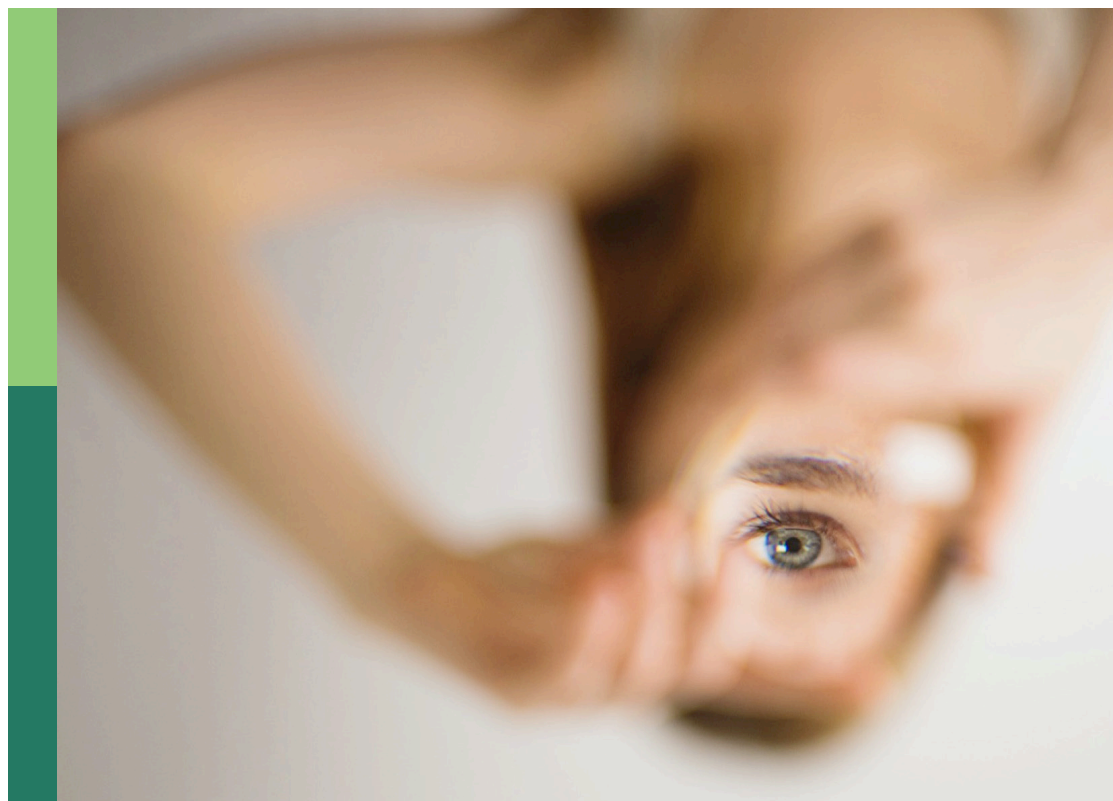# Global human identification: Studies of its roots, how it may be enlarged, and its expressions in attitudes and behavior

Edited by
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Global human identification: Studies of its roots, how it may be enlarged, and its expressions in attitudes and behavior

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Editorial: Global human identification: studies of its roots, how it may be enlarged, and its expressions in attitudes and behavior

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Editorial on the Research Topic
Global human identification: studies of its roots, how it may be enlarged, and its expressions in attitudes and behavior

Research on identity has a long history in psychology and is a thriving area of work within social psychology. Currently, the field is seeing an increase in research and public interest in large, superordinate identities (for a review, see McFarland et al., 2019). Many of the issues confronting humanity today (e.g., climate change, refugee crises, the spread of dangerous diseases such as the SARS-CoV-2, etc.) require a concerted, global effort to solve. As a result, the importance of studying the role of superordinate identification is vital for these efforts.

The idea of such broad identifications is not new. In fact, ideas linking all humanity together were discussed in ancient times by Diogenes of Sinope, Socrates or Chrysippus, and, more recently, by Bartolomé de Las Casas, Baha'u'llah, Thomas Paine, Pablo Casals, Mahatma Gandhi, and many others (McFarland, 2011; Hamer et al., 2019; McFarland et al., 2019). Social identities are also a key feature of many psychological theories. Social Categorization Theory proposes identification with all humanity as the highest possible self-categorization (Turner et al., 1987). In Maslow's (1954) Hierarchy of Needs, self-actualized individuals are described as having developed "a deep feeling of identification, sympathy, and affection for human beings in general". These individuals feel a deep connection to others and perceive themselves as human first. Adler (1927/1954) described humans as having an innate capacity to care for the wellbeing of other human beings. This can range from concern extending to one's ingroup members to concern for all humanity. According to Allport (1958), without humanity as a common ingroup, human conflict is endless and inevitable. The common theme among these ideas and theories is a bond, or identification, with people around the world.

Work on global social identifications focuses on two approaches: situational, where they are treated as a state, and their level can be experimentally manipulated, or dispositional, where they are treated as rather stable characteristics (see Hamer et al., 2019). Thirteen

papers included in this Research Topic of "*Frontiers in psychology - global human identification: studies of its roots, how it may be enlarged, and its expressions in attitudes and behavior*", represent both of these approaches. Building upon earlier research, they present some of the most cutting-edge work on superordinate identifications to date. The collection is very diverse: studies were conducted in Argentina, Canada, Chile, China, England, Germany, India, Iran, Italy, Poland, Russia, Spain, South Africa, and the USA. Together, this work examines the predictors and correlates of global identities (global human identification and global citizenship identification), their potential roots in childhood, as well as their relationship with pressing issues confronting all humanity: attitudes toward migrants, COVID-19, environmental sustainability issues, and international cooperation.

Turmoil around the world, whether due to the impact of war, economic uncertainties, climate crisis, or persecution from one's government, leads to people emigrating in search of a better life for themselves and their families. Migrants are often met with opposition and hostilities. Albarello and Rubini, in an Italian sample, examined psychological factors that lead to denying migrants basic human rights. Perceiving migrants as threatening reduced attributing human rights to them, increased perceptions that one's ingroup is being deprived, and led to lower identification with the human group. Work by Carmona et al. shows that different all-inclusive superordinate categories (e.g., "humans", "citizens of the world") differentially impact intergroup helping from host communities toward migrants. Identification with "citizens of the world" was positively associated with opposition to helping migrants and to offering more dependency-oriented helping. In contrast, identification with "humans" was positively associated with greater helping in general and negatively associated with opposition to helping migrants. Grimalda et al.'s experimental work in six countries shows that globally identified individuals cooperate more not only at the global level but more at both the national and local levels as well. With many unprecedented issues confronting humanity requiring novel and global thinking to address, Pastor et al. found in Spanish and diverse migrant samples that identification with a global culture is connected to more creative thinking among host groups. More specifically, they found developing a cultural identity that develops beyond one acquired through enculturation has the potential to facilitate creative behavior.

Several articles in this Research Topic examine the relationship between identification with all humanity (IWAH) and COVID-19. Barragan and Meltzoff found on U.S. samples that IWAH predicted the prosocial motivation to wear masks and, when not wearing a mask, engage in physical distancing in public. Sparkman et al.'s experimental work shows on U.S. samples that manipulating IWAH had a significant effect on participants' psychological bond with all humanity but did not impact their concern for all humanity. Unexpectedly, manipulating IWAH had no causal impact on intentions to engage in behaviors to help attenuate the spread of COVID-19. Wlodarczyk et al. collected data in Spain and Chile at two points during the COVID-19 pandemic and found IWAH significantly decreased in participants over the 2-month course of the strict pandemic lockdowns. This unique project highlights the

impact of pandemic exhaustion on people and a corresponding shift to more local concerns and away from global issues. While during the pandemic, there was a general increase in prejudice against people from China, a longitudinal study from Ferrante et al. on a Canadian sample shows that global citizenship identification was connected to the lowest prejudice toward this group.

Two articles in this Research Topic examine the role of superordinate identification and environmental concerns. In a systematic review of 30 articles, Pong and Tam found global identification consistently related to pro-environmental behaviors and environmental concerns. The underlying mechanisms in this relationship—obligation, responsibility, and relevance—underscore the role of human connections and concerns. Urbańska et al., on a Polish sample, explored how perceptions of freedom impact pro-environmental behaviors. Viewing freedom as intrinsic (conditional, limited by the needs of other people) was related to greater environmental concern and pro-environmental behavior than extrinsic one, with IWAH moderating this relationship.

There is still much to learn about the roots of global human identification. Several studies in this Research Topic examine its potential predictors. Hagel et al. on English and German samples found participants' recollections of very general "positive parenting behavior" weakly connected to IWAH, while the extent to which participants perceived their parents as global citizens accounted for a third of the variance in their own identification as global citizens. Hamer and McFarland on U.S. and Polish samples examined childhood and adolescent experiences of being raised in diverse environments, having intergroup friendships, helping or being helped by various others, and having experiences leading to re- or de-categorization processes predicted IWAH beyond other known factors, such as openness to experience, empathy, universalism and others (Hamer et al., 2019), while parental styles did not predict IWAH. Wu et al. examined, on a Chinese sample, the connection between pop culture and IWAH. Specifically, engaging with science fiction—literature, movies, and comics that portray alternative worlds and events—was positively related to IWAH. These programs of research illustrate the ways in which early experiences and pop culture have the ability to make people more open to others and impact global social identifications.

Cumulatively, these studies explore the predictors, correlates, roots, and consequences of global identities in a variety of contexts and countries. As Editors, we would like to express our gratitude to all the contributing authors, and reviewers for their support of this Research Topic.

We began this Research Topic working with another co-editor, our colleague and friend Dr. Sam McFarland who unfortunately passed away in 2022. Dr. McFarland was an incredible teacher, researcher, and mentor. His efforts, openness to everyone, and his groundbreaking work on identification with all humanity, brought researchers from around the world together and began many of the collaborations that evolved into the international Identification With All Humanity Lab. We hope this Research Topic, which we dedicate to him, positively contributes to the ever-evolving legacy of his work.

Author contributions

JH: Writing—original draft. KH: Writing—review and editing.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Does Activating the Human Identity Improve Health-Related Behaviors During COVID-19?: A Social Identity Approach

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Taking a social identity approach to health behaviors, this research examines whether experimentally "activating" the human identity is an effective public-health strategy to curb the spread of COVID-19. Three goals of the research include examining: (1) whether the human identity can be situationally activated using an experimental manipulation, (2) whether activating the human identity causally increases behavioral intentions to protect the self and others from COVID-19, and (3) whether activating the human identity causally increases behaviors that help protect vulnerable communities from COVID-19. Across two preregistered experiments (total N = 675), results suggest (1) the manipulation of identification with humanity had a significant but small effect on participants' psychological bond with all humanity (Cohen's ds = 0.21 – 0.27), but not their concern for all humanity. However, the manipulation had (2) no causal effect on health-related behavioral intentions or (3) helping behaviors that reduce the spread of COVID-19. Limitations, future directions, and direct benefits of the research are discussed.

Keywords: identification with all humanity (IWAH), social identity, COVID-19, health behaviors, helping

> *"Seen from space, the Earth has no borders. The spread of the coronavirus is showing us that what we share is much more powerful than what keeps us apart. All people are inescapably interconnected, and the more we can come together to solve our problems, the better off we will all be."*
>
> – Scott Kelly.

INTRODUCTION

In a New York Times opinion piece, astronaut Kelly (2020) provided a perspective on the interconnectedness among people at the beginning of a global pandemic. Included in this perspective is a possible remedy—not only to improve individual health and well-being—but also to improve our collective health and well-being. But as much research on the link between social psychological processes and health has shown, it is not simply the perception of *social connectedness* that affects health and well-being, but a shared *social identity* (Jetten et al., 2014).

According to social identity theory (SIT; Tajfel and Turner, 1979), a fundamental feature of the human experience centers around the psychological connection we have, and the meaning associated with, our shared (vs. unshared) social groups (e.g., gender identity, racial identity, nationality; also see Turner et al., 1987). According to self-categorization theory (SCT; Turner et al., 1987; Oakes et al., 1994), an extension of SIT, we have a range of social identities that exist at

different levels of abstraction—that is, the individual level vs. social level vs. human level—all of which can be activated according to various personal and contextual factors. These complementary theories, now recognized as the social identity approach, were initially an explanation for intergroup attitudes and behavior (e.g., prejudice, discrimination, cooperation), but new research has shown social identities also have a strong impact on individual health and well-being because of the close connection between the self and the group (for reviews, see Haslam et al., 2009; Jetten et al., 2017). For instance, just during the COVID-19 pandemic alone, recent data from 67 countries suggest stronger identification with one's nation predicted more positive well-being (Bonetto et al., 2021) and stronger adherence to recommended health behaviors (Van Bavel and Boggio, 2020). Despite an emerging research agenda that has wielded social identities as a tool for improving individual health and well-being (Jetten et al., 2017), comparatively little research has examined the impact of broader, more inclusive social identifications (e.g., human identity, global identity) on personal health behaviors that have implications for collective health. Thus, we argue that social identification at the most inclusive level of abstraction—the human level (Turner et al., 1987)—may be particularly well-suited to mobilize the kind of personal, health-related behaviors needed during a global pandemic.

A Social Identity Approach to Health-Related Behaviors During COVID-19

Identification with humanity is uniquely suited for understanding responses to the COVID-19 outbreak because it is a global pandemic that cuts across national and cultural boundaries. COVID-19 is a collective crisis (rather than a crisis of the individual) that has affected nearly all human beings and revealed that we share a common fate (i.e., how the individual behaves has implications for spreading COVID-19 to others, and how others behave have implications for contracting COVID-19 for the self). Indeed, researchers have argued that social identification processes specific to the *human identity* become especially relevant "when an ingroup needs help fulfilling perceived basic human needs" (Carmona et al., 2020, p. 15), such as reducing illness or death among fellow humans. Drawing from the social identity model of pro-environmental action (SIMPEA; see Fritsche et al., 2018), appraising the COVID-19 pandemic as a collective threat should engender emotions and/or motivations that facilitate social identification processes, which in turn should facilitate behavioral responses that protect the self and others from COVID-19. To outline this process more specifically, an appraisal of the COVID-19 pandemic as a collective threat may engender motivations to reduce subjective uncertainty (Hogg, 2007), reduce the likelihood of existential mortality (Castano et al., 2002), or increase a sense of personal control (Fritsche et al., 2013). These motives, in turn, should lead to several interactive social identification processes, including ingroup identification, ingroup norms, and perceived efficacy of ingroup goals.

Identification with the human ingroup manifests as affective feelings of closeness and concern for the well-being of other humans—above and beyond the self (McFarland et al., 2012). In the context of COVID-19, human identification could manifest as a perceptual focus on the biological and sociocultural characteristics that all humans share—similarities that may be contrasted with the characteristics of non-human "outgroups" (Turner et al., 1987), such as the coronavirus itself (also see Reese et al., 2020). Perceived norms of the human ingroup during COVID-19 reflect an awareness of the agreed upon standards and prototypical patterns of behavior (e.g., mask wearing, social distancing) that serve to protect others from infection, whereas perceived efficacy reflects a belief in the likelihood that such ingroup norms will be effective against COVID-19. To the extent that these social identification processes become salient and internalized by the self, according to the SIMPEA approach, it should mobilize behaviors that protect the self and others from COVID-19 (e.g., wearing a mask, social distancing, sanitizing, vaccinating; see Fritsche et al., 2013; Reese et al., 2020). While these core social identification processes—ingroup identification, ingroup norms, and perceived efficacy of ingroup goals—are all important for understanding behavioral responses and appraisals during the COVID-19 pandemic, the primary focus of the current research is the link between identification with the human ingroup and its effect on personal, health-related behaviors.

Identification at the human level should be uniquely suited to promote personal behaviors that protect fellow humans from a viral outbreak, but very little research has addressed the link between identification with humanity and health-related behaviors during COVID-19. Moreover, the human identity (as opposed to the individual or social identity) is arguably the least researched level of abstraction in the social identity approach (e.g., see Wohl and Branscombe, 2005; for an updated review, see McFarland et al., 2019). Thus far, only a few studies have demonstrated that identification with all humanity (or global identification) uniquely predicts personal, health-related behaviors that reduce the spread of COVID-19 (Barragan et al., 2021; Wang et al., 2021; for helping behaviors during COVID-19, see Deng, 2021; Zagefka, 2021). However, these studies thus far have taken a correlational approach, operationalizing identification with all humanity as an individual difference measure rather than a social identity that is situationally activated. With this point in mind, only a few published studies have directly manipulated identification at the human level; of the studies that have, all examine its effect on improving intergroup relations or increasing international helping (Wohl and Branscombe, 2005; Greenaway et al., 2011; Reese et al., 2015). No research (to our knowledge) has attempted to experimentally manipulate identification with humanity with the goal of examining its causal effect on health-related COVID-19 behaviors (e.g., mask wearing, social distancing).

Overall, the importance of activating the human level of inclusiveness has not yet been fully realized as a potential public-health strategy for improving health-related behaviors during the COVID-19 pandemic. We argue that situationally activating identification with the human ingroup should increase one's psychological bond with and concern for the well-being of fellow humans. This focus on others (rather than the self) should promote health-related behaviors (e.g., mask wearing,

social distancing) that benefit and protect the human ingroup from contracting COVID-19. Therefore, the current research will test the public-health utility of the human identity by directly "activating" it using an experimental manipulation, and examining whether it causally promotes personal, health-related behaviors needed to reduce the spread of COVID-19.

The Present Research

The present research takes an important experimental approach with three primary goals. **Goal 1**: Examine whether the human identity can be situationally activated using random assignment to a control vs. experimental condition. Because only a few published studies have shown success in directly manipulating the human identity, doing so remains relatively uncharted experimental territory. Indeed, recent research involving 11 experiments with different manipulations (e.g., educational activities, persuasion, subliminal priming, self-awareness) have demonstrated the difficulty in causally increasing social identification at the highest, most inclusive level of abstraction (see Reysen et al., 2021). Given this uncertainty, in Study 1 we tested the effectiveness of two different manipulations of the human identity in the hopes that at least one would increase identification with humanity. **Goal 2**: Examine whether activating the human identity causally increases intentions to engage in behaviors that protect the self and others from COVID-19, including wearing a mask, cleaning, social distancing, and receiving a COVID-19 "booster" vaccine in the future. **Goal 3**: Examine whether activating the human identity causally increases actual behaviors geared toward helping vulnerable communities become more protected from COVID-19.

Statement on Open Science

To increase transparency in psychological science, the hypotheses, manipulations and measures, sampling plan, data exclusion plan, and data analytic plan of this research were preregistered on the Open Science Framework (for Study 1[1], for Study 2[2]). Although preregistrations were submitted after data collection began, no summary statistics or analyses were conducted until data collection was complete. A copy of the data (including raw data files, SPSS data files, and SPSS syntax for variable creation and primary analyses) and survey materials can be found on OSF [3].

STUDY 1

Method
Sample Size and Power Analyses
Using G*Power software (Faul et al., 2007) and the ANCOVA statistical test (results were also similar for an ANOVA), a preregistered, *a priori* power analysis was conducted to estimate required sample size. To date, no research has examined the effect of a manipulation of identification with humanity on

health-related behaviors. However, prior research similar to the current study (see Reese et al., 2015) has shown that manipulating identification with humanity increases the behavioral component of human identification ($d = 0.41$) and increases donations to a local charity ($d = 0.43$). To achieve at least 80% statistical power with input parameters of a small-to-medium effect size (Cohen's $d = 0.41$, Cohen's $f = 0.205$), conventional significance level ($p < .05$), two numerator degrees of freedom, three conditions, and two covariates, the required total sample size was at least 233 participants. To further increase the power of the study, a total sample size of at least 300 participants was set. After applying exclusion criteria, 297 participants were available for primary analyses (see below section). Based on the results of a sensitivity power analysis using the above criteria, this final sample ($N = 297$) yielded a required effect size of Cohen's $d = 0.36$ (Cohen's $f = 0.181$).

Participants and Procedure
From November 20, 2020, to April 18, 2021, a total of 302 participants were recruited from an undergraduate psychology subject pool at a mid-size university in the state of Wisconsin, United States. It is worth noting that this university held in-person classes throughout most of the 2020–2021 academic year, though masks were required in classrooms, desks were socially distanced, and student symptoms were monitored via a smartphone application. Consistent with pre-registered data exclusion criteria, four participants were removed for not having enough responses to compute an average on one or more measures, and an additional participant was removed for not completing the manipulation. This left a final sample size of 297 participants for analyses. Demographically, participants were primarily White (86.9% White, 1.3% Black/African-American, 2% Hispanic/Latino, 3.4% Asian/Pacific Islander, 5.6% Biracial/Multiracial, 0.7% Other), primarily women (79.5% women, 18.5% men, 2% other), and ranged in age from 18 to 52 years old ($M = 19.96$ years old, $SD = 3.15$).

Participants could complete our study in exchange for satisfying a course requirement or earning extra credit toward a course. The study was described as an exploration of the visual, emotional, and personality correlates of cognitive intelligence. A second portion of the study, which was described as separate from examining the correlates of cognitive intelligence, was to "explore people's opinions and behaviors regarding current COVID-19 guidelines." However, these separate studies were connected, with COVID-19 behaviors representing the primary dependent variables (see below). After providing informed consent, participants completed measures of empathy, personality, and three multiplication questions to buttress the cover story. Participants were then randomly assigned to one of three conditions manipulating identification with humanity. Next, participants completed a manipulation check, primary dependent measures of behavioral intentions to minimize the spread of COVID-19 and an optional charity donation task, followed by demographic questions.[4] Participants were debriefed at a later date.

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[4]Due to researcher error, a single question asking participants to report their political ideology was not removed from our standard demographics page before launching both studies. This was the only other measure collected in our studies

Manipulating Identification With Humanity

To buttress the cover story of the research, participants were told a "simple test" was developed to measure their visual memory capacity and language ability. Participants were asked to carefully view an image for 30 s and try to remember as many of its details as possible, with a visible, 30-s timer displayed on the page. To "measure visual memory capacity," we then asked participants three questions about the image they viewed. To "measure their language ability," we asked participants to take 3 min to type a response to a "conceptual question." A visible timer was set for 3 min, and we set a minimum requirement of 150 characters for the writing prompt. In both cases, participants could not advance to the next page until the timers expired.

Participants randomly assigned to the control condition (n = 101) viewed a house-like image composed of different shapes (e.g., a square, parallelogram, triangle). Their writing prompt asked, "What does it mean to be considered a triangle? And how is this similar to, or different from, what it means to be a rectangle?" Participants randomly assigned to the first experimental condition viewed a realistic picture of the earth from space (n = 98, the "earth condition"), and those assigned to the second experimental condition viewed an animated picture of the earth in space surrounded by human hands (n = 98, the "globe condition," used in prior research; see Reese et al., 2015). The writing prompt, which was based on a colleagues' unpublished data (Bertin, 2019) was used in both experimental conditions and asked, "What does it mean to you to be a human being? What do you have in common with, or in what ways are you connected to, humans all over the world?" Considering the effect of social identity on health-related behavior depends on whether the identity is salient and meaningful to the self (Jetten et al., 2017), this manipulation makes the human identity salient and then asks participants to reflect on its personal meaning to them.

Manipulation Check

As a check on the effectiveness of the manipulation, we used the *identification with all humanity* (α = .82) scale from prior research[5] (McFarland et al., 2012). Based on the results of a factor analysis and consistent with other findings (Reese et al., 2015; Reysen and Hackett, 2016; McFarland et al., 2019; Hamer et al., 2021), this scale broke down into two subfactors that researchers have increasingly termed *bond with all humanity* (α = .76) and *concern for all humanity* (α = .75). These two subfactors represent the identity and behavioral components of identification with all humanity, respectively (see Hamer et al., 2021). Identification with one's community and other Americans were also measured but not used in the present research.

Health-Related Behavioral Intentions

For the purposes of this research, we constructed a detailed series of questions measuring participants' intentions to wear a mask, sanitize, and social distance across different contexts and situations (e.g., indoor vs. outdoor settings, public vs. private settings). We believed this approach would be more realistic and have greater reliability than asking for single-item questions about intentions to wear a mask, sanitize, and social distance in general.

Prior to answering any questions of their behavioral intentions, participants were reminded that they were now completing "a separate part of this study." Ten questions measured intentions to *wear a mask* (α = .87; e.g., "Imagine you visit an indoor private gathering, such as inside the home of friends or family who are not current household members: do you intend to regularly wear a mask?" and "Imagine you visit an indoor public place, such as a restaurant, bar, grocery store, library, or shop: do you intend to regularly wear a mask?"). Twelve questions measured intentions to *clean, wash, or sanitize* (α = .91; e.g., "Do you intend to sanitize frequently used surfaces in public spaces after each use, such as tables, gym equipment, computer equipment, and gas pumps?" and "Do you intend to clean your hands (with hand sanitizer or soap and water) after touching frequently used surfaces?"). Finally, ten questions measured intentions to *social distance* (α = .88; e.g., "Do you intend to regularly maintain a six-foot distance from people who are not current household members?" and "Imagine you visit an indoor public space, such as a restaurant, bar, grocery store, library, or shop: do you intend to regularly maintain a six-foot distance from other people?" [reverse-scored]). All questions were framed as intentions to engage in these behaviors *in the next week*, and all questions were answered using the same 1 (*very unlikely*) to 6 (*very likely*) scale. Although our preregistration committed us to measuring and analyzing these behaviors separately, the mask wearing, cleanliness, and social distancing measures were strongly correlated (rs ranged from .56 to .79, p < .001) and could be combined to form an overall composite of *health-related behavioral intentions* (α = .94).

Helping Behavior

As a measure of actual behavior, participants could learn how to help raise money (up to $100 donated by the researchers) for the #MaskUpMKE fund of the United Way of Greater Milwaukee and Waukesha County, an initiative to make and distribute face masks to essential workers, communities of color, and other individuals in the region. It was made clear that participants were "under no obligation to participate, and choosing not to participate will in no way affect your ability to earn your credit." Thus, participants' decision to "finish the study and earn my SONA credit" or "learn how to help the #MaskUpMKE fund" represented our dichotomous measure of *helping interest* (0 = no, 1 = yes). Participants who chose to finish the study without helping were directed to the final page of the survey, whereas participants who chose to learn more about the helping opportunity were sent to a separate page.

Participants who opted to help with the donation opportunity were told, "the researchers... have developed a simple way to quantify how much effort people are willing to give to help contribute to the #MaskUpMKE fund." Using a list of 100 randomly generated strings of nine-digit numbers, participants

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that was not preregistered. We have not conducted any analyses on this measure and therefore do not report them here.

[5]The target group "humans all over the world" was used in place of the original phrasing of "people all over the world" to specifically highlight the human identity. However, previous research suggests the concepts of "humans" and "people" have similar prototypical meanings (Carmona et al., 2020).

were asked to identify whether a total of 20 number strings were included on a primary list. For every number correctly identified from the primary list, $0.05 would be donated to the #MaskUpMKE fund. However, if a number was incorrectly identified from the primary list, $0.05 would not be added to the participant's donation amount. Participants were reminded that the task is voluntary, and that they can complete "as few or as many number searches" as they would like. The amount of donation money participants secured by correctly identifying number strings represented our continuous measure of *helping effort*, which ranged from $0.00 to $1.00. Those who opted out of the task received a score of $0.00.

Covariates

Considering data collection for this study was slow and progressed over the course of 6 months, we wanted to control for the possible effects of time and variability in COVID-19 cases on our primary dependent variables. We suspected that as time progressed and COVID-19 cases slowly decreased into the spring of 2021, participants would find it increasingly less important to engage in behaviors that minimize the spread of COVID-19. As outlined in our preregistration materials, a measure of *time* was computed by determining the day participants completed the study (range: Day 1 – Day 150), and a measure of *COVID-19 positivity rates* for the county were taken from the CDC's county-level time series data for the state of Wisconsin. Positive test data are reported by the CDC as weekly averages by day, which were matched with participants' study completion date.

Preregistered Hypotheses

We hypothesized that, compared to the control condition, participants in the "earth" condition would report stronger (1) identification with all humanity (as measured by the full scale; *Hypothesis 1a*), (2) bond with all humanity factor (*Hypothesis 1b*), and (3) concern for all humanity factor (*Hypothesis 1c*). We had the same hypotheses when comparing the control to the "globe" identification with humanity condition (*Hypotheses 2a – 2c*). Controlling for time and COVID-19 positivity rates, we also hypothesized that, compared to the control condition, participants in the "earth" identification with humanity condition would (1) report stronger intentions to wear a mask (*Hypothesis 3a*), clean, wash, or sanitize (*Hypothesis 3b*); and social distance (*Hypothesis 3c*); (2) be more likely to express interest in learning how they can help secure masks for others (*Hypothesis 3d*), and (3) put more effort toward a task that contributes money to help secure masks for others (*Hypothesis 3e*). We had the same hypotheses when comparing the control to the "globe" identification with humanity condition (*Hypotheses 4a – 4e*). Finally, we remained agnostic and made no specific hypotheses regarding differences between the two experimental conditions.

Analytic Strategy

Consistent with our preregistration, separate one-way analyses of variance (ANOVA) tested whether the manipulation of identification with humanity was successful in affecting the full scale of identification with all humanity, the bond with all humanity factor, and concern for all humanity factor. Next, after controlling for time and COVID-19 positivity rates,

separate one-way analyses of covariance (ANCOVA) tested whether the manipulation of identification with humanity affected behavioral intentions to wear a mask, clean, and social distance, as well as how much effort participants put toward helping others secure masks. Where appropriate, significant ANOVAs and ANCOVAs were interpreted with *post hoc* pairwise comparisons using the least-significant difference (LSD) test. Finally, after controlling for time and COVID-19 positivity rates, a binary logistic regression tested whether the manipulation of identification with humanity affected interest in helping others secure masks (yes or no).

Results

For descriptive statistics and bivariate correlations of all primary measured variables, see **Table 1**.

Manipulation Check

Regarding Hypotheses 1a – 2c, the manipulation of identification with humanity had no effect on the full scale of identification with all humanity, omnibus $F(2, 294) = 0.73$, $\eta_p^2 = 0.01$, $p = .49$; the bond with all humanity factor, omnibus $F(2, 294) = 1.88$, $\eta_p^2 = 0.01$, $p = .16$; nor the concern for all humanity factor, omnibus $F(2, 294) = 0.02$, $\eta_p^2 \leq 0.001$, $p = .98$ (for descriptive and additional inferential statistics, including effect sizes, see **Table 2**). Although all omnibus tests were not significant, examining the means and exploring the results of pairwise comparisons revealed that bond with all humanity was marginally significantly higher in the "earth" identification with humanity condition ($M = 2.80$) compared to the control ($M = 2.61$), $p = .07$. This provides some support for Hypothesis 1b, although we interpret this with caution. All other pairwise comparisons were non-significant, including the full identification with all humanity scale, ps > .27; and the concern for all humanity factor, ps > .86.

Health-Related Behavioral Intentions

Regarding Hypotheses 3a – 3c and Hypotheses 4a – 4c, the manipulation of identification with humanity (even after controlling for time and COVID-19 positivity rates) had no effect on intentions to wear a mask, omnibus $F(2, 292) = 0.08$, $\eta_p^2 = 0.001$, $p = .93$; intentions to clean, wash, or sanitize, omnibus $F(2, 292) = 0.09$, $\eta_p^2 = 0.001$, $p = .92$; or intentions to social distance, omnibus $F(2, 292) = 0.32$, $\eta_p^2 = 0.002$, $p = .73$. We also looked at the effect of the manipulation of identification with humanity on the overall composite of health-related behavioral intentions, which remained non-significant, omnibus $F(2, 292) = 0.16$, $\eta_p^2 = 0.001$, $p = .85$ (see **Table 2**).

Helping Behaviors

Regarding Hypotheses 3d and 4d, a model including the manipulation of identification with humanity, time, and COVID-19 positivity rates did not predict participants' interest in learning how to help secure masks for others, omnibus $\chi^2(4, N = 297) = 0.68$, $p = .95$. Testing Hypotheses 3e and 4e, the manipulation of identification with humanity (even after controlling for time and COVID-19 positivity rates) had no effect on participants' effort to help secure masks for others, omnibus $F(2, 292) = 0.40$, $\eta_p^2 = 0.003$, $p = .67$ (see **Table 2**).

TABLE 1 | Descriptive statistics and bivariate correlations of all primary measured variables in Study 1.

Variable	M (SD)	1	2	3	4	5	6	7	8	9	10
(1) IWAH Full Scale	3.30 (0.63)	–									
(2) IWAH Bond	2.72 (0.74)	.90***	–								
(3) IWAH Concern	4.01 (0.70)	.83***	.50***	–							
(4) Mask Wearing	4.30 (1.06)	.23**	.20***	.19***	–						
(5) Cleanliness	4.48 (1.06)	.36***	.30***	.33***	.59***	–					
(6) Social Distancing	3.98 (1.12)	.23***	.18**	.22***	.79***	.56***	–				
(7) Health Composite	4.27 (0.94)	.32***	.27***	.29***	.90***	.84***	.89***	–			
(8) Helping Interest	NA	.11†	0.06	.14*	.09	.12*	.13*	.13*	–		
(9) Helping Effort	0.05 (0.19)	.10†	.08	.11†	.10†	.10†	.19**	.15*	.81***	–	
(10) Time	NA	−.07	−.04	−.09	−.18**	−.17**	−.24***	−.22***	−.02	−.04	–
(11) COVID Rates	7.74 (4.07)	.10†	.08	.10†	.17**	.18**	.24***	.23***	.01	.04	−.95***

***p < .001, **p < .01, *p < .05, †p < .09. IWAH: Identification with All Humanity. Health Composite: the average of all mask wearing, cleanliness, and social distancing items. Helping interest (0 = no, 1 = yes) does not have descriptive statistics because it is a dichotomous variable, and the covariate of Time ranges from 1 to 150 days.

TABLE 2 | Descriptive statistics and pairwise comparison results of ANOVAs, ANCOVAs, and binary logistic regression in Study 1.

Variable	(1) Control M (SD)	(2) Human ID "Earth" M (SD) (3) Human ID "Globe" M (SD)		d	p	95% C.I. Lower	95% C.I. Upper
IWAH[a] (Full scale)	(1) 3.23 (0.53)	(2) 3.33 (0.65)		0.17	.27	−0.27	0.08
		(3) 3.32 (0.69)		0.15	.33	−0.26	0.09
Bond[a] (Subscale)	(1) 2.61 (0.64)	(2) 2.80 (0.76)		0.27	.07	−0.40	0.02
		(3) 2.76 (0.80)		0.21	.14	−0.36	0.05
Concern[a] (Subscale)	(1) 4.01 (0.66)	(2) 4.00 (0.69)		0.01	.86	−0.18	0.22
		(3) 4.02 (0.77)		0.01	.98	−0.20	0.19
Mask wearing[b]	(1) 4.33 (1.09)	(2) 4.27 (1.09)		0.06	.70	−0.24	0.35
		(3) 4.29 (1.01)		0.04	.81	−0.26	0.33
Cleaning[b]	(1) 4.52 (1.03)	(2) 4.49 (1.11)		0.03	.85	−0.27	0.32
		(3) 4.45 (1.04)		0.07	.68	−0.23	0.36
Social distancing[b]	(1) 4.06 (1.14)	(2) 3.94 (1.15)		0.10	.47	−0.19	0.42
		(3) 3.95 (1.07)		0.10	.53	−0.21	0.40
Health composite[b]	(1) 4.31 (0.95)	(2) 4.25 (0.99)		0.06	.63	−0.19	0.32
		(3) 4.24 (0.88)		0.08	.62	−0.19	0.32
Helping effort[b]	(1) .05 (0.21)	(2) .06 (0.22)		0.05	.90	−0.06	0.05
		(3) .03 (0.14)		0.11	.48	−0.04	0.07

		b (SE)	Wald	OR	p	95% C.I. OR Lower	95% C.I. OR Upper
Helping interest[c]	(1) (Reference)	(2) −0.09 (0.51)	0.03	0.91	.85	0.34	2.47
		(3) −0.25 (0.53)	0.22	0.78	.64	0.28	2.19

Superscript[a] indicates effects were tested using an ANOVA, superscript[b] indicates effects were tested using an ANCOVA (controlling for time and COVID-19 positivity rates), and superscript[c] indicates effects were tested using a binary logistic regression (controlling for time and COVID-19 positivity rates). Adjusted means and standard errors for ANCOVAs are not reported because covariates were not significant. The progression of time was unrelated to mask wearing, $F(1,292) = 0.64$, $\eta_p^2 = 0.002$, $p = .42$; cleaning, $F(1,292) = 0.05$, $\eta_p^2 \leq 0.001$, $p = .82$; social distancing, $F(1,292) = 0.13$, $\eta_p^2 \leq 0.001$, $p = .72$; the overall composite of health-related behavioral intentions, $F(1,292) = 0.26$, $\eta_p^2 \leq 0.001$, $p = .61$; and helping effort, $F(1,292) = 0.05$, $\eta_p^2 \leq 0.001$, $p = .83$. COVID-19 positivity rates was unrelated to mask wearing, $F(1,292) = 0.05$, $\eta_p^2 \leq 0.001$, $p = .82$; cleaning, $F(1,292) = 0.61$, $\eta_p^2 = 0.002$, $p = .44$; social distancing, $F(1,292) = 1.12$, $\eta_p^2 = 0.004$, $p = .29$; the overall composite of health-related behavioral intentions, $F(1,292) = 0.65$, $\eta_p^2 \leq 0.002$, $p = .42$; and helping effort, $F(1,292) = 0.20$, $\eta_p^2 = 0.001$, $p = .66$. Time was unrelated to helping interest, $b = −0.01$, $SE = 0.01$, $Wald = 0.43$, $OR = 0.99$, 95% CI of OR [0.97, 1.02], $p = .51$; and COVID-19 positivity rates was unrelated to helping interest, $b = −0.09$, $SE = 0.16$, $Wald = 0.32$, $OR = 0.91$, 95% CI of OR [0.66, 1.25], $p = .57$.

Discussion

Results suggest the manipulation of identification with humanity did not causally promote stronger intentions to wear a mask, clean, or social distance, nor greater interest in learning how to help or actual effort needed to help secure masks for others. Despite these non-significant effects on the primary dependent variables, preliminary findings indicate the manipulation of identification with humanity may be effective at activating this inclusive social identity. Compared to the control, the "earth" identification with humanity condition (but not the "globe" condition) marginally increased identification with all humanity. However, this increase appeared only for the bond with all humanity factor. To assess the reliability of the effect of the manipulation on bond with all humanity, and to again examine whether identification with humanity causally promotes health-related COVID-19 behaviors, we conducted a follow-up study with greater statistical power and a more diverse, non-student sample.

STUDY 2

Method

Sample Size and Power Analyses

Using G*Power software and the ANCOVA statistical test (results were similar for an independent-samples t-test), an *a priori* power analysis was conducted to estimate required sample size. To ensure the current study at least demonstrates a significant effect of the manipulation on identification with humanity, the marginally significant effect size for bond with all humanity was used from Study 1. To achieve 80% statistical power with input parameters of a small effect size (Cohen's $d = 0.27$, Cohen's $f = 0.135$), conventional significance level ($p < .05$), one numerator degree of freedom, two conditions, and one covariate, the required total sample size was at least 433 participants. Given a fixed availability of personal funds, however, we sought to recruit a total sample size as close to this number as possible. Therefore, our goal was a total sample size of 400 participants, which represents approximately 77% statistical power to discover a significant effect. After applying exclusion criteria, 378 participants were available for primary analyses (see below section). Based on the results of a sensitivity power analysis using the above criteria, this final sample ($N = 378$) yielded a required effect size of Cohen's $d = 0.29$ (Cohen's $f = 0.144$).

Participants and Procedure

On May 14, 2021, a total of 389 participants[6] from across the United States were recruited on the Prolific crowdsourcing platform. Consistent with pre-registered data exclusion criteria, 10 participants were removed for having a relative survey completion speed twice as fast as the typical participant, and an additional participant was removed for not following instructions for the experimental manipulation. This left a final sample of 378 participants for analyses. Demographically, participants were primarily White (65.6% White, 8.5% Black/African-American, 5.3% Hispanic/Latino, 11.1% Asian/Pacific Islander, 0.8% Native American, 7.9% Biracial/Multiracial, 1.1% Other), primarily women (60.8% women, 36.5% men, 2.6% other), and ranged in age from 18 to 76 years old ($M = 36.62$ years old, $SD = 13.18$).

Participants could earn at least \$1.56 in exchange for completing our study (completion time: $M = 14.90$ min, $SD = 10.07$)[7], which was described on Prolific in the same way as Study 1 (i.e., a "two-part" study exploring the visual, emotional, and personality correlates of cognitive intelligence, and opinions and behaviors regarding current COVID-19 guidelines). After providing informed consent, participants completed measures of empathy, personality, and two multiplication questions to buttress the cover story. Participants were then randomly assigned to a control or experimental condition manipulating identification with humanity. Next, participants completed a manipulation check, primary dependent measures of behavioral intentions to minimize the spread of COVID-19 and an optional charity donation task, followed by demographic questions. Participants were debriefed at a later date.

Manipulating Identification With Humanity

The same manipulation of identification with humanity from Study 1 was used, but with three small modifications. Fist, when participants were instructed to view an image for the "visual memory capacity test," a visible, 35-s timer (instead of 30 s) was displayed to provide more time for participants to get oriented to the image. Second, when participants completed the conceptual question measuring their "language ability," a visible timer was set for 2 min and 35 s (instead of 3 min) to reduce survey completion time and minimize payment costs. Finally, participants were randomly assigned to the same control condition ($n = 190$) or "earth" identification with humanity condition ($n = 188$) from Study 1. Because the manipulation-check effect size from the "globe" experimental condition was slightly smaller than the "earth" condition, it was eliminated to increase sample size. All other features of the manipulation remained the same.

Manipulation Check

As a check on the effectiveness of the manipulation, the same *identification with all humanity* ($\alpha = .90$) scale from Study 1 was used, including factors of *bond with all humanity* ($\alpha = .84$) and *concern for all humanity* ($\alpha = .83$). To reduce survey length, identification with one's community and other Americans were not measured.

Health-Related Behavioral Intentions

As in Study 1, participants were reminded that they were now completing "a separate part of this study" prior to measuring their health-related behavioral intentions. Participants were told, "Many infectious disease experts are concerned that currently approved COVID-19 vaccinations will eventually be ineffective at

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[6]Data collection was stopped once the Prolific survey platform indicated 400 participants opted into the survey. However, some Prolific users often choose to return their submission before completing the survey, and 11 participants did so in this case. Once data collection is stopped on Prolific, it cannot be easily restarted; a new survey page must be generated to recruit additional participants. Thus, we chose to proceed with data analysis with a sample of 389 participants.

[7]Participants who took longer received a bonus payment of up to \$0.75.

stopping the spread of COVID-19, especially as the virus mutates over time. To slow the spread of COVID-19 across the world, infectious disease experts believe people (even those who are currently vaccinated) will still need to practice certain behaviors to slow the spread of COVID-19." To reduce survey completion time, we asked participants their likelihood of engaging in only three behaviors that reduce the chance of contracting COVID-19 and spreading it to other people, including whether they would "seek out a COVID-19 'booster' vaccination in the future," "wear a mask in crowded public areas in the future," and "practice social distancing in crowded public areas in the future." Each question was answered on the same 0 (*very unlikely*) to 100 (*very likely*) scale. As in Study 1, our preregistration committed us to measuring and analyzing these behaviors separately, but the COVID-19 booster vaccination, mask wearing, and social distancing items could be combined to form an overall composite of *health-related behavioral intentions* (α = .76).

Helping Behavior

As a measure of actual behavior, participants could learn how to help raise money (up to $100 donated by the researchers) in the same way as Study 1, but with two modifications. Instead of helping secure masks for the #MaskUpMKE fund, participants could help raise money for the Vaccine Access Fund, an initiative providing free rides to vaccine sites for people in communities hit hard by the pandemic, including Black and Latino adults, people living on low incomes, and others for whom transportation is a barrier. Participants' decision to "finish the study and earn my payment" or "learn how to help the Vaccine Access Fund" represented our dichotomous measure of *helping interest* (0 = no, 1 = yes). Those who opted to help with the donation opportunity completed the same number-search task as in Study 1, but instead of earning $0.05 for every correctly identified number string, participants could earn $0.20 for each correct number. Given the low level of participation from Study 1, the donation amount was increased to provide more incentive to participants. All other features of the number-search task remained the same. The amount of money participants secured during the number-search task represented our continuous measure of *helping effort*, which ranged from $0.00 to $4.00. Those who opted out of the task received a score of $0.00.

Covariate

Because the study was launched soon after the Centers for Disease Control suggested vaccinated individuals no longer needed to wear masks in most situations, we measured and controlled for participants' *vaccination status* by asking, "Are you currently fully vaccinated by an approved COVID-19 vaccine?" (0 = no, 1 = yes). At the time of data collection, 53.2% of participants were fully vaccinated.

Preregistered Hypotheses

We hypothesized that, compared to the control condition, participants in the identification with humanity condition would report (1) stronger identification with all humanity (as measured by the full scale; *Hypothesis 1a*), (2) stronger bond with all humanity (*Hypothesis 1b*), and (3) no significant difference

in concern for all humanity (*Hypothesis 1c*). Controlling for COVID-19 vaccination status, we also hypothesized that, compared to the control condition, participants in the identification with humanity condition would report stronger intentions to (1) receive a COVID-19 "booster" vaccination (*Hypothesis 2a*), wear a mask (*Hypothesis 2b*), and social distance (*Hypothesis 2c*); (2) be more likely to express interest in learning how they can help others secure rides to a vaccination appointment (*Hypothesis 2d*), and (3) put more effort toward a task that contributes money to help others secure rides to a vaccination appointment (*Hypothesis 2e*).

Analytic Strategy

Consistent with preregistration, separate independent-samples *t*-tests assessed whether the manipulation of identification with humanity affected identification with all humanity, the bond with all humanity factor, and the concern for all humanity factor. Next, after controlling for vaccinations status, separate one-way analyses of covariance (ANCOVA) tested whether the manipulation of identification with humanity affected behavioral intentions to receive a "booster" vaccination, wear a mask, and social distance, as well as how much effort participants put toward helping others secure rides to vaccination appointments. Finally, after controlling for vaccination status, a binary logistic regression tested whether the manipulation affected interest in helping others secure rides to vaccination appointments (yes or no).

Results

For descriptive statistics and bivariate correlations of all primary measured variables, see **Table 3**.

Manipulation Check

Supporting Hypotheses 1a – 1c, the manipulation of identification with humanity (compared to the control condition) marginally increased the full scale of identification with all humanity, $t(376) = -1.68$, $p = .09$; significantly increased bond with all humanity, $t(376) = -2.30$, $p = .02$; but had no effect on concern for all humanity, $t(376) = -0.58$, $p = .56$ (for descriptive and additional inferential statistics, including effect sizes, see **Table 4**).

Health-Related Behavioral Intentions

Regarding Hypotheses 2a – 2c, the manipulation of identification with humanity (even after controlling for COVID-19 vaccination status) had no effect on intentions to receive a "booster" vaccine, $F(1, 375) = 0.46$, $\eta_p^2 = 0.001$, $p = .50$; intentions to wear a mask in crowded public places, $F(1, 375) = 0.02$, $\eta_p^2 < 0.001$, $p = .89$; or intentions to social distance in crowded public places, $F(1, 375) = 1.43$, $\eta_p^2 = 0.004$, $p = .23$ (see **Table 4**). As in Study 1, we also looked at the effect of the manipulation of identification with humanity on the overall composite of health-related behavioral intentions, which remained non-significant, omnibus $F(1, 375) = 0.01$, $\eta_p^2 < 0.001$, $p = .93$ (see **Table 4**).

TABLE 3 | Descriptive statistics and bivariate correlations of all primary measured variables in Study 2.

Variable	M (SD)	1	2	3	4	5	6	7	8	9
(1) IWAH Full Scale	3.50 (0.75)	–								
(2) IWAH Bond	3.25 (0.83)	.95***	–							
(3) IWAH Concern	3.81 (0.79)	.90***	.71***	–						
(4) Booster Vaccine	73.46 (32.76)	.17**	.12*	.20***	–					
(5) Mask Wearing	83.22 (25.56)	.22***	.16**	.25***	.43***	–				
(6) Social Distancing	80.88 (24.52)	.18***	.15**	.19***	.44***	.78***	–			
(7) Health Composite	79.19 (22.91)	.23***	.17***	.26***	.79***	.85***	.86***	–		
(8) Helping Interest	NA	.10†	.05	.15**	.28***	.26***	.21***	.31***	–	
(9) Helping Effort	0.94 (1.50)	.08	.04	.10*	.24***	.19***	.15**	.24***	.75***	–
(10) Vaccine Status	NA	.01	−.02	.03	.44***	.20***	.14**	.34***	.19***	.16**

$***p < .001$, $**p < .01$, $*p < .05$, $†p < .06$. IWAH: Identification with All Humanity. Health composite: the average of the booster vaccine, mask wearing, and social distancing items. Helping interest (0 = no, 1 = yes) and the covariate of vaccination status (0 = no, 1 = yes) do not have descriptive statistics because they are dichotomous variables.

Helping Behaviors

Regarding Hypothesis 2d, a model including the manipulation of identification with humanity and COVID-19 vaccination status predicted participants' interest in learning how to help secure masks for others, omnibus $\chi^2(4, N = 378) = 14.18$, $p < .01$. However, this was only because vaccinated individuals were more likely to express interest in helping, $b = 0.80$, $p < .001$; the manipulation of identification with humanity did not independently affect interest in helping, $b = 0.15$, $p = .49$. Regarding Hypothesis 2e, the manipulation of identification with humanity (even after controlling for COVID-19 vaccination status) had no effect on participants' effort to help secure rides to vaccination appointments, $F(1, 375) = 0.65$, $\eta_p^2 = 0.002$, $p = .42$ (see **Table 4**).

Discussion

Consistent with preregistered hypotheses, the manipulation of identification with humanity marginally increased the full identification with all humanity scale, significantly increased bond with all humanity, but had no effect on concern for all humanity. Not supporting hypotheses, but consistent with the results of Study 1, identification with humanity had no causal effect on health-related COVID-19 behaviors or helping toward others.

GENERAL DISCUSSION

The present research took a social identity approach to health-related behaviors, focusing exclusively on identification at the highest level of abstraction—the human level

(Turner et al., 1987). We reasoned that identification at this "human" level should be particularly relevant for mobilizing the kind of health-related behaviors (e.g., mask wearing, social distancing) that protect fellow humans from contracting COVID-19, a viral outbreak that has infected hundreds of millions of people across national and cultural boundaries. Thus, COVID-19 represents a collective threat (rather than a personal one), and identification with the human ingroup should promote behaviors that benefit and protect others from COVID-19. Because social identities are often contextually activated (e.g., see Turner et al., 1987; Oakes et al., 1994), the present research examined whether activating the human identity is an effective public-health strategy for improving health-related behaviors during COVID-19. In particular, this research examined whether the human identity can be situationally activated using an experimental manipulation (Goal 1), whether activating the human identity causally increases intentions to engage in behaviors that minimize the spread of COVID-19 (e.g., mask wearing, social distancing, receiving a COVID-19 "booster" vaccine; Goal 2), and whether activating the human identity causally increases helping behaviors that protect vulnerable communities from COVID-19 (Goal 3).

The Effect of Identification With Humanity on Behavioral Intentions and Helping During COVID-19: Findings, Limitations, and Future Directions

Regarding Goals 2 and 3 of the research, results suggest that the manipulation used to activate the human identity had no

TABLE 4 | Descriptive statistics and results of *t*-tests, ANCOVAs, and binary logistic regression in Study 2.

Variable	Control Condition *M (SD)* [Adjusted *M (SE)*]	Human ID Condition *M (SD)* [Adjusted *M (SE)*]	*d*	*p*	95% C.I. Lower	Upper
IWAH[a] (Full scale)	3.43 (0.73)	3.56 (0.77)	0.17	.09	−0.28	0.02
Bond[a] (Subscale)	3.15 (0.82)	3.35 (0.84)	0.24	.02	−0.36	−0.03
Concern[a] (Subscale)	3.78 (0.77)	3.83 (0.80)	0.06	.56	−0.21	0.11
"Booster" Vaccine[b]	75.53 (31.44) [74.49 (2.15)]	71.36 (34.00) [72.42 (2.16)]	0.12	.50	−3.92	8.07
Mask wearing[b]	83.78 (24.14) [83.40 (1.82)]	82.65 (26.96) [83.03 (1.83)]	0.04	.89	−4.72	5.46
Social distancing[b]	79.66 (24.38) [79.39 (1.76)]	82.12 (24.67) [82.39 (1.77)]	0.10	.23	−7.92	1.93
Health composite[b]	79.66 (22.53) [79.09 (1.57)]	78.71 (23.33) [79.28 (1.58)]	0.04	.93	−4.57	4.21
Helping effort[b]	0.90 (1.49) [0.88 (0.11)]	0.99 (1.51) [1.00 (0.11)]	0.06	.42	−0.43	0.18

	b (SE)	Wald	OR	*p*	95% C.I. OR Lower	Upper
Helping interest[c]	(Reference)	0.15 (0.21)	0.47	1.16	.49	0.76 1.76

Superscript[a] indicates effects were tested using a t-test, superscript[b] indicates effects were tested using an ANCOVA (controlling for COVID-19 vaccination status), and superscript[c] indicates effects were tested using a binary logistic regression (controlling for COVID-19 vaccination status). For ANCOVA results, unadjusted means and standard deviations are reported first, and adjusted means and standard errors are reported in brackets. Vaccination status was positively related to intentions to receive the "booster" vaccine, $F(1,375) = 86.75$, $\eta_p^2 = 0.19$, $p < .001$; intentions to wear a mask, $F(1,375) = 16.07$, $\eta_p^2 = 0.04$, $p < .001$; intentions to social distance, $F(1,375) = 8.40$, $\eta_p^2 = 0.02$, $p < .01$; the overall composite of health-related behavioral intentions, $F(1,375) = 47.21$, $\eta_p^2 = 0.11$, $p < .001$; and helping effort, $F(1,375) = 9.68$, $\eta_p^2 = 0.03$, $p < .01$. Vaccination status was also positively related to helping interest, $b = 0.80$, $SE = 0.22$, $Wald = 13.66$, $OR = 2.22$, 95% CI of OR [1.46, 3.39], $p < .001$.

causal effect on health-related COVID-19 behaviors—even after controlling for the progression of time, COVID-19 positivity rates (Study 1), and participants' vaccination status (Study 2). The non-significant effect was consistent regardless of how the primary outcomes were measured—that is, whether outcomes were operationalized as behavioral *intentions* to wear a mask (Study 1 and 2), clean (Study 1), social distance (Study 1 and 2), or receive a COVID-19 "booster" vaccine in the future (Study 2); or whether outcomes were operationalized as *actual* behaviors to help secure masks (Study 1) or rides to vaccination appointments (Study 2) for vulnerable communities. The effect of the manipulation on COVID-19 behaviors also remained non-significant whether data were collected in a sample of college students from a university that held in-person classes during the pandemic (Study 1), or an online sample of U.S. adults that were comparatively more diverse in terms of race, gender, and age. Finally, the effect of the manipulation on COVID-19 behaviors remained non-significant despite roughly doubling the statistical power between studies, from approximately 100 participants per condition (Study 1) to 190 participants per condition (Study 2). One interpretation of these data is that the true size of the effect of activating the human identity on health-related COVID-19 behaviors is so small that the current studies were not sufficiently powered to detect it. Another possibility is that, even though individual differences in identification with all humanity

have been found to be correlated with health-related COVID-19 behaviors (e.g., Barragan et al., 2021; Wang et al., 2021), situationally activating the human identity has no real causal effect on health-related behaviors. We cannot be entirely sure given the present studies alone.

However, given these consistent non-significant effects, it is possible that the current manipulation of identification with humanity was limited in its ability to cause changes in health-related COVID-19 behaviors. In other studies that experimentally manipulate identification with humanity and found causal effects on intergroup forgiveness (e.g., Wohl and Branscombe, 2005; Greenaway et al., 2011), the manipulation was contextualized around intergroup conflict and an explicit ingroup vs. outgroup contrast was salient. Thus, perhaps a manipulation of identification with humanity that contextualizes the COVID-19 pandemic and contrasts the human ingroup from the COVID-19 "outgroup" would have been more successful in causally affecting health-related COVID-19 behaviors (e.g., see Reese et al., 2020). However, previous research has shown a contrasting outgroup does not need to be salient to promote attitudes and behaviors that favor the ingroup (Gaertner et al., 2006). Indeed, in the only other study that successfully manipulated identification with humanity, Reese and colleagues' (2015) subtle use of the same "globe" image from Study 1 increased donations to a global charity—even without contextualizing

the manipulation or providing an ingroup–outgroup contrast. Instead, we believe that the current manipulation of identification with humanity did not have a causal effect on health-related behaviors and helping because the manipulation did not increase the appropriate factor of identification with all humanity. We discuss this possibility in greater detail in the following section.

While the current research did not show a causal effect of identification with humanity on health-related COVID-19 behaviors, it is important to weigh these results in light of other findings. Much research taking a social identity approach has demonstrated that social identification has both correlational and causal effects on personal, health-related behaviors (for reviews, see Haslam et al., 2009; Jetten et al., 2017), including in the context of COVID-19 (Van Bavel and Boggio, 2020). Additionally, new research consistently demonstrates an association between identification with broader, more inclusive groups (e.g., all of humanity, global citizens) and personal behaviors that benefit and protect fellow humans from COVID-19 (Barragan et al., 2021; Deng, 2021; Wang et al., 2021). Moreover, there is some preliminary support for theoretically grounded approaches that outline the unique social identification processes relevant for identification with humanity and COVID-19 (e.g., Reese et al., 2020). For instance, work by Zagefka (2021) suggests appraisals of the COVID-19 pandemic as a collective threat that requires global cooperation predicted stronger identification with all humanity, which in turn predicted stronger willingness to donate money to countries negatively affected by COVID-19. Thus, although the current research did not uncover a causal effect of identification with humanity on health-related COVID-19 behaviors, there remain promising avenues for future research. This includes, among others, examining the causal effects of superordinate social identification processes (e.g., ingroup identification, ingroup norms, perceived efficacy of ingroup goals) on appraisals of and health-related behavioral responses to viral pandemics.

Manipulating Identification With Humanity: Findings and Future Directions

The results for Goal 1 of the current research were more encouraging. In our attempt to manipulate identification with humanity, participants in the human-identity condition focused on an image of our planet, and then reflected on and wrote about what it means to be a human being. Compared to the control condition, participants who had their human identity "activated" scored higher on a particular cluster of items from the identification with all humanity scale (McFarland et al., 2012). While initially McFarland et al. (2012) suggested the identification with all humanity scale represented a unidimensional construct, newer research indicates identification with all humanity is a higher-order construct with two subfactors (Reese et al., 2015; Reysen and Hackett, 2016; McFarland et al., 2019; Hamer et al., 2021). Researchers now recognize that the items representing *bond with all humanity* focus on cognitive

categorization and affective feelings of closeness with the human ingroup (the identity component), and the items representing *concern for all humanity* focus on caring for and wanting to help the human ingroup (the behavioral component; see Hamer et al., 2021). Because the "bond" and "concern" factors have differential associations with attitudinal and behavioral outcomes (e.g., Reese et al., 2015; Reysen and Hackett, 2016; Sparkman and Hamer, 2020), research has increasingly examined them separately.

When examining results separately for the bond and concern subfactors in the present research, the manipulation of identification with humanity consistently increased (albeit with small effects, Cohen's ds = 0.21 – 0.27) the bond with all humanity factor. This makes some sense given the writing prompt of the experimental condition, which asked participants to reflect on what it means to be a human being, including what they have in common with and how they are connected to humans all over the world. However, the manipulation of identification with humanity had no effect on items representing the concern for all humanity factor. Thus, separately analyzing the bond and concern factors demonstrates the current manipulation of identification with humanity increased the extent to which participants categorized themselves as, and felt emotionally close to, the human ingroup, but it did not increase participants' concern for or desire to help the human ingroup.

These results suggest manipulations of identification with humanity can be quite nuanced, emphasizing one particular factor of the identity (e.g., psychological bond with the human ingroup) over another (e.g., behavioral concern for the human ingroup; see Reese et al., 2015). As such, the specific factor of identification with humanity being manipulated may have implications for different outcomes. For instance, manipulations of identification with humanity that focus on forming a psychological bond or connection to the human ingroup, such as the manipulation used in this research, may be more effective at improving *cognitive* and *affective* reactions toward the self and others. On the other hand, manipulations of the human identity that focus on caring for and recruiting the motivation to help the human ingroup may be more effective at promoting *behaviors* that benefit all humans. For this reason, we believe the current research did not show a causal effect on health-related behaviors, or helping protect others from COVID-19, because the manipulation of identification with humanity increased the cognitive-affective component (*bond*) when it should have increased the behavioral component (*concern*). Future research would do well to develop a manipulation that successfully activates concern for all humanity, and then examine whether this manipulation causally affects health-related behaviors that can protect the self and others from COVID-19 (or future viral outbreaks).

Our manipulation of identification with humanity may also act similarly to manipulations identified in the common ingroup identity model (CIIM; for reviews, see Gaertner and Dovidio, 2000). From this perspective, activating a common, "human" identity recategorizes all outgroups to be part of the same

inclusive ingroup, and this, in turn, redirects the power of ingroup biases to promote more positive outcomes toward "former" outgroups. Keeping in mind the distinction between the bond and concern factors of identification with humanity, future research could investigate whether manipulations that activate a psychological bond with the human ingroup are more effective at reducing stereotyping (a cognitive outcome) and prejudice (an affective outcome) toward different outgroups, and also whether manipulations that activate the desire to help the human ingroup are more effective at reducing discrimination or violence toward outgroups (both of which are behavioral outcomes). Given how little research has attempted to experimentally manipulate the human identity, and also how difficult it is to causally increase inclusive social identities in general (Reysen et al., 2021), testing the effectiveness of different manipulations of the human identity on different affective, cognitive, and behavioral outcomes is a fruitful area for future research.

Overall, we believe the results reported here suggest our manipulation of identification with humanity can be successfully used to activate one's psychological bond with the human ingroup (but not necessarily their concern for or desire to help the human ingroup). As such, we encourage researchers interested in this inclusive social identity to use and build upon this manipulation of identification with humanity. Given the preliminary nature of this manipulation, however, more research is needed to replicate the effects, increase the strength of the manipulation, and assess its reliability in different contexts and cultures. This is especially relevant considering the samples in the current research are from the United States and therefore likely to be higher in individualistic (rather than collectivist) orientations, which itself has implications for health-related behaviors during COVID-19 (e.g., see Lu et al., 2021).

Benefits of the Current Research to Vulnerable Communities During COVID-19

As part of their involvement in the current research, participants had the opportunity to complete tasks with real financial benefits toward organizations that help communities especially vulnerable to the COVID-19 pandemic. In Study 1, participants had the opportunity to complete tasks that donated money to the #MaskUpMKE fund of the United Way of Greater Milwaukee and Waukesha County, an initiative to make and distribute face masks to essential workers, communities of color, and other individuals in the region. In Study 2, participants had the opportunity to complete tasks that donated money to the Vaccine Access Fund, an initiative providing free rides to vaccine sites for Black and Latino adults, people living on low incomes, and others for whom transportation is a barrier. In total, participants' efforts generated $113.70 to these communities, a donation that was paid for by the researchers. Although we acknowledge that this component of the research is unlikely to fully remedy long-standing issues of inequity and injustice, it is an approach we took to ensure that this research—at least in part—benefited the communities and/or ideas studied.

CONCLUSION

Our research took a social identity approach to the current COVID-19 pandemic and examined whether situationally activating the most inclusive, "human" identity could be used as an effective public-health strategy to promote personal, health-related behaviors that reduce the spread of COVID-19. Across two studies, our findings consistently suggest that the manipulation of identification with humanity did not have any causal effect on health-related behavioral intentions (e.g., to wear a mask, social distance, etc.) or helping behaviors that protect others from COVID-19. However, the results do show that the manipulation of identification with humanity consistently increased participants' psychological bond with the human ingroup (but not their concern for the human ingroup). We believe such experimental manipulations that seek to activate our collective, "human" identity may be used to address a range of global issues that affect all human beings—not only viral pandemics, but climate change, refugee crises, international conflict, and possibly other crises. As astronaut Scott Kelly mentioned at the start of the COVID-19 pandemic, "All people are inescapably interconnected, and the more we can come together to solve our problems, the better off we will all be."

DATA AVAILABILITY STATEMENT

The datasets presented in this study can be found in online repositories. The names of the repository/repositories and accession number(s) can be found below: https://osf.io/2pes6/ at the Open Science Framework (OSF).

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by the University of Wisconsin–Eau Claire Institutional Review Board (IRB) Committee. The patients/participants provided their informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

DS contributed to conception and design of all studies, receiving Institutional Review Board approval, statistical analysis, and wrote the manuscript. KK and EN contributed to conception, design, Institutional Review Board approval, and statistical analysis of Study 1. All authors approved the submitted version of the article.

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Perceived parenting and identification with all humanity: Insights from England and Germany

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In the past decade, identification with all humanity (IWAH) has been found to predict several positive behavioral outcomes like volunteering, a willingness to contribute to humanitarian relief, and cooperative health behavior during the COVID-19 pandemic. However, to this day, little is known about how individual differences in IWAH emerge. Therefore, the present study aimed to explore whether there is a relationship between individuals' upbringing and their IWAH. For this purpose, data on IWAH, remembered parenting behavior (RPB), and remembered parental attachment assessed by 3056 individuals (1517 from Germany and 1539 from England) were analyzed. Structural equation models were used to (A) analyze the correlations between RPB, attachment, and IWAH and to (B) test whether single facets of RPB and attachment could significantly predict IWAH when controlling for the other facets in a latent regression analysis. The facets of positive RPB correlated significantly positively with the two facets of IWAH (global self-definition and global self-investment) and explained between 4.1 and 7% of their variance. Surprisingly, in the English sample, two facets of negative RPB also correlated significantly positively with IWAH. The explained variance in IWAH being significant but small, it is argued that parents' attitudes or behavior specifically related to IWAH could have a greater impact on IWAH than more unspecific parenting behavior. For instance, we discovered that the extent to which participants perceived their parents as global citizens explained about one third of the variance in their own identification as global citizens. Fostering IWAH could constitute an effective approach to tackle important global challenges. Therefore, more research is needed to test the generalizability of the results and to further analyze the roots of people's IWAH.

Introduction

Being asked where he came from, the ancient Greek philosopher Diogenes of Sinope (c. 412 B.C.) stated: "I am a citizen of the world (kosmopolitês)" (Caraus, 2021, p. 3). Due to his declaration, Diogenes of Sinope is regarded as the first person coining the term *cosmopolitanism* (Leung et al., 2015; Caraus, 2021). Since then, the term has increasingly been used to describe different positions supporting the notion of a literal or metaphorical world citizenship (Kleingeld, 2013). From a cosmopolitan perspective, all human beings belong to one community, sometimes called *the cosmopolis* (Pierik and Werner, 2010). Cosmopolitanism can also refer to a moral ideal which highlights the equal moral worth of all people and entails obligations for all people to protect this worth (Pierik and Werner, 2010).

In today's globalized world, cosmopolitan ideas are repeatedly brought up by famous politicians. In June 2008, during a speech in Berlin, Barack Obama stepped into Diogenes' footsteps by declaring: "I speak (...) as a fellow citizen of the world" (Selzer, 2010). A quite oppositional position was voiced by former British Prime Minister Theresa May. In a speech following the Brexit referendum in 2016, she said: "(...) if you believe you are a citizen of the world, you are a citizen of nowhere. You don't understand what the very word citizenship means" (Bearak, 2016). But not only politicians show interest in the idea of global citizenship. Cosmopolitanism is also lively discussed by researchers from various disciplines. Depending on their field, they offer different perspectives on the subject (Sevincer et al., 2017). In philosophy, political science and sociology, discussions on cosmopolitanism usually focus on global ethics and the difficulties of their implementation (van Hooft, 2014; Sevincer et al., 2017; Nussbaum, 2019).

In psychology, cosmopolitanism and global citizenship are mainly studied on an individual level (Reysen and Katzarska-Miller, 2018). The idea of an individual value orientation that consists in considering mankind as one's primary reference group was already discussed over 60 years ago by Sampson and Smith (1957) who named such an orientation world-mindedness. Early studies on world-mindedness included the investigation of its relationship to perceived nuclear threat and anti-nuclear activism during the Cold War (Der-Karabetian, 1992). References to global citizenship can be found in publications in many other disciplines too, like agriculture,

geography, economics, arts, computer science and medicine (Sevincer et al., 2017; Reysen and Katzarska-Miller, 2018). Some topics are also being discussed through a cosmopolitan lens by researchers across disciplinary boundaries. Two particularly important examples are the climate change on our shared planet (Der-Karabetian et al., 1996, 2014; Pierik and Werner, 2010; Page, 2011; Jaspal et al., 2014; Der-Karabetian and Alfaro, 2015; Lee et al., 2015; Leung et al., 2015; Reese, 2016; Loy and Spence, 2020; Pong, 2020) and global migration (Pierik and Werner, 2010; Patterson and Choi, 2018; Sparkman and Hamer, 2020). Considering the importance of these and other global challenges, calls for interdisciplinary work on cosmopolitanism have been rising over the past few years (Cameron, 2018; Reysen and Katzarska-Miller, 2018).

Now, what makes the idea of a global community relevant for individuals' experience and behavior? Studying the origins of altruism, Monroe (1996) interviewed people who had shown exceptional altruistic behavior in the past. For instance, she asked people who had rescued Jews during the Holocaust what had led them to risk their own safety to help others. Hearing her answers, Monroe was "struck by the similarity of expressions used" (p. 205), because "the idea of being welded together, of belonging to one human family, surfaced over and over again" (p. 205). By publishing parts of her interviews, she impressively showed that the notion of a shared human family could animate people to help and protect others.

Correlates of identification with all humanity

Inspired by Monroe's reports, McFarland et al. (2012) started exploring the rescuers' shared motive. They wanted to find out why some people identified with the "human family" more than others and what consequences this identification might have. To facilitate their studies, they introduced a new psychological construct describing individual differences in "viewing all humanity as family" and named it "identification with all humanity (IWAH)" (McFarland et al., 2012). Later, McFarland et al. (2013) also defined IWAH as "a deep caring for all human beings regardless of their race, religion, or nationality" (p. 194).

Variables which have been found to correlate positively with IWAH include perspective taking and empathetic concern (about $r = 0.30$, respectively $r = 0.50$; McFarland et al., 2012), openness to experience (about $r = 0.29$ to $r = 0.39$; McFarland et al., 2019), horizontal collectivism (about $r = 0.30$ to $r = 0.40$; McFarland et al., 2012), agreeableness (about $r = 0.20$ to $r = 0.33$; ibid.), and logical reasoning ($r = 0.21$; ibid.). Variables that have been found to correlate negatively with IWAH include generalized prejudice (ethnocentrism; Altemeyer, 1996), right-wing authoritarianism (RWA; ibid.), and social dominance orientation (SDO; Sidanius and Pratto, 1999), with correlations

between IWAH and these three variables usually ranging from $r = -0.30$ to $r = -0.60$ (McFarland et al., 2019). Other negative correlations have been observed between IWAH and the support for building a wall on the American-Mexican border ($r = -0.36$; ibid.), the need for social approval (up to $r = -0.34$; ibid.), and psychopathy ($r = -0.20$ to $r = -0.46$; ibid.). For a more extensive overview of correlates of IWAH, see McFarland et al. (2019).

Parenting and identification with all humanity

Coming back to McFarland's et al. (2012) original intentions to study IWAH: They wanted to find out why some people identify with the "human family" more than others and what consequences this identification might have. Using regression and structural equation models (SEM), a few possible answers to these questions have already been found. IWAH has been found to predict the desire for global knowledge, a willingness to contribute to humanitarian relief, forgiving former enemies of their war crimes (Hamer et al., 2017, 2018), volunteering (Stürmer et al., 2016; Faulkner, 2018), and cooperative health behavior during the COVID-19 pandemic (Barragan et al., 2021; Marchlewska et al., 2022; Sparkman et al., 2022). Examples for variables that have been found to predict IWAH itself are global awareness, openness to experience, empathy, universalism (Hamer et al., 2019), and multicultural experiences (Sparkman and Hamer, 2020). In the present study, we also focus on IWAH's roots by investigating possible origins in childhood.

The way parents raise their children can be described using several different concepts. One popular way to do so is using parenting styles. A parenting style can be defined as a "constellation of attitudes toward the child that are communicated to the child and that, taken together, create an emotional climate in which the parent's behaviors are expressed" (Darling and Steinberg, 1993, p. 488). Parenting styles are relatively stable over different situations and points in time (Cierpka, 2008). They can be subdivided into three more specific characteristics: "the values and goals parents have in socializing their children, the parenting practices they employ, and the attitudes they express toward their children" (Darling and Steinberg, 1993, p. 492). In the past few decades, the term "parenting behavior" has often been used as a synonym for the term "parenting style" (Cierpka, 2008; Rueger et al., 2011). According to Feldman (2012), the term "parenting behavior" has a slight focus on objectively observable actions, which can form a behavioral style when shown repeatedly (p. 536). In the present study, the term "parenting behavior" was chosen because it comes closest to the phenomenon of interest: concrete parenting practices that are shown repeatedly over the course of a person's childhood and youth. In its meaning, it is close to the term "parenting style", but it is not completely equivalent

to it. While parenting styles include parents' values, goals, and attitudes (Darling and Steinberg, 1993), parenting behavior as used in this study centers on concrete, observable actions.

When it comes to relationships between parents and their children, another concept that is important to explore is attachment. According to Benoit (2004), attachment can be defined as "one specific and circumscribed aspect of the relationship between a child and caregiver that is involved with making the child safe, secure and protected" (p. 541). John Bowlby was one of the most influential theorists in the field of attachment, with his work focusing on the development of attachment in infants (Bowlby, 1969, 1973, 1980). While early work on attachment focused on the relationships between children and their caregivers, a growing interest in studying attachment beyond early childhood has developed over time (Armsden and Greenberg, 1987). In a wider definition, attachment can be seen as "an enduring affectional bond of substantial intensity" (Armsden and Greenberg, 1987), not only appearing between children and their caretakers, but also between an individual and other people close to the individual, for example peers or partners (p. 429).

Now, is there a relationship between IWAH and parenting behavior, or between IWAH and attachment? The theoretical perspectives that inspired IWAH contain some ideas about possible relationships. Adler (2007/1927) believed that every person comes to the world with a certain degree of "Gemeinschaftsgefühl" (p. 54). Gemeinschaftsgefühl can be described as "a sense of belonging within and to the group" and as "a collective identity and shared endeavor" (La Voy et al., 2013, p. 281). Adler supposed that an individual's Gemeinschaftsgefühl can expand over the life course (Adler, 2007/1927, p. 54). In his theory, a necessary precondition for this expansion is "a nurturing environment with a value for the other" (La Voy et al., 2013, p. 281). Adler also suspected that the expansion could be impeded by adverse circumstances, especially during childhood (Adler, 2007/1927, p. 39). He supposed that parenting behaviors preventing Gemeinschaftsgefühl from growing could be parents mollycoddling their children ("Verzärtelung"), treating them unlovingly ("Lieblosigkeiten"), and being too harsh ("harte Erziehung"; Adler, 2008/1933, p. 51).

Abraham Maslow believed so-called "self-actualized" individuals to "have for human beings in general a deep feeling of identification, sympathy, and affection" and "a genuine desire to help the human race," "as if they were all members of a single family" (Maslow, 1954/1970, p. 165). However, he also believed that "very good conditions are needed to make self-actualizing possible," also addressing familial conditions (Maslow, 1954/1970, p. 99). According to his theory, it is especially important for parents to satisfy their child's safety needs (p. 39). He believed that "permissiveness within limits, rather than unrestricted permissiveness is preferred as well as needed by children" (Maslow, 1954/1970, p. 40). Also, he

stated that a child's need for safety could stay unfulfilled due to certain parental actions including "quarreling, physical assault, separation, divorce, or death within the family (…) parental outbursts of rage or threats of punishment directed to the child (…) or actual physical punishment" (Maslow, 1954/1970, p. 40). In his theory, the fulfillment of these needs is necessary to reach self-actualization (p. 99). Thus, according to his theory, unfavorable parenting behavior leading to unfulfilled safety needs can prevent self-actualization and the feelings of identification, sympathy, and affection toward the human family (p. 165).

McFarland et al. (2012) suggested that "early punitiveness and lack of affection appear to predispose one to be less concerned for all humanity, whereas a lack of punitiveness coupled with affection may provide a foundation for later concern for humanity at large" (p. 849). This concrete idea stems from the "Dual Process Model of Ideology and Prejudice" by Duckitt (2001). Part of this model is the idea that the development of RWA can be favored by a punitive socialization, while the development of SDO can be favored by an absence of childhood affection (Duckitt, 2001). As RWA and SDO show strong negative correlations with IWAH, a punitive socialization and the absence of affection in childhood might also negatively affect IWAH. Contradictory to this idea, an unpublished study by McFarland et al. (2013) found no relationship between IWAH and people's memories of their parents' childrearing. Besides, in another study, Hamer and McFarland (2018, June) found IWAH to be unrelated to harsh and strict socialization, as well as to unaffectionate socialization (McFarland et al., 2019).

However, an unpublished study by Hamer (2017) with an adult sample from Poland found that IWAH correlated significantly but weakly (0.08 to 0.21) with autonomy and acceptance given to children by their parents (McFarland et al., 2019). The same study also came to the result that IWAH correlated weakly positively with a secure attachment style and weakly negatively with a fearful one (McFarland et al., 2019). Moreover, Reysen and Katzarska-Miller (2013) found that a normative environment supporting global citizenship could predict global identification. In their study, such an environment consisted of people who were important to the surveyed person and found global citizenship desirable (p. 862).

Aims of the present study

So far, only very few studies have analyzed the relationship between parenting behavior and IWAH and only one study has tried to examine the relationship between attachment and IWAH. Some of the most relevant findings in this field have not been published. The few published or cited studies have come to ambiguous results. Therefore, to this day, little is known about the relationship between the way a person has been raised and this person's identification with and care for all humanity. Apart

from that, theoretical ideas on the topic (Adler, 2007/1927, 2008/1933; Maslow, 1954/1970; Duckitt, 2001) are rather broad and stem from theories which all do not have parenting as their focus but rather mention it as a side issue. They primarily have in common that they suggest that positive parenting behavior might lead to IWAH while negative parenting behavior might prevent it from developing. Considering the lack of more concrete empirical and/or theoretical indications, the present study aimed to approach the relationship between parenting and IWAH by testing the following two rather unspecific hypotheses:

Hypothesis 1: There is a positive correlation between positive parenting behavior and IWAH, as well as between attachment and IWAH.

Hypothesis 2: There is a negative correlation between negative parenting behavior and IWAH.

An additional aim of the study was to explore the unique contribution of each facet of parenting when controlling for all other facets in a purely exploratory way.

Materials and methods

Design and procedure

The present study followed a correlational approach as described by Eid et al. (2017). The study's survey was programmed with LimeSurvey (Limesurvey GmbH, 2012) and ran from June 25, 2021 to July 23, 2021. In this period, the respondi AG (2020), a company that provides online samples for social and market research and mainly recruits respondents via online campaigns (respondi AG, 2021), contacted participants from its German and English access panels. Choosing to sample from the access panels in Germany and England traces back to the study being part of a larger project with research questions concerning the European Union and Brexit. Before starting the survey, all participants gave informed consent following the criteria stated by the German Psychological Society [DGPs] (2016). Participants were informed that the survey contained questions about experienced negative parenting behavior and that it was recommended not to take part in the study if they did not want to expose themselves to these questions. While the survey was active, the five variables age (five groups), region (9 regions in England, 16 in Germany), gender, education (3 groups) and income (3 groups) were monitored by the respondi AG (2020). To create samples which are as representative as possible for the German and the English population, participants were contacted based on the quota of these five variables over the course of the study. Three items were integrated in the survey to check whether participants read the questions carefully or whether they just selected random answers (e.g., "Please select option 5 so that we can conduct data quality checks"). At the end of the survey, participants

were informed about all constructs that were planned to be investigated using their data. For completing the survey, the participants received a small monetary reward.

Participants

An a priori power analysis for the present study, which is described in detail in section 2.4.1, resulted in an optimal sample size of $n = 1400$. The respondi AG (2020) was commissioned to collect the data and to obtain the intended sample size. Finally, the data of 3056 participants were analyzed, 1517 from the German and 1539 from the English sample. Individuals had to be at least 18 years old to participate. The mean age of all participants who were included in the data analyses was 46.47 years ($SD = 15.51$). 50.34% were female, and almost half of the sample (45.41%) held at least an Access to Higher Education diploma (A level). **Supplementary Table 1** (**Supplementary Material 1**) provides detailed information on the samples' characteristics, separately as well as conjointly for the German and the English sample. Almost all participants answered the questions regarding remembered parenting behavior (RPB) and attachment for their biological parents. However, 7.95% of the participants also answered the questions for other people close to them, for instance their stepfathers or grandmothers. **Supplementary Table 2** shows in detail for whom the participants assessed RPB and attachment.

Measures

All participants were asked to fill out the following questionnaires. As the present study was embedded in a bigger study with other research topics, several other questionnaires were completed by the participants as well.

Identification with all humanity

Identification with all humanity was measured with the IWAH scale by McFarland et al. (2012) and its German translation by Reese et al. (2015). The scales can be found in Section 3 of the **Supplementary Material**. The original scale by McFarland et al. (2012) contains nine questions. Each of them is answered separately for three groups on a five-point scale (e.g., "1 = not at all" to "5 = very much"). As described by McFarland et al. (2012), the sum of all items forming the last group (e.g., "people all over the world") constitutes the measure of IWAH. For the bigger study, two more groups ("Europeans" and "Followers of my religion/denomination") were added to the IWAH scale. However, these groups were not analyzed in the present study.

The scale's items have repeatedly been found to form two different factors with four items loading on each one (Reese et al., 2015; Reysen and Hackett, 2015; Sparkman and Hamer,

2020). Items 1–4 (e.g., "How often do you use the word "we" to refer to the following groups?") usually load on a factor called "global self-definition" (GSD) or "bond," while items 6–9 (e.g., "When they are in need, how much do you want to help people all over the world?") usually load on a factor called "global self-investment" (GSI) or "concern" (Reese et al., 2015; Hamer et al., 2021). Item 5 usually cross-loads onto both factors as it incorporates parts of both GSD and GSI (Reese et al., 2015). Thus, previous studies came to the conclusion that this item might be dropped from analyses (Reese et al., 2015; Sparkman and Hamer, 2020).

Different studies found the IWAH scale to have good psychometric properties. The internal consistency of the total IWAH scale has been found to be acceptable to excellent in adult samples from different countries ($\alpha = 0.75$ to $\alpha = 0.90$; McFarland et al., 2012; Hamer et al., 2021). The internal consistency of the two facets GSD and GSI has been found to be acceptable to good (GSD: $\alpha = 0.73$ to $\alpha = 0.86$, GSI: $\alpha = 0.75$ to $\alpha = 0.86$; Reese et al., 2015; Hamer et al., 2021).

Remembered parenting behavior

The participants also answered several questions about the behavior their parents showed toward them over the course of their first 16 years of life. As these questions were retrospective, the overarching construct that was measured will from now on be called RPB. All questionnaires measuring RPB were presented twice, with one version measuring the participants' mothers' and one measuring their fathers' RPB.

To measure negative RPB [henceforth negative remembered parenting behavior (nRPB)], twelve items from the "Measure of Parental Style" (MOPS) by Parker et al. (1997) and their German translation by Rumpold et al. (2002) were utilized. The MOPS consists of three facets, namely "Indifference" (e.g., "My mother/father was uninterested in me"), "Abuse" (e.g., "My mother/father made me feel in danger"), and "Over-Control" (e.g., "My mother/father was overprotective of me"). Four items of each facet were selected based on the factor loadings reported by Rumpold et al. (2002). As in the original MOPS, the perceived truth of all statements was rated on a four-point scale (from "1 = not true at all" to "4 = extremely true"). In the original English version of the MOPS, the internal consistencies of the three facets have been found acceptable to excellent (Indifference: $\alpha_{mother} = \alpha_{father} = 0.93$; Abuse: $\alpha_{mother} = 0.87, \alpha_{father} = 0.92$; Over-Control: $\alpha_{mother} = 0.82, \alpha_{father} = 0.76$; Parker et al., 1997). In the German version, the internal consistencies of the facets Indifference and Abuse have been found acceptable to excellent (Indifference: $\alpha_{mother} = 0.87, \alpha_{father} = 0.93$, Abuse: $\alpha_{mother} = 0.84, \alpha_{father} = 0.78$; Rumpold et al., 2002). The internal consistency of the facet Over-Control has been found to be poor ($\alpha_{mother} = 0.58, \alpha_{father} = 0.48$; Rumpold et al., 2002). However, as only the four items with the highest factor loadings were selected, the facet was still included in the study.

Twelve other items were used to measure positive RPB [henceforth positive remembered parenting behavior (pRPB)]. These items were all either selected from one of the two following questionnaires or formulated by the authors of the study. The first questionnaire with items measuring pRPB was the "Evaluation des Pratiques Educatives Parentales" (EPEP; Evaluation of Educational Parental Practices) by Meunier and Roskam (2007). From the EPEP, the four items loading highest on the facet "Positive parenting" were selected (Meunier and Roskam, 2007). The EPEP being a questionnaire which is usually answered by parents, the chosen items were adapted to the child's perspective and put into past tense (e.g., "My mother/father gave me a compliment, hug or a tap on the shoulder as a reward for good behavior"). As there was no German translation available, the questions were translated using the following back-translation method in combination with subsequent tests for measurement invariance, as recommended by van de Vijver and Poortinga (2005) and Schmitt and Eid (2007): One person translated the questions into German. Another person who had not seen the original questions before translated them back into English. At points where minor discrepancies between the original and the version that was translated back appeared, the translation was discussed until a consensus solution was found. Finally, an independent professional translator checked and approved, or adjusted the final version.

The second questionnaire with items measuring pRPB was the "Zürcher Kurzfragebogen zum Erziehungsverhalten" (ZKE; Zurich Short Questionnaire on Parental Behavior) by Reitzle et al. (2001). The four items loading highest on the facet "Warmth/Support" were selected, and again, adapted to the child's perspective, and put into past tense (e.g., "My mother/father was there when I needed her/him"). Reports on the two questionnaires' psychometric properties can be found in the studies by Meunier and Roskam (2007) and Reitzle et al. (2001). As only specific items instead of the original factors were used in the present study, previously reported internal consistencies of the original factors "Positive Parenting" and "Warmth/Support" are not restated here.

Additionally, four new items measuring parental love were formulated by the authors of the study (e.g., "My mother/father loved me"). Apart from the items being translated into English and then back into German, the translation process for these items was equal to the one already described for the EPEP items.

As all items measuring nRPB and pRPB were presented in one questionnaire, the scale measuring nRPB ("1 = not true at all" to "4 = extremely true") was also used for the rating of all other items. Finally, the order of all items measuring RPB was modified to counteract possible position effects and response bias. Items measuring pRPB and nRPB were alternated. While the original order of the items measuring nRPB was maintained, items measuring the same facet of pRPB were placed as far away from each other as possible.

Attachment

Attachment was measured with a revised version of Armsden and Greenberg's (1987) "Inventory of Parent and Peer Attachment" (IPPA). Items in the IPPA are usually rated on a five-point scale. However, as all questions concerning RPB were rated on a four-point scale in the present study, this four-point scale was also adopted for measuring attachment to avoid confusion. In its original version, the IPPA consists of three subscales, namely "Trust," "Communication," and "Alienation" (Armsden and Greenberg, 1987). In the present study, we only used the two positive subscales "Trust" and "Communication." These two facets were thought of as valuable supplements to the facets concerning positive parenting behavior, as their items were close to parenting behavior as defined in our study ("concrete parenting practices that are shown repeatedly over the course of a person's childhood and youth"), while still adding new aspects to it. While these two subscales had already been validated in a German sample and turned out to be reliable measures in a previous study (Bohn et al., 2020), the negative subscale "Alienation" had neither been translated, nor validated so far. Thus, we decided to drop this subscale. Hence, four items were selected from each of the two subscales "Communication" (e.g., "My mother/father helped me to talk about my difficulties") and "Trust" (e.g., "My mother/father trusted my judgement"). The item selection was based on the items' factor loadings in Armsden and Greenberg's (1987) original version of the IPPA, as item loadings for the revised version were not available. The German items stem from a translation by Renate Baudis (Greenberg, 2021, personal communication). They were used and rewritten from the third person plural into the third person singular with kind permission of Mark T. Greenberg. Again, as only specific items were used in the present study, previously reported internal consistencies of the original factors "Trust" and "Communication" are not restated here.

Statistical analysis

Statistical analyses were conducted in December 2021 with R (version 4.0.4) and RStudio (version 1.4.1106; R Core Team, 2021). Following prevalent conventions, the significance level for all analyses was set to $\alpha = 0.05$, unless stated otherwise.

A priori power analysis

An a priori power analysis was conducted with the Shiny App "pwrSEM" (Wang and Rhemtulla, 2021) to determine the sample size that is necessary to assure an adequate power. The app works with a Monte Carlo simulation approach and allows to calculate power to detect a target effect in structural equation modeling (SEM; Wang and Rhemtulla, 2021). For this study, the power analysis aimed to assure a power of 0.80 for the correct rejection of all possible null hypotheses that certain

correlations in the population are zero, given specific values for these correlations.

The smallest value for a correlation to be regarded as relevant was $r = |0.20|$. Therefore, the correlations between each facet of pRPB and both facets of IWAH, as well as between both facets of attachment and both facets of IWAH were set to 0.20. Correlations between each facet of nRPB and both facets of IWAH were set to -0.20. As correlations between facets of nRPB and pRPB, as well as between facets of nRPB and attachment were difficult to estimate prior to the study, the power analysis was split into two parts. The first part included correlations between all facets of pRPB, attachment, and IWAH (positive model, see **Figure 1**). The second part included correlations between all facets of nRPB and IWAH (negative model, see **Figure 2**). Each facet in both models was planned to be measured by four items. The four items corresponding to one facet were split into two parcels consisting of two items each. Correlations between the different facets of RPB and attachment, as well as the loadings of the observed variables were estimated based on the questionnaires' manuals and studies investigating similar variables (Armsden and Greenberg, 1987; Parker et al., 1997; Reitzle et al., 2001; Schönpflug, 2001; Rumpold et al., 2002; Meunier and Roskam, 2007; Reese et al., 2015; Pastorelli et al., 2016; Wong et al., 2020). Residual variances of the observed variables were calculated as follows (Eid et al., 2017):

$$Var(\varepsilon_i) = Var(Y_i) - \lambda_i^2 \cdot Var(\eta) \tag{1}$$

The seed for simulations as well as the number of simulations were set to 10,000. The final values entered in the power analyses can be found in **Supplementary Table 4** (positive model) and **Supplementary Table 5** (negative model). Systematic variation of possible sample sizes led to the result that assuring a power of 0.80 for the correct rejection of all null hypotheses of correlations being zero in the population required a sample size of $n \approx 700$ in the negative and of $n \approx 580$ in the positive model. As an adequate power needed to be assured for both models, as well as for the German and the English sample, the power analysis resulted in a necessary sample size of at least $n = 700$ per sample.

Other research questions were planned to be investigated with the same dataset. Power analyses for the corresponding models resulted in an optimal sample size of $n \approx 1350$ per sample. As the data collection was based on this size, an adequate power for the present study was clearly ensured.

Data preparation

The R packages "tidyverse" (Wickham et al., 2019), "psych" (Revelle, 2020), and "naniar" (Tierney et al., 2021) were used to prepare the data for further analyses. Already factoring in dropout, the respondi AG (2020) exceeded the necessary sample size of $n = 1350$ per sample in the data collection process. Hence, the raw dataset consisted of 6591 participants (2998

German and 3593 English). For all our further analyses, we then excluded participants that had (a) not accepted the conditions of participation, (b) dropped out before having been presented with all questionnaires relevant to the study, or (c) given no answers at all for the items measuring RPB and attachment. To ensure basing our analyses on carefully and honestly completed questionnaires only, we also excluded participants that (d) had failed to answer the first quality check item correctly[1] or (e) for whom we had found more than twice as many further hints of poor data quality than on average (relative to the number of questionnaire pages completed). Such hints included speeding, i.e., answering long pages very quickly, straightlining, i.e., ticking the same answer option across an entire long page, or clearly answering semantically unrelatedly to a free-text item concerning a spiritual life event (see Bowling, 2005; Zhang and Conrad, 2014; Callegaro et al., 2015). We diversified our criteria to alleviate weaknesses some of them show in the detection of suspicious observations (Reuning and Plutzer, 2020). Note that only the presence of at least four hints led to exclusion from the sample, while, e.g., ticking the same answer option across an entire page only on one or two pages did not (see above). Altogether, we excluded 1481 German and 2054 English participants based on these five criteria, resulting in final sample sizes of $n = 1517$ for the German, and $n = 1539$ for the English sample.

Confirmatory factor analyses

To incorporate the effects of measurement error into the statistical analyses, SEM were applied. The relevant models, which were derived from theoretical assumptions and previous studies, were already introduced in the Chapter "a priori power analysis". They are displayed in **Figure 1** (positive model) and **Figure 2** (negative model). One confirmatory factor analysis (CFA) was conducted for each combination of sample (German vs. English) × model (positive vs. negative), resulting in four separate analyses. The CFA were analyzed with the R package "lavaan" (Rosseel, 2012) using full information robust maximum likelihood estimation (MLR), which does not require multivariate normal distribution of the observed variables. The evaluation of the four CFA was based on the models' chi-square statistics (χ^2), Standardized Root Mean Square Residuals (*SRMR*), Comparative Fit Indices (*CFI*), and Root Mean Square Error(s) of Approximation (*RMSEA*). The criteria for good model fit followed the recommendations of Schermelleh-Engel et al. (2003): A ratio of $\chi^2/df \leq 2$, ideally with a non-significant χ^2 ($p > 0.05$), $SRMR \leq 0.05$, $CFI \geq 0.97$, and $RMSEA \leq 0.05$. Composite reliabilities of the factors (McDonald's ω) were calculated with the reliability() function in the R package

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1   The second quality check item had only been presented to a subsample and would thus have biased the exclusion, while the third quality check item was positioned after the last questionnaire relevant to the present study.
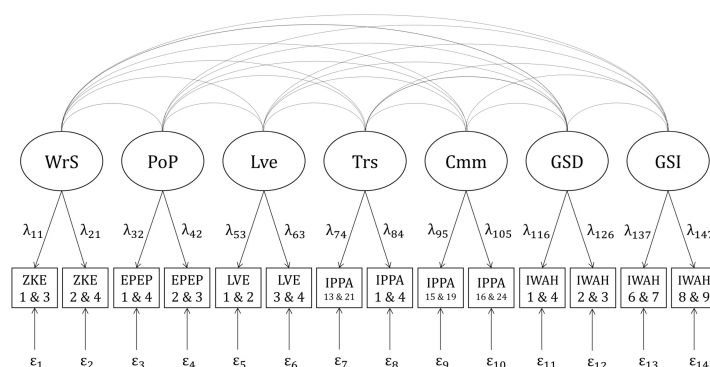
FIGURE 1

Positive model with correlations between positive RPB, attachment, and IWAH. WrS, Warmth/Support; PoP, positive parenting; Lve, love; Trs, trust; Cmm, communication; GSD, global self-definition; GSI, global self-investment; ZKE, "Zürcher Kurzfragebogen zum Erziehungsverhalten"; EPEP, "Evaluation des Pratiques Educatives Parentales"; LVE, items measuring parental love; IPPA, "Inventory of Parent and Peer Attachment"; IWAH, "Identification With All Humanity scale". Latent factors (e.g., WrS) are displayed in circles. Indicators (e.g., ZKE 1 and 3) are displayed in squares. Numbers beneath the abbreviations of questionnaires indicate item numbers of the items forming particular indicators (e.g., Item 1 and item 3 from the ZKE form one indicator displayed as ZKE 1 and 3). Curved lines indicate correlations between latent factors. Arrows with factor loadings (e.g., λ_{11}) illustrate the assumption that the indicators are predicted by specific latent factors. Residual variances are displayed below the indicators (e.g., ε_1).

"semTools" (Jorgensen et al., 2022). For factors with cross-loadings, composite reliabilities were calculated using formula (2) in Raykov and Shrout (2002).

Measurement invariance

To test the psychometric equivalence of the latent variables, measurement invariance across the two samples (German and English) was tested for both models (positive and negative). The measurement invariance was tested by calculating Satorra-Bentler scaled χ^2 difference tests (Satorra and Bentler, 2001) in each of which the fit of two nested models (e.g., one configural and one metric invariance model) was compared. Increasingly restrictive models were tested until a significant difference between two models was observed. All tests concerning measurement invariance were conducted with the R package "lavaan" (Rosseel, 2012).

Correlation analyses

As different facets of positive and negative parenting behavior were measured, the study's hypotheses concerning correlations were specified as follows:

Hypothesis 1: There is a positive correlation between each facet of positive parenting behavior and both facets of IWAH, as well as between each facet of attachment and both facets of IWAH.

Hypothesis 2: There is a negative correlation between each facet of negative parenting behavior and both facets of IWAH.

Structural equation models were used to test these two hypotheses, as they allow to estimate correlations between latent variables which are free from measurement error. To separate measurement error from true individual differences we used the parceling approach (see, e.g., Kline, 2011) with two indicators (split-half procedure) for each factor. The models depicted in **Figures 1, 2** were used to test the two hypotheses separately for the German and the English sample. Thus, four model
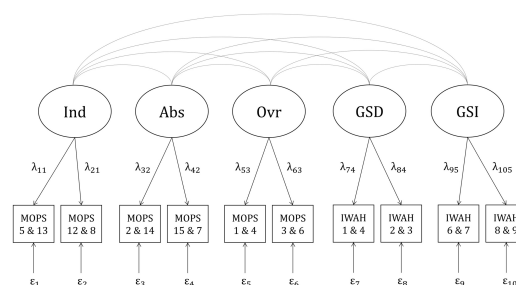
FIGURE 2

Negative model with correlations between negative RPB and IWAH. Ind, indifference; Abs, abuse; Ovr, over-control; GSD, global self-definition; GSI, global self-investment; MOPS, "Measure of Parental Style"; IWAH, "Identification With All Humanity scale". Latent factors (e.g., Ind) are displayed in circles. Indicators (e.g., MOPS 5 and 13) are displayed in squares. Numbers beneath the abbreviations of questionnaires indicate item numbers of the items forming particular indicators (e.g., Item 5 and item 13 from the MOPS form one indicator displayed as MOPS 5 and 13). Curved lines indicate correlations between latent factors. Arrows with factor loadings (e.g., λ_{11}) illustrate the assumption that the indicators are predicted by specific latent factors. Residual variances are displayed below the indicators (e.g., ε_1).

comparisons were conducted. In each comparison, two kinds of models were compared: A first model which allowed for correlations between all latent variables included in the model, and a second, more restricted model, in which all correlations of interest were set to zero. Satorra-Bentler scaled χ^2 difference tests (Satorra and Bentler, 2001), which are robust to violations of multivariate normality, and Bayesian Information Criteria (*BIC*) were calculated to compare the fit of the two models.

Based on the result of each χ^2 difference test and on the *BIC*, a decision for one of the models was made. A significant difference according to the χ^2 difference test in conjunction with the model allowing for all correlations having a lower *BIC* led to a decision for the respective model. If all estimated correlations had the expected sign (positive signs for Hypothesis 1, negative for Hypothesis 2), the corresponding hypothesis was accepted. Finally, the significance of single correlations in the analyzed model was tested. To account for the alpha error accumulation occurring in multiple testing, the False Discovery Rate (*FDR*) was controlled by calculating adjusted *p*-values after Benjamini and Hochberg (1995). Whenever the models did not have a significantly differing fit according to the χ^2 difference test and whenever the model in which all correlations were set to zero had a lower *BIC*, the decision was made in favor of the more restricted model. In these cases, the respective hypothesis was rejected.

Regression analyses

First, to estimate the multiple correlation between the facets of parenting and IWAH (square root of coefficient of determination) and to test whether this multiple correlation is significantly different from 0, and second, to explore the unique contribution of each facet of parenting when controlling for all other facets in a purely exploratory way, we calculated latent regression analyses.

Hence, the factors representing IWAH (dependent variables, GSD and GSI) were regressed on the factors representing RPB and attachment. Regression analyses were only conducted when a model allowing for all correlations was preferred over a model in which all correlations were set to zero in the corresponding correlation analysis. For each regression model, the significance of single regression coefficients was tested and the percentage of variance in the dependent variables (GSD and GSI) which could be explained by the relevant latent variables (R^2) as well as the multiple correlation between the facets of parenting and IWAH (R) were calculated.

Beside analyzing the positive and the negative models separately, one regression analysis was calculated per sample, in which all positive and negative facets were included as predictors. For these regressions, too, the percentage of variance in the dependent variables (GSD and GSI) which could be explained by all positive and negative facets (R^2) as well as the multiple correlation between all positive and negative facets and IWAH (R) were calculated.

Results

Descriptive statistics

Density plots of the study's most important variables are displayed in **Supplementary Figure 1** (GSD and GSI), **Supplementary Figure 2** (pRPB variables: Warmth/Support, Positive Parenting, and Love), **Supplementary Figure 3** (nRPB variables: Indifference, Abuse, and Over-Control), and **Supplementary Figure 4** (attachment variables: Communication and Trust). Examining the plots leads to two key findings. Firstly, the variables' distributions only show small differences between the German and the English sample. In the English sample, the means of the nRPB facets Indifference and Abuse are lower, the mean of GSD is slightly lower, and the means of all pRPB and attachment facets are slightly higher than in the German sample. And secondly, all nRPB variables are clearly positively skewed in both samples, which indicates that most participants reported not having experienced much negative parenting behavior. Means, standard deviations, and manifest correlations between the study's main variables can be found in **Table 1** (German sample) and **Table 2** (English sample).

Confirmatory factor analyses

Positive model, German sample

The positive model (**Figure 1**) did not have an acceptable fit in the German sample: $\chi^2 (56) = 465.966, p < 0.001; SRMR = 0.014; CFI = 0.981; RMSEA = 0.075, 90\% \text{ CI } [0.069, 0.081]$. Therefore, the model's modification indices were examined. The indices suggested that the model's fit could be improved by allowing the two indicators "IPPA 13 and 21" and "EPEP 1 and 4" to have additional loadings on the factor "Communication". The model was adjusted accordingly. Modifying the model led to a new model which fit the data well: $\chi^2 (54) = 235.783, p < 0.001; SRMR = 0.009; CFI = 0.992; RMSEA = 0.050, 90\% \text{ CI } [0.044, 0.057]$. Reliabilities of the indicators ranged from 0.744 (IWAH 1 and 4) to 0.956 (IPPA 1 and 4) and composite reliabilities of the factors ranged from 0.869 (GSD) to 0.965 (Trs; see **Supplementary Table 6**). The adjusted model displayed in **Figure 3** was therefore used in all further analyses.

Positive model, English sample

In the English sample, the original positive model had a poor fit as well: $\chi^2 (56) = 494.089, p < 0.001; SRMR = 0.017; CFI = 0.980; RMSEA = 0.075, 90\% \text{ CI } [0.069, 0.081]$. Hence, the model was modified the same way as in the German sample. The adjusted model (**Figure 3**) had an acceptable fit: $\chi^2 (54) = 284.340, p < 0.001; SRMR = 0.013$;

CFI = 0.990; $RMSEA$ = 0.055, 90% CI [0.049, 0.062]. Reliabilities of the indicators ranged from 0.636 (IWAH 1 and 4) to 0.937 (IPPA 1 and 4) and composite reliabilities of the factors ranged from 0.819 (GSD) to 0.956 (Trs; see **Supplementary Table 7**). Thus, this model was used in all further analyses.

Negative model, German sample

The negative model (**Figure 2**) fit the data from the German sample well by all criteria: $\chi^2(25)$ = 64.026, $p < 0.001$; $SRMR$ = 0.025; CFI = 0.996; $RMSEA$ = 0.033, 90% CI [0.023, 0.043]. Reliabilities of almost all indicators ranged from 0.738 (IWAH 1 and 4) to 0.832 (MOPS 12 and 8). One indicator had a very low reliability of 0.356 (MOPS 1 and 4). As composite reliabilities of all factors ranged from 0.726 (Ovr) to 0.891 (Abs; see **Supplementary Table 8**), the modified model was used in all further analyses.

Negative model, English sample

The negative model had a good fit in the English sample, too: $\chi^2(25)$ = 110.226, $p < 0.001$; $SRMR$ = 0.029; CFI = 0.991; $RMSEA$ = 0.050, 90% CI [0.041, 0.060]. Reliabilities of the indicators ranged from 0.624 (IWAH 1 and

4) to 0.930 (MOPS 12 and 8). Just as in the German sample, the indicator MOPS 1 and 4 had a very low reliability of 0.457. However, the composite reliabilities of all factors ranged from 0.816 (Ovr) to 0.952 (Ind; see **Supplementary Table 9**), so the modified model was used in all further analyses of the English sample as well.

Measurement invariance

Positive model

Measurement invariance across the two samples was tested based on the previously adjusted model (**Figure 3**). A first χ^2-difference test was conducted to compare the model fits of the following two models: (a) a configural model ($\chi^2(108)$ = 519.296, $p < 0.001$; $SRMR$ = 0.011; CFI = 0.991; $RMSEA$ = 0.053, 90% CI [0.048, 0.058]) which only assumed that the latent variables in the positive model (GSD, GSI, WrS, PoP, Lve, Trs, and Cmm) had the same pattern of free and fixed loadings in the German as in the English sample and (b) a metric model ($\chi^2(117)$ = 532.188, $p < 0.001$; $SRMR$ = 0.012;

TABLE 1 Means, standard deviations, and bivariate correlations for the German sample.

	M (SD)	GSD	GSI	WrS	PoP	Love	Cmm	Trs	Ind	Abs
GSD	9.75 (3.42)	1								
GSI	13.04 (4.05)	0.68***	1							
WrS	2.82 (0.85)	0.11***	0.14***	1						
PoP	2.44 (0.86)	0.15***	0.15***	0.90***	1					
Love	2.92 (0.86)	0.10***	0.12***	0.94***	0.85***	1				
Cmm	2.36 (0.93)	0.16***	0.11***	0.83***	0.87***	0.81***	1			
Trs	2.69 (0.87)	0.12***	0.11***	0.88***	0.85***	0.89***	0.88***	1		
Ind	1.69 (0.72)	−0.02	−0.05	−0.69***	−0.59***	−0.72***	−0.57***	−0.68***	1	
Abs	1.63 (0.66)	0.04	0.01	−0.60***	−0.50***	−0.64***	−0.50***	−0.63***	0.81***	1
Ovr	1.78 (0.57)	0.08**	0.03	−0.32***	−0.25***	−0.36***	−0.28***	−0.42***	0.55***	0.71***

N = 1478 to 1516. GSD, global self-definition (scale: 4 to 20); GSI, global self-investment (scale: 4 to 20); WrS, Warmth/Support; PoP, positive parenting; Cmm, communication; Trs, trust; Ind, indifference; Abs, abuse; Ovr, over-control. Scales for all variables apart from GSI and GSD range from 1 to 4. **$p < 0.01$. ***$p < 0.001$.

TABLE 2 Means, standard deviations, and bivariate correlations for the English sample.

	M (SD)	GSD	GSI	WrS	PoP	Love	Cmm	Trs	Ind	Abs
GSD	9.38 (3.43)	1								
GSI	13.43 (4.06)	0.59***	1							
WrS	2.85 (0.85)	0.11***	0.15***	1						
PoP	2.50 (0.86)	0.16***	0.17***	0.90***	1					
Love	3.00 (0.86)	0.09***	0.13***	0.93***	0.85***	1				
Cmm	2.42 (0.93)	0.16***	0.11***	0.82***	0.84***	0.78***	1			
Trs	2.76 (0.87)	0.12***	0.11***	0.86***	0.90***	0.85***	0.87***	1		
Ind	1.50 (0.72)	0.07**	−0.02	−0.61***	−0.49***	−0.66***	−0.46***	−0.57***	1	
Abs	1.37 (0.66)	0.13***	0.06*	−0.46***	−0.35***	−0.52***	−0.32***	−0.45***	0.79***	1
Ovr	1.75 (0.57)	0.15***	0.11***	−0.29***	−0.22***	−0.34***	−0.25***	−0.41***	0.54***	0.65***

N = 1512 to 1539. GSD, global self-definition (scale: 4 to 20); GSI, global self-investment (scale: 4 to 20); WrS, Warmth/Support; PoP, positive parenting; Cmm, communication; Trs, trust; Ind, indifference; Abs, abuse; Ovr, over-control. Scales for all variables apart from GSI and GSD range from 1 to 4. *$p < 0.05$. **$p < 0.01$. ***$p < 0.001$.
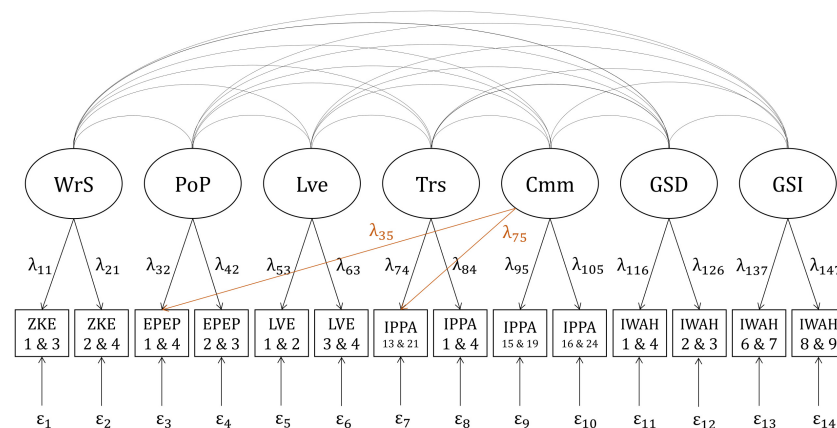
FIGURE 3
Adjusted positive correlation model for the German and the English sample. WrS, Warmth/Support; PoP, positive parenting; Lve, love; Trs, trust; Cmm, communication; GSD, global self-definition; GSI, global self-investment; ZKE, "Zürcher Kurzfragebogen zum Erziehungsverhalten"; EPEP, "Evaluation des Pratiques Educatives Parentales"; LVE, items measuring parental love; IPPA, "Inventory of Parent and Peer Attachment"; IWAH, "Identification With All Humanity scale". Latent factors (e.g., WrS) are displayed in circles. Indicators (e.g., ZKE 1 and 3) are displayed in squares. Numbers beneath the abbreviations of questionnaires indicate item numbers of the items forming particular indicators (e.g., Item 1 and item 3 from the ZKE form one indicator displayed as ZKE 1 and 3). Curved lines indicate correlations between latent factors. Arrows with factor loadings (e.g., λ_{11}) illustrate the assumption that the indicators are predicted by specific latent factors. Residual variances are displayed below the indicators (e.g., ε_1). One modification of the original positive model (**Figure 1**) was made to improve model fit: the factor "communication" was allowed to additionally load on the indicators "IPPA 13 and 21" and "EPEP 1 and 4." This change is marked in orange.

$CFI = 0.991$; $RMSEA = 0.051$, 90% CI [0.046, 0.055]) which also assumed that the factor loadings were equivalent in the two groups. This first test was not significant $\triangle\chi^2(9) = 7.6512$, $p = 0.57$. The non-significant result allows us to infer that metric invariance between the two samples was likely given (Putnick and Bornstein, 2016).

A second χ^2-difference test was conducted to compare the model fits of the previously tested metric model ($\chi^2(117) = 532.188$, $p < 0.001$; $SRMR = 0.012$; $CFI = 0.991$; $RMSEA = 0.051$, 90% CI [0.046, 0.055]) and a scalar model ($\chi^2(124) = 759.082$, $p < 0.001$; $SRMR = 0.016$; $CFI = 0.986$; $RMSEA = 0.061$, 90% CI [0.057, 0.065]) which additionally assumed that the item intercepts were equivalent in the German and the English sample. This test turned out to be significant $\triangle\chi^2(7) = 246.06$, $p < 0.001$. Therefore, scalar invariance was not given for the positive model. All further analyses were conducted separately for the German and the English sample.

Negative model

Just as for the positive model, a first χ^2-difference test was conducted to compare the model fits of a configural model ($\chi^2(50) = 175.859$, $p < 0.001$; $SRMR = 0.027$; $CFI = 0.993$; $RMSEA = 0.043$, 90% CI [0.036, 0.050]) and a metric model ($\chi^2(55) = 208.665$, $p < 0.001$; $SRMR = 0.030$; $CFI = 0.992$; $RMSEA = 0.045$, 90% CI [0.039, 0.052]). This test turned out to be significant $\triangle\chi^2(5) = 31.521$, $p < 0.001$. Thus, metric invariance was not given for the negative model.

However, as configural invariance was ensured through the preceding CFA and as the study did not contain group difference tests, the metric non-invariance was not a problem for the further analyses.

Latent correlation analyses

Correlations between all latent variables for both samples are displayed in **Table 3** (positive model) and **Table 4** (negative model). To begin with, the tables show strong positive correlations between all facets of pRPB and attachment (0.84 to 1), between the facets of nRPB (0.65 to 0.98), and between GSD and GSI (0.69 to 0.78). These correlations are all in line with prior expectations.

In both samples, all facets of attachment and pRPB correlate weakly positively (0.10 to 0.19) with the two facets of IWAH. These correlations can be interpreted as a first indicator of the possible acceptance of Hypothesis 1. Contrarily, the correlations concerning Hypothesis 2, which are the correlations between the facets of nRPB and IWAH, are predominantly close to zero and non-significant, which distinguishes them from all other correlations. In the English sample, three correlations between facets of nRPB and IWAH are significant. Interestingly, they are all weakly positive ($r_{GSD,Abs} = 0.15$, $r_{GSD,Ovr} = 0.15$, $r_{GSI,Ovr} = 0.09$). Thus, Hypothesis 2 is likely to be rejected.

Table 5 contains chi-square values (χ^2) and *BIC* for all models which were tested in the study's correlation analyses.

TABLE 3   Latent correlations in the positive model.

	GSD	GSI	WrS	PoP	Love	Cmm	Trs
GSD	1	0.774***	0.128***	0.173***	0.115***	0.180***	0.117***
GSI	0.692***	1	0.155***	0.176***	0.137***	0.128***	0.097**
WrS	0.127***	0.169***	1	0.970***	0.996***	0.876***	0.912***
PoP	0.180***	0.193***	0.971***	1	0.910***	0.907***	0.845***
Love	0.108***	0.154***	1.011***	0.933***	1	0.847***	0.921***
Cmm	0.183***	0.120***	0.881***	0.881***	0.843***	1	0.859***
Trs	0.119***	0.115***	0.904***	0.838***	0.911***	0.851***	1

Correlations above the diagonal stem from the German sample, those below the diagonal stem from the English sample. N = 1517 (German sample) and 1539 (English sample). GSD, global self-definition; GSI, global self-investment; WrS, Warmth/Support; PoP, positive parenting; Cmm, communication; Trs, trust. ***$p < 0.001$.

Testing Hypothesis 1

The following models were compared to test Hypothesis 1: a first model which allowed for correlations between all facets of pRPB and IWAH as well as between all facets of attachment and IWAH, and a second model which was a more restricted version of the first model in which correlations between all facets of pRPB and IWAH as well as between all facets of attachment and IWAH were set to zero. For the German as well as for the English sample, the previously adjusted model displayed in Figure 3 was used as a basis for the two different models.

Results in the German sample

The first χ^2 difference test revealed that the two positive models differed significantly regarding their model fit: $\chi^2(10) = 81.985, p < 0.001$. Moreover, the model allowing for all correlations had a lower *BIC* than the other (see Table 5). This indicates that the model allowing for all correlations describes the relationships between the latent variables better when considering model fit as well as parsimony. Therefore, the model allowing for all correlations was preferred over the model in which all correlations of interest were set to zero. The estimated correlations between the two facets of IWAH and all facets of pRPB and attachment were all positive and ranged from $r_{GSI,Trs} = 0.097$ to $r_{GSD,Cmm} = 0.180$ (see Table 3). Without correcting for alpha error accumulation, all correlations of interest were

significant on a level of $\alpha = 0.001$. When controlling the *FDR* by calculating adjusted p-values according to Benjamini and Hochberg (1995), all correlations remained significant. Thus, the hypothesis that there is a positive correlation between each facet of positive parenting behavior and both facets of IWAH, as well as between each facet of attachment and both facets of IWAH was accepted for the German sample. All estimated parameters of the positive model allowing for all correlations in the German sample can be found in Supplementary Table 6.

Results in the English sample

The second χ^2 difference test revealed that the model allowing for all correlations fit the data significantly better: $\chi^2(10) = 97.191, p < 0.001$ (see Table 5). As the model allowing for all correlations also had a lower *BIC*, it was preferred over the other. Just as in the German sample, the correlations between the two facets of IWAH and all facets of pRPB and attachment were positive. In the English sample, they ranged from $r_{GSD,Lve} = 0.108$ to $r_{GSI,PoP} = 0.193$. All these correlations were significant on a level of $\alpha = 0.05$. When calculating adjusted p-values according to Benjamini and Hochberg (1995), all correlations remained significant. Thus, the hypothesis that there is a positive correlation between each facet of positive parenting behavior and both facets of IWAH, as well as between each facet of attachment and both facets of IWAH was also accepted for the English sample. The estimated parameters of the positive model allowing for all correlations in the English sample can be found in Supplementary Table 7.

Testing Hypothesis 2

Two other types of models were compared to test Hypothesis 2: A first model which allowed for correlations between all facets of nRPB and IWAH, and a second model which was a more restricted version of the first model in which correlations between all facets of nRPB and IWAH were set to zero. The negative model in Figure 2 was used as a basis for the two different models in both samples.

TABLE 4   Latent correlations in the negative model.

	GSD	GSI	Ind	Abs	Ovr
GSD	1	0.775***	−0.017	0.030	0.042
GSI	0.690***	1	−0.046	0.017	0.007
Ind	0.058	−0.040	1	0.981***	0.712***
Abs	0.153***	0.053	0.844***	1	0.905***
Ovr	0.151***	0.088*	0.648***	0.761***	1

Correlations above the diagonal stem from the German sample, those below the diagonal stem from the English sample. N = 1517 (German sample) and 1539 (English sample). GSD, global self-definition; GSI, global self-investment; Ind, indifference; Abs, abuse; Ovr, over-control. *$p < 0.05$. ***$p < 0.001$.

Results in the German sample

The third χ^2 difference test revealed that the two negative models differed significantly regarding their model fit: $\chi^2(6) = 13.11, p < 0.04$ (see Table 5). However, as the model in which all correlations were set to zero had a lower *BIC*, this model was preferred over the model allowing for all correlations. A closer look at the estimated correlations between the facets of nRPB and the facets of IWAH also revealed that all of them were very small (ranging from $r_{GSI,Ind} = -0.046$ to $r_{GSD,Ovr} = 0.042$) and none of them were significant. Therefore, the hypothesis that there is a negative correlation between each facet of negative parenting behavior and both facets of IWAH was rejected for the German sample. All estimated parameters of the negative model allowing for all correlations in the German sample can be found in **Supplementary Table 8**.

Results in the English sample

The fourth χ^2 difference test revealed that the model allowing for correlations between all facets of IWAH and nRPB fit the data significantly better than the alternative model: $\chi^2(6) = 57.248, p < 0.001$ (see Table 5). The model which allowed for all correlations also had a lower *BIC*. Therefore, the model allowing for all correlations was preferred over the model in which all correlations of interest were set to zero. Out of the six correlations between all facets of IWAH and nRPB, three correlations were significant on a level of $\alpha = 0.05$ when not correcting for alpha error accumulation ($r_{GSD,Abs}$, $r_{GSD,Ovr}$ and $r_{GSI,Ovr}$). When calculating adjusted *p*-values according to Benjamini and Hochberg (1995), these three correlations remained significant. However, as half of the correlations were not significant, the hypothesis that there is a negative correlation between *each* facet of negative parenting

behavior and both facets of IWAH also needed to be rejected for the English sample. In addition to that, surprisingly, all significant correlations were positive ($r_{GSD,Abs} = 0.153$, $r_{GSD,Ovr} = 0.151$ and $r_{GSI,Ovr} = 0.088$). To further analyze the unexpected data structure in the negative model for the English sample, it was included in the subsequent regression analyses as well. All estimated parameters of the negative model allowing for all correlations in the English sample can be found in **Supplementary Table 9**.

Regression analyses

Latent regression analyses were conducted to estimate the multiple correlation between the facets of parenting and IWAH and to explore which facets of attachment and RPB could predict the two facets of IWAH (GSD and GSI) when controlling for the other facets of attachment and RPB. For this purpose, the models which were used in the correlation analyses were modified. In the modified versions of the models, the two facets of IWAH were regressed on the variables representing nRPB, pRPB, and attachment (see **Figures 4, 5**). The regression models showed the same model fit as the corresponding correlation models. Additionally, one regression analysis per sample was calculated, in which all positive and negative facets were included as predictors ("Combined Model").

Positive model, German sample

All estimated parameters of the positive regression model in the German sample are displayed in **Supplementary Table 10**. Altogether, the variables representing pRPB and attachment explained 4.1% of the variance in the latent variable GSD as well as in the latent variable GSI ($R^2 = 0.041$, $R = 0.20$, $p < 0.001$ for both variables). The variables

TABLE 5 Test statistics of all eight models and results of the four χ^2-difference tests.

Test statistics	Hypothesis 1, positive models				Hypothesis 2, negative models			
	German sample		English sample		German sample		English sample	
	Cor. allowed	Cor. zero	Cor. allowed	Cor. zero	Cor. allowed	Cor. zero	Cor. allowed	Cor. zero
N	1517	1517	1539	1539	1517	1517	1539	1539
χ^2	235.783	314.497	284.340	380.434	64.026	77.137	110.226	165.051
df	54	64	54	64	25	31	25	31
p	<0.001***	<0.001***	<0.001***	<0.001***	<0.001***	<0.001***	<0.001***	<0.001***
BIC	36248	36260	38058	38089	33527	33497	32428	32443
χ^2-diff.	81.985		97.191		13.11		57.248	
df-diff.	10		10		6		6	
p	<0.001***		<0.001***		0.04*		<0.001***	

"Cor. allowed" describes the models allowing for correlations between all latent variables. "Cor. zero" describes the models in which all correlations of interest were set to zero. The row "χ^2" contains robust chi-square values for all models, the row "*BIC*" contains the models' robust Bayesian Information Criteria. "χ^2-diff." is the test statistic for the scaled χ^2-difference test. "*df*-diff." is the corresponding *df*-difference. Note that as the χ^2-difference test is a function of two standard (not robust) test statistics, the χ^2-difference test statistic cannot be calculated by simply subtracting the scaled χ^2 test statistics above. *$p < 0.05$. ***$p < 0.001$.
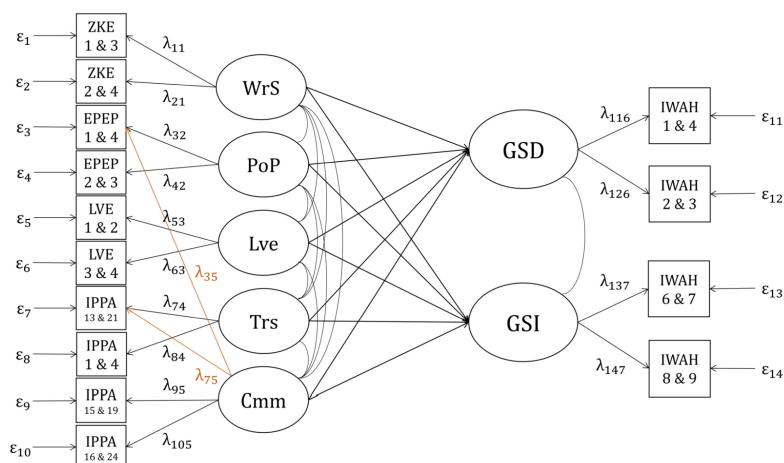
FIGURE 4
Positive regression model for the German and the English sample. WrS, Warmth/Support; PoP, positive parenting; Trs, trust; Cmm, communication; GSD, global self-definition; GSI, global self-investment; ZKE, "Zürcher Kurzfragebogen zum Erziehungsverhalten"; EPEP, "Evaluation des Pratiques Educatives Parentales"; LVE, items measuring parental love; IPPA, "Inventory of Parent and Peer Attachment"; IWAH, "Identification With All Humanity scale." Latent factors (e.g., WrS) are displayed in circles. Indicators (e.g., ZKE 1 and 3) are displayed in squares. Numbers beneath the abbreviations of questionnaires indicate item numbers of the items forming particular indicators (e.g., Item 1 and item 3 from the ZKE form one indicator displayed as ZKE 1 and 3). Arrows with factor loadings (e.g., λ_{11}) illustrate the assumption that the indicators are predicted by specific latent factors. Residual variances are displayed left and right to the indicators (e.g., ε_1). Curved lines indicate correlations between latent factors. Arrows from latent variables to other latent variables (e.g., WrS → GSD) illustrate the idea that one variable on which the arrow points (e.g., GSD) is predicted by another (e.g., WrS). The change from the original model in **Figure 1**, which was modified slightly in the CFA, is marked in orange. In contrast to the correlation model which resulted from the CFA, in the present predictive model, the two facets of IWAH (GSD and GSI) are regressed on the variables representing pRPB and attachment.

representing pRPB and attachment were highly correlated: $r_{\min} = r_{\text{PoP,Trs}} = 0.845$, $r_{\max} = r_{\text{WrS,Lve}} = 0.996$. Therefore, despite the previously observed positive correlations between both facets of IWAH and all facets of pRPB and attachment, only one of the regression coefficients was significant (GSD is regressed on Communication) and some of the non-significant regression coefficients were even negative.

To avoid the problem of multicollinearity, one additional regression model was constructed for each facet of pRPB and attachment. In each of these models, except for the two regression coefficients between one chosen facet of pRPB or attachment and both facets of IWAH, all regression coefficients were set to zero. Testing these models revealed that without controlling for the other facets, the estimated standardized regression coefficients of all facets lay between $\beta = 0.110$ (GSI is regressed on Trust) and $\beta = 0.178$ (GSD is regressed on Communication), explaining between 1.2 and 3.2% of the variance in the two facets of IWAH. In these models, all regression coefficients were significant.

Positive model, English sample

All estimated parameters for the data from the English sample are displayed in **Supplementary Table 11**. Altogether, the variables representing pRPB and attachment could explain about 7% of the observed variance in the facet GSD ($R^2 = 0.067$, $R = 0.26$, $p < 0.001$), and

about 5% of the variance in the facet GSI ($R^2 = 0.051$, $R = 0.23$, $p < 0.001$). In the English sample, the variables representing pRPB and attachment were highly correlated too: $r_{\min} = r_{\text{PoP,Trs}} = 0.838$, $r_{\max} = r_{\text{WrS,Lve}} = 1.011$. Thus, the problem of multicollinearity was present in the English sample as well. Therefore, additional models were examined, in which the influence of one facet at a time was tested, without controlling for the other facets of pRPB and attachment. This procedure was already described for the tests in the German sample and will therefore not be repeated here. In the English sample, the estimated standardized regression coefficients of all facets were significant and lay between $\beta = 0.122$ (GSD is regressed on Love) and $\beta = 0.180$ (GSD is regressed on Communication), explaining between 1.5 and 3.3% of the variance in the two facets of IWAH.

Negative model, German sample

As the negative model allowing for all correlations was rejected, no further regression analysis was conducted for this model with the data from the German sample.

Negative model, English sample

All estimated parameters of the model can be found in **Supplementary Table 12**. Collectively, the facets of nRPB could explain 4.4% of the variance in the facet GSD ($R^2 = 0.044$, $R = 0.21$, $p < 0.001$), and 3.4% of the observed variance in GSI ($R^2 = 0.034$, $R = 0.18$, $p < 0.001$). There were

strong correlations between the facets of nRPB (ranging from $r_{\text{Ind,Ovr}} = 0.648$ to $r_{\text{Ind,Abs}} = 0.844$).

Due to the strong correlations, the estimated regression coefficients were confounded with suppression effects. Therefore, the estimated regression coefficients were difficult to interpret. The three significant correlations in the preceding correlation analysis were the correlations between GSD and Abuse, between GSD and Over-Control, and between GSI and Over-Control. Therefore, two additional models were examined, one of which only allowed for regression coefficients between Abuse and the two facets of IWAH, and one of which only allowed for regression coefficients between Over-Control and the two facets of IWAH. When not controlling for the other facets of nRPB, the regression coefficient between Abuse and GSD was significant ($\beta_{\text{GSD}\sim\text{Abs}} = 0.145$, $p < 0.001$), with Abuse explaining 2.1% of the observed variance in GSD. Additionally, the coefficients b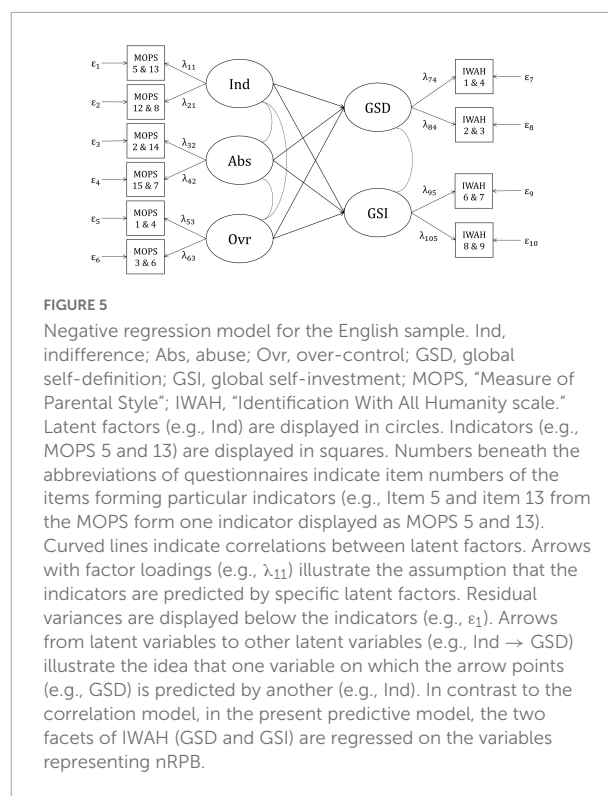etween Over-Control and GSD ($\beta_{\text{GSD}\sim\text{Ovr}} = 0.157$, $p < 0.001$) and between Over-Control and GSI ($\beta_{\text{GSI}\sim\text{Ovr}} = 0.084$, $p = 0.008$) were significant. The facet Over-Control explained 2.5% of the variance in GSD, and 0.7% of the variance in GSI.

Combined model, German sample

The combined model including all positive and all negative facets had an acceptable fit: $\chi^2(123) = 474.818, p < 0.001$; $SRMR = 0.038$; $CFI = 0.987$; $RMSEA = 0.045$, 90% CI [0.041, 0.050]. All estimated parameters of the model can be found in **Supplementary Table 13**. Collectively, all facets of nRPB, pRPB, and attachment could explain 5.7% of the variance in the facet GSD ($R^2 = 0.057$, $R = 0.24$, $p < 0.001$), and 9.2% of the observed variance in GSI ($R^2 = 0.092$, $R = 0.30$, $p < 0.001$). Just as in the positive model, there were strong correlations between the variables representing positive parenting and attachment ($r_{\min} = r_{\text{Lve,Cmm}} = 0.845$). The negative facets were, too, highly correlated: $r_{\min} = r_{\text{Ind,Ovr}} = 0.717$, $r_{\max} = r_{\text{Abs,Ovr}} = 0.917$. The correlations between all positive and negative facets ranged between $r_{\min} = r_{\text{PoP,Ovr}} = -0.352$ and $r_{\max} = r_{\text{Lve,Ind}} = -0.778$.

Just as in the preceding analyses with separate models for positive and negative facets, suppression effects resulted in regression coefficients which could not be easily interpreted: non-significant coefficients with some negative and some positive signs for both positive and negative facets. Testing models in which GSD and GSI were regressed on single facets without controlling for the others led to similar results as the preceding analyses with separate models for positive and negative facets: Positive and significant regression coefficients of similar sizes (as in the analyses with separate models) for all positive facets, and non-significant regression coefficients for all negative facets.

FIGURE 5
Negative regression model for the English sample. Ind, indifference; Abs, abuse; Ovr, over-control; GSD, global self-definition; GSI, global self-investment; MOPS, "Measure of Parental Style"; IWAH, "Identification With All Humanity scale." Latent factors (e.g., Ind) are displayed in circles. Indicators (e.g., MOPS 5 and 13) are displayed in squares. Numbers beneath the abbreviations of questionnaires indicate item numbers of the items forming particular indicators (e.g., Item 5 and item 13 from the MOPS form one indicator displayed as MOPS 5 and 13). Curved lines indicate correlations between latent factors. Arrows with factor loadings (e.g., λ_{11}) illustrate the assumption that the indicators are predicted by specific latent factors. Residual variances are displayed below the indicators (e.g., ε_1). Arrows from latent variables to other latent variables (e.g., Ind → GSD) illustrate the idea that one variable on which the arrow points (e.g., GSD) is predicted by another (e.g., Ind). In contrast to the correlation model, in the present predictive model, the two facets of IWAH (GSD and GSI) are regressed on the variables representing nRPB.

Combined model, English sample

The combined model including all positive and all negative facets fit the data worse than the separate models: $\chi^2(123) = 689.302, p < 0.001$; $SRMR = 0.054$; $CFI = 0.980$; $RMSEA = 0.057$, 90% CI [0.053, 0.061]. All estimated parameters of the model can be found in **Supplementary Table 14**. Collectively, all facets of nRPB, pRPB, and attachment could explain 11.4% of the variance in the facet GSD ($R^2 = 0.114$, $R = 0.34$, $p < 0.001$), and 8.1% of the observed variance in GSI ($R^2 = 0.081$, $R = 0.28$, $p < 0.001$). Just as in the German sample, there were strong correlations between the variables representing positive parenting and attachment ($r_{\min} = r_{\text{Lve,Cmm}} = 0.841$) and the negative facets were highly correlated as well: $r_{\min} = r_{\text{Ind,Ovr}} = 0.638$, $r_{\max} = r_{\text{Ind,Abs}} = 0.844$. The correlations between all positive and negative facets ranged between $r_{\min} = r_{\text{Cmm,Abs}} = -0.339$ and $r_{\max} = r_{\text{Lve,Ind}} = -0.699$.

As in the previous analyses, suppression effects resulted in regression coefficients which could not be easily interpreted. In the English sample, the regression coefficients of almost all positive facets were non-significant, while those of the negative facets were significant and had different signs. However, testing models in which GSD and GSI were regressed on single facets without controlling for the others led to similar results as the preceding analyses with separate models for positive and negative facets: Positive and significant regression coefficients

of similar sizes (as in the analyses with separate models) for all positive facets, significant positive regression coefficients of similar sizes for $\beta_{GSD\sim Ovr}$, $\beta_{GSD\sim Ovr}$, and $\beta_{GSD\sim Ovr}$, and non-significance of all other regression coefficients of negative facets.

Ordered probit regression

In addition to the previously described regression analyses, an ordered probit regression analysis was conducted in which the level of agreement to the statement "I see myself as a global citizen" was regressed on the level of agreement to the two statements "I see my mother as a global citizen" and "I see my father as a global citizen". The levels of agreement to all three statements ranged from 1 ("Strongly disagree") to 4 ("Strongly agree"). The regression was calculated with the sem() function included in the R package "lavaan" (Rosseel, 2012) and the diagonally weighted least squares (DWLS) estimator (Muthén, 1998). Allowing for a correlation between the two predictors, in the German sample, 33.4% of the variance in the statement "I see myself as a global citizen" could be explained by the other two statements. In the English sample, 25.6% of the variance in the first statement could be explained by the statements concerning participants' parents.

Discussion

The aim of this study was to analyze whether there is a relationship between people's upbringing and their IWAH. More precisely, the relationship between people's pRPB, attachment, nRPB, and IWAH was analyzed in a German and an English sample. Additionally, the study aimed to explore whether any facets of attachment, nRPB, or pRPB could significantly predict IWAH when controlling for the other facets in a latent regression. In the German as well as in the English sample, the facets of IWAH were found to correlate weakly positively with different facets of attachment (Communication and Trust) and pRPB (Warmth/Support, Positive Parenting, and Love). Regression analyses revealed that between 4.1 and 6.7% of the variance in both facets of IWAH could be explained by these facets of attachment and pRPB. In the English sample, surprisingly, significant positive correlations were found between two facets of nRPB (Over-Control and Abuse) and IWAH. The facet Over-Control, which had the highest correlation with one of the facets of IWAH, could explain 2.5% of the observed variance in GSD when not controlling for the other facets of nRPB.

Interpretation and discussion of findings

The first hypothesis that was tested in the present study (Hypothesis 1) was that there is a positive correlation between

each facet of positive parenting behavior and both facets of IWAH, as well as between each facet of attachment and both facets of IWAH. Analyzing the German sample, this hypothesis was confirmed. In the model which included correlations between all facets of attachment, pRPB and IWAH, all relevant correlations were significant and ranged from $r = 0.097$ (GSI and Trust) to $r = 0.180$ (GSD and Communication). Overall, the facet "Positive Parenting" correlated most strongly with the two facets of IWAH ($r_{GSD,PoP} = 0.173$, $r_{GSI,PoP} = 0.176$), while the facet "Trust" correlated most weakly with them ($r_{GSD.Trs} = 0.117$, $r_{GSI,Trs} = 0.097$). Altogether, in the corresponding regression model, all facets of attachment and pRPB explained 4.1% of the observed variance in GSD, just as in GSI. Analyzing the English sample, Hypothesis 1 was accepted as well. All estimated correlations were significant, positive, and ranged from $r = 0.108$ (GSD and Love) to $r = 0.193$ (GSI and Positive Parenting). Just as in the German sample, the facet "Positive Parenting" correlated most strongly with the facet GSD ($r_{GSD,PoP} = 0.180$, $r_{GSI,PoP} = 0.193$), while the facet which correlated most weakly with IWAH was "Trust" ($r_{GSD.Trs} = 0.119$, $r_{GSI,Trs} = 0.115$). Altogether, in the corresponding regression model, all facets of attachment and pRPB explained 6.7% of the observed variance in GSD and 5.1% of the observed variance in GSI.

An unpublished study by McFarland et al. (2013) found no relationship between IWAH and people's memories of their parents' affection, support, and care (p. 196). Contrarily, the present study found weak correlations between IWAH and the facets of pRPB and attachment. In a latent regression analysis, those facets could explain 4.1 to 6.7% of the variance in the facet GSD, which is considerably more than one would expect in the face of the results reported by McFarland et al. (2013). As the respective study was not published, it is difficult to identify reasons for the differing results. However, another unpublished study by Hamer (2017) with an adult sample from Poland found that IWAH correlated significantly but weakly with parents giving autonomy and acceptance to their child, as well as with a secure attachment style (McFarland et al., 2019, p. 160). The results of the present study match these findings. However, when interpreting these results, it should also be kept in mind that the correlations could be significant due to large sample sizes and that most of them are very weak.

As openness to experience (Hamer et al., 2019) as well as multicultural experiences (Sparkman and Hamer, 2020) have been found to predict IWAH and as they are also likely to show positive correlations with pRPB and attachment, they might be mediators of the relationship between pRPB/attachment and IWAH. Positive relationships in childhood and youth might increase openness to new relationships, including relationships to people from different cultures, which might in turn increase IWAH. Other possible moderators include perspective taking and empathetic concern, which could both be increased by

positive parenting and which also have been found to correlate positively with IWAH (McFarland et al., 2012).

The second hypothesis that was tested in the present study (Hypothesis 2) was that there is a negative correlation between each facet of negative parenting behavior and both facets of IWAH. For the German sample, this hypothesis was rejected as the model allowing for all correlations did not fit the data significantly better than the model in which all relevant correlations were set to zero. Analyzing the English sample, the model allowing for all correlations fit the data significantly better. However, Hypothesis 2 also needed to be rejected for the English sample, as firstly, half of the correlations were not significant, and secondly, contrary to Hypothesis 2, all significant correlations between the facets of nRPB and IWAH were positive. The three significant positive correlations were the correlation between GSD and abuse ($r = 0.153$, $p < 0.001$), the correlation between GSD and over-control ($r = 0.151$, $p < 0.001$), and the one between GSI and over-control ($r = 0.088$, $p = 0.011$). When controlling the *FDR*, all three correlations remained significant. This result was surprising, as the positive correlations between GSD and abuse as well as GSD and over-control were as high as most correlations in the positive model. In the corresponding negative regression model, the facet abuse explained 2.1% and the facet over-control explained 2.5% of the observed variance in GSD when not controlling for the other facets of nRPB.

So far, the present study is the first to discover a correlation between nRPB and IWAH. The unpublished study by McFarland et al. (2013) already mentioned when discussing Hypothesis 1 found IWAH to be unrelated to remembered punitive and spoiling parenting behavior (p. 196). Besides, Hamer and McFarland (2018, June) found IWAH to be unrelated to harsh and strict, as well as to unaffectionate socialization (McFarland et al., 2019). As no correlations between IWAH and nRPB were found in the German sample and as half of the correlations in the English sample were non-significant, the present study mostly confirmed the results of the two preceding studies. Nevertheless, it is unclear, why the present study found significant, albeit small positive correlations between GSD and abuse as well as GSD and GSI and over-control in the English sample. It is worth noting that these significant correlations could also trace back to a large sample size and that variables which have not been discovered yet might moderate the strength of these correlations. Future studies could try to further investigate these relationships.

To summarize, there are weak indications that pRPB and attachment could contribute to the development of IWAH, while there are no indications that nRPB could prevent it. Considering implications, this result is very comforting, as it shows that experiencing positive parenting behavior might slightly enhance IWAH while experiencing negative parenting behavior probably does not inhibit IWAH.

Because most correlations were very small, we conducted an exploratory search for alternative parent-related antecedents

of individuals' IWAH. In an ordered probit regression, two brief statements on parents' cosmopolitanism explained about one third of the variance in the statement "I see myself as a global citizen" (25.6% in the English and 33.4% in the German sample). This result indicates that parents' attitudes or behavior specifically related to IWAH could have a greater impact on people's IWAH than more unspecific parenting behavior.

Limitations

Although the present study and its analyzed models were planned with care, some limitations should be considered when interpreting the results, eight of which are discussed in this section.

Firstly, all participants came from Germany or England, two Western, educated, industrialized, rich, and democratic (WEIRD) nations (Henrich et al., 2010; Muthukrishna et al., 2020). The two samples analyzed in the study are representative for their respective nations, but for those nations only. Therefore, the study does not allow to draw inferences about other nations, unless subsequent studies with data from other countries are conducted to replicate the results. The data collection for this study was part of a larger project with different research questions. Some of the questions had to do with the European Union, which is our reason for having added the category "Europeans" to the IWAH scale and which is also the reason for having chosen a country which is part of the EU for our first (German) sample. We were also interested in questions concerning Brexit, which is the reason for having chosen the English sample. However, we do not have any reason for having chosen Germany rather than another European country for our first sample other than our own ability to understand and check German translations of the questionnaires and the survey.

Secondly, the analyzed data might contain a slight bias toward people being religious. As one of the quality check items was included in a questionnaire which was only relevant for people who reported to remember a significant religious or spiritual event, more non-religious than religious participants failed to answer this quality check item correctly and were therefore excluded from the study if they took part in the study from June 24 to July 9, 2021. However, it is unlikely that a slight bias toward people being more religious has any influence on the relationship between RPB, attachment, and IWAH, as religious faith has been found to be either unrelated or only weakly negatively related to IWAH (McFarland et al., 2019).

Thirdly, the models which were used to analyze the correlations and predictive relationships between the variables were slightly modified in the CFA. All changes from the initial models were driven by the present data structure. Although it was ensured that all modifications were in line with prior theoretical assumptions, necessary modifications might differ in other samples. On that account, the SEM analyzed in the

present study should be replicated in other samples, as their generalizability still needs to be tested.

Fourthly, the Measure of Parental Style (MOPS; Parker et al., 1997), which was used to obtain items measuring RPB, was originally designed to measure parenting styles. As the definition of parenting styles and parenting behavior differs slightly, this choice deserves explanation. The MOPS was chosen for measuring nRPB because it is one of the only questionnaires covering negative parenting behavior, which is validated for English as well as German samples, and which has an adequate length. Moreover, the items in the MOPS are fairly concrete (e.g., "My mother/father left me on my own a lot"). Therefore, they are in line with the definition of RPB used in the study.

Fifthly, all analyses in the present study relied on self-reports. It is unclear whether other methods like observer ratings or interviews would have led to the same results. As GSD and GSI as well as parenting behavior are complex constructs, directly talking to people and allowing them to explain what they associate with the questionnaires' items could yield valuable new insights into the topic.

Sixthly, it is beyond the scope of this study to confirm causal relationships between RPB, attachment, and IWAH. Although the regression models fit the data well and although several regression coefficients were significant, the study design does not allow for causal conclusions on the relationship between RPB, attachment, and IWAH to be drawn. Future studies could try to investigate whether other variables might moderate the observed relationships between the variables. However, the present study indicates that the idea of parenting behavior influencing IWAH should not be rejected prematurely.

Seventhly, we did not randomize the order of the different questionnaires presented in the survey across participants. The IWAH scale was placed right at the beginning of the survey so that answers could not be influenced by preceding questionnaires. The questionnaires concerning parenting and attachment were placed as far away from the IWAH scale as possible for participants not to give similar answers by habit. Although we assume that neither order effects, nor the contents of other questionnaires presented in the survey biased the answers to the questions concerning parenting and attachment, we cannot fully exclude this possibility.

And eighthly, the selection of the facets representing RPB as well as attachment lacks theoretical justification. When planning the study, our idea was to investigate in a general way, whether positive parenting has an overall positive relationship with IWAH, and whether negative parenting has an overall negative relationship with IWAH. Thus, the concrete facets were not the main focus of our work. We chose measures for parenting behavior and attachment pragmatically, focusing on availability, validity in Germany as well as in England, and reliability. For instance, we chose to measure attachment with modified items from the Inventory of Parent and Peer Attachment (IPPA; Armsden and Greenberg, 1987) because the scale was available, the

facets of interest were already validated in German as well as English samples, and because we had already used the scale in other projects, where it had turned out to be a reliable measure (Bohn et al., 2020). The items measuring attachment were close to our working definition of parenting behavior while still adding new aspects. Therefore, the two concepts positive parenting and attachment as used in our study show some overlap and are not clearly distinct. Undoubtedly, there are more popular ways to classify attachment, for instance classifying secure, avoidant, anxious-ambivalent, and disorganized-disoriented attachment according to Ainsworth et al. (1978/2015). Our study does not allow for any conclusions concerning IWAH and attachment styles as they are commonly defined.

Implications and future directions

Identification with all humanity has been shown to predict several positive behavioral outcomes, like the desire for global knowledge, a willingness to contribute to humanitarian relief, forgiving former enemies of their war crimes (Hamer et al., 2017, 2018), volunteering (Stürmer et al., 2016; Faulkner, 2018), and cooperative health behavior during the COVID-19 pandemic (Barragan et al., 2021; Marchlewska et al., 2022; Sparkman et al., 2022). In addition to that, people's cosmopolitan orientation, which is similar to IWAH, has been shown to predict pro-environmental behaviors above and beyond other factors like a pro-environmental worldview, pro-environmental motivations and beliefs (Leung et al., 2015).

Trying to investigate the origins of IWAH, the present study found that pRPB and nRPB might have a small predictive impact on GSD and GSI. This finding leaves room for several questions future studies could revisit: What are other possible sources of IWAH? Do parents' attitudes or behavior more specifically related to IWAH have a greater impact on people's IWAH? Are there relevant mediators for the observed relationship between pRPB and IWAH? And under which circumstances does a person's GSI transform into concrete actions aimed at helping other human beings who are in need? There is a great urgency to deal with current global challenges like the climate change on our shared planet and global migration. Trying to find answers to the questions above is not only interesting but could also yield effective approaches to tackle these challenges.

As the present study was one of the first to analyze the relationship between RPB, attachment, and IWAH, there are some aspects it could not cover. Further research is needed to test the generalizability of the study's findings. Replications in other countries could help to test whether similar results can be found in other parts of the world. It is particularly interesting to find out whether the observed positive correlations between Abuse and GSD as well as Over-Control and GSD and GSI can be replicated in other samples. Subsequent studies could also try to investigate whether other variables might moderate the

observed relationships between pRPB, attachment, and IWAH. Additionally, further research could explore other possible sources of IWAH and other possible ways to promote it. For example, future studies could focus on aspects of parenting that are specifically related to IWAH. When doing so, different research methods like interviews or observer ratings could yield new insights into the topic.

Now can we raise citizens of the world? The present study indicates that we might. Comforting our children when they are in trouble, showing them love and affection, asking them about their hobbies and interests and giving them a "compliment, hug, or a tap on the shoulder" (Meunier and Roskam, 2007, p. 116) every now and then will surely cause no harm.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Ethics statement

Ethical review and approval was not required for the study on human participants in accordance with the local legislation and institutional requirements. The patients/participants provided their written informed consent to participate in this study.

Author contributions

MH, FT, and ME contributed to the conception of the study. MH wrote the manuscript, created the tables and figures, and conducted all data analyses. FT defined the inclusion criteria, organized/conducted the survey, and communicated with LimeSurvey and the respondi AG as well as with other researchers. ME provided statistical advice and monitored the whole research process. FT and ME participated in the revision of the article. All authors have read and approved the final version.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Supplementary material

The Supplementary Material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fpsyg.2022.924562/full#supplementary-material

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Can science fiction engagement predict identification with all humanity? Testing a moderated mediation model

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Identification with all humanity (IWAH) is viewed as a critical construct that facilitates global solidarity. However, its origins have rarely been explored in previous literature, and no study has yet investigated the role of pop-culture in cultivating IWAH. To address this gap, this study initially focuses on science fiction (sci-fi), a specific pop-culture genre with worldwide audiences, and examines its effect on IWAH. It hypothesized a direct association between sci-fi engagement and IWAH from the narrative persuasion approach, and an indirect association via abstract construal based on the cognitive-literary approach. Moreover, the moderating role of actively open-minded thinking (AOT) in the direct and indirect association was also assessed. Results were obtained through a cross-sectional survey conducted in China (*n* = 570) and showed that sci-fi engagement was positively associated with IWAH; this association was also partially mediated by abstract construal. Interestingly, and inconsistent with our hypotheses, AOT positively moderated the indirect effect but negatively moderated the direct effect. Theoretical and practical implications for cultivating IWAH from the media and pop-cultural perspective were discussed.

KEYWORDS

identification with all humanity, science fiction, narrative persuasion, construal level, actively open-minded thinking

Introduction

Unsolved global crises such as COVID-19, climate change, depleting natural resources, terrorism and regional conflicts have posed severe threats and challenges to the collective future of human society. Apart from scientific, technological, and political solutions, global solidarity which underpins joint efforts and collective actions to combat these problems have become more urgent and necessary. To this end, scholars have suggested that identification with all humanity (IWAH)—a construct defined as psychological bonds with people all over the world and a concern for all members of the human community—may drive people to think and act globally. Empirically, IWAH was found to be positively associated with concern for humanitarian needs, globalism,

and intergroup forgiveness (McFarland et al., 2012; Hamer et al., 2018), and negatively associated with intergroup dehumanization, and ethnocentrism (McFarland et al., 2019). Moreover, people with higher IWAH are more likely to engage in globally responsible behaviors, such as supporting international charities, fighting against global inequality, and health and prosocial behaviors during the COVID-19 pandemic (Reese et al., 2012; McFarland, 2017; Barragan et al., 2021; Deng, 2021; Marchlewska et al., 2022).

However, cultivating IWAH can be challenging. It requires individuals to lower self-centeredness and transcend subordinated social identities (e.g., national identities, ethnical identities) to connect with unfamiliar people who are far away. Compared to the ample studies on the social consequences of IWAH, knowledge about its origins is relatively lacking. To address this, recent studies have revealed that individual differences such as openness to experiences, empathy, and cognitive factors such as cognitive complexity may be behind IWAH (McFarland et al., 2012; Hamer et al., 2018, 2019). Inspiringly, some studies suggested that cultural activities such as intercultural contact, multi-cultural experiences, and mind-body practices are linked to high IWAH (Sparkman and Eidelman, 2018; Loy and Reese, 2019; Sparkman and Hamer, 2020). However, no study has examined the relationship between pop-culture engagement and IWAH, largely neglecting the affordance of media and cultural resources in connecting people all over the world.

Of all genres of pop-culture, this study focuses on science fiction (sci-fi) and examines whether, why, and when sci-fi engagement fosters IWAH. Sci-fi is a genre of speculative fiction that portrays imaginative and futuristic issues based on postulated scientific discovery and technological advancement. In recent years, sci-fi has become one of the dominating genres in films, literature, TV series, video games, and other media, and is consumed, discussed, and disseminated by people worldwide (Wells, 2013). According to the Internet Movie Database (IMD) (2022), as of March 2022, seven of the top ten films that have received the highest lifetime grosses are sci-fi films (e.g., *Avatar* [2009], *Avengers*: *Endgame* [2019]). In a survey across different countries (*n* = 902), 92.1% of the participants indicated they liked sci-fi/fantasy films and TV shows, and 46.2% agreed that sci-fi/fantasy "is the best thing ever" (Menadue and Jacups, 2018). In China, where the current study was carried out, the total value of sci-fi industries, which include subindustries of sci-fi film, publication, video game, and tourism, reached 55.109 billion RMB in 2020, according to the Chinese Research Institution for Science Popularization (2021). Given the worldwide popularity of sci-fi, it is interesting and essential to question whether it can bridge people across the world. If the association of sci-fi engagement and IWAH can be established, we may expect a media

and cultural strategy for cultivating people's IWAH across different countries.

Therefore, we proposed two disparate approaches that may explain the association between sci-fi engagement and IWAH. From the narrative persuasion approach, we hypothesized that sci-fi, a genre which portrays humanity as a whole and cares for their living conditions, may have a positive and direct persuasive effect on individuals' IWAH. From the cognitive-literary approach, we hypothesized that sci-fi, a genre distancing people from their experienced reality, would foster abstract construal and consequentially positively predict IWAH. Furthermore, given the fictional and imaginative nature of sci-fi, which comprises knowledge and anticipations that may contradict with people's existing belief, we hypothesized that actively open-minded thinking (AOT) may serve as a moderator both in the direct and indirect association. A cross-sectional survey (*n* = 570) was conducted in China and the hypotheses were tested through a moderated mediation model. The results provide preliminary evidence on the association between sci-fi engagement and IWAH, which may not only enrich our understanding of the cognitive and social impacts of sci-fi, but also suggest a new direction for cultivating IWAH.

Theoretical background and hypothesis development

Identification with all humanity

According to social-categorization theory (Turner et al., 1987), people can categorize themselves into different social groups based on the levels of abstraction, resulting in various self-definitions. For instance, at the lowest level, people may see themselves as unique individuals; at the middle-ranged levels, people may define themselves as members of a family, city, or nation; and at the highest level, people may feel that they belong to the human community (Reicher et al., 2010). When self-defined as a part of all humanity, people would expand their concern from their national, regional, and ethnical groups to the human race in general, even the unborn future generations (McFarland and Brown, 2008). In this regard, identifying with humanity is viewed as one of the most essential parts of achieving the highest level of human needs, namely, self-actualization, and the most mature and far-reaching form of social interest (Maslow, 1954; McFarland et al., 2012). To capture this highest order of human need and social interest, McFarland and Brown (2008) proposed the concept of identification with all humanity (IWAH, or global human identification) and defined it as "a positive caring, a genuine concern and love for all other members of the human family, and a regarding of all other human beings as part of one's ingroup" (p. 39). Previous literature has

examined IWAH both as a situationally activated factor and a dispositional characteristic. The former approach suggests that human identity can be elicited through experimental manipulation, such as portrayals of people with diverse national and ethnic backgrounds getting together (Greenaway et al., 2011; Reese et al., 2015; Sparkman et al., 2022). Moreover, when the superordinate identity of humanity is made salient, as supported by the Common Ingroup Identity Model (CIIM), people tend to disregard their subordinate social identities and recategorize themselves into the more inclusive group, which in turn, may alter people's attitudes and behavioral intention toward the former out-group members (Gaertner et al., 1993; Greenaway et al., 2011; Gaertner and Dovidio, 2014). Studies from the latter approach, however, view IWAH as an individual difference and have developed a psychometric scale to measure it (McFarland et al., 2012; Hamer et al., 2019). Preliminary studies suggested that all items of the IWAH scale loaded on one dimension (McFarland et al., 2012), and a two-dimension model was also found for other samples in several countries (e.g., McFarland and Hornsby, 2015; Reysen and Hackett, 2016). The two dimensions were labeled as: (1) global self-definition (or bond with all humanity), reflecting a sense of membership in the human community, and (2) global self-investment (or concern for all humanity), referring to one's commitment and tendency to devote to the group of all humanity, respectively (Reese et al., 2015; Hamer et al., 2021). Compared to people with low trait IWAH, those with high trait IWAH have greater concern for humanitarian needs, international human rights, and global issues (e.g., AIDS, global inequality), and exhibit more prosocial international attitudes and behaviors (McFarland, 2015, 2017; McFarland and Hornsby, 2015; for a review, see McFarland et al., 2019).

In essence, developing IWAH involves the process of transcending one's specific social circumstances and connecting to the distant others, as well as the human community, both emotionally and cognitively. Although it is impossible for people to know or get in touch with everyone across the world, and the notion of humankind might be too abstract to comprehend, people may rely on their imagination to make sense of the larger social group beyond their direct experiences. As noted by Anderson (1983), all large communities are imagined in their nature. Moreover, in contemporary societies, media and cultural experiences, including pop-cultural experiences, play a vital role in constructing this collective imagination and shaping their way of construing the world, and profoundly impacts on the process of identity formation (Siriyuvasak and Hyunjoon, 2007; Plante et al., 2014; Cui et al., 2016). In light of this, we switch to the media and pop-cultural resources, and particularly to whether sci-fi genre, which has a worldwide audience, can help to cultivate IWAH.

Sci-fi engagement and identification with all humanity

While sci-fi writers, audiences, and theorists may understand sci-fi from different perspectives, some consensus has been reached. The most essential definition of sci-fi was proposed by Suvin (1972), who regarded it as a genre of "cognitive estrangement." To illustrate, sci-fi is distinct in its ability to alienate people from their habitual environment and engage them in the scientific, futuristic, and technological imaginaries (Ekem, 1990). Typical sci-fi prototypes involve futuristic cities, space exploration, extraterrestrial life, parallel universes, time travel, human enhancement technology, and investigating how human society might be impacted by and cope with plausibly impossible change (Heinlein, 1991). For this reason, it has been described as a popular mode of observing the technoscientific world and a thought experiment tool to provide insights and reflections for human society (Gil, 2018; Weiner et al., 2018). Sci-fi has become a recognizable and legitimate genre in pop-culture studies, not only from the critical literature perspective but also from cultural and social science perspectives (for a review, see Menadue and Cheer, 2017). In this study, we define sci-fi as a specific genre of literature and audio-visual texts that envision and portray alternative worlds or extraordinary events based on the logic of deducible scientific discoveries and technological development. Sci-fi engagement is defined as people's daily participation with sci-fi in all media forms, including films, literature, TV series, and video games, reflecting their general consumption of, preference for, familiarity with, and mental involvement with the sci-fi genre.

Though pilots, protagonists, stories lines, and ideologies may differ across various sci-fi works, the genre takes humanity as its metacharacter and the possible human fate as its metanarrative, in contrast with any other popular genres. As literature studies have figured out, sci-fi places human conditions in the heart of discussion, and is powerful in its ability to connect us with human issues (Popper, 2022). Not only does it reflect the basic and universal needs of human beings to live and survive, but also the shared desire for all human societies to develop and thrive. For instance, sci-fi portrays how the living conditions of human species might change (e.g., *The Wandering Earth* [2019]), how humans search for the extraterrestrial homes (e.g., *Passengers* [2016]), or cope with the threats from non-human out-groups such as aliens and robots (e.g., *The Three Body Problem* [2006−2010]; *I, Robot* [2004]). It also seeks to understand how emerging technologies could enhance human bodies on the one hand, and create ethical problems on the other (e.g., *Lucy* [2014]; *Do Androids Dream of Electric Sheep?* [1968]), and how human society would develop or dysfunction in the alternative settings (e.g., *Brave New World* [1931]; *Black Mirror* [2011−2019]). Although sci-fi prototypes

are imaginative, they are rooted in real-world concerns related to all human beings at present. Through analyzing the frequency of words related to disease (i.e., epidemics, pandemics, plagues, viruses, and disease) in science fiction magazines, Menadue (2020) found that representations of disease in sci-fi correlated with real-world historical trends, supporting that sci-fi appears to reflect and express contemporary human concerns and interests. Additionally, sci-fi works also convey anxiety about the emerging real-world ecological problems (e.g., climate change, technological hazard, overpopulation; Kitzinger, 2010; Otto, 2012; Rumpala, 2021), show existing social problems that violate human rights (e.g., totalitarian politics, social stratification, technological surveillance; Dongmei and Xu, 2018; Jones and Paris, 2018; Milne et al., 2021), and advocate universal humanitarian values that may help in building global solidarity (e.g., multiculturalism, cosmopolitanism; Addison-Smith, 2005; Gunderman, 2020). In this regard, sci-fi imaginaries, including both utopian and dystopian versions, might serve as a creative tool for global citizenship education by providing prospective envisioning, and proactive planning for the collective future (Starkey, 2012; Montiel et al., 2018; Doyle, 2020).

Ample studies demonstrate that narrative fictions can directly and powerfully influence people, including their identification, based on the narrative persuasion approach. This approach argues that, through being mentally transported into the fictional world, audiences may align their identification, beliefs and desires with the protagonists, experience the congruent events, thoughts and emotions, and thus, get affected by the explicit persuasive information or implicit moral conveyed by the stories (Green and Brock, 2000). Therefore, narrative fiction can yield various real-world outcomes without necessarily providing "true" information, such as evoking issue-relevant thinking (e.g., Zwarun and Hall, 2012; Hoeken and Fikkers, 2014; Borum Chattoo and Feldman, 2017), cultivating story-specific or genre consistent beliefs and worldviews (e.g., Zwarun and Hall, 2012; Xu and Kochigina, 2021), and influencing people's attitudes, intentions and behaviors (for a review, see Braddock and Dillard, 2016). More importantly and more specified to the current study, according to the temporary expansion of the boundaries of the self (TEBOTS) model proposed by Slater et al. (2014), narrative fiction can relieve people from the constraints of their given identities, permitting them to take the perspectives of the members from a certain social group, and thus expand the boundaries of their personal and social selves (Johnson et al., 2014, 2016). Gabriel and Young (2011) also demonstrated that experiencing a narrative can directly foster a sense of belonging to the collective portrayed by the stories, facilitating the process of collective assimilation. Specifically, reading a passage from *Harry Potter and the Sorcerer's Stone* led participants to feel like a part of the wizard community, and reading a passage from *Twilight* led participants to feel like a part of the vampire community (Gabriel and Young, 2011). Likewise, by engaging

in sci-fi narratives, people may align their perspectives and standpoint with all of humanity, connect themselves to the human collective, vicariously experience the possible scenarios of human fate, perceive the shared needs and desires of all humanity, have concern for universal human rights involved in the imaginative or realistic global issues, endorse the human values conveyed by the narratives, and thus assimilate the human identity into self-concept, and develop their IWAH. Though previous studies have mostly examined identity formation as an immediate consequence of fictional viewing in experimental settings, accumulated fiction engagement can also cultivate long-lasting beliefs, worldviews, and social perceptions, as well as moral values (Appel, 2008; Bilandzic and Busselle, 2012; Young, 2019). In this regard, people who engage in sci-fi may not only be transported into sci-fi narratives frequently, but also see the world through the lens of sci-fi (Gierzynski, 2018; Young and Carpenter, 2018). That is, they link the concept of humanity from abstract to concrete, perceive their bond with human beings, and get cognitively and emotionally involved in issues concerning all humans. Thus, we hypothesized that:

H1: Sci-fi engagement is positively associated with IWAH.

The indirect effect via abstract construal

While the narrative persuasion approach, which has been widely examined by fiction studies, suggests a direct link between sci-fi engagement and IWAH, the cognitive-literary approach may provide a more subtle and unique explanation for this association. The cognitive-literary approach bridges literature studies and cognitive science, and concerns the cognitive process in and cognitive outcomes of literature consumption (Oatley, 2012; Burke and Troscianko, 2017). Various studies have suggested that fiction consumption in general or in a specific genre may impact people's cognitive abilities or cognitive tendencies, such as theory-of-mind and empathy, regardless of the specific content (Kidd and Castano, 2013; Mikkonen, 2015; Dodell-Feder and Tamir, 2018). In light of this and drawing upon the construal level theory (CLT), we predicted that sci-fi engagement would be associated with abstract construal, which in turn, could positively predict IWAH.

Construal level theory assumes that people tend to mentally construct an object or event from an ego-centric perspective, resulting in a continuum of construal levels from low to high abstraction (Trope and Liberman, 2003). For instance, people can construe "making a list" either concretely as "writing things down," or abstractly as "get organized." People leverage their abstract (vs. concrete) construal to encode and retrieve information that is temporally, spatially,

socially, and hypothetically distant from (vs. close to) their direct experience (Trope and Liberman, 2010). When in an abstract (vs. concrete) mindset, people adopt a holistic (vs. narrow) view, and place greater emphasis on the general (vs. specific) aspects, long-term (vs. immediate) consequences, and superordinate (vs. subordinate) goals of the events, and thus form sequential perception, judgement, evaluation, and decision (Trope and Liberman, 2011). While levels of construal can be situationally activated, it is also viewed as a personal trait which reflects people's cognitive inclination of abstract processing style (Vallacher and Wegner, 1989). The current study examines the mediating role of abstract construal as an individual difference.

As informed by the core assumption of the CLT, the level of abstraction increases along with psychological distance. As a genre of "cognitive estrangement," sci-fi creates extraordinary media experiences through engaging people in alternative world settings comprising temporally (e.g., future), geographically (e.g., outer space), socially (e.g., aliens), and hypothetically (e.g., time travel) distant events or elements (Carney, 2017). People are required to leverage their abstract mindset to interpret the unfamiliar information and categorize the novel stimuli into their existing mental schema during exposure (Förster, 2009). Further, it is reasonable that accumulated sci-fi engagement will make the abstract construal of a person more active and accessible, compared to those who do not engage with sci-fi. Another line of studies suggested that sci-fi tends to cultivate a broad and flexible mind, which serves as the basis of abstract construal (Trope and Liberman, 2010). Specifically, sci-fi may extend people's imaginative boundaries and scope of thought by incorporating advanced knowledge, future consequences, alternative worlds, and extreme events in to their mental schema. However, people with low sci-fi engagement may only take their limited experience and fixed reality as the only reference point when construing the world. Additionally, sci-fi exposure was found to enhance curiosity and creativity (Lin et al., 2013; Lin, 2014; KaradenİZ and DeuGİRmenÇAy, 2020), and be positively associated with openness to experience (Stern et al., 2019). Black et al. (2018) further demonstrated that familiarity with the sci-fi genre could positively predict the inclination to judge extraordinary events as possible, and morally deviant actions as acceptable, suggesting that sci-fi would help people to overcome their narrow imagination and rigid perspective. When people think broadly and flexibly, they will be more fluent in switching their perspectives and attention, consider various aspects of an idea or events, and engage in high-order conceptualization, which are linked to abstract construal (Pyone and Isen, 2011; Mrkva et al., 2018; Chan and Wang, 2019). Thus, we hypothesized that:

> **H2:** Sci-fi engagement is positively associated with abstract construal.

When adopting an abstract mindset, people are inclined to engage in global processing and turn to the big picture of an event or object, which makes the superordinate goals more salient, and the contextual factors more inessential. Thus, abstract construal may engender a broad and high-order categorization, which also pertains to the judgment and evaluation of social targets, including the self (McCrea et al., 2012). Hence, it is possible that people with more abstract construal are more likely to categorize people all over the world as one, and themselves as members of the superordinate social group. In a similar vein, construal level can yield favorable outcomes for intergroup attitudes and relations. For instance, people with abstract (vs. concrete) construal would perceive greater similarities among people of different social categories, exhibit higher perspective-taking across groups, and are more motivated to help those in need, even if they are socially stigmatized (Levy et al., 2002). Additionally, abstract (vs. concrete) construal may serve to reduce intergroup prejudice (Luguri et al., 2012), promote moral inclusion (Mentovich et al., 2016), and is associated with preference for cooperation rather than competition in the conflict management context (Mukherjee and Upadhyay, 2019). Through broadening people's attention to the gestalt wholes, abstract construal also promotes decisions to maximize joint outcomes of the collective unit, regardless of the beneficiary (Stillman et al., 2018). Thus, we hypothesized that:

> **H3:** Abstract construal is positively associated with IWAH.

> **H4:** Abstract construal mediates the positive relationship between sci-fi engagement and IWAH.

The moderating role of actively open-minded thinking

People may sometimes find themselves incapable of transporting into the fictional worlds or unwilling to accept the deviant moral values conveyed by the fictional works (Black and Barnes, 2017). Indeed, sci-fi, as a tool of thought experiment, may carry knowledge, beliefs, and even values that inevitably contradict and challenge people's existing mental schema, causing cognitive dissonance. In this regard, we proposed AOT as a boundary condition for the relationship between sci-fi engagement, abstract construal, and IWAH.

As a dispositional cognitive style, AOT refers to a tendency and an epistemic motivation to seek out and consider new, though potentially threatening evidence, opinions, beliefs, and values (Price et al., 2015; Kahan and Corbin, 2016). People with high AOT are motivated to collect information to prevent subconscious bias from their pre-existing standpoints (Haran

et al., 2013; Mellers et al., 2015), tend to think rationally and reflectively, and will seriously consider revising their own beliefs by fairly weighing on the alternative information source (Yilmaz and Saribay, 2017; Janssen et al., 2020). On the contrary, people with low AOT tend to defend their pre-existing beliefs, and spare little effort and time in processing the evidence or opinions that contract with their owns. Empirical studies have suggested that AOT may reduce myside bias in reasoning and judgement. Specifically, compared to close-minded people, open-minded people are less influenced by their pre-existing beliefs when evaluating the quality of the arguments (Stanovich and West, 1997), exhibit less hostility towards the counterarguments against their own opinion (Stanovich and West, 2008), and respond in a more conciliative fashion to peer disagreement (Beebe and Matheson, 2021). For this reason, AOT is thought to be a qualified antidote to the epistemic or ideological rejection to complex and controversial science. For instance, Sinatra et al. (2003) found that, compared to learners with low AOT, those who score high in AOT report greater understanding of evolution theory, and an inconclusive and changing scientific belief. Stenhouse et al. (2018) also found that people with higher AOT are more likely to adopt the belief of human-caused climate change, regardless of their political ideology.

Considering the nature of AOT, it may function as an imaginative lubricant that facilitates people to adopt a more open mindset when engaging with sci-fi, a genre that typically employs hyperbole to express certain scientific beliefs or moral values in counterfactual story settings, and emphasizes the changeable facet of the world. Specifically, people with high AOT will find themselves more involved in and ponder over the fictious issues concerning the collective fate of human community (e.g., alien invasion, apocalypse, robots taking over the world), even though there is little chance that these events might become reality. In contrast, people with low AOT will treat the plausibly impossible events as an epistemic threat to their ingrained belief of the world's being just, orderly, and stable (Lerner and Miller, 1978), and thus, may resist to transform their vicarious experiences in sci-fi into real-world concerns and intentions, inhibiting the formation of IWAH. Supporting this argument, Feinberg and Willer (2011) found that people exhibited more global-warming skepticism and less willingness to reduce carbon footprint when they were exposed to a dire message that conveys apocalyptic imaginaries of global warming. Thus, we hypothesized that:

H5: AOT positively moderates the effect of sci-fi engagement on IWAH, such that the direct effect of sci-fi engagement on IWAH will be stronger for people with high AOT.

Likewise, people with high AOT will actively seek out and consider for the counterfactual situations or even deviant moral values embedded in sci-fi prototypes, and be more ready

and open to categorize them into their existing intellectual, cognitive, and moral structures, which may boost the effect of sci-fi engagement on a broad mind, namely, abstract construal. However, people with low AOT may consciously avoid to engage in the complex, controversial, and challenging concepts in sci-fi to reduce cognitive load and epistemic conflicts, and would only focus on the details that fall into their expectations or pre-existing beliefs. Thus, the effect of sci-fi engagement on abstract construal will be weaker for those with lower AOT.

H6: AOT positively moderates the effect of sci-fi engagement on abstract construal, such that the effect of sci-fi engagement on abstract construal will be stronger for people with high AOT.

H7: AOT positively moderates the indirect effect of sci-fi engagement on IWAH via abstract construal, such that the indirect effect of sci-fi engagement on IWAH via abstract construal will be stronger for people with high AOT.

The research model is presented in **Figure 1**.

Materials and methods

Participants

Participants were recruited using the paid sampling service provided by *Wenjuanxing*[1], a professional online survey company in mainland China. There are over 2.9 million registered respondents with diverse demographic backgrounds in the sampling pool of *Wenjuanxing*. A considerable number of previous studies have employed this sampling strategy to investigate various social and psychological issues (e.g., Zheng and Zheng, 2014; Ning et al., 2020). The online questionnaire was distributed and collected from January 27 to February 5, 2022. The data collection protocol was approved by the academic committee of the authors' affiliated institution. Participants provided voluntary informed consent before they start the survey. A total number of 594 participants completed the survey, while 24 out of them failed to pass the attention check, resulting in the final sample size of 570. **Table 1** presents the sample characteristics.

Measures

All scales involved in the current study were originally developed in English, and translated into Chinese following a rigorous translation-backtranslation procedure.

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1 www.sojump.com
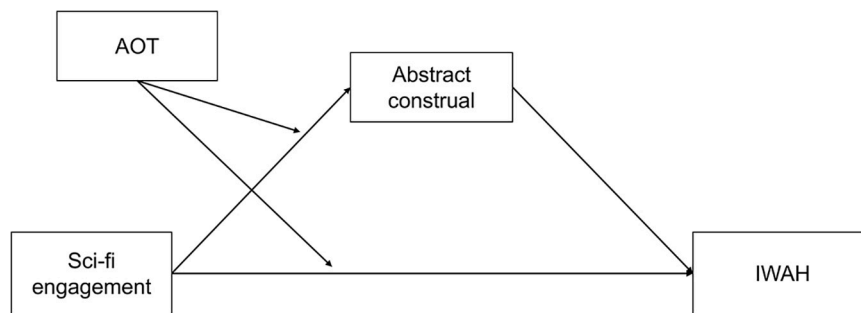
FIGURE 1

The proposed research model. IWAH, Identification with all humanity; AOT, Actively open-minded thinking.

Identification with all humanity

The measurement for IWAH was adopted from the 9-item scale developed by McFarland et al. (2012). The original scale assessed people's identification at three levels: local community, country, and humanity. Given the interest of the current study, we only kept the humanity level as previous studies did (e.g., Sparkman and Hamer, 2020). Sample items include, "How close do you feel to people all over the world," and "When they are in need, how much do you want to help people all over the world." Participants were asked to rate on a 5-point Likert scale from 1 (not at all) to 5 (very much). Confirmatory factor analysis (CFA) indicated that one-factor model fit with the current data

satisfactorily ($\chi^2 = 122.342$, $df = 27$, $\chi^2/df = 4.531$, CFI = 0.943, TLI = 0.923, RMSEA = 0.079, SRMR = 0.041), which is consistent with a previous study conducted in China (Deng, 2021). Thus, we averaged the 9 items to index people's identification with all humanity, and the reliability was satisfactory (Cronbach's $\alpha = 0.86$).

Abstract construal

The 25-item Behavioral Identification Form (BIF; Vallacher and Wegner, 1989) was adopted to measure chronic abstract construal. Participants were asked to choose between two options to describe 25 activities either in terms of concrete (coded as 0), or abstract manner (coded as 1). For instance, participants can choose either "putting a key in the lock" (concrete construal) or "securing the house" (abstract construal) to indicate their preference to describe "locking a door." CFA showed that the model fit was satisfactory ($\chi^2 = 508.927$, $df = 275$, $\chi^2/df = 1.851$, CFI = 0.936, TLI = 0.930, RMSEA = 0.039, SRMR = 0.038). The reliability of the scale was assessed through Kuder–Richardson Formula 20 (KR-20), which is equivalent to Cronbach's alpha for dichotomously scored items (Kuder and Richardson, 1937). The KR-20 coefficient of 0.90 indicated a good reliability. Responses for each item were summed up to form the total BIF score, with higher score indicating more abstract construal.

Sci-fi engagement

Sci-fi engagement was measured through the 12-item Science Fiction Hobbyism Scale developed by Koverola et al. (2020), reflecting people's consumption of, preference for, familiarity with, and mental involvement in sci-fi genre in general. Participants were first provided with the following brief definition of sci-fi for the current study: "Science fiction refers to a specific genre of literature, movies, televisions, games, and comics that portrays alternative worlds or extraordinary events based on the logic of deducible scientific discoveries and technological development. Typical themes or elements of sci-fi genre may include space exploration, futuristic technology,

TABLE 1 Sample profile (*N* = 570).

Variables	Distribution	Frequency	Percent (%)
Gender	Male	258	45.3
	Female	312	54.7
Age	18~25	82	14.4
	26~30	208	36.5
	31~35	158	27.7
	36~40	67	11.8
	41~45	21	3.7
	>45	34	6.0
Education level	Middle school or lower	6	1.1
	High school	15	2.6
	College	62	10.9
	Bachelor's	441	77.4
	Master's or higher	46	8.1
Monthly income	0~1000 RMB	14	2.5
	1001~3000 RMB	69	12.1
	3001~6000 RMB	127	22.3
	6001~10000 RMB	195	34.2
	10001~15000 RMB	116	20.4
	More than 15000 RMB	49	8.6
Overseas experiences	Yes	142	24.9
	No	428	75.1

TABLE 2 Measurement model comparison.

	χ^2	df	χ^2/df	CFI	TLI	RMSEA	SRMR
Four-factor model	1761.671	1028	1.714	0.906	0.901	0.035	0.048
Three-factor model 1[a]	2135.990	1031	2.072	0.859	0.852	0.043	0.053
Three-factor model 2[b]	2203.529	1031	2.137	0.850	0.843	0.045	0.058
Three-factor model 3[c]	3247.613	1031	3.150	0.717	0.703	0.061	0.088
Two-factor model [d]	3680.763	1033	3.563	0.662	0.646	0.067	0.093
One-factor model [e]	5037.302	1034	4.872	0.489	0.466	0.082	0.108

N = 570. χ^2, chi-square discrepancy; df, degrees of freedom; CFI, comparative fit index; TLI, Tucker–Lewis index; RMSEA, root mean square error of approximation; SRMR, standardized root mean square residual.
[a] Actively open-minded thinking and sci-fi engagement were combined into one factor.
[b] Abstract construal and actively open-minded thinking were combined into one factor.
[c] Abstract construal and sci-fi engagement were combined into one factor.
[d] Abstract construal, actively open-minded thinking, and sci-fi engagement were combined into one factor.
[e] Abstract construal, actively open-minded thinking, sci-fi engagement, and identification with all humanity were combined into one factor.

time and space travel, posthuman (e.g., superman, robots, aliens, human cloning, cyborg), and ecological crises (e.g., virus, apocalypse, energy shortage)." Next, they were asked to complete the items on a 7-point Likert scale from 1 (strongly disagree) to 7 (strongly agree). Sample items were: "I have spent a lot of time on sci-fi movies, literature, games, TV shows and/or comics," and "I often think about what machines are going to be like in the future." Though the reliability of the original scale was good (Cronbach's α = 0.90), CFA indicated that the scale did not fit our data satisfactorily (χ^2 = 694.858, df = 54, χ^2/df = 12.867, CFI = 0.806, TLI = 0.762, RMSEA = 0.144, SRMR = 0.074). Thus, we considered omitting some items to improve the construct validity. Following the guide of previous studies (e.g., Voss et al., 2003; Fish et al., 2010), we iterated the process of deleting one item at one time based on factor loadings or recommendation of modification indices (MIs) and re-estimating the measurement model until the model fit was acceptable. One item (i.e., "For me, science fiction is an interesting topic") was firstly excluded due to low factor loading (<0.5), and three items (i.e., "I have actively participated in conventions and gatherings related to science fiction," "I try to keep up to date on technological and scientific advances," and "I often think about things related to artificial intelligence") were then dropped based on the recommendation of MIs, which suggested the possibility of item redundancy. The removal of the four items resulted in an acceptable model fit (χ^2 = 125.069, df = 20, χ^2/df = 6.253, CFI = 0.936, TLI = 0.910, RMSEA = 0.096, SRMR = 0.042). Finally, the retained 8 items were averaged to index sci-fi engagement, and the reliability was good (Cronbach's α = 0.86).

Actively open-minded thinking

We adopted the 7-item scale used by Haran et al. (2013), Mellers et al. (2015) to assess AOT. Sample items are: "People should take into consideration evidence that goes against their beliefs," and "One should disregard evidence that conflicts with one's established beliefs (reverse coded)." Participants responded on a scale from 1 (completely disagree) to 7

(completely agree). Though the reliability of this measure for the current sample is acceptable (Cronbach's α = 0.61) and comparable to previous studies such as Kahan and Corbin (2016), Svedholm-Häkkinen and Lindeman (2018), both of which report α = 0.61 for this measure, CFA indicated that the initial scale did not fit well with our data (χ^2 = 136.237, df = 14, χ^2/df = 9.731, CFI = 0.775, TLI = 0.663, RMSEA = 0.124, SRMR = 0.077). However, the removal of two items with factor loadings below 0.5 (i.e., "People should take into consideration evidence that goes against their beliefs," "People should revise their beliefs in response to new information or evidence") could simultaneously increase model fit (χ^2 = 16.895, df = 5, χ^2/df = 3.379, CFI = 0.972, TLI = 0.945, RMSEA = 0.065, SRMR = 0.025) and reliability (Cronbach's α = 0.66). Thus, the retained five items were averaged to index AOT after reverse coding.

Control variables

Gender was assessed as a dichotomous variable (female = 0, male = 1; 45.3% males) and age as a continuous variable (M = 31.86, SD = 7.41). Education level (middle school or lower = 1, high school = 2, college = 3, bachelor's = 4, master's or higher = 5; Median = 4, or Bachelor's degree) and monthly income (0∼1000 RMB = 1, 1001∼3000 RMB = 2, 3001∼6000 RMB = 3, 6001∼10000 RMB = 4, 10001∼15000 RMB = 5, More than 15000 RMB = 6; Median = 4, or 6,001∼10,000

TABLE 3 Descriptive statistics and correlations of variables.

Variable	M	SD	1	2	3	4
(1) IWAH	3.37	0.69	–			
(2) Abstract construal	16.18	6.30	0.21**	–		
(3) Sci-fi engagement	4.86	1.04	0.45**	0.23**	–	
(4) AOT	4.82	0.98	−0.12**	−0.04	−0.13**	–

**p < 0.01; IWAH, Identification with all humanity; AOT, Actively open-minded thinking; M, Mean; SD, Standard deviation.

TABLE 4 Testing the mediation effect of abstract construal between sci-fi engagement and identification with all humanity (IWAH).

Predictors	Model 1 (IWAH)		Model 2 (Abstract construal)		Model 3 (IWAH)	
	β	t	β	t	β	t
Gender	−0.09	−2.44*	0.04	0.92	−0.10	−2.57*
Age	−0.01	−0.13	0.02	0.52	−0.01	−0.20
Education	−0.06	−1.56	−0.05	−1.06	−0.06	−1.44
Income	0.01	0.16	0.11	2.33*	−0.01	−0.12
Overseas experiences	0.09	2.22*	0.03	0.59	0.08	2.17*
Sci-fi engagement	0.45	11.27***	0.19	4.33***	0.43	10.64***
Abstract construal					0.11	2.86**
R^2	0.22		0.07		0.23	
F	26.19***		6.93***		23.91***	

***$p < 0.001$; **$p < 0.01$; *$p < 0.05$. IWAH, Identification with all humanity.
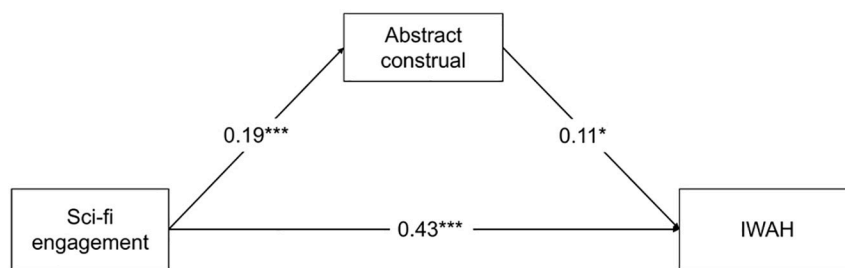
FIGURE 2
Results of the mediation analysis. ***$p < 0.001$, *$p < 0.05$; IWAH, Identification with all humanity.

TABLE 5 Testing the moderated mediation effect of actively open-minded thinking (AOT).

Predictors	Model 1 (Abstract construal)		Model 2 (IWAH)	
	β	t	β	t
Gender	0.04	0.84	−0.09	−2.49*
Age	0.01	0.34	−0.01	−0.18
Education	−0.05	−1.07	−0.05	−1.39
Income	0.10	2.15*	0.01	0.12
Overseas experiences	0.02	0.51	0.08	2.08*
Sci-fi engagement	0.19	4.34***	0.42	10.33***
AOT	−0.03	−0.71	−0.03	−0.88
Sci-fi engagement × AOT	0.10	2.44*	−0.09	−2.37*
Abstract construal			0.12	3.10**
R^2	0.08		0.24	
F	5.98***		19.67***	

***$p < 0.001$, **$p < 0.01$, *$p < 0.05$. IWAH, Identification with all humanity; AOT, Actively open-minded thinking.

RMB) were both assessed as ordinal variables. Additionally, considering the international personal contact would impact IWAH (Römpke et al., 2019), we also controlled for overseas experiences by asking participants to indicate whether they have had experiences of living, studying, or working abroad (0 = No, 1 = Yes; 24.9% Yes).

Statistical analyses

To examine common method bias, an exploratory factor analysis (EFA) was conducted using SPSS 25.0, and a series of CFAs were conducted using Mplus 8.3. Then, we used SPSS 25.0 to calculate the means, and standard deviations of the variables, and examined their inter-correlations. After all the variables
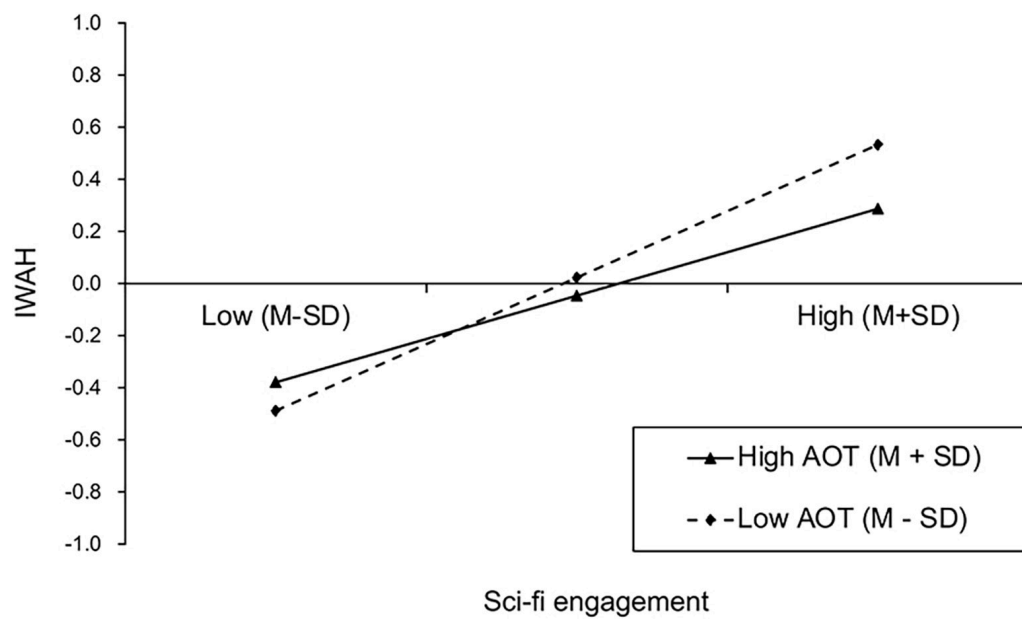
FIGURE 3
Interaction effect of sci-fi engagement and AOT on IWAH. IWAH, Identification with all humanity; AOT, Actively open-minded thinking; M, Mean; SD, Standard deviation.
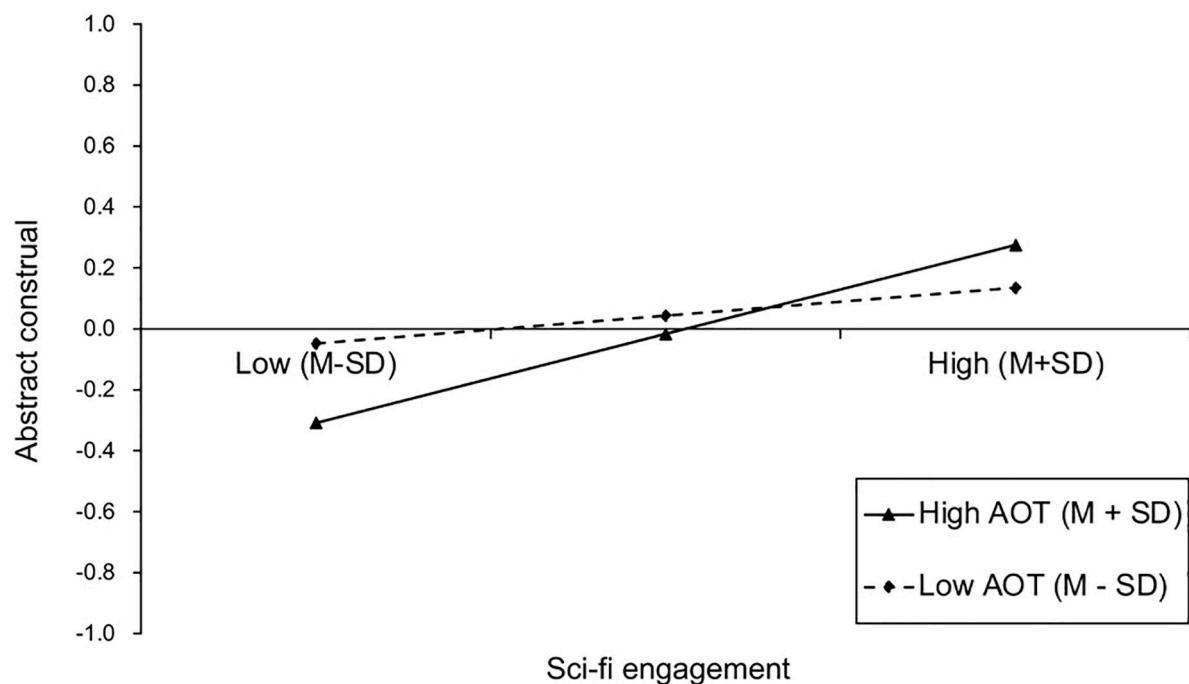
FIGURE 4
Interaction effect of sci-fi engagement and AOT on abstract construal. AOT, Actively open-minded thinking; M, Mean; SD, Standard deviation.

were mean-centered, we leveraged the PROCESS version 3.5 to test the research hypotheses. The PROCESS Model 4 was employed to assess the mediating role of abstract construal, while the Model 8 was employed to assess the moderating role of AOT in the direct and indirect paths. The mediation effect and moderated mediation effects were tested with 5,000 bootstrap
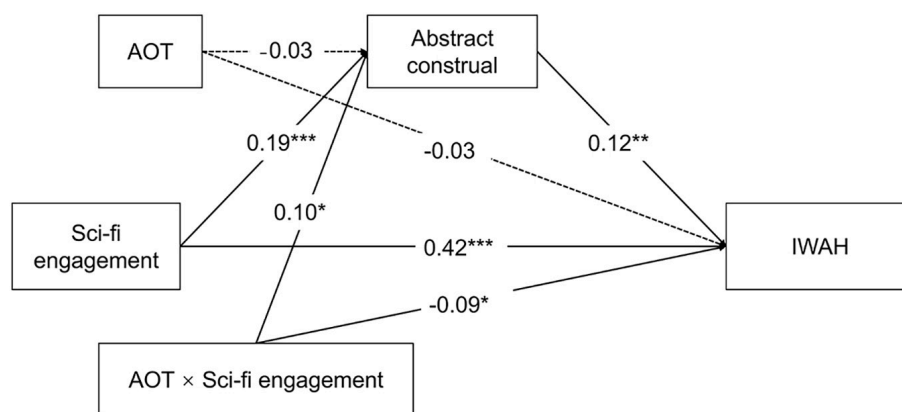
FIGURE 5
Results of the moderated mediation analysis. ***p < 0.001, **p < 0.01, *p < 0.05; IWAH, Identification with all humanity; AOT, Actively open-minded thinking.

samples (Hayes and Scharkow, 2013), and were established if the 95% bias-corrected confidence interval did not include zero.

Results

Preliminary analysis

To avoid the common method bias caused by the self-report questionnaire, participants were informed of the confidentiality principle and answered the questions anonymously, including the reversed items. Additionally, we conducted a series of statistical analyses to test the common method bias. First, we relied on Harman's one-factor method, which assumes that a common method bias is present if only one factor was extracted, or a single factor explains over 50% of the total variance in the factor analysis. (Podsakoff and Organ, 1986; Podsakoff et al., 2003). We conducted an un-rotated EFA with all scale items entered. The EFA extracted 9 factors with an eigenvalue greater than one, and the first factor explained 19.78% of the overall variance, less than the critical value of 50%, indicating the common method was acceptable.

We conducted a series of CFAs to further rule out the common method bias. Model fit indices demonstrated that the four-factor measurement model (i.e., 9-item IWAH, 25-item abstract construal, 8-item sci-fi engagement, and 5-item AOT) yielded an acceptable model fit, while the alternative models, including the one-factor model, yielded poor model fits (see Table 2). Therefore, the common method was not a problem in this study (Podsakoff et al., 2012).

Table 3 displays the means, and standard deviations of the variables, and their inter-correlations. The results showed that sci-fi engagement positively correlated with IWAH, and abstract construal. Sci-fi engagement positively correlated with abstract

construal. Contrarily, AOT negatively correlated with IWAH and sci-fi engagement.

Testing the mediation model

We employed PROCESS Model 4 to assess the mediating role of abstract construal between sci-fi engagement and IWAH. Gender, age, education level, monthly income and overseas experience were entered as the covariates in the analyses. Table 4 presents the results of regression tests. The results indicated that sci-fi engagement was positively associated with IWAH (β = 0.45, SE = 0.04, t = 11.27, p < 0.001). Thus, H1 was supported. Consistent with H2 and H3, sci-fi engagement was positively associated with abstract construal (β = 0.19, SE = 0.04, t = 4.33, p < 0.001), and abstract construal was positively associated with IWAH (β = 0.11, SE = 0.04, t = 2.86, p < 0.01). More importantly, abstract construal positively mediated the effect of sci-fi engagement on IWAH (β = 0.02, SE = 0.01, 95%CI [0.007, 0.043]), supporting H4. Additionally, after abstract construal was incorporated as mediating variable into the model, the positive predictive effect of sci-fi engagement on IWAH was still significant (β = 0.43, SE = 0.04, t = 10.64, p < 0.001). Thus, abstract construal partially mediated the positive effect of sci-fi engagement on IWAH, and the mediation effect accounted for 4.44% (0.02/0.45) of the total effect. Figure 2 displays the results of the mediation analysis.

The moderating role of actively open-minded thinking

The PROCESS Model 8 was used to test the moderating role of AOT in the direct association and indirect association

via abstract construal between sci-fi engagement and IWAH. Gender, age, education level, monthly income and overseas experience were also entered as the covariates. **Table 5** displays the results of the regression tests. It was found that the interaction of sci-fi engagement with AOT negatively predicted IWAH (β = −0.09, SE = 0.04, t = −2.37, p < 0.05), but positively predicted abstract construal (β = 0.10, SE = 0.04, t = 2.44, p < 0.05). The interaction effect of sci-fi engagement with AOT on IWAH was plotted in **Figure 3**. The results of simple slope analysis revealed that, the effect of sci-fi engagement on IWAH was stronger for people with low AOT ($\beta_{low-AOT}$ = 0.51, SE = 0.05, t = 9.38, p < 0.001), compared to those with high AOT ($\beta_{high-AOT}$ = 0.33, SE = 0.06, t = 5.90, p < 0.001). Thus, H5 was not supported. The interaction effect of sci-fi engagement with AOT on abstract construal was plotted in **Figure 4**. The results of simple slope analysis revealed that, the positive effect of sci-fi engagement on abstract construal was significant for people with high AOT ($\beta_{high-AOT}$ = 0.29, SE = 0.06, t = 4.80, p < 0.001), but was nonsignificant for people with low AOT ($\beta_{low-AOT}$ = 0.09, SE = 0.06, t = 1.53, p = 0.126). Thus, H6 was supported. Furthermore, the indirect effect of sci-fi engagement on IWAH via abstract construal was conditional on AOT (β = 0.01, SE = 0.01, 95%CI [0.002, 0.029]). Specifically, the indirect effect via abstract construal was significant for people with high AOT ($\beta_{high-AOT}$ = 0.03, SE = 0.01, 95%CI [0.012, 0.071]), but was nonsignificant for people with low AOT ($\beta_{low-AOT}$ = 0.01, SE = 0.01, 95%CI [−0.006, 0.032]). Thus, H7 was supported. **Figure 5** displays the results of the moderated mediation analysis.

Discussion

This study proposed a moderated mediation model to assess to the effect of sci-fi engagement on IWAH, as well as the mediating role of abstract construal and the moderating role of AOT. Supporting our hypotheses, higher sci-fi engagement is associated with increased IWAH both directly, and indirectly via abstract construal. Further, AOT can facilitate the positive effect of sci-fi engagement on abstract construal, as well as the indirect relationship between sci-fi engagement on IWAH via abstract construal. However, inconsistent with our hypothesis, the positive direct effect of sci-fi engagement on IWAH was attenuated, rather than strengthened, with the increase of AOT. Two points of the results need further discussions.

Firstly, the mediation effect of abstract construal only accounted for approximately 4.44% of the total effect, which may exhibit somewhat low explanatory power and need to be cautiously interpreted. However, we argue that this indirect effect is worthy of considering, since not all sci-fi works directly portray or explicitly convey concerns for human community

(e.g., *The Time Traveler's Wife* [2009]), and abstract construal may help to explain a more stable and universal mechanism across all sci-fi works, since all sci-fi tends to alienate people from reality. Additionally, the indirect effect via abstract construal might be less susceptible to political orientation, national identity, or cultural value orientation, since it shapes people's way of construing the world through dealing with the cognitive level, which may cause less direct psychological reactance and ideological rejection to the persuasive attempts of sci-fi. Further, we identified a boundary condition that may boost the effect of sci-fi engagement on IWAH via abstract construal: AOT. That is, this mediation effect may be enlarged for people who tend to consider for and elaborate counter-belief events and values, or when people are more epistemically open-minded in their sci-fi engagement.

Secondly, AOT intriguingly attenuated, rather than magnified, the direct association between sci-fi engagement and IWAH, which suggests the opposite direction against our hypothesis. We explained this unexpected and counterintuitive result by revisiting the nature of AOT, and its possible alternative effects on people's mindset in sci-fi engagement. Theoretically, AOT signals the individual difference in the openness to the counter-belief values and opinions, while human identity, as an inclusive identity, salient by the sci-fi narratives does not violate people's existing identities, and most people would endorse, rather than oppose to, the humanitarian values. In other words, sci-fi may increase people's IWAH by highlighting their existing identification, and amplifying their inherent concern for human, rather than persuading them to adjust their values and beliefs towards ones that contradict with their owns. This would explain why the positive moderating effect of AOT in the direct association was not observed. Further, the core of AOT is rational and reflective thinking (Baron, 2019; Briki, 2022). It actually signals *a willingness to consider* a variety of intellectual perspectives (Price et al., 2015, p. 1488), rather than a tendency to be directly impacted or persuaded by whatever they see and hear (Stenhouse et al., 2018). People with high AOT tend to evaluate the merits of the information, while people with low AOT are likely to use their heuristics (i.e., mental shortcuts) in information processing (Campitelli and Gerrans, 2014). Thus, compared to people with high AOT, people with low AOT (those who score high in items like "intuition is the best guide in making decisions") would be more responsive to the emotional appeal (e.g., fear, hope, compassion) in sci-fi narratives that attempt to raise people's concern for humanity, and rely more on their direct media experiences, rather than rational evaluation of the possibilities of the counterfactual events, in their judgment and decision making. This would help explain why the direct persuasive effect of sci-fi would be stronger for people with low AOT. Additionally, AOT might also be associated with selective attention to the sci-fi. Previous studies found evidence that people with high AOT also score high in need for cognition, namely, the interest and

enjoyment in dealing with the abstract, and complex ideas (Haran et al., 2013). Thus, compared to people with low AOT, people with high AOT (i.e., those who enjoy in thinking) would be more motivated by their epistemic needs, and might allocate more cognitive resources to seek for and elaborate intellectual elements such and scientific knowledge and technological logics bolstering the sci-fi narratives, rather than the non-intellectual elements such as the plots, characters, or the affective appeal of the sci-fi stories. Thus, it might be not that surprising that AOT, an epistemic motivation, may discount the direct persuasiveness of sci-fi, while exaggerating the indirect effect via abstract construal. The paradoxical role of AOT in moderating the direct and indirect interestingly challenges our common wisdom, which might be informative and inspiring to observe how people negotiate their complex media experiences in sci-fi engagement. However, more researches are needed to further illustrate and reconcile the paradoxical role of AOT.

Theoretical implications

First and foremost, this study contributes to the IWAH literature by revealing its possible pop-cultural and cognitive origins. During the period of this study, the human society seem to be more turbulent than the past decades. Global crises such as COVID-19, and the Russia-Ukraine conflicts once again called on our attention to human solidarity and mutual care across subordinate social groups. While it is important to investigate the social implications of IWAH, it is also critical to know how individuals' IWAH could be cultivated or enlarged, which has received surprisingly less attention (Loy and Reese, 2019; McFarland et al., 2019). To this end, we theorized and examined sci-fi engagement and abstract construal as antecedents of IWAH and provided empirical evidence. The findings implied that individuals' IWAH may vary from their daily pop-cultural engagement and cognitive style in addition to previously identified variables such as personality and moral values (McFarland et al., 2012; Hamer et al., 2019), suggesting new a direction for cultivating IWAH. Of note, we should caution drawing causal conclusion of this trend, since the cross-sectional evidence only gives a first hint. It is also possible that people with high IWAH tend to adopt an abstract mindset, and are inclined to engage in sci-fi frequently. To shed light on this possibility, we conducted a series of post-hoc analyses with IWAH as the independent variable and sci-fi engagement as the dependent variable. Though supplementary analyses suggested the possibility of the reverse relationships, the predictive effect of IWAH on sci-fi engagement was weaker than that of sci-fi engagement on IWAH, and the indirect effect of abstract construal was slightly weaker in the reverse model (IWAH → abstract construal → sci-fi engagement) compared to that in the original model (sci-fi engagement → abstract construal → IWAH) when controlling for age, gender, education level, monthly income, and overseas experiences (see **Supplementary Materials**). Future studies may investigate the reciprocal relationships between the variables.

Secondly, this study contributes to the meaningful entertainment studies, and highlights the uniqueness of sci-fi genre. Apart from hedonic values, there is a trend suggesting that popular media content can facilitate self-transcendence and yield pro-social outcomes (Janicke and Oliver, 2017; Oliver et al., 2018; Clayton et al., 2021). Echoing this trend, this study particularly investigated the potential social implications of sci-fi, a genre that has gained worldwide popularity, and provide preliminary evidence on how it correlates with people's tendency to transcend their subordinate social identities, thereby highlighting the pro-social aspects of entertainment narratives (Papa and Singhal, 2009; Frank and Falzone, 2021). Beyond previous researches, we conceptualized sci-fi as a gerne of humanity, and extended the scope of narrative persuasion literature from the effect of specific storytelling to the metanarrative of a genre in general, and from immediate effect to accumulated effect. Consistent with Appel (2008),we contributed to the evidence that the metanarrative of a genre is associated with the cultivation of genre-consistent meta-beliefs and meta-worldviews. Furthermore, we contribute to the conceptualization of sci-fi as "a genre of cognitive estrangement" (Suvin, 1972) by revealing its association with abstract construal, a cognitive tendency which lead people to adopt self-distancing perspectives and focus on the big picture. Indeed, Carney (2017) has also noticed the potential of sci-fi in eliciting abstract construal, and put forward the propositions that readers may exhibit high-order expectation (i.e., purposiveness, moral engagement, formal speech) related to abstract construal for sci-fi works. However, he treated abstract construal as an in-text mindset during exposure, and did not test his propositions empirically. Extending his propositions, our results indicated that abstract construal may also be viewed as a trait-like cognitive style that correlates with accumulated sci-fi engagement. If accumulated sci-fi engagement can lead to chronic abstract construal, we may expect a broader range of the real-world implications of sci-fi, since abstract construal is also related to various favorable outcomes such as self-control, perspective taking, and green consumption (Fujita and Carnevale, 2012; Reczek et al., 2018; Holt et al., 2021). Thus, the indirect mechanism via abstract construal may also extend the research scope of meaningful entertainment from the cognitive perspective.

Thirdly, we revealed the complex psychological mechanisms underlying sci-fi engagement. We found a direct association between sci-fi engagement and IWAH, building on the theoretical tenets of narrative persuasion, which emphasizes the emotional, affective, and experiential aspects of fiction narrative. An indirect association via abstract construal was also supported, building on the cognitive-literary approach and CLT, which emphasizes the cognitive, intellectual, and epistemic

aspects of fiction narrative. Thus, it might be not that surprising that AOT, a cognitive style and an epistemic motivation that encourages people to rely less on their direct experience and more on information seeking and broad consideration, may inhibit the former approach but facilitate the latter approach. This unexpected finding might imply the dual nature of sci-fi genre as both an experiential and epistemic resource for people to make sense of the world and adjust their relationships with the imagined others, which is unique in sci-fi narratives. In this regard, we also suggest that narrative fiction may also function to revise schema, expand worldview, and alter cognitive style, in addition to its function of creating immediate emotional experiences, and satisfying psychological and emotional needs for autonomy, competence, and connectedness as acknowledged by previous studies (Tan, 2008; Slater et al., 2014; Silver and Slater, 2019).

Practical implications

The association between sci-fi engagement and IWAH suggested that people who frequently engage in sci-fi will also hold stronger IWAH. Thus, sci-fi fandom should be regarded as a targeted group for the mobilization of global-oriented actions, since they may exhibit more global responsibility and less reactance. For instance, international non-government organizations (e.g., International Committee of the Red Cross) may consider mobilizing the sci-fi community to devote time, money, or effort to global issues (e.g., global poverty); policy propagandists may consider mobilizing them to help disseminate global-oriented policies (e.g., pro-environmental policies, international aid policies, anti-war policies). Considering the potential of sci-fi engagement in cultivating IWAH, we may also expect sci-fi to be a less costly, but widespread and efficient method for global citizenship education. If the causal effect is demonstrated by future researches, cultural policy makers, schools of all levels, media stakeholders, and online commercial platforms should work together to encourage people to consume or create sci-fi works in all media forms, especially during the period when we particularly need to unite people all over the world.

The mediating role of abstract construal in the relationship between sci-fi engagement and IWAH also provides implications for sci-fi creation and global-oriented persuasion. Specifically, writers, film makers, cartoonist, and game designers of sci-fi may consider setting their stories in the distant future, portraying scientific and technological elements that will largely broad the mind of people, and continuously exploring prototypes that will create novel media experiences, such that the effect of sci-fi on IWAH via abstract construal will be maximized. Additionally, considering the positive association between abstract construal and IWAH, we

recommend global-oriented persuasion (e.g., pro-environment persuasion, international donation persuasion) emphasizing the superordinate goal, long-term consequences, and desirability of the actions, which might help to elicit abstract mindset and make people feel connected to people beyond their close relationships.

The paradoxically moderating role of AOT may imply that the match between sci-fi style and personal cognitive style matters for raising IWAH. While some sci-fi works focus on the story lines and the affective aspect, which is known as soft sci-fi, others may weigh more on the scientific and technological elements, which is known as hard sci-fi. For people with high AOT (e.g., liberals), hard sci-fi might be more effective in raising their IWAH, whereas for people with low AOT (e.g., conservatives), soft sci-fi portraying human issues might be more effective to raise their IWAH (Price et al., 2015).

Limitations and future directions

First, the main limitation of this study is its correlational nature, which inhibited us from interpreting the causal relationship between sci-fi engagement, abstract construal, and IWAH, since the proposed relationship might be adverse or bidirectional, or an unconsidered variable caused all of them. Thus, future study may explore the effect of sci-fi engagement in experimental settings to establish the causal effect. For example, a line of studies has employed experimental design the test the effect of sci-fi exposure on acceptance of new technology, privacy concern, and political attitudes (Appel et al., 2016; Jones and Paris, 2018; Milne et al., 2021). It is also interesting to see whether exposure to sci-fi that portrays all humanity or simply displaying futuristic technology or outer space will elicit IWAH. To ascertain the temporal effect, future studies may employ follow-up design to determine the directionality of the proposed variables over time.

Second, this study was conducted in China with a non-randomized adult sample. Indeed, previous studies have found that, compared to people from western countries, Chinese people are more collectivistic, tend to adopt a holistic processing style, and exhibit higher interdependent self-construal (Hui et al., 1991; Nisbett et al., 2001; Li et al., 2006). Thus, the positive direct effect may be partially due to their way of construing the world and their selective attention to the collective narratives and community values in sci-fi narratives. To address this, future studies are encouraged to replicate the proposed model in other countries, especially in western cultures, and investigate that whether people all over the world interpret sci-fi in a shared manner. Additionally, the results should be cautiously generalized to other social groups, such as adolescents, who are excluded from the current study. Furthermore, random national sampling technique may be employed to strengthen the representativeness of the current sample.

Third, though we have identified abstract construal as a possible mediator, the proportion explained by it is relatively low. One possible reason is that the direct effect of sci-fi engagement on identity formation is so strong that it overwhelmed the indirect effect through the cognitive mechanism. Thus, future studies may employ experimental design to see whether the cognitive approach may be more salient for sci-fi narratives that do not explicitly convey the concern for all humanity, and instead purely display alternative world setting (e.g., outer space), and futuristic technologies. Also, more researches must explore alternative mediators between sci-fi engagement and IWAH from the emotional, social, and cognitive perspectives. For instance, scholars may consider global consciousness, perceived intergroup similarity, and cognitive complexity as mediators of sci-fi engagement and IWAH (Levy et al., 2002; Reysen and Katzarska-Miller, 2013; Hamer et al., 2019).

Last, the current study did not differentiate the effect of different subcategories and subthemes of sci-fi genre. Indeed, sci-fi pieces produced by different countries and social groups carry disparate visions of future worlds and aim to convey diverse values or ideologies. Some sci-fi narratives may exhibit optimistic future visions by portraying technological advancement, and human flourish, known as the utopian sci-fi, whereas others may convey strong pessimism by highlighting the disasters, totalitarian politics, as well as social stratification, known as the dystopian sci-fi. Future studies may investigate whether sci-fi narratives with different themes, emotion valence, and story structures may have different impacts on IWAH.

Conclusion

The present study proposed a moderated mediation model to test the effect of sci-fi engagement on IWAH, as well as the mediating role of abstract construal, and the moderating role of AOT. A direct association between sci-fi engagement and IWAH was revealed, and an indirect effect of sci-fi engagement and IWAH via abstract construal was also confirmed. The direct and indirect paths were both moderated by AOT. Specifically, for people with higher AOT, the direct effect of sci-fi engagement on IWAH was weaker, whereas the indirect path via abstract construal was stronger. This is the among the first studies addressing the relationship, mechanism, and boundary condition between sci-fi engagement and IWAH, which indicates the potential of sci-fi, as a worldwide pop-culture genre, in cultivating IWAH.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Ethics statement

The studies involving human participants were reviewed and approved by the Institutional Review Board of the Academic Committee of School of Journalism and Communication, Tsinghua University. The patients/participants provided their written informed consent to participate in this study.

Author contributions

FW conceived the idea, carried out the study design, collected and analyzed the data, and wrote the manuscript. MZ participated in conceptualization, results interpretation, and manuscript revision. ZZ acquired the funding, supervised the whole project, and participated in conceptualization, results interpretation, and manuscript revision. All authors contributed to the article and approved the final version.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Supplementary material

The Supplementary Material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fpsyg.2022.943069/full#supplementary-material

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Unpacking all-inclusive superordinate categories: Comparing correlates and consequences of global citizenship and human identities

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Previous research suggests that all-inclusive superordinate categories, such as "citizens of the world" and "humans," may represent different socio-psychological realities. Yet it remains unclear whether the use of different categories may account for different psychological processes and attitudinal or behavioral outcomes. Two studies extended previous research by comparing how these categories are cognitively represented, and their impact on intergroup helping from host communities toward migrants. In a correlational study, 168 nationals from 25 countries perceived the group of migrants as more prototypical of the superordinate category "citizens of the world" than their national group (relative outgroup prototypicality), whereas no differences in prototypicality occurred for the category "humans." Identification with "citizens of the world" was positively associated with a disposition to oppose helping migrants and to offer dependency-oriented help. However, identification with "humans" was positively associated with helping in general, and with offering dependency- and autonomy-oriented help; and negatively associated with opposition to helping. The experimental study manipulated the salience of "citizens of the world" vs. "humans" vs. control category, among 224 nationals from 36 countries. Results showed that the salience of "humans" (vs. "citizens of the world") triggered higher entitativity and essentialist perceptions, and dual-identity representations. No differences due to salience were found for representations of relative ingroup prototypicality or helping responses. Overall, these findings suggest that the interchangeable use of different labels is problematic, considering these might activate different representations, and thus, are likely to lead, in some circumstances, to different attitudinal or behavioral outcomes.

KEYWORDS

all-inclusive superordinate identities, global citizenship identification, human identification, intergroup helping, autonomy-oriented help

Introduction

> *Can humanity constitute an ingroup?* (Allport, 1954, p. 41-45)

Research on reducing intergroup conflict and improving intergroup relations has demonstrated the broad effectiveness of creating a sense of shared identity among people who originally conceived of themselves as members of different groups. For example, the main tenet of the common ingroup identity model (Gaertner and Dovidio, 2000) is that shifting the basis of categorization of "us vs. them" into a more inclusive "we" ameliorates intergroup tensions because it redirects the forces of ingroup favoritism to improve orientations toward others formerly perceived to be "them" (Gaertner and Dovidio, 2000; Gaertner et al., 2016). One implication of the robust evidence supporting this proposition is that *all-inclusive superordinate categories*—which encompass all human beings as a single group—may be uniquely effective for improving relations among diverse groups, because they create a sense of shared identity across multiple domains of difference (Barth et al., 2015). However, as Allport (1954) question about humanity implies and the current research investigates, the nature of an all-inclusive identity may influence the effectiveness of the common identity for improving intergroup relations. The present research examined whether and why alternative forms of all-inclusive identity might differ in effectiveness. We use the term 'all-inclusive' to refer to the highest level of identity abstraction (in categorical terms), which Allport (1954) specifies as the outer ring in his 'circles of inclusion' (Allport, 1954, p: 43), and not one related to a specified social context, such as national identity, or specific values or ideologies of inclusion. All-inclusive superordinate categories may be conceived as the broadest exemplar of recategorization into a common identity. Different constructs and categories have been proposed. Some focused on common humanity (e.g., *all humanity*, Barth et al., 2015), whereas others emphasized belongingness to a worldwide collection of people (e.g., *people all over the world*, McFarland et al., 2012; *world population*, Reese et al., 2016), or citizens (e.g., *citizens of the world*, ISSP, 2015; *global citizens*, Reysen and Katzarska-Miller, 2013). Overall, several positive impacts of identification with all-inclusive categories have been identified (e.g., increased prosocial behavior, McFarland et al., 2019; greater political solidarity from advantaged toward disadvantaged groups; Subašić et al., 2008). However, some detrimental effects have also been identified (e.g., weaker intentions to reduce global inequality; Reese et al., 2016). Recent discussions of these apparently inconsistent effects highlight the importance of considering the nature of these categories. Specifically, besides conveying shared identity, the specific meaning and cognitive representation of all-inclusive categories can vary, which can activate different processes and thus can have different intergroup consequences (Reysen and Katzarska-Miller, 2015; Reese et al., 2016; Carmona et al., 2020).

The main goal of the current research is to better understand how different all-inclusive superordinate categories may produce different effects and to illuminate the psychological processes that account for different outcomes. To do so we compared the categories *citizens of the world* and *humans*, considering their relationships to intergroup processes (Wenzel et al., 2016), cognitive representations (Gaertner et al., 2016), and impact on intergroup relations. We selected these two categories for comparison in the present work because they are frequently used in the largest cross-national surveys (e.g., EVS, 2020), as well as because they have attributes that may activate different psychological processes. For example, the category of *humans*, because it seems to activate more biological attributes (e.g., nature of the human species; appearance; need of bonding; Carmona et al., 2020), may influence perceptions of essentialism and motivate prosocial action toward others defined as human more than would the category of *citizens of the world*, which seems to activate more attitudinal attributes (e.g., multiculturalism; cosmopolitanism; Carmona et al., 2020, 2022).

According to the self-categorization theory (Turner et al., 1987), people cognitively represent ingroups, outgroups, or superordinate groups (i.e., groups inclusive of the ingroup and an outgroup) using category prototypes. These prototypes are composed of a fuzzy set of attributes that capture simultaneously perceived similarities within a particular group and differences between that group and other groups (Hogg and Smith, 2007). Different social groups have different prototypical content, which not only describes categories but also prescribes prototype-based attitudes and behaviors of group members (Turner and Reynolds, 2012).

The nature of superordinate categories may activate a variety of processes that can affect their impact. Ingroup projection is one such process. The ingroup projection model (Mummendey and Wenzel, 1999; Wenzel et al., 2007) focuses on the influence of relative ingroup prototypicality, which involves the tendency of people to use characteristics from their ingroups and familiar groups to define central, distinguishing characteristics of superordinate categories. The model proposes that when a superordinate category is salient and positively valued, members of a subgroup may "project" their ingroup's attributes onto the prototype of the superordinate group. This projection process leads to relative ingroup prototypicality, in which people see their group as relatively more representative of the superordinate group than the outgroup. Because the outgroup is then perceived as less prototypical and therefore less normative, it is less valued.

Indeed, relative ingroup prototypicality, because it promotes ingroup favoritism as well as outgroup derogation and hostility, can undermine the positive effects of common ingroup identities (Wenzel et al., 2016)—including all-inclusive superordinate identities. For instance, citizens from a high-income country perceived their ingroup as more prototypical of the *world population* than the outgroup of citizens of lower-income countries (Reese et al., 2012; referred to by those authors as "developed" and "developing" countries"). The greater relative

ingroup prototypicality was indirectly associated with less positive behavioral intentions toward the outgroup (Reese et al., 2012), along with weaker intentions to act against inequalities (Reese et al., 2016). Also, research on infrahumanization, which refers to beliefs that outgroup members possess fewer human characteristics than ingroup members, suggests that ingroup prototypicality may also be observed for human identity, as people tend to judge ingroup attributes as more human than those of the outgroup (Paladino and Vaes, 2009), and tend to create their concepts of "humanity" based on their impressions of their own group (Bilewicz and Bilewicz, 2012).

In the present research, we compared how the all-inclusive categories of *citizens of the world* and *humans* relate to relative ingroup prototypicality and to measures of intergroup helping (Studies 1 and 2) in a specific intergroup setting. We investigated how national citizens of a host country (ingroup) viewed and responded to migrants living in the same country (outgroup). We conceptualized national citizens as an advantaged group in numerical, economic, and social terms, in contrast to migrants who were conceived to be in a disadvantaged position in these terms. In Study 1, we examined this issue correlationally in terms of the strength of global citizenship identification (using the category *citizens of the world*) and human identification (using the category *humans*). In Study 2, we investigated this question experimentally in terms of the potentially different impacts of these forms of all-inclusive identification salient.

In both studies, we explored whether relative ingroup prototypicality would differ as a function of whether the category used was *citizens of the world* or *humans*. Ingroup projection is particularly likely to occur when a shared superordinate identity is made salient among members of a higher status group (Wenzel et al., 2007). Our participants were members of host communities, thus we expected relative ingroup prototypicality to occur in both studies. That is, we anticipated that participants would generally see their national ingroup's characteristics, compared to those of migrants, as more prototypical of the perceived characteristics of *citizens of the world* and *humans*. We further considered the possibility that different perceptions of relative ingroup prototypicality with respect to the superordinate category may emerge because of the specific content that people may associate with what it means to be a *citizen of the world* and what it means to be a *human*. Previous research (Carmona et al., 2020) suggested a distinction between global citizenship-oriented labels (e.g., *citizens of the world*), which evoke aspects that people share as members of a global political community of citizens (e.g., cosmopolitan views), and humanness-oriented labels, which mainly evoke aspects that people share as members of the human species (e.g., physical appearance). Nonetheless, considering the lack of evidence examining relative ingroup prototypicality for *citizens of the world*, we acknowledge the exploratory nature of our research in this regard.

Besides exploring the potential degree to which relative ingroup prototypicality may be involved for these two all-inclusive superordinate categories, we examined the role of *citizens of the*

world and *humans* on a particular type of intergroup helping—autonomy-oriented help (Studies 1 and 2). Autonomy-oriented help (e.g., providing the tools to solve a problem) is a form of assistance that is empowering because it fosters the capacity of others to achieve related goals independently in the future. Autonomy-oriented help contrasts with dependency-oriented help (e.g., providing the full solution to a problem), which involves assistance that establishes or reinforces the recipient's continued need to rely on the benefactor. In Study 2, we also investigated how the two all-inclusive categories, *citizens of the world* and *humans*, are cognitively represented in terms of perceptions of entitativity, essentialism, and group representations. The theoretical background for considering these aspects is elaborated in the introduction of the individual studies.

Social context

We focused our research on the context of migration because of the current practical and theoretical importance of this topic. Practically, international migration is occurring at an unprecedented pace, and it has generated considerable political and social controversy. In 2020, approximately 281 million people were living outside their country of origin, either by choice or by force (UN-United Nations, 2020), and face an increasingly hostile and polarized socio-political environment (Dempster and Hargrave, 2017; UNDP, 2020). Stronger restrictions to mobility are being put in place (e.g., physical walls at borders; surveillance control systems), and anti-immigration and xenophobic narratives are rising (Benedicto and Brunet, 2018; Bouron et al., 2021). A recent extreme example of these restrictions was the criminalization of helping migrants; in certain countries, one could face criminal charges for rescuing people at sea or offering food toward people on the move (AI-Amnesty International, 2019, 2020). Theoretically, several core social psychological processes (e.g., threat, discrimination) are prevalent and impactful in how host communities deal with migration (Verkuyten, 2018). A more comprehensive psychological understanding can offer insights that are valuable for achieving one of the United Nation's Global Goals for 2030—*to empower and promote social, economic, and political inclusion of all people*. It is important to analyze pathways to build more inclusive societies globally, for example by fostering prosocial empowering interactions between host communities and migrants.

Study 1

Study 1 investigated, correlationally, the extent to which the strength of global citizenship identification (using the category *citizens of the world*) and human identification (using the category *humans*) relate to relative ingroup prototypicality and intergroup help given by nationals citizens of a host country (ingroup) toward migrants (outgroup).

Intergroup helping might have different implications for intergroup power relations depending on the type of help given (Halabi and Nadler, 2017). Research inspired by the intergroup helping as status relations model (Nadler, 2002; Halabi et al., 2008) revealed that group members often engage in helping strategically to reinforce or establish a position of power over another group. Autonomy-oriented help reduces the recipient's reliance on the benefactor in the future, and thus empowers those in need. By contrast, dependency-oriented help creates or reinforces the reliance of the recipient on the benefactor, which can maintain or widen the social disparity between the groups. Previous research demonstrated that, under conditions in which people view others in need as threatening in some way, people are more likely to offer dependency-oriented help to secure their advantageous social position (Halabi and Nadler, 2017). Of particular relevance to the current research, host-country members are generally less willing to offer migrants autonomy- than dependency-oriented help (Abad-Merino et al., 2013).

A common identity can affect the type of help that is exchanged between groups. Research on the common ingroup identity model (Gaertner and Dovidio, 2000; Gaertner et al., 2016) reveals that when a common identity is salient, people are generally more helpful to others formerly seen as members of an outgroup (Dovidio et al., 2008). Accordingly, all-inclusive identities have been generally related to prosocial outcomes (McFarland et al., 2019). In the present research, we hypothesized that having a stronger sense of global citizenship and human identification would be associated with greater helpfulness toward migrants. We further explored the possibility that those who strongly identify themselves with *citizens of the world* and *humans* would display either autonomy- as well as dependency-oriented helping toward migrants, or even different patterns. Previous research demonstrated, for example, that whereas members of one group were less willing to seek dependency- than autonomy-oriented help from another group when separate identities were salient, they were as likely to seek dependency- as autonomy-related help from the other group when common identity was salient (Halabi et al., 2014). Nonetheless, considering the lack of research examining these relationships with respect to help-giving, we refrained from offering directional hypotheses.

Overall, in Study 1, participants reported their level of global citizenship and human identification, along dimensions of self-definition and self-investment (Leach et al., 2008). The self-definition dimension involves individuals' perceptions of themselves as similar to a group prototype, and of their group as sharing commonalities. The self-investment dimension relates to individuals' positive feelings about and importance of their group membership, and their sense of belongingness. Then, we assessed relative ingroup prototypicality of national citizens compared to migrants, for *citizens of the world* and *humans*. Finally, participants responded to a variety of help-relevant measures.

To sum up, our hypotheses and exploratory aspects of Study 1 were as follows,

H1: Based on previous research (Wenzel et al., 2007), we hypothesized that participants would view the ingroup as relatively more prototypical than migrants of the all-inclusive category.

H2: Based on work on the common ingroup identity model (Gaertner et al., 2016), we hypothesized that global citizenship and human identification would be associated with greater helpfulness toward migrants.

We explored whether the degree of relative ingroup prototypicality would differ as a function of global citizenship or human identification and would be related to helping preferences and orientations.

We also explored whether these two forms of all-inclusive identity would relate to different tendencies for autonomy- and dependency-oriented help.

We tested these relationships controlling for general prosocial traits (social value orientation; Van Lange et al., 2007) and other general factors that predict orientations toward migrants—political orientation and national identification. Previous research has found that individuals who are more politically conservative (Manesi et al., 2019) and persons who have a stronger national identification (López et al., 2019) have more negative orientations toward migrants.

Method

Participants and procedure

An *a priori* power analysis was conducted using G*Power (Faul et al., 2007). It indicated that a sample size of 80 participants would be required based on the predetermined parameters: effect size $f = 0.20$, power $= 0.80$, $\alpha = 0.05$, 7 predictors. We oversampled in anticipation of non-valid responses. Participants were recruited *via* Mechanical Turk, in August and September 2019, and completed an online survey in Qualtrics platform, in exchange for monetary compensation (US$1.5). To be counted as part of the host community, individuals and their parents had to be living in their and their parents' country of birth and hold citizenship (to minimize the possibility that participants would conceive of themselves as migrants). To minimize forged responses, multiple validation procedures were implemented (i.e., robot check, control questions, and open-answers screening). The full protocol is available in Supplementary material.

We complied with APA Ethical Principles of Psychologists and Code of Conduct (APA-American Psychological Association, 2017), and the Code of Ethical Conduct in Research in place at the first author's institution. All participants were 18 or older; informed consent was requested, and participants were debriefed. The informed consent was completed by 315 participants. However, 45 responses were excluded because they did not conform to the inclusion criterion about residency and citizenship in the host society. An additional 102 individuals were excluded

because they failed validation procedures. The final sample included 168 participants, who had sufficient proficiency in English, from 25 different countries (mostly United States, Brazil, United Kingdom, and India; details in Supplementary material). The mean age was 32.11 years ($SD = 8.2$, range: 18–58), 66.1% participants identified as a man and 33.9% as a woman; 78% had higher education; 69% were employed. Participants displayed heterogeneous political views ($M = 4.02$, $SD = 1.82$, range: 1–7, $n = 155$): 40.5% positioned themselves at the left/center-left; 35.7% at the right/center-right and 16.1% at the center.

Participants indicated their country of birth and residence, and nationality. Then, the measures were administered in the following order[1]: group identification (i.e., global citizenship identification, human identification, and national identification, in a randomized order); general prosociality (altruistic orientation), relative ingroup prototypicality for *citizens of the world* and for *humans*, in a randomized order; and helping preferences and helping orientations toward migrants. Sociodemographic information was collected at the end, and participants were thanked and debriefed.

Materials

All items within each scale were presented in a randomized order and were measured using a 7-point Likert-type scale (1 = *strongly disagree* to 7 = *strongly agree*) unless stated otherwise.

Group identification

Group identification was assessed by the Multicomponent Ingroup Identification Scale by Leach et al. (2008) and was administered three times: global citizenship identification (using the label *citizen of the world*), human identification (using the label *humans*), and national identification (using participant's reported nationality). Global citizenship identification and human identification were predictors of primary interest. National identification was included because it is generally related to negative orientations toward migrants (López et al., 2019); it was treated as a covariate in the analyses. The self-definition dimension (4 items; $\alpha_{c.world} = 0.86$; $\alpha_{human} = 0.83$; $\alpha_{national} = 0.85$) assessed self-stereotyping (e.g., "I have a lot in common with the average *citizen of the world/human/national*") and ingroup homogeneity (e.g., "*Citizens of the world/humans/nationals* are very similar to each other"). The self-investment dimension (10 items; $\alpha_{c.world} = 0.94$; $\alpha_{human} = 0.90$; $\alpha_{national} = 0.94$) assessed satisfaction with the membership (e.g., "Being *a citizen of the world/a human/ nationality* gives me a good feeling"), centrality of group membership (e.g., "The fact that I am *a citizen of the world/a human/nationality* is an important part of my identity"), and solidarity with other group members (e.g., "I feel solidarity with *citizens of the world/humans/nationals*"). An exploratory factor

analysis[2] showed a clear distinction between national identification, and the self-definition and self-investment dimensions of global citizenship and human identification. For this reason, in the following analyses, we treated them separately.

Altruistic orientation

Altruistic orientation which represented individual differences in prosociality generally and was entered as a covariate in the analyses, was measured using the 6 primary items of the Social Value Orientation (SVO) Slider Measure (Murphy et al., 2011). For each item, participants allocated points that supposedly would be converted into real money, between themselves and a non-identified person. This measure provides a continuous angle representing the ratio of allocations to oneself versus another person, that can be computed categorically to identify four types of social orientations. Higher values of SVO angle refer to altruistic (>57.15°) and prosocial individuals (22.45° to 57.15°), whereas lower values refer to individualistic (−12.04° to 22.45°) and competitive (< −12.04°) individuals. Previous research has shown good psychometric properties of the measure (Murphy et al., 2011).

Relative ingroup prototypicality

Relative ingroup prototypicality was measured by adapting from Wenzel et al. (2003; Study 3). Participants typed three attributes they considered characteristic of their national group (ingroup) compared to migrants (outgroup), and three attributes they considered characteristic of migrants compared to their national group. The 6 self-generated attributes were randomly presented, and participants rated to what extent each attribute applies to *citizens of the world* and *humans* (i.e., the scale was administered twice adapting the target group; 1 = *Does not apply at all to citizens of the world/humans*, 7 = *Applies very much to citizens of the world/humans*). Relative ingroup prototypicality (RIP) for *citizens of the world* and *humans* was computed as the difference score between the mean typicality ratings of ingroup attributes and the mean typicality ratings of outgroup attributes. Positive scores indicate that participants perceived ingroup (national group) attributes' as more prototypical of the superordinate categories than those of the outgroup (migrants), that is, RIP. Correspondingly, negative scores indicate that participants perceived migrants' attributes as more prototypical than those of their national group, that is relative outgroup prototypicality.

Helping preferences

Helping preferences assessed which helping response nationals prefer to offer toward migrants in helping situations that could occur naturalistically and were measured using 10 scenarios adapted from Halabi et al. (2008). Participants were presented with a cover story in a short video informing that a new

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1   One additional measure was administered but not analysed.

2   Details in Supplementary material.

international website was launched, where migrants can chat with nationals to ask them for help in finding solutions to problems they encounter daily. Participants were told that they would be presented with different problems and a list of possible solutions, and that they would be asked to select the best solution to be recommended to future users of the website. Then, the 10 scenarios were randomly presented, covering diverse problems in different contexts (e.g., make an appointment in a health facility, create a resumé to apply to a job, obtain a residence permit). Participants were asked to select one out of four possible actions: (1) provide a full solution to the problem – dependency-oriented response (e.g., "contact the health facility and make the appointment for the migrant user"); (2) provide instructions to solve the problem—autonomy-oriented response (e.g., "inform and support the migrant user on how to identify a health facility and how to make an appointment"); (3) no help (e.g., "*national user should not help, because the migrant user should find a solution to this problem on his/her own*"); (4) none of the previous options should be recommended. As confirmed by a multiple correspondence analysis,[3] participants tended to display patterns of preferences for dependency- or autonomy-oriented responses, independently of the scenario's content. We computed two measures based on the helping responses for each scenario. First, to measure participants' preference for choosing to help migrants independently of the type of help given, *preference for helping in general* was computed as the count of the number of times dependency-oriented and autonomy-oriented responses were chosen, ranging from 0 (no helping options were selected) to 10 (in all 10 scenarios participants choose to offer either dependency-oriented or autonomy-oriented help). Second, to measure their preference for a specific type of help response, *preference for autonomy- relative to dependency-oriented help* referred to the proportion of times when help was given that participants recommended an autonomy-oriented response (i.e., computed as the number of times autonomy-oriented responses were selected divided by the *preference for helping in general*). This measure ranged from 0 (when help was given, no autonomy-oriented responses were chosen) to 1.00 (when help was given, in all scenarios, participants recommended an autonomy-oriented response as the best solution to the problem).

Helping orientations

Helping orientations were measured by the Helping Orientations Inventory (Maki et al., 2017) to assess participants' individual dispositions to help migrants, namely *orientation for dependency-oriented help* (5 items, e.g., "In general, solving migrants' problems for them is good for society because it helps meet immediate needs"; $\alpha_{dependency} = 0.76$),[4] *orientation for autonomy-oriented help* (8 items, e.g., "Teaching migrants to take

care of themselves is good for society because it makes them independent"; $\alpha_{autonomy} = 0.88$), and a general *orientation for opposition to helping* (8 items, e.g., "Helping migrants only makes them more needy in the future"; $\alpha_{opposition} = 0.93$).

Results

Means, *SD*s, and zero-order correlations for the main variables are presented in Table 1. A full table including secondary variables is available in Supplementary material.

As presented in Table 1, the self-investment and self-definition dimensions were moderate to highly correlated within and between both global citizenship and human identification; were positively associated with national identification, but not with altruistic orientation or political orientation; and, were positively related to a *preference helping in general*, as well as *orientation for autonomy-oriented help* and *for dependency-oriented help* toward migrants, but not to a *preference for autonomy- relative to dependency-oriented help*. Moreover, altruistic orientation was positively related to *preference for helping in general* and *orientation for autonomy-oriented help*, and negatively to *orientation for opposition to helping*. Whereas political orientation (higher values indicate a right-wing orientation) was positively related to *orientation for opposition to helping*, and negatively to *preference for helping in general*, as well as to *preference and orientation for autonomy-oriented help*.

Relative ingroup prototypicality

We examined the degree to which participants projected their ingroup's attributes onto the two all-inclusive superordinate categories (*citizens of the world* and *humans*) relative to the outgroup's (migrants' attributes)—relative ingroup prototypicality (RIP).[5] We also tested the relationship between the degree to which participants endorsed each of the all-inclusive forms of identification (global citizenship and human identification) and their levels in RIP for the respective categories (i.e., *citizens of the world* and *humans*, respectively). In addition, we explored the relationships between RIP for *citizens of the world* and *humans*, separately, and the specific intergroup helping measures.

In terms of the overall degree to which participants exhibited RIP for *citizens of the world* ($M = -0.62$, $SD = 1.48$) and for *humans* ($M = -0.09$, $SD = 1.37$) both showed negative means. Negative scores indicate that, contrary to our expectations (H1), participants perceived migrants' attributes as more (not less) prototypical of *citizens of the world* and *humans* than those of their national ingroup, producing relative *outgroup* prototypicality (ROP) instead of RIP. However, one-sample *t*-tests revealed that this ROP effect was significantly different from zero only for *citizens of the world*, $t(166) = -5.429$, $p < 0.001$, and not for *humans*, $t(166) = -0.864$, $p = 0.389$. Indeed,

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3   Details in Supplementary material.

4   Three from the 8 items were removed by EFA (see Supplementary material).

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5   The preconditions for RIP were satisfied (see Supplementary material).

TABLE 1 Means, *SD*s, and zero-order correlations among main variables.

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Global ident.: Self-investment	–												
2. Human ident: Self-investment	0.71**												
3. Global ident.: Self-definition	0.65**	0.56**											
4. Human ident: Self-definition	0.39**	0.46**	0.62**										
5. Pref. for helping in general	0.21**	0.26**	0.17*	0.25**									
6. Orient. to opposition to helping	0.01	0.02	0.07	−0.06	−0.44**								
7. Orientation for dependency	0.37**	0.32**	0.35**	0.34**	0.29**	0.13							
8. Preference for autonomy	−0.09	−0.03	−0.07	−0.07	0.18*	−0.39**	−0.35**						
9. Orientation for autonomy	0.32**	0.34**	0.22**	0.29**	0.62**	−0.28**	0.40**	0.17*					
10. National identification	0.44**	0.62**	0.37**	0.31**	0.04	0.25**	0.26**	−0.09	0.16*				
11. Altruistic orientation	0.07	0.03	−0.01	−0.05	0.20**	−0.25**	−0.03	0.09	0.19*	−0.13			
12. RIP for citizens of the world	0.04	0.10	0.11	−0.01	−0.07	0.24**	−0.04	0.02	−0.14	0.21**	−0.18*		
13. RIP for humans	0.13	0.12	0.18*	0.13	0.10	0.03	0.10	−0.09	0.10	0.11	−0.10	0.42**	
14. Political orientation	−0.09	−0.03	−0.09	−0.08	−0.43**	0.59**	0.04	−0.35**	−0.36**	0.22**	−0.20*	0.16*	0.07
M	4.92	5.24	4.63	5.16	8.91	3.09	4.38	0.83	5.51	4.99	26.88	−0.62	−0.09
SD	1.15	1.07	1.26	1.17	2.14	1.45	1.13	0.20	0.96	1.20	13.58	1.48	1.37

*$p < 0.05$; **$p < 0.01$.

a paired sample *t*-test showed that the two means were significantly different from each other, $t(166) = −4.448$, $p < 0.001$. In sum, participants considered migrants as more prototypical of *citizens of the world* than their national group members, whereas neither RIP nor ROP were observed for *humans*.

As presented in Table 1, stronger endorsement of global citizenship identification was not significantly related to RIP for *citizens of the world* either measured as self-investment or self-definition. Similarly, human identification representing self-investment and self-definition were not significantly related to RIP for *humans*. The analyses did reveal significant relationships between RIP for *citizens of the world* and the measures of intergroup helping. Specifically, RIP for *citizens of the world* was not significantly related to any of the measures involving helping migrants, except for participants exhibiting stronger RIP for *citizens of the world* which were more opposed to helping migrants. RIP for *humans* was not significantly related to any of the measures involving helping migrants.

Predicting helping in general (independently of the type)

In this set of analyses, we explored the main predictors of primary interest—global citizenship and human identification (in terms of self-investment and self-definition)—on measures of helping, regardless of the type of help given to migrants. Specifically, we report the results for helping preferences (i.e., *preference for helping in general*, as assessed by scenarios) and orientations (i.e., *orientation for opposition to helping*, as assessed by Helping Orientations Inventory, Maki et al., 2017). In these analyses, we control for altruistic orientation to distinguish between general tendencies and the tendency to help migrants specifically, and for national identification, political orientation and RIP to help isolate the effects of global citizenship and human identification.

We conducted four hierarchical multiple regressions (Table 2), two for *preference for helping in general* (models 1, 2, and 3) and two for *orientation for opposition to helping* (models 4, 5, and 6). Control variables were included in the first step of hierarchical multiple regressions for each outcome (model 1—*preference for helping in general*, and model 4—*orientation for opposition to helping*): altruistic orientation, political orientation, RIP for *citizens of the world* and *humans*, and national identification (treated as a unidimensional variable). Identification with *citizens of the world* and *humans* were included in the second step, separately for self-investment (models 2 and 5) and self-definition dimensions (models 3 and 6).

As presented in Table 2, regarding *preference for helping in general*, the full model for self-investment (i.e., including all covariates and self-investment dimensions—model 2) was statistically significant ($R^2 = 0.287$, $F[7, 146] = 8.381$, $p < 0.001$; adjusted $R^2 = 0.252$), and the addition of self-investment with *citizens of the world* and *humans* led to a statistically significant increase in R^2 of 0.039, $F(2, 146) = 4.019$, $p = 0.020$. However, only self-investment as *humans* was associated with a higher *preference for helping in general*, over and above the significant negative effect of political orientation and the positive effect of relative ingroup prototypicality for *humans*. Similarly, the full model for self-definition (i.e., including all covariates and self-definition dimensions; model 3) was statistically significant ($R^2 = 0.290$, $F[7, 146] = 8.514$, $p < 0.001$; adjusted $R^2 = 0.256$), and the addition of self-definition as *citizens of the world* and *humans* led to a statistically significant increase in R^2 of.042, $F(2, 146) = 4.369$, $p = 0.014$. Again, only self-definition as *humans* was associated with a higher *preference for helping in general*, over and above the significant negative effect of political orientation and the positive effect of altruistic orientation. Contrary to the expected (H2), self-investment and self-definition as *citizens of the world* were not associated with a *preference for helping in general*.

Regarding *orientation for opposition to helping*, the full model for self-investment (i.e., including all covariates and self-investment dimensions; model 5) was statistically significant, $R^2 = 0.402$, $F(7, 146) = 14.013$, $p < 0.001$; adjusted $R^2 = 0.373$; however, the addition of self-investment with *citizens of the world* and *humans* did not significantly increase explained variance, R^2 of 0.006, $F(2, 146) = 0.702$, $p = 0.497$. Self-investment as *citizens of the world* and *human* were not associated with *orientation for opposition to helping* migrants; only political orientation showed a significant positive effect. On the contrary, the full model for self-definition (i.e., including all covariates and self-definition dimensions; model 6) was statistically significant, $R^2 = 0.431$, $F(7, 146) = 15.811$, $p < 0.001$; adjusted $R^2 = 0.404$, and the addition of self-definition as *citizens of the world* and *humans* led to a statistically significant increase in R^2 of 0.035, $F(2, 146) = 4.502$, $p = 0.013$. However, whereas self-definition as a *citizen of the world* was positively associated with *orientation for opposition to helping*, self-definition as a *human* was negatively associated, over and above the significant positive effect of political orientation.

Predicting dependency and autonomy-oriented help

In this last set of analyses, we explored the main predictors of primary interest—global citizenship and human identification—on the type of help given to migrants. Specifically, we report the results for helping orientations (i.e., *orientation for dependency-oriented help* and *for autonomy-oriented help*); results for *preference for autonomy- relative to dependency-oriented help* (as assessed by scenarios) did not reveal significant effects and are presented in Supplementary material. In these analyses, we only control for political orientation, which showed a consistent relationship with helping in the previous analysis.

We conducted four multiple regressions (Table 3) for *orientation for dependency-oriented help* (models 1 and 2) and *orientation for autonomy-oriented help* (models 3 and 4), separately for self-investment and self-definition dimensions of global citizenship and human identification.

As presented in Table 3, regarding *orientation for dependency-oriented help*, the model for self-investment (model 1) was statistically significant ($R^2 = 0.143$, $F[3, 151] = 8.411$, $p < 0.001$; adjusted $R^2 = 0.126$), and only self-investment as *citizens of the world* was positively related to *orientation for dependency-oriented help*, whereas self-investment as *humans* was not. The model for self-definition dimensions (model 2) was statistically significant ($R^2 = 0.159$, $F[3, 151] = 9.541$, $p < 0.001$; adjusted $R^2 = 0.143$), and both self-definition as a *citizen of the world* and as a *human* were positively related to *orientation for dependency-oriented help*. Political orientation was not related to *orientation for dependency-oriented help*.

Regarding *orientation for autonomy-oriented help*, the model for self-investment (model 3) was statistically significant ($R^2 = 0.249$, $F[3, 151] = 16.702$, $p < 0.001$; adjusted $R^2 = 0.234$). Only self-investment with *humans* was positively related to *orientation for autonomy-oriented help*, whereas self-investment with *citizens of the world* was not. Similarly, the model for self-definition (model 4) was statistically significant ($R^2 = 0.216$, $F[3, 151] = 13.841$, $p < 0.001$; adjusted $R^2 = 0.200$), and only self-definition as a *human* was positively related to *orientation for autonomy-oriented help*. Political orientation was negatively associated with *orientation for autonomy-oriented help*, in both models.

Discussion

Study 1 revealed that global citizenship and human identification were moderately to strongly related. However, consistent with the proposition that the specific content of an all-inclusive category is also important, these forms of identification also related distinctively to intergroup outcomes. For instance, consistent with work on the common ingroup identity model (Gaertner and Dovidio, 2000), although global citizenship and human identification both had significant positive correlations with preference for helping migrants generally, when

TABLE 2 Hierarchical multiple regression results for helping preferences and orientations regardless of the type of help.

| | Preference for helping in general | | | | | | |
| | 95% CI for *B* | | | | | | |
	B	*LL*	*UL*	*SE B*	*β*	*R*²	*ΔR*²
Model 1						0.25	0.22***
Constant	8.75	7.06	10.45	0.86			
Altruistic orientation	0.02[+]	0.00	0.05	0.01	0.13[+]		
Political orientation	−0.53***	−0.70	−0.35	0.09	−0.43***		
RIP for citizens of the world	−0.13	−0.37	0.11	0.12	−0.09		
RIP for humans	0.29*	0.04	0.55	0.13	0.18*		
National identification	0.31*	0.03	0.58	0.14	0.16*		
Model 2 (Self-investment)						0.29	0.25*
Constant	7.59***	5.66	9.53	0.98			
Altruistic orientation	0.02[+]	0.00	0.04	0.01	0.12[+]		
Political orientation	−0.48***	−0.66	−0.30	0.09	−0.40***		
RIP for citizens of the world	−0.12	−0.35	0.12	0.12	−0.08		
RIP for humans	0.25*	0.00	0.51	0.13	0.15*		
National identification	0.01	−0.34	0.36	0.18	0.00		
Global citizenship ident: SI	−0.16	−0.54	0.23	0.19	−0.08		
Human identification: SI	0.63	0.16	1.10	0.24	0.30**		
Model 3 (Self-definition)						0.29	0.26*
Constant	7.20***	5.19	9.22	1.02			
Altruistic orientation	0.02	0.00	0.05	0.01	0.15*		
Political orientation	−0.49***	−0.67	−0.31	0.09	−0.40***		
RIP for citizens of the world	−0.06	−0.30	0.18	0.12	−0.04		
RIP for humans	0.21	−0.04	0.47	0.13	0.13		
National identification	0.16	−0.13	0.46	0.15	0.09		
Global citizenship ident.: SD	−0.11	−0.43	0.21	0.16	−0.06		
Human identification: SD	0.50	0.14	0.86	0.18	0.26**		
	Orientation for opposition to helping						
Model 4						0.40	0.38***
Constant	1.05*	0.03	2.07	0.52			
Altruistic orientation	−0.01	−0.03	0.00	0.01	−0.11		
Political orientation	0.43***	0.32	0.54	0.05	0.53***		
RIP for citizens of the world	0.13	−0.02	0.27	0.07	0.13[+]		
RIP for humans	−0.08	−0.23	0.08	0.08	−0.07		
National identification	0.14	−0.02	0.31	0.08	0.11[+]		
Model 5 (Self-investment)						0.40	0.37
Constant	1.08[+]	−0.11	2.27	0.60			
Altruistic orientation	−0.01	−0.03	0.00	0.01	−0.11		
Political orientation	0.43***	0.32	0.54	0.06	0.53***		
RIP for citizens of the world	0.13	−0.02	0.27	0.07	0.13[+]		
RIP for humans	−0.08	−0.23	0.08	0.08	−0.07		
National identification	0.17	−0.05	0.39	0.11	0.13		
Global citizenship ident.: SI	0.13	−0.11	0.36	0.12	0.10		
Human identification: SI	−0.15	−0.44	0.14	0.15	−0.11		
Model 6 (Self-definition)						0.43	0.40*
Constant	1.43*	0.22	2.64	0.61			
Altruistic orientation	−0.01	−0.03	0.00	0.01	−0.12[+]		
Political orientation	0.43***	0.32	0.54	0.05	0.53***		

(Continued)

TABLE 2 Continued

	Orientation for opposition to helping						
		95% CI for *B*					
	B	*LL*	*UL*	*SE B*	*β*	*R²*	*ΔR²*
RIP for citizens of the world	0.09	−0.05	0.23	0.07	0.09		
RIP for humans	−0.06	−0.21	0.10	0.08	−0.05		
National identification	0.15	−0.03	0.33	0.09	0.12[+]		
Global citizenship ident.: SD	0.24	0.05	0.44	0.10	0.21*		
Human identification: SD	−0.30	−0.51	−0.08	0.11	−0.23**		

Model = "Enter" method in SPSS Statistics; B = unstandardized regression coefficient; CI = confidence interval; LL = lower limit; UL = upper limit; SE B = standard error of the coefficient; β = standardized coefficient; R^2 = coefficient of determination; ΔR^2 = adjusted R^2. SI: Self-investment; SD: Self-definition. $*p < 0.05$; $**p < 0.01$; $***p < 0.001$; $^+p < 0.10$.

considered as predictors and controlling for other relevant variables (e.g., political orientation, altruistic orientation) identification as *humans* was a significant predictor while identification as *citizens of the world* was not. Greater identification as *humans* was related to less opposition to helping migrants (albeit significantly only for self-definition). By contrast, greater identification as *citizens of the world* was positively (only for self-definition) related to opposition to helping.

The findings concerning *opposition to help* are surprising considering that are not in line with research showing that endorsing an all-inclusive identity improves prosocial orientations (McFarland et al., 2019). But, before providing possible explanations for these results in the General Discussion, a specific limitation should be addressed herein. We should note that the items assessing *orientation for opposition to helping* highlighted the negative outcomes of helping (e.g., "Solving migrants' problems for them makes their situation worse in the long run"; Maki et al., 2017). To our understanding, these items do not merely reflect that "people are simply opposed to helping others" (Maki et al., 2017, p. 690), but might also reflect a concern about or the rejection of the undesirable outcomes of helping. For this reason, participants' interpretation of these items is not clear, and further studies are needed.

Moreover, the more participants identified themselves as *citizens of the world*, the higher their orientation to offer dependency-oriented help toward migrants; whereas the more they identified as *humans*, the higher their orientation to offer either dependency- or autonomy-oriented help toward migrants. Overall, this pattern of findings supports the proposal that stronger all-inclusive orientations relate to more positive orientations to migrants but also suggests the promise of distinguishing how different all-inclusive identities may have different effects.

The manner by which identification as *humans* or as *citizens of the world* may have different effects is not clearly documented in Study 1. One of the factors we considered, relative ingroup prototypicality (RIP, Wenzel et al., 2007) did not appear to play a systematic role. Unexpectedly, we generally observed a relative outgroup prototypicality effect, not relative ingroup prototypicality. Also, the strength of global citizenship and human identification did not significantly predict RIP for *citizens of the*

world and for *humans*, respectively. RIP for *citizens of world* did have significant, positive zero-order correlation with opposition to helping migrants, but it did not have a significant negative correlation with helping. RIP for *humans* did not significantly correlate with either helping measures. In addition, participants showed no systematic differences as a function of identification or RIP in autonomy- compared to dependency-oriented helping.

We note, however, that Study 1 was correlational and, while we measured and controlled for a range of relevant effects (e.g., political orientation, altruistic orientation, national identification), unmeasured variables might still be operative in ways that obscured the potential effects of our main variables of interest. Study 2 was therefore designed as an experiment.

Study 2

Study 2 investigated, experimentally, the potentially different impacts of making *citizens of the world* and *humans* salient on relative ingroup prototypicality and intergroup help given by national citizens toward migrants. As in Study 1, we distinguished between autonomy and dependency-oriented help. Additionally, we explored the perceptions about entitativity and essentialism that may be elicited by the two categories, and how the different subgroups are represented within these common identities (one-group or dual-identity group representations), as these aspects may shape intergroup dynamics.

Entitativity represents the perception of the "groupness" of a social category (i.e., members' similarities, interaction, common goals, fate, and the importance given to it). Essentialism describes the degree to which a category is perceived as natural, immutable and historically persistent, in which members are bonded by an underlying, often biological, essence (Lickel et al., 2000; Hamilton et al., 2004; Demoulin et al., 2006; Haslam, 2017). Importantly, people are inclined to develop stereotypic judgments about social categories when it is highly essentialized and tend to have polarized impressions when they perceive a group as highly entitative (Hamilton et al., 2004). Essentialist beliefs have been associated with several negative intergroup outcomes (e.g., prejudice; less interaction with essentialized outgroup members; resistance to

TABLE 3 Multiple regressions result for types of help.

			Orientation for dependency				
		95% CI for B					
	B	LL	UL	$SE\ B$	$β$	R^2	$ΔR^2$
Model 1 (Self-investment)						0.14	0.13
Constant	2.18***	1.22	3.15	0.49			
Political orientation	0.05	−0.05	0.14	0.05	0.07		
Global citizenship ident.: SI	0.29**	0.08	0.50	0.11	0.29**		
Human identification: SI	0.11	−0.12	0.35	0.12	0.11		
Model 2 (Self-definition)						0.16	0.14
Constant	2.12***	1.20	3.03	0.46			
Political orientation	0.05	−0.04	0.14	0.05	0.08		
Global citizenship ident.: SD	0.20*	0.03	0.37	0.09	0.22*		
Human identification: SD	0.22*	0.03	0.41	0.10	0.22*		
			Orientation for autonomy				
Model 3 (Self-investment)						0.25	0.23
Constant	4.56***	3.78	5.33	0.39			
Political orientation	−0.18***	−0.26	−0.11	0.04	−0.35***		
Global citizenship ident.: SI	0.06	−0.11	0.23	0.09	0.07		
Human identification: SI	0.27**	0.08	0.45	0.09	0.29**		
Model 4 (Self-definition)						0.22	0.20
Constant	4.92***	4.16	5.68	0.38			
Political orientation	−0.18	−0.26	−0.10	0.04	−0.34***		
Global citizenship ident.: SD	0.01	−0.13	0.15	0.07	0.01		
Human identification: SD	0.25**	0.09	0.40	0.08	0.29**		

Model = "Enter" method in SPSS Statistics; B = unstandardized regression coefficient; CI = confidence interval; LL = lower limit; UL = upper limit; SE B = standard error of the coefficient; β = standardized coefficient; R^2 = coefficient of determination; $ΔR^2$ = adjusted R^2. SI: Self-investment; SD: Self-definition. *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$; +$p < 0.10$.

egalitarian intergroup relations; strategic use of essentialism beliefs to exclude others from group membership; negative bias toward immigrants; Haslam et al., 2002; Bastian and Haslam, 2008; Morton et al., 2009; Pehrson et al., 2009; Haslam, 2017). Even though social categories are not conceived as highly entitative or homogenous, they tend to be essentialized (e.g., Karasawa et al., 2019), particularly those that have a biological basis (Hamilton et al., 2004). Previous research has suggested that the category *humans* might be highly essentialized (e.g., Haslam et al., 2005). We aim to explore whether *citizens of the world* might be perceived as less essentialized and more entitative than *humans*, considering their differences in meaning. Being a human being has strong biological connotation; whereas *citizens of the world* seems to activate less biological-related content, as it tends to describe individuals who hold a beyond-nation scope of concern and responsibility (Carmona et al., 2022).

Second, making common identity salient can alter the way people cognitively represent groups through the process of recategorization that changes an initial representation of different groups as separate groups to a shared identity, either as one single group emphasizing similarities among members (i.e., one-group representation) or as two subgroups on the same team, which recognizes and values both similarities and differences between subgroups (i.e., dual-identity representation; Gaertner and Dovidio, 2000). Research has shown that both

types of shared-identity representations reduce prejudice and facilitate prosocial intergroup behavior toward former outgroup members (Dovidio et al., 2010; Gaertner et al., 2016). We investigated whether making the all-inclusive identity as *citizens of the world* or as *humans* salient would differ in the degree to which members of host communities adopt a one-group or a dual-identity representation inclusive of migrants. Previous research has shown that making shared identity salient is less likely to produce a one-group representation when it activates the need of members to differentiate and reaffirm their original, different group identities (Crisp et al., 2006). Also, the effectiveness of dual-identity representation might be weakened because when intergroup differences are highlighted, subgroup members may regard their subgroup's attributes as more prototypical of the common category (i.e., ingroup projection; Gaertner et al., 2016). Like other forms of common identities, all-inclusive superordinate categories may also elicit different types of group representations. One important aspect may be related to how people perceive *citizens of the world* and *humans* in terms of their potential to emphasize similarities between the subgroups or to recognize and value both similarities and differences between subgroups.

In Study 2 participants were assigned to one of three experimental conditions: participants viewed a video presenting

"what it means to identify" (1) as *citizens of the world*, (2) as *humans*, or (3) in a control condition, as *daughters and sons*. Then, using the same intergroup context as in Study 1, participants responded to the same measures of helping toward migrants, but only those assessing autonomy- and dependency-oriented help (we did not assess helping in general). Then, we assessed relative ingroup prototypicality of national citizens compared to migrants for the respective category, as well as the respective perceptions of essentialism, entitativity and group representations.

Considering previous research and the results of Study 1, we had two main hypotheses:

> *H3*: We hypothesized that the salience of *citizens of the world* and *humans* would trigger higher dependency-oriented help, relative to the control category.

> *H4*: We hypothesized that the salience of *humans* would trigger higher autonomy-oriented help, relative to the salience of *citizens of the world* and the control category.

Considering the unexpected relative outgroup prototypicality reported in Study 1, we also explored whether this finding would be replicated when manipulating the salience of *citizens of the world* and *humans*. Given the lack of previous research on the relationships of these specific all-inclusive identities with entitativity, essentialism, and group representations, we refrained from establishing directional hypotheses, acknowledging the exploratory nature of the study in this regard.

Method

Participants and procedure

An *a priori* power analysis was conducted using G*Power (Faul et al., 2007). It indicated that a sample size of 246 participants would be required based on the predetermined parameters: effect size $f = 0.20$, power $= 0.80$, 3 groups, $\alpha = 0.05$. Participants were recruited *via* Clickworker, in November and December 2020. We complied with APA Ethical Principles of Psychologists and Code of Conduct (APA-American Psychological Association, 2017), and the Code of Ethical Conduct in Research in place at the first author's institution. All participants, who were 18 or older, completed an online survey in the Qualtrics platform in exchange for monetary compensation (~€3). All participants indicated informed consent and were debriefed. The validation procedures and inclusion criteria were the same used in Study 1. Participants who failed to respond correctly to questions about the experimental manipulation were also excluded. The informed consent was completed by 385 participants. However, 18 responses were excluded because they did not conform to the inclusion criterion about residency and citizenship in the host society. An additional 143 individuals were excluded because they failed validation procedures and/or questions about the manipulation. Thus, the final sample included 224 participants (slightly below the required sample size due to participants' exclusion), who had sufficient proficiency in English, from 36 different countries (mostly United Kingdom, India, United States and South Africa; details in Supplementary material). The mean age of these participants was 35.32 years ($SD = 11.51$, range: 18–67), and 61.6% identified as a man and 37.1% as a woman (1.3% preferred not to answer); 75.9% had higher education; 58% were employed. Participants displayed heterogeneous political views ($M = 3.75$, $SD = 1.50$, range: 1–7, n = 223): 39.9% positioned themselves at the left/center-left; 34.5% at the center; and 25.6% at the right/center-right.

Participants were told that the survey aimed to understand how people use online platforms. After consenting to participate, participants were randomly assigned to one of three experimental conditions (i.e., *citizens of the world* vs. *humans* vs. control), watched a 2-min video containing the manipulations, and answered a few questions related to the video (used as exclusion criterion). The final sample was distributed per conditions as follows: $n_{cit.world} = 67$; $n_{human} = 74$; $n_{control} = 83$.

Participants indicated their nationality and their own and their parents' country of birth and residence. After the manipulation, the measures were administered in the following order[6]: group identification, helping preferences, helping orientations, relative ingroup prototypicality, entitativity, essentialism, perceptions of choice, evaluative status and valence, perceptions of group size, group representations, social dominance orientation, and national identification. Sociodemographic information was collected at the end, and participants were thanked and debriefed. The full protocol is available in Supplementary material.

Experimental manipulation

The experimental manipulation designed to vary the salience of different identities was introduced through a 2-min video, presenting the cover story. Participants were told that the first part of the survey investigated whether different online learning techniques (presentations with or without voice-over) help people retain information and that they would see a short video with content from an online psychology course. All participants were informed that they were assigned to a presentation without the voice-over. After the cover story, participants were presented with the manipulation: a PowerPoint presentation, entitled "Learning Psychology Online." We selected "identification with groups" as the concept to be explained in the course. A description of what it means to identify with a large group was given (based on Leach et al., 2008), but the group used as an example varied across conditions. In one condition, participants read about identification with *citizens of the world*. In a second condition, the focus was identification with *humans*. In a third, control condition, the topic was identification with *daughters and sons*. We chose this as the control group because it also represents an all-inclusive category,

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6   Additional measures were administrated but not included in the analysis.

that is, everyone is a daughter or son, but this identity is not related to the intergroup setting of migrants and host communities, representing thus a baseline for comparison. After watching the video, participants were asked four questions about its content (e.g., "Which example was given to exemplify the concept, in the presentation?"), as a manipulation check. The verbatim instructions and manipulation check questions are available in Supplementary material.

Materials

All items within each scale were randomized and were measured using a 7-point Likert-type scale (1 = *strongly disagree* to 7 = *strongly agree*), unless stated otherwise.

Group identification

Group identification was assessed to examine the preconditions for the occurrence of relative ingroup prototypicality, by a single item per target[7]: "I identify with [*citizens of the world* vs. *humans* vs. *daughters and sons*]" and "I identify with [national group]" (Postmes et al., 2013).

Helping preferences

Helping preferences were assessed as in Study 1, with slight adaptations. Instead of asking participants how they think a national user of the website should respond to a migrant's request, we asked participants to select the solution they would themselves most likely adopt and recommend to future users of the website. As in Study 1, and confirmed by a multiple correspondence analysis,[8] participants tended to display patterns of preferences for dependency- or autonomy-oriented help, independently of the scenario's content. The measures were computed as in Study 1.

Helping orientations

Helping orientations for dependency-oriented help (5 items; $\alpha = 0.81$) and for autonomy-oriented help (8 items; $\alpha = 0.90$) were assessed as in Study 1.

Relative ingroup prototypicality

Relative ingroup prototypicality was measured by two separate items adapted from Waldzus et al. (2003), for ingroup prototypicality ("[National group] are prototypical [*citizens of the world* vs. *humans* vs. *daughters and sons*]") and outgroup prototypicality ("Migrants are prototypical [*citizens of the world* vs. *humans* vs. *daughters and sons*]"). RIP was computed as in Study 1, that is, the difference between the mean scores of ingroup' and outgroup' prototypicality; positive scores indicate RIP; negative scores indicate relative outgroup prototypicality (ROP).

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7   Two subdimensions of the MIIS were administered but not analysed.

8   Details in Supplementary material.

Evaluative status

Evaluative status of the categories is considered an important aspect to account for when examining group projection processes (Wenzel et al., 2016). As such, we included one additional item: "Generally speaking, people highly respect and admire *citizens of the world* vs. *humans* vs. *daughters and sons*."

Valence

Valence of the categories, also an important aspect (Wenzel et al., 2016), was measured by the item "Generally speaking, people have a positive image of *citizens of the world* vs. *humans* vs. *daughters and sons*."

Entitativity

Entitativity was assessed with 7 items measuring the extent to which the group was perceived as entitative (Lickel et al., 2000; Demoulin et al., 2006): groupness (1 = *not qualify at all as a group* to 7 = *very much qualify as a group*), members' interaction (1 = *not interact at all with one another* to 7 = *interact very much with one another*), importance for its members (1 = *not at all important* to 7 = *very much important*), members' common fate (1 = *not share a common fate* to 7 = *share a common fate*), members' common goals (1 = *not have common goals* to 7 = *pursue common goals*), informativeness of belonging to the group (1 = *is not very informative* to 7 = *tells a lot about that person*) and similarity between members (1 = *diverse* to 7 = *similar*). Reliability scores for entitativity of each target category were not acceptable for all target categories, being very low for the social category *humans* ($\alpha_{cit.world} = 0.75$; $\alpha_{human} = 0.47$; $\alpha_{control} = 0.81$). Considering our goal of comparing entitativity between conditions we did not aggregate the items in a single index and will treat them separately in further analyses.

Perceptions of choice

Perceptions of choice over the group membership is an important aspect related to the mental representation of the group (Hamilton et al., 2004). As such, we included one item measuring the extent to which members have chosen to belong to the group (Toosi and Ambady, 2011; 1 = *is the result of a choice* to 7 = *does not result from a choice*; reverse coded).

Perceptions of group size

Perceptions of group size also an important aspect, was measured by the item "The group of *citizens of the world* vs. *humans* vs. *daughters and sons* includes every person on Earth."

Essentialism

Essentialism was assessed by 5 items measuring the extent to which the group was perceived to be a natural-kind (Haslam et al., 2000; Demoulin et al., 2006): discreteness (1 = *clear-cut* to 7 = *fuzzy*; reverse coded), naturalness (1 = *artificial* to 7 = *natural*), immutability (1 = *easily changed* to 7 = *not easily changed*), stability (1 = *change much over time* to 7 = *change little over time*) and necessity (1 = *have necessary characteristics* to 7 = *do not have necessary characteristics*; reverse coded). Reliability scores for

TABLE 4 Means, *SD*s and differences regarding the impact of the categories "citizens of the world" and "humans."

	Control (*n* = 83)	C. World (*n* = 67)	Humans (*n* = 74)	Test
	M (SD)	*M (SD)*	*M (SD)*	
Helping preferences				
Pr. for autonomy rel. to dependency	0.78 (0.23)	0.74 (0.23)	0.81 (0.22)	$F(2, 221) = 1.666$, $p = 0.191$, partial $\eta^2 = 0.01$
Helping orientations				$F(4, 440) = 0.662$, $p = 0.619$; *Wilks' Λ* = 0.988, partial $\eta^2 = 0.01$
Or. for dependency	4.70 (1.01)	4.78 (1.16)	4.94 (1.08)	$F(2, 221) = 0.986$, $p = 0.375$
Or. for autonomy	5.83 (0.83)	5.82 (0.89)	5.98 (0.78)	$F(2, 221) = 0.936$, $p = 0.394$

natural kindness dimensions ($\alpha_{cit.world} = 0.42$; $\alpha_{human} = 0.51$; $\alpha_{control} = 0.53$) were not acceptable for any of the social categories.[9] For this reason, the indicators of essentialism are treated separately in subsequent analyses. Additionally, one item measured the attribution of essence to the group (underlying reality; Haslam et al., 2000; Demoulin et al., 2006; 1 = *has an underlying sameness* to 7 = *does not have an underlying sameness*, reverse coded).

Group representations

Group representations were assessed by 3 items, adapted from Guerra et al. (2015), measuring to what extent participants felt their national group and migrants' group as a one-group ("When I think of migrants and [national group], who are living in [country of residence], I see them as one group"), as two subgroups of the same team (dual-identity) ("When I think of migrants and [nationality], who are living in [country of residence], I see them as two groups on the same team") and as two separate groups ("When I think of migrants and [national group], who are living in [country of residence], I see them as two separate groups").

Social dominance orientation

Social dominance orientation was assessed by 4 items of the Short SDO scale (Pratto et al., 2013; $\alpha = 0.70$; e.g., "We should not push for group equality").

Results

Dependency- and autonomy-oriented help

To test H3 and H4, we examined the effects of condition (control, *citizens of the world*, or *humans*) on *preference for autonomy- relative to dependency-oriented help*, as well as on *orientations for dependency-oriented help* and *for autonomy-oriented help*.

As presented in Table 4, a one-way analysis of variance (ANOVA) examining differences between conditions did not reveal a significant effect of the manipulation on *preference for autonomy- relative to dependency-oriented help*. We explored

differences between the conditions with simple contrasts: *citizens of the world* vs. *control*; *humans* vs. *control*; and *citizens of the world* vs. *humans*. None of the contrasts were significant, and only the comparison between *citizens of the world* vs. *humans* approached significance ($p = 0.070$), pointing to a tendency for participants in the condition making *humans* salient to score higher on *preference for autonomy- relative to dependency-oriented help*.[10]

A one-way multivariate analysis of variance (MANOVA) examining differences in *helping orientations* for *dependency-* and *autonomy-oriented help* between conditions[11] (Table 4) did not reveal a significant multivariate effect of condition. Univariate effects and simple contrasts on each dependent variable were also not significant.

Relative ingroup prototypicality

First, to explore the occurrence of RIP,[12] we analyzed whether the mean scores for relative ingroup prototypicality for the control group, *citizens of the world* or *humans* were significantly different from zero; then, we explored the mean differences for RIP between conditions.

As presented in Table 5, one sample *t*-tests revealed that means for RIP were not significantly different from zero for *citizens of the world* ($M = 0.00$, $SD = 1.18$, $t[66] = 0.000$, $p = 1.00$), *humans* ($M = -0.12$, $SD = 0.66$, t[73] = -1.583, $p = 0.118$) and the control group ($M = 0.18$, $SD = 1.05$, $t[82] = -1.569$, $p = 0.120$). That is, neither RIP nor ROP were observed in this study. Finally, a one-way ANOVA examining differences in relative ingroup prototypicality between conditions did not reveal a significant main effect of the experimental condition.

Evaluative status

Additionally, we explored mean differences between conditions for categories' evaluative status. A one-way

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9   EFAs were run for each condition, however none of the final solutions reproduced the theoretical dimensions for the social categories under analysis.

10   When political orientation was included as a covariate, results for the ANCOVA and simple contrasts were identical. When social dominance orientation was included as a covariate, the marginal effect on simple contrasts was not observed.

11   When political orientation and social dominance orientation were included as covariates, results for the MANCOVA's omnibus tests and simple contrasts were identical.

12   The preconditions for RIP were satisfied (see Supplementary material).

TABLE 5 Means, *SD*s and differences regarding the representation of the categories "citizens of the world" and "humans."

	Control (*n* = 83)	Citiz. World (*n* = 67)	Humans (*n* = 74)	Test
	M (SD)	*M (SD)*	*M (SD)*	
Relative ingroup prototypicality	0.18 (1.05)	0.00 (1.18)	−0.12 (0.66)	$F(2, 221) = 1.880$, $p = 0.155$, partial $\eta^2 = 0.02$
Evaluative status	4.87 (1.40)a,b	4.64 (1.38)a	5.26 (1.41)b	$F(2, 221) = 3.519$, ***p* = 0.031**
Valence	5.28 (1.23)a	4.73 (1.27)b	5.22 (1.27)a	$F(2, 221) = 4.006$, ***p* = 0.020**
Entitativity				$F(14, 430) = 3.859$, $p < 0.001$, *Wilks' Λ* = 0.789, partial $\eta^2 = 0.11$
Groupness	5.00 (1.64)a	4.81 (1.58)a	5.57 (1.51)b	$F(2, 221) = 4.536$, ***p* = 0.012**
Interaction	5.11 (1.35)a	4.82 (1.40)a	5.58 (1.22)b	$F(2, 221) = 5.973$, ***p* = 0.003**
Importance	4.80 (1.74)a	4.76 (1.72)a	5.61 (1.35)b	$F(2, 221) = 6.512$, ***p* = 0.002**
Common Fate	4.23 (1.88)	4.42 (1.73)	4.82 (1.57)	$F(2, 221) = 2.354$, $p = 0.097$
Common Goals	4.08 (1.73)a	4.69 (1.45)b	4.80 (1.42)b	$F(2, 221) = 4.814$, ***p* = 0.009**
Informativeness	3.42 (1.93)	3.97 (1.68)	3.65 (2.02)	$F(2, 221) = 1.560$, $p = 0.212$
Similarity	4.17 (1.89)	3.73 (1.70)	3.72 (1.68)	$F(2, 221) = 1.665$, $p = 0.191$
Choice	2.39 (1.55)a	3.27 (1.80)b	2.53 (1.71)a	$F(2, 221) = 5.688$, ***p* = 0.004**
Size	5.64 (1.73)a	5.93 (1.31)a	6.62 (0.82)b	$F(2, 221) = 10.657$, $p <$ **0.001**
Natural kindness (Essentialism)				$F(10, 432) = 5.765$, $p < 0.001$, *Wilks' Λ* = 0.778, partial $\eta^2 = 0.12$
Discreteness	5.04 (1.66)a	4.41 (1.74)b	5.23 (1.59)a	$F(2, 220) = 4.618$, $p =$ **0.011**
Naturalness	6.01 (1.08)a	4.76 (1.61)b	5.74 (1.42)a	$F(2, 220) = 16.565$, $p <$ **0.001**
Immutability	5.54 (1.57)a	4.77 (1.66)b	5.65 (1.47)a	$F(2, 220) = 6.460$, $p =$ **0.002**
Stability	4.75 (1.80)a	4.38 (1.50)a,b	3.96 (1.63)b	$F(2, 220) = 4.418$, $p =$ **0.013**
Necessity	4.49 (1.89)a	3.82 (1.72)b	4.97(1.65)a	$F(2, 220) = 7.534$, $p <$ **0.001**
Underlying reality (Essentialism)	4.42 (1.72)a,b	4.21 (1.66)a	4.92 (1.59)b	$F(2, 221) = 3.459$, $p =$ **0.033**
Group representations				$F(6, 438) = 1.465$, $p = 0.189$, *Wilks' Λ* = 0.961, partial $\eta^2 = 0.02$
One-group	5.19 (1.93)	5.39 (1.91)	5.78 (1.75)	$F(2, 221) = 2.015$, $p = 0.136$
Dual identity	5.30 (1.77)a,b	5.19 (1.89)b	5.84 (1.95)a	$F(2, 221) = 2.491$, $p = 0.085$
Two separate groups	4.43 (2.03)	3.99 (2.13)	3.93 (2.16)	$F(2, 221) = 1.350$, $p = 0.261$

Different letters show significant differences between conditions as a result of pairwise comparisons (LSD).

ANOVA revealed a significant effect of salience on the evaluative status (Table 5). Pairwise comparisons showed that participants in the condition *humans* scored higher on respect and admiration relative to those in the *citizens of the world* condition.

Valence

We also explored mean differences between conditions for categories' valence. A one-way ANOVA revealed a significant effect of salience on valence (Table 5). Pairwise comparisons showed that participants in the condition *citizens of the world* (vs. *humans*, and vs. control conditions) scored lower on the positive image toward the members of this group.

Entitativity

We explored mean differences between conditions for seven entitativity indicators (not assessed as a dimension). Results from a one-way MANOVA that considered the seven items as the dependent variables revealed a significant multivariate effect of condition on these indicators (Table 5). Follow-up one-way ANOVAs revealed a significant effect of condition on groupness, interaction, importance, and common goals; whereas there was not a significant effect on common fate, informativeness, and similarity (Table 5). Pairwise comparisons showed that participants in the *humans* condition, relative to those in the *citizens of the world* condition, scored higher on the perception that the category qualifies as a group (groupness), on the perceptions that members interact with one another (interaction), and on the importance of belonging to that group (importance). Additionally, participants in the control group (*daughters and sons*) scored significantly lower than did those in the condition of *humans* in terms of groupness, interaction, importance, and common goals; and they also scored lower than participants in the condition of *citizens of the world* in terms of common goals.

Perceptions of choice

We explored mean differences between conditions for perceptions of choice over the membership. A one-way ANOVA

revealed a significant effect of condition on category's choice (Table 5). Pairwise comparisons showed that participants in the condition of *citizens of the world*, relative to those in *humans* and control conditions, scored higher on the perception that membership in the category is the result of a choice.

Perceptions of group size

We explored mean differences between conditions for perceptions of group size. A one-way ANOVA revealed a significant effect of condition on category's size (Table 5). Pairwise comparisons showed that participants in the condition of *humans* scored higher on the perception that the category includes everyone on Earth, relative to those in *citizens of the world* and control conditions.

Essentialism

We explored mean differences between conditions for six essentialism indicators (not assessed as a dimension), namely the five items that compose the natural kindness dimension, and the single item assessing underlying reality. Results from a one-way MANOVA, that considered the five items of natural kindness as the dependent variables, revealed a significant multivariate effect of condition on these indicators (Table 5). Follow-up one-way ANOVAs revealed a significant effect of salience on discreteness, naturalness, immutability, stability, and necessity (Table 5). Pairwise comparisons showed that participants in the *humans* condition, relative to those in the *citizens of the world* condition, scored higher on the perception that the category is clear-cut (discreteness), natural (naturalness), difficult to change (immutability) and its members are required to have necessary characteristics to justify the membership (necessity). The control condition (*daughters and sons*) was not different than *humans* in all aspects except for stability (higher mean), and differed significantly from *citizens of the world* in all aspects (higher means), except for stability. Regarding the essence of the group, a one-way ANOVA revealed a significant effect of the experimental condition on underlying reality (Table 5), and pairwise comparisons showed that participants in the *humans* condition scored higher on the perception that members of the category have similarities and differences on the surface but underneath they are basically the same, relative to those in the condition of *citizens of the world*.

Group representations

We explored mean differences between conditions for group representations. Results from a one-way MANOVA did not reveal a significant multivariate effect of condition on group representations (Table 5). Nonetheless, univariate effects showed a main effect of condition that approached significance ($p = 0.085$) for the dual-identity representation. Pairwise comparisons pointed to a tendency of participants in the condition of *humans* salience to score higher on dual-identity representations relative to those on the condition of *citizens of the world*.

Discussion

Study 2 revealed, inconsistent with hypotheses, that when examining experimentally the potentially different impacts of making the all-inclusive superordinate categories *citizens of the world* and *humans* salient, no significant effects were observed on nationals' inclination to offer dependency-oriented help (H2a) or for autonomy-oriented help (H2b) toward migrants. Moreover, the salience manipulation did not significantly influence patterns of relative ingroup nor outgroup prototypicality. Nonetheless, different patterns of how *citizens of the world* and *humans* are cognitively represented emerged. Overall, the category of *humans* triggered higher entitativity and essentialist beliefs compared to the category *citizens of the world*. The results regarding group representations pointed to a tendency for the salience of *humans* to activate a stronger representation of host community members and migrants as two subgroups of the same team (i.e., dual-identity representations), however, considering the lack of significant main effects, we should interpret these results with caution.

General discussion

The main goal of the current research was to offer a new lens to better understand how different all-inclusive superordinate categories may produce different effects and to illuminate the psychological processes that account for different outcomes represented by responses to migrants. Considering *citizens of the world* and *humans*, commonly used all-inclusive categories, as labels for comparison, we examined their relationships to intergroup processes (Wenzel et al., 2016), cognitive representations (Gaertner et al., 2016), and impact on intergroup relations. These all-inclusive categories represent the highest level of identity abstraction (in categorical terms). We explored these relationships correlationally (Study 1) and experimentally (Study 2). To triangulate the similarities and differences between these all-inclusive categories, these studies also tested the effects of the strength identification with (Study 1) and the salience of (Study 2) these social categories, which are related but conceptually distinct constructs (Oakes et al., 1994; Ellemers et al., 1999; Wang and Dovidio, 2017). The process of identification with different all-inclusive categories might better predict intergroup outcomes given that it implies a stronger commitment to the specific group content (e.g., values, norms) than merely being exposed to information affecting the salience of these categories.

Overall, findings support the proposal that *citizens of the world* and *humans* differed in how they are cognitively represented with respect to relative ingroup prototypicality (albeit only in Study 1), as well as on perceptions of entitativity, essentialism, and to a lesser extent on the group representations (Study 2) they elicit for migrants. Regarding their impact on intergroup relations, the two studies did not converge, as only in Study 1 we found that

level of identification with each of these categories was associated with different types of intergroup helping, whereas, in Study 2, the salience of these all-inclusive superordinate categories did not trigger different patterns of helping.

The overall findings show that the categories *citizens of the world* and *humans* differ in several structural aspects, and to a less extent on their impact suggesting that might be better represented as different socio-psychological realities. Our research was, admittedly, exploratory, and we acknowledge several limitations. However, these limitations also suggest promising directions for future research to more comprehensively understand the nature, correlates, and consequences of different all-inclusive categories.

Relative ingroup prototypicality

Contrary to expectations, we did not observe relative ingroup prototypicality for *citizens of the world* or for *humans* in either of the current studies. Surprisingly, in Study 1 (but not in Study 2) relative outgroup prototypicality was observed for *citizens of the world*, as migrants were considered to be more prototypical for *citizens of the world* than participants' national group. It is worth noting that different measures of relative ingroup prototypicality were used in each study.

These results are not in line with previous research revealing ingroup projection for all-inclusive superordinate categories (e.g., Bilewicz and Bilewicz, 2012, "humanity"; Paladino and Vaes, 2009, "human"; Reese et al., 2012, 2016, "world population"). We can only speculate about possible explanations regarding the occurrence of relative outgroup prototypicality for *citizens of the world* in Study 1. Wenzel et al. (2016) proposed two aspects of how superordinate categories are represented that might equate the perceptions of prototypicality between groups: (a) the vagueness of the superordinate categories so that no subgroup can claim to better represent the undefined prototype; (b) the diversity (i.e., intra-category differences) of the superordinate categories so that different subgroups can be equally prototypical. Previous research has shown that people can differentiate specific attributes to both *citizens of the world* and *humans* (e.g., Carmona et al., 2020), indicating that these are not generally perceived to be vague and undefinable categories. Therefore, it seems plausible to discard the argument of vagueness to explain the absence of a relative ingroup prototypicality effect. As such, we advance alternative explanations. *Citizens of the world* may be seen as a particularly diverse category such that one's own group may be viewed as equally prototypical of this category, or even less prototypical than people, like *migrants*, who were formerly *citizens* of many different countries. Importantly, one explanation for one's group to be seen as less prototypical may be related to the potentially malleable prototypical meaning of *citizens of the world*. In certain circumstances people use this label to describe those who move around the world, who interact with different cultures and seem to have "no roots" nor a special bond to their country of origin (Türken and Rudmin, 2013; Carmona et al., 2022). Considering this meaning, the prototype of *migrants* (as those who live outside their country of origin) may be seen as more similar to the prototype of *citizens of the world*, than the one of one's own national group, which may therefore be seen as less prototypical for this superordinate category.

Even so, our results for the category of *humans* appear inconsistent with previous research. However, seemingly minor difference in phrasing may have fairly strong and systematic impact. Specifically, the terms used in previous research may have emphasized similarity/homogeneity—humanity, all humans, and human (implying a particular quality)—more than the term humans, which might allow for the category to be perceived as more diverse/heterogeneous in which group members differ greatly from one another and do not share many characteristics. The recognition, and perhaps acceptance, of differences between *humans* might have led to the perception of equal prototypicality between the national group and migrants. Thus, future research on relative ingroup prototypicality associated with all-inclusive categories might also assess perceptions of the complexity of these social categories directly, as well as consider how differences in phrasing that may emphasize either similarity or difference can affect group projection processes and, ultimately, other outcomes.

Group representations

The value of studying in future research the degree to which all-inclusive categories emphasize similarities versus differences may also further illuminate the pattern of findings we observed for group representations. A possible explanation for the finding that *humans* may tend to elicit a stronger dual-identity representation than *citizens of the world* might be that the category *humans* could be more effective in simultaneously emphasizing both similarities and differences among people (e.g., "all different, all equal," most likely in biological aspects). Also, participants perceived greater interaction between *humans* than between *citizens of the world*, which is a factor that can elicit the recategorization of two subgroups into a superordinate aggregate, either by one-group or dual-identity representations (Gaertner et al., 2016).

Entitativity and essentialism

Our results suggested that all-inclusive superordinate categories that encompass everyone, such as *citizens of the world* and *humans*, can be perceived as a group, in common sense, complying sufficiently with most requirements for entitativity. Nonetheless, the category *humans* scored significantly higher on several indicators of entitativity and essentialist beliefs, suggesting that people more strongly perceive the aggregate of *humans* (vs. *citizens of the world*) as a group, in which members are bonded together by an underlying essence. These results are in line with previous research showing that *humans* tend to be essentialized and perceived as having a biologically based essence

(Haslam et al., 2005). One possible explanation might be related to the spontaneous meanings that people themselves attribute to these categories. Previous research suggested that humanness-oriented labels (e.g., *all humans everywhere*) might activate more biologically based attributes (e.g., physical, emotional attributes), whereas global citizenship-oriented labels (e.g., *citizens of the world*) might activate more attitudinal based attributes (e.g., multiculturalism; cosmopolitanism; Carmona et al., 2020). Thus, we suggest that the biological-based content activated by humanness-oriented labels might boost essentialist beliefs about human nature, which is in line with research on humanness essence (e.g., Haslam et al., 2005). This is important considering that essentialist beliefs have been associated with negative effects of appealing to common humanity (e.g., Greenaway et al., 2011; Morton and Postmes, 2011). We note that these meanings might reflect the worldviews of the western socio-cultural context in which the research was carried out. Considering the potential cross-cultural variability, further research is needed to replicate these findings in different cultural contexts.

Intergroup helping

Contrary to expectations, identification with *citizens of the world* and *humans* were associated with different types of helping responses but manipulating the salience of these categories did not trigger different patterns of helping.

A possible explanation for the association between identification with *citizens of the world* and the tendency to offer dependency-oriented help or opposition to help (beyond the measurement issue) could be related to the different prototypical contents activated by this category. That is, the prototypical content of the category *citizens of the world* could have been experienced as a threat and triggered defensive helping (i.e., dependency-oriented help) or opposition to help. That is, the idea of what it means to be a *citizen of the world* seems to be related to multicultural and cosmopolitan views, which might reflect a worldview influenced by a globalized Western culture and might be malleable to contextual socio-status-political motives (Rosenmann et al., 2016). It is therefore plausible that when thinking about how much they identify themselves with *citizens of the world*, individuals might activate a prototype mostly composed of the attitudinal aspects that people share as members of a global political community, such as the endorsement of multiculturalism and cosmopolitanism. If that was the case, the identification with *citizens of the world* might have activated existing political divisions in society regarding multiculturalist views and could have been experienced as a threat by some host communities' members, particularly considering that national identification was also salient in this context. If so, the tendency to offer dependency-oriented help or opposition to help, might be linked to the motivation of host community members to maintain the status quo, namely their advantageous social position and their role as providers of help.

An alternative explanation for the association between identification with *humans* and the tendency to offer multiple types of help could be that when thinking about how much they identify with *humans*, individuals might have activated a category prototype mostly composed of the biologically based aspects that people share as members of the human species (e.g., physical appearance, need of bonding). If that was the case, identification with *humans* might have been less malleable to contextual socio-status-political motives, which might have been experienced as less threatening.

General limitations

In addition to the specific limitations and suggestions for future research, we acknowledge some general methodological limitations of the current work, which speak to conceptual issues to consider in future research.

One important aspect to consider is that in the current study participants were conceptualized as members of an advantaged group in numerical, economic, and social terms. Previous research has shown that different inclusive representations are preferred and have different consequences for groups of unequal status, depending on the cultural and historical context, or the groups' goals (e.g., Hehman et al., 2012). Whereas some research suggests that advantaged groups favor more assimilationist orientations, such as one-group representations (e.g., Dovidio et al., 2001), other research shows that they also endorse dual-identity representations, as these might mitigate threats to the ingroup distinctiveness and higher status within the superordinate category (Guerra et al., 2010, 2013; Gaertner et al., 2016). Thus, it is important that future research explores how advantaged and disadvantaged groups conceive of all-inclusive superordinate categories, as well as the potential role of distinctiveness motivations. Additional research might also investigate how personal and contextual influences shape the impact of all-inclusive identities. For example, as showed by Hackett and Hogg (2014), experiencing greater self-uncertainty tended to undermine community identification when diversity was important. Thus, future work might consider, along with the specific nature of all-inclusive identities, the role of personal and contextual factors.

One strength of these studies is that they cover a broad range of national samples. However, we caution that while there may be basic similarities in the ingroup-outgroup dynamics with respect to migrants across national contexts, there is also likely that how people think about migrants may vary as a function of geographical, historical, economic, and political influences. These cultural differences in the conceptualization of migrants, which we did not assess, could have also impacted our findings, and deserve to be investigated in future research (see, for example, Esses et al., 2006).

We highlight four additional directions for future research. First, that the category labels used for comparison might drive different connotations and meanings in different cultures and

languages (McFarland, 2017). Considering that our studies were conducted with international samples using the English language, they are not sensitive to translation and interpretation issues that might have occurred. As such, we recommend further research to examine the meanings of different labels and their intergroup outcomes, in cross-national samples and languages. Second, different measures were used in both studies to assess the same construct (e.g., RIP), due to concerns about the length of the studies. However, we cannot rule out that this might partially account for the lack of replication of some findings. Relatedly, the lack of replication might be due to the different designs employed in each study, which is not a limitation but an important aspect to consider. Third, our measure of *helping preferences* was designed for the present study, and it was not previously validated. Fourth, considering the lack of previous studies analyzing the relations between our main variables, the current studies are exploratory in nature. Thus, it is important that future research replicates and tests directional hypotheses, as well as uses other settings than online platforms (e.g., laboratory and real groups), and other target groups.

Conclusion

Understanding the effects of all-inclusive social categories on how people think about, feel about, and behave toward migrants, specifically, and people originally conceived of as outgroup members is valuable both theoretically and practically.

One particularly key finding is that the effects of all-inclusive identities can differ in important ways as a function of the specific identity involved. Overall, the current studies suggest that the all-inclusive superordinate categories *citizens of the world* and *humans* might be better represented as different socio-psychological realities, given their differences in terms of *structure* and *impact*. In light of these findings and interpretations, we corroborate the proposition that the interchangeable use of different labels is problematic, considering these might activate different content and thus different identity and intergroup processes, as well as behavioral consequences (Reysen and Katzarska-Miller, 2015; Reese et al., 2016), which could partly account for the inconsistencies in their intergroup outcomes.

Beyond the theoretical contribution, we expect the current work to provide researchers, policymakers, educators, or practitioners an awareness about the need to critically account for the complexity of appealing to all-inclusive forms of identification and considering their meanings within the structural systems of power in which they are used. In fact, one approach to mobilize people to take prosocial actions on global matters has been to enhance a sense of togetherness, by using statements such as "we are all citizens of the world" or "we are all humans." Our concern is that, in a polarized world, the salience of different all-inclusive superordinate categories might drive undesirable societal outcomes, such as the maintenance of the status quo between groups of unequal status. To our understanding, one of the core

questions in terms of impact is not simply whether all-inclusive identities promote prosocial behavior - there is evidence that they generally do – but whether they promote empowering interactions, capable of reducing or eliminating the social disparity, and promote social change. Further research is needed to continue the search for the optimal conditions under which all-inclusive superordinate categories might contribute to solve urgent global issues, building more inclusive societies, and ultimately foster socio-structural equality worldwide.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Ethics statement

Ethical review and approval were not required for the study on human participants in accordance with the local legislation and institutional requirements. The patients/participants provided their written informed consent to participate in this study.

Author contributions

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Supplementary material

The Supplementary material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fpsyg.2022.986075/full#supplementary-material

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COVID-19, economic threat and identity status: Stability and change in prejudice against Chinese people within the Canadian population

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Objectives: Previous studies found a general increase in prejudice against Chinese people during the first months of the pandemic. The present study aims to consider inter-individual heterogeneity in stability and change regarding prejudice involving Chinese people during the pandemic. The first objective is to identify and describe different trajectories of prejudice over a seven-month period during the pandemic. The second and third objectives are to test the association between trajectory group membership and antecedent variables such as: socio-demographic factors (i.e., age, gender, political affiliation) and two psychological mechanisms, namely economic threat and global citizenship identification.

Methods: A representative Canadian sample ($N=3,617$) according to age, gender and province of residence, was recruited for a 10-wave survey starting from April 2020 to December 2020. First, a group-based modeling approach was used to identify trajectories of prejudice. Second, a multinomial logistic regression model was used to test associations between membership in trajectories and antecedents.

Results: Four trajectories were identified. The first three trajectories have a low (71.4% of the sample), high (18.5%) or very high (5.3%) level of prejudice *against* Chinese people which is relatively stable over time. The fourth trajectory (4.9%) reports low levels of prejudice *in favor* of Chinese people which become more positive throughout 2020. Regarding socio-demographic factors: gender is not associated with trajectory group membership, younger people are more likely to follow the trajectory in favor of Chinese people and conservatives are more likely to follow the highest trajectories against Chinese people. Regarding some psychological mechanisms: personal but not collective economic threat is associated with the trajectory in favor of Chinese people. Finally, the highest levels of

prejudice are found when the strategy of identification is more local rather than global.

Conclusion: The present study shows that Canadians differ in terms of both their level and change in prejudice against Chinese people throughout the pandemic with some socio-demographic groups being more likely than others to be associated with prejudice. The results also suggest that a promising way to tackle the major social issue of prejudice is to highlight a vision of the world where individuals are all "global citizens" facing the same challenge.

Introduction

The COVID-19 pandemic first identified in Wuhan, China, has recently transformed societies and the lives of billions of individuals. Since Chinese people are often held responsible for the pandemic (Borja et al., 2020; Jackson et al., 2020), they could have been affected by a parallel "racial epidemic" (Pang, 2021, p. 235). As an illustration, many media outlets and authors evoked the emergence of an international and global "anti-Chinese sentiment" (Kang, 2020; Vachuska, 2020; White, 2020).

This negative sentiment towards individuals or groups, strictly based on the group membership, refers to "prejudice" (Leyens and Yzerbyt, 1997; Leyens, 2020). Many previous studies on prejudice against Chinese people during the pandemic are cross-sectional and do not investigate stability or change in prejudice over time. Some studies considered multiple measurement time points to directly address if there was indeed an increase in prejudice. These prospective studies showed that anti-Chinese slurs increased on the internet during the first months of the pandemic (Nguyen et al., 2020; Schild et al., 2020; also see Vachuska, 2020).

As the pandemic entails specific factors that can impact prejudice, there is a need for intensive longitudinal studies to investigate if prejudice will increase, crystallize or decrease as the crisis continues. Most importantly, additional studies need to verify the external validity of past findings as they tended to assume that the noted increase in prejudice was embraced by a homogeneous population. Indeed, it has long been theorized that, while facing the same context, inter-individual differences occur during the formation and maintenance of prejudice, leading to different baseline levels and patterns of change across individuals with some individuals remaining stable while others decreasing their levels of prejudice (Foley, 1974). These inter-individual differences in levels and evolution of prejudice should be taken into account when it comes to understanding the dynamics of prejudice, especially in such an unprecedented, lasting crisis like the COVID-19 pandemic.

The main goal of this paper is to determine whether in a given population, individuals would react in the same, homogeneous way regarding the level of change in their prejudice against Chinese people during the pandemic or would several patterns of prejudice be observed. Can the population be divided into homogeneous subgroups? With this perspective in mind, it is important for longitudinal research to be conducted among large, representative samples of their studied populations in order to ensure that the proportion of each eventual subgroup could be adequately estimated. The present study benefits from such empirical data, because it followed more than 3,500 Canadians adults with similar age, gender, and province of residence to those of the Canadian adult population over the first months of the pandemic.

The first objective aims to identify and describe the different trajectory groups of prejudice. This new contribution will allow us to reach a deeper, more acute understanding of the dynamics of prejudice against Chinese people during the pandemic by answering the following questions: Did the level of prejudice change over time for some groups of individuals? If yes, for whom did it change?

Distinguishing if there are one or more subgroups of prejudice among a given population is the first step to fully understand the dynamics of prejudice during the COVID-19 pandemic. Next, understanding what can fuel or lessen the different patterns of prejudice in this specific context may have important practical and theoretical implications. Our second objective aims to test the association between the trajectory group membership of prejudice and "traditional" socio-demographic factors that have already been associated with prejudice against Asian people during the pandemic (i.e., age, gender, political affiliation). Finally, our third objective aims to test the association between the trajectory group membership of prejudice and two psychological mechanisms prominent in the socio-psychological literature and known to be relevant within a context of social change: economic threats (i.e., relative deprivation theory) and identity status (i.e., global versus local citizenship identification).

COVID-19 and the increase in prejudice against Chinese people

When COVID-19 was recognized as a pandemic by the World Health Organization on March 11, 2020, there were already more than 121,000 infections (Faucher et al., 2022) and 4,500 deaths worldwide (Ritchie et al., 2020). Global daily infections increased rapidly and drastically throughout 2020 while the number of deaths reached 1.88 million at the end of December 2020, with almost 16,700 occurring in Canada (Ritchie et al., 2020). Unlike China or the United States, Canada was less impacted by the pandemic because the country reacted quickly to stop the spread of the virus with, for example, the closing of the borders on March 17, 2020, the successful mobilization of the population regarding adherence to health measures, and several other factors that allowed the health system not to become overwhelmed (Detsky and Bogoch, 2020; Ferrante et al., 2020a, b). The rate of increase in daily infections was low compared to other countries, with even a decline in cases from May 4 to July 13, 2020 (i.e., waves 3 to 7 in the present study) before increasing again but weakly until late December 2020 (Ritchie et al., 2020).

In the presence of a pathogen, individuals tend to develop prejudice against certain groups without even being aware of it, as they tend for example to avoid people in contact with the virus to protect themselves (i.e., behavioral immune system theory, Schaller, 2011; Schaller and Park, 2011; Taylor, 2019). Since the belief in a pathogen-ethnicity link is strongly rooted in the collective imagination (Gee et al., 2020), foreigners have often been targets of prejudice during previous epidemics, especially Chinese people (White, 2020; Jones, 2021). The COVID-19 pandemic was no exception and its association with China has even been this time directly established and mediatized (i.e., the so-called "Chinese Virus").

Consequently, a lot of behavioral incidents directed against Chinese people and generally against Asians have been reported globally during the COVID-19 pandemic. International surveys and studies indeed corroborate the fact that Asian people were particularly discriminated against due to the pandemic (Cheah et al., 2020; Ipsos MORI, 2020; Ruiz et al., 2020; Lee and Waters, 2021). As a result, the increasingly "anti-Chinese sentiment" assuming to underly such behavioral incidents became an axiom instead of a research avenue. Thus, there is a lack of research on prejudice against Chinese people within the broad COVID-19 pandemic research.

Even among the rare studies that did focus on prejudice, "anti-Chinese sentiment" is assumed to have increased within the general population. Thus, many of these studies focused on predictors of the prevalence or frequency of prejudice (see Croucher et al., 2020; Dhanani and Franz, 2020a, b; Tsai et al., 2020). For example, Dhanani and Franz (2020a, b) showed using a cross-sectional design in the United States, that factors such as fear of COVID-19, lack of knowledge about the virus, lack of trust in science and trust in the American ex-president (i.e., Donald Trump) were positively associated with prejudice against Chinese

and Asian people. In another experimental study conducted among American adults, the same authors manipulated three factors in a statement related to the pandemic: (1) the fact that the coronavirus emerged in China or consisted in a mutation unrelated to China, (2) the severity of economic threats due to the pandemic, and (3) the severity of the health threat engendered by the coronavirus. They found that focusing on the Chinese origin of the virus and on the economic threat of the virus caused prejudice against Asian people while the health threat did not (Dhanani and Franz, 2021).

Although the investigation of predictors or causal factors related to the pandemic is necessary in order to understand what may fuel or lessen prejudice in individuals in this specific context, neither cross-sectional nor experimental studies inform us about change in prejudice over the course of the pandemic. Yet, one cannot just assume that prejudice increased during the pandemic based on media reporting or research on related-phenomena (e.g., discrimination). The only way to know if anti-Chinese manifestations are also increasingly happening on a cognitive and affective level is to investigate change in self-reported prejudice. In summary, it is essential to consider the possibility for prejudice to change (e.g., increase, decrease) throughout the pandemic.

The other previous studies are more informative regarding change in prejudice following the pandemic. By using a long-term perspective with data extracted from the internet, they addressed the question: Did prejudice increase over time? For example, the American Google Trends' analysis of Vachuska (2020) conducted from February 2020 to June 2020 shows that searches on pandemic-related information correlated both with an increase in anti-Chinese slurs and a disinterest toward Chinese restaurants. In the same vein, another international study conducted from November 2019 to March 2020 demonstrated that the use of anti-Chinese slurs was more widespread and diversified over time on social media such as Twitter (Budhwani and Sun, 2020; Nguyen et al., 2020; also see Schild et al., 2020). In summary, these studies aimed to understand whether prejudice against Chinese people increased during the pandemic or not, indeed confirming such an increase during the first months of the pandemic.

The major contribution of these longer-term prospective studies is their interest regarding stability and change in prejudice during the pandemic. By showing that prejudice increased following the first months of the pandemic, they support the general assumption of a growing "anti-Chinese sentiment," highlighting a social issue that needs to be addressed. Nevertheless, the interpretation of their results should be nuanced, as the increase in observed prejudice cannot necessarily be generalized to the entire population. First, these studies may have an important selection bias given the fact that their data was indirectly extracted from the internet. Second, the approach used by these studies reveals that prejudice increased on average, as a general tendency within a given population. It does not mean that everyone in the population embraced this increase in prejudice. There were for example many supportive individuals and organizations that helped the Chinese community during the pandemic (Macguire,

2020; Chan, 2021; Lui et al., 2021). Thus, asking whether there was a general increase in prejudice or not over the course of the pandemic is not sufficient. The next step is to better understand who exactly is concerned with this increase in prejudice and to determine if other systematic patterns of change in prejudice could be identified.

The present study proposes an in-depth investigation of the dynamics of prejudice against Chinese people during the pandemic within the Canadian adult population. Such an investigation requires taking into account inter-individual heterogeneity within a given population, as individuals could report a different pattern of change in prejudice over time. These patterns of change in prejudice can also be referred to as a "trajectory" of change.

COVID-19 and the heterogeneity in trajectories of prejudice

The first objective of the present study proposes to identify the heterogenous trajectories of prejudice against Chinese people during the COVID-19 pandemic. This new theoretical and methodological perspective examined by the present study in the literature of prejudice is based on the assumption that when it comes to understanding the dynamics of prejudice within a given population, inter-individual differences should be taken into consideration. In other words, a population is not a homogeneous entity regarding both prejudice levels and change. Inter-individual differences are thus expected to be revealed at two levels: a difference in the initial level of prejudice may be observed as well as a difference in the degree of stability/change (i.e., linear, quadratic or more complex polynomials).

Heterogeneity in initial levels of prejudice

Regarding the initial level of the intensity of prejudice, the literature indeed assumes that some individuals have low levels of prejudice while others have high levels against any groups (Lindzey, 1950; Allport, 1979). In addition, these inter-individual differences led to the first theories which explain heterogeneity in levels of prejudice by personality traits (i.e., the authoritarian personality theory, Adorno et al., 1950; the scapegoat theory of intergroup conflict, Leyens and Yzerbyt, 1997). Such a perspective implied a certain within-person stability as some individuals would be predisposed to remain consistently prejudiced while others would be predisposed to remain less or non-prejudiced. That is to say, individuals would distinguish themselves based on their basic, initial level of prejudice, regardless of their change in prejudice over time.

Taking into consideration this theoretical notion of systematic inter-individual differences regarding basic levels of prejudice has important implications when it comes to the study of change in prejudice. Indeed, individuals who report different levels of prejudice during a first observation may also report different patterns of change in prejudice over the course of the following observations. For example, Foley (1974) found that while facing the same context of interracial contact, the initially lowest prejudiced individuals did not change in their prejudice while the initially highest prejudiced individuals were those who reported the biggest decrease in prejudice. The author concludes about the possibility for prejudice to change over time, while specifying that the direction of change is a function of personality and environmental factors.

Heterogeneity in the evolution of prejudice

Regarding the evolution of prejudice over time, it requires recognizing that prejudice can change in different and even multiple directions (e.g., increase, decrease, curvilinear trajectory), but can also remain stable. Contrary to Foley's findings, some authors argue, for example, that the more extreme the attitudes are, the more resistant they are to change (Eagly and Chaiken, 1995). There is support in the literature for both the stability and the malleability of prejudice over time (Akrami et al., 2009). While pioneering theories of prejudice focused on personality by explaining the likelihood to be prejudiced in a stable way, and considering prejudice as "a trait of personality" (Allport, 1979, p. 73), subsequent theories of prejudice explored the malleability of prejudice by investigating which situational factors lead to change in prejudice. For example, although the intergroup contact hypothesis assumes that intergroup contact reduces prejudice (for a meta-analysis, see Pettigrew and Tropp, 2006), it requires to take into consideration several conditions and factors for the reduction to occur (Allport, 1979; Pettigrew and Tropp, 2008).

While previous studies on the COVID-19 pandemic answered the question "Is there a change in prejudice towards Chinese people?" The current work considers both the stability and the malleability of prejudice raising the question: does everyone change, and if so, do they change in the same direction? This new contribution will further help to understand which individuals are the most vulnerable when it comes to developing and/or renforcing prejudice in the context of dramatic social changes, which are "the new normal" (de la Sablonnière, 2017, p. 2).

COVID-19 and antecedents of prejudice heterogeneity

Socio-demographic factors

Age and gender

Some studies have been conducted to determine if low versus high prejudiced individuals differ regarding their socio-demographic characteristics (Allport and Kramer, 1946; Lindzey, 1950). Overall, studies contradict each other and did not lead to established conclusions, especially regarding "sex, age, [and] region" (Allport, 1979, p. 80). Such contradictory results were also reported in the COVID-19 pandemic context: some cross-sectional studies found that age and gender predict prejudice against Asian people with young people and women being less

prejudiced than older people and men (Dhanani and Franz, 2020a, b, 2021), whereas Tsai et al. (2020) found that older people were less prejudiced against Asian people than younger people and that there was no difference between men and women.

However, none of these authors discussed gender differences, which probably reflects the literature's lack of explanations about underlying mechanisms. Although studies consistently found women to be less prejudiced than men, this difference is assumed to stem from cultural rather than natural factors, such as institutional ones, as this difference is not observed among children (Allport and Kramer, 1946). Regarding age, studies suggest that prejudice increases with age (Henry and Sears, 2009), while rejecting the explanation of a "cohort effect." Thereby, some authors argue for a cognitive explanation as older people would be less able of repressing their implicit (i.e., unconscious) prejudice while another sociocultural explanation posits that the increased levels of prejudice observed among older people could be explained by a greater endorsement of the right-wing authoritarian ideology (Franssen et al., 2013).

Political affiliation

The association between political affiliation and prejudice is well documented. Research consistently found conservatives to be more prejudiced than liberals (Lindzey, 1950; Allport, 1979) and these results have been replicated during the COVID-19 regarding prejudice against Chinese and Asian people (Tsai et al., 2020; Dhanani and Franz, 2020a, b, 2021).

Two theories have proposed some explanations about the tendency for conservatives to be more prejudiced than liberals (Kite and Whitley, 2016). According to the social dominance orientation (SDO) theory which found strong correlations between SDO construct and conservative political ideology, conservatives would endorse at a greater extent a hierarchical view of the social system, based on the ingroup's power and dominance over lower-status groups (by opposition to an egalitarian view based on equality) that they would use as "legitimizing myths" to justify their prejudice and privileges. Regarding the attribution-value model (Crandall et al., 2001), prejudice results from the perception that members of minority groups present negative characteristics for which they are at fault. Since the notion of personal responsibility is more important for conservatives than liberals, they would attribute negative outcomes (e.g., their poverty) to minority groups rather than to other circumstances. As an illustration related to the COVID-19 context, Hardy et al. (2021) found that conservatives were more likely than liberals to blame China and Chinese people for being responsible for the pandemic.

Finally, research also used to support that conservatives are more likely sensitive to threat than liberals, as they would perceive the world as more dangerous and unpredictable (Van Leeuwen and Park, 2009). However, it has been nuanced, as Nail et al. (2009) showed that when liberals are exposed to some threats, they tend to become more conservative. But one could still wonder if the results of Nail et al. (2009)'s studies might not depend on the type of threat assessed. Indeed, contemporary research on the link between political affiliation and threat suggests that some threats such as climate change would constitute a lesser concern for conservatives than liberals. In the COVID-19 pandemic context, Calvillo et al. (2020) observed, for example, that conservatives perceived the virus as less dangerous but were at the same time more likely to endorse conspiracy theories about the spread of the virus, which is an attitude linked to prejudice (Jolley et al., 2020; Douglas, 2021).

Psychological mechanisms

Economic threat

Economic insecurities or dissatisfaction constitute a major human concern which is often associated with an increase in prejudice (Allport, 1979; Stephan and Stephan, 2000, 2017). The relative deprivation theory (Crosby, 1976) offers a conceptualization of such an economic threat. In the present study, we will focus on economic temporal relative deprivation, both personal and collective. Economic temporal relative deprivation refers to the perception of a disadvantage between the current state of economic resources possessed by an individual (personal, referred in our study as personal relative deprivation) or her/his group such as Canadians (collective, referred as collective relative deprivation) compared to the individual's own or group past situation. Added to this perception is an unpleasant feeling that results from this comparison over time as individuals feel themselves dispossessed by something they may otherwise deserve (Runciman, 1966; Albert, 1977; Walker and Pettigrew, 1984). It has been demonstrated that high levels of economic temporal relative deprivation are positively related to prejudice toward an outgroup (Dambrun and Guimond, 2001; Dambrun et al., 2006; de la Sablonnière et al., 2013).

The relative deprivation theory distinguishes itself from previous theories which consider an economic threat (e.g., integrated threat theory; Stephan and Stephan, 2000, 2017) by highlighting the idea that threat comes from the gap between two states rather than from the object of the threat itself. We assumed that relative deprivation theory is relevant regarding the pandemic context as this event happened with a "before" and an "after." This theory is widely supported by research in predicting prejudice (Smith et al., 2012).

Identity status

Social identification refers to the process by which individuals feel themselves belonging to several significant ingroups by sharing characteristics with the other ingroup members (i.e., social identity theory, Tajfel, 1982). Social identification may occur at several levels, such as at a local "subgroup" level more or less inclusive (e.g., national identification) and at a global "supra ordinal" level of mankind, which is the most inclusive one (i.e., global citizenship identification) (i.e., self-categorization theory, Tajfel and Turner, 1986; Turner et al., 1987). Social identification is highly context dependent; in this perspective, if individuals can

identify themselves with multiple groups to which they belong, recent studies suggests that social identification occurs one ingroup at a time as the multiple identities possessed by individuals remain cognitively separated (Caron-Diotte and de la Sablonnière, 2022). Specifically, literature suggests that local and global citizenship identification are two distinct and separated strategies of identification which serve different purposes and can lead to different outcomes notably in terms of prejudice (Gorman and Seguin, 2018; Jetten et al., 2020). At the very least, we might say that certain identities take precedence over others due to circumstances or situations.

In line with this theoretical perspective, Jetten et al. (2020) recognized several scenarios regarding identity status and prejudice within the pandemic context. On the one hand, individuals may identify themselves with a local ingroup in opposition to an outgroup likely to propagate the coronavirus such as the Chinese people which will result in an "us" versus "them" dynamic. Local identification is indeed a common strategy while facing an existential threat such as the coronavirus which systematically leads to denigration and prejudice against outgroups (i.e., terror management theory, Greenberg et al., 1986; Greenberg and Kosloff, 2008). Literature suggests that higher levels of local identification are positively associated with prejudice (Tajfel and Turner, 1986; Castano et al., 2002; Bourhis, 2020). On the other hand, individuals may identify themselves globally, as citizens of the world. This type of identification referred in the present study as "global citizenship identification" can be situationally activated or stem from individual differences, with some individuals having a greater tendency than others to identify themselves as global citizens (Hamer et al., 2019). According to the common identity model (Dovidio et al., 2000) which uses the situational approach (Hamer et al., 2019), the more inclusive the ingroup identification, the less prejudice there is (Gaunt, 2009; Leyens, 2015). Since global citizenship identification is the ultimate level of inclusiveness, literature supports that it is associated with less intergroup bias such as prejudice (McFarland, 2017; Sparkman and Eidelman, 2018) with a greatest valuation on human rights and lives (McFarland et al., 2019; Sparkman and Hamer, 2020). The beneficial outcomes of global citizenship identification have even been studied in this unprecedented, global context of the COVID-19 pandemic, suggesting that compared to local identification, global citizenship identification was associated with pro-social behaviors aiming at preventing the propagation of the virus (Barragan et al., 2021; Marchlewska et al., 2022; Sparkman, 2022). In this paper, we refer to "local identification" at a national level (i.e., Canadian citizens).

Overview of the present study and hypotheses

The present study is part of the project: "COVID-19 Canada: The end of the world as we know it?" ("COVID-19 Canada: La fin du monde tel qu'on le connaît?," in French), which was approved by the Ethic Committee for Research in Education and Psychology at the Université de Montréal. This project consists of a large national and longitudinal 12-waves survey spanning from April 2020 to April 2022. Readers interested in obtaining detailed information about the survey and its methodology can consult the technical reports (de la Sablonnière et al., 2020a; Caron-Diotte et al., 2021).

The present study focuses on the first year of the pandemic with data from waves 1 to 10 (early April 2020 to late December 2020). Our three objectives are (1) to identify trajectory groups of prejudice against Chinese people, (2) to test the association between the membership of these trajectory groups and socio-demographic factors, and (3) to test the association between the membership of these trajectory groups and two COVID-19-related psychological mechanisms.

> *Hypothesis 1*: There are different trajectory groups of prejudice against Chinese people during the COVID-19 pandemic which differ regarding their initial level of prejudice (e.g., low, medium, high) and their change over time (e.g., increase, stagnation, decrease).

> *Hypothesis 2*: Trajectory group membership of prejudice is associated with socio-demographic factors. Regarding political affiliation, it is expected that conservatives will be more likely to belong to high trajectory groups of prejudice than liberals (H2a). Regarding age and gender, we do not make any specific sub-hypothesis.

> *Hypothesis 3*: Trajectory group membership of prejudice is associated with economic threat. More specifically, it is expected that participants who report more (H3a) personal relative deprivation and (H3b) collective relative deprivation will be more likely to belong to high trajectory groups of prejudice.

> *Hypothesis 4*: Trajectory group membership of prejudice is associated with identification status. More specifically, it is expected that participants who report a more local identification over a global one will be more likely to belong to high trajectory groups of prejudice.

Materials and methods

Participants and procedure

Tables 1, 2 provide information about the sample's socio-demographic characteristics and the assessment period at each wave with all sample sizes.

Participants

A total of 3,617 adults residing in Canada were recruited via the online survey firm *AskingCanadians* (*Qu'en pensez-vous*, in

TABLE 1 Information about data collection.

Wave	Response rate	Sample size (N)	% (n) women	Mean age (range)	Survey date	No. of days to complete the survey
1	100.0%	3,617	50.5% (1827)	47.6 (18–92)	April 6th–May 6th 2020	14
2	63.0%	2,282	48.9% (1115)	49.0 (18–86)	April 21st–May 13th 2020	7
3	65.5%	2,369	49.2% (1165)	48.8 (18–86)	May 4th–May 25th 2020	7
4	63.5%	2,296	48.5% (1113)	48.9 (18–86)	May 18th–June 10th 2020	7
5	59.6%	2,154	48.7% (1048)	49.3 (18–92)	June 1st–June 23rd 2020	7
6	58.5%	2,116	48.8% (1033)	49.4 (18–92)	June 15th–July 13th 2020	14
7	57.6%	2,072	49.1% (1017)	49.8 (18–92)	July 13th–August 8th 2020	14
8	51.7%	1,871	49.4% (924)	50.4 (18–92)	August 17th–September 13th2020	14
9	50.3%	1,821	48.4% (882)	51.8 (18–92)	September 21st–October 19th 2020	14
10	52.5%	1,883	48.4% (911)	50.3 (18–86)	November 25th–December 28th 2020	30

TABLE 2 Distribution of participants according to province of residence.

Wave	Province of residence									
	Alberta	British Columbia	Manitoba	New Brunswick	Newfoundland and Labrador	Nova Scotia	Ontario	Prince Edward Island	Quebec	Saskatchewan
1	12.1% (439)	14.7% (532)	3.3% (119)	2.0% (71)	1.4% (51)	3.4% (123)	39.1% (1415)	0.7% (25)	20.6% (747)	2.6% (95)
2	12.1% (276)	14.6% (334)	3.3% (75)	2.1% (47)	1.5% (34)	3.7% (85)	41.5% (947)	0.6% (14)	18.0% (411)	2.6% (59)
3	12.2% (289)	14.5% (344)	3.2% (76)	1.6% (39)	1.3% (31)	3.3% (79)	40.6% (962)	0.6% (15)	20.1% (475)	2.5% (59)
4	12.5% (287)	15.2% (348)	3.2% (74)	1.7% (40)	1.3% (30)	3.5% (80)	40.8% (937)	0.5% (11)	19.3% (443)	2.0% (46)
5	13.1% (283)	14.7% (316)	3.6% (77)	1.9% (41)	1.3% (27)	3.8% (81)	41.4% (891)	0.6% (14)	17.3% (372)	2.4% (52)
6	12.3% (260)	13.9% (294)	3.4% (72)	1.9% (40)	1.3% (27)	3.6% (76)	41.3% (874)	0.6% (12)	19.4% (411)	2.4% (50)
7	12.8% (266)	14.8% (306)	3.4% (71)	1.7% (35)	1.4% (28)	3.2% (67)	39.4% (816)	0.6% (13)	20.2% (419)	2.5% (51)
8	12.6% (235)	15.7% (293)	3.2% (59)	2.1% (39)	1.3% (24)	3.7% (69)	40.0% (749)	0.4% (8)	18.7% (350)	2.4% (45)
9	12.2% (222)	14.6% (265)	3.1% (57)	1.8% (33)	1.2% (21)	3.1% (57)	42.7% (778)	0.5% (9)	18.7% (341)	2.1% (38)
10	12.7% (239)	15.15 (284)	3.1% (58)	2.1% (39)	1.0% (18)	3.3% (62)	39.9% (751)	0.5% (9)	20.3% (383)	2.1% (40)

French). The sample is representative of the adult Canadian population by age, gender and province of residence at the first wave of the study (de la Sablonnière et al., 2020a). The proportion of participants born in Canada and abroad was also comparable to the Canadian population, with 79.5% ($n = 2,858$) of participants reporting being born in Canada. Regarding the proportion of Chinese people, 4.2% of participants indicated China as their country of birth (de la Sablonnière et al., 2020a), which was consistent with data from Statistique Canada (2013) indicating that Chinese people accounted for 4.0% of the Canadian population in 2011. More broadly, 6.7% ($n = 243$) of the sample considered themselves Chinese.

At wave 1, participants were aged between 18 and 92 (M = 47.6; SD = 17.0) and females represented 50.5% of the sample ($n = 1,827$; with 0.1% "other," $n = 2$). The age of participants was distributed as follows: 11.0% aged 18–24 ($n = 399$), 16.6% aged 25–34 ($n = 599$), 16.9% aged 35–44 ($n = 614$), 15.9% aged 45–54 ($n = 578$) and 21.8% over 65 ($n = 789$). The level of education was particularly high within the sample since half of the sample (50.2%; $n = 1815$) had a university degree.

Exclusion criteria

First, as a precaution to ensure that the participation was taken seriously, we excluded participants who responded too quickly to a questionnaire but only for the wave in question (i.e., less than 4 min). This cut-off point was determined following the survey firm's recommendation. No cut-off could have been set for extremely long completion time since participants had more than 1 day to complete the questionnaire and had the possibility to do it several times. We also introduced two attention check items from the second wave and excluded participants who failed to correctly answer at both for the wave in question. Second, we excluded participants who did not answer to at least three waves for the dependent variable (i.e., "prejudice," starting from wave 3 to 10) as it is the minimum number of waves required for modeling a linear trajectory of change. Third, we excluded participants who identified themselves as "other" in terms of gender, who represented a negligible proportion of the sample ($n = 2$, 0.1%). To conclude, participants were excluded from the original sample based on these three criteria. The remaining sample consisted in 2,460 participants at wave 1.

TABLE 3 Coefficients for the binary logistic regression predicting participation at wave 10.

	Estimate	Standard Error	Value of p	Odd ratio	95% CI
Constant	−0.06	0.21	0.772		
Age	0.02	0.00	0.000	1.02	(1.01–1.02)
Gender	0.09	0.10	0.357	1.10	(0.90–1.34)
Education (university vs. non-university)	0.07	0.10	0.499	1.07	(0.88–1.31)
Political affiliation	0.01	0.03	0.582	1.02	(0.96–1.07)
Chinese ethnicity	0.22	0.19	0.238	1.24	(0.87–1.79)

$R^2 = 0.02$ (Cox-Snell), 0.02 (Nagelkerke). Model $\chi^2 (5) = 34.91$, $p = 0.000$.

Sample's representativeness

The sample's representativeness was established using the first wave of the survey (de la Sablonnière et al., 2020a). Although trajectories analysis uses FIML, missing data largely due to attrition may impact the results as well as the sample's representativeness.

First, we conducted a binary logistic regression model to examine if some socio-demographic variables would predict individuals' participation in the last 10th wave. Participants' province of residence was not included in the logistic regression model because it made little sense to pick or select a particular province or region as the comparison group. The number of participants by province seemed stable from waves 1 to 10 (Table 2). According to the results (Table 3), only age is a significant, but weak predictor of participation in the 10th wave, with older participants being more willing to have participated ($b = 0.02$, Wald $\chi2(1)$, $= 32.13$, $p < 0.001$). The conclusion of that analysis is that since attrition is not associated with participants' socio-demographic characteristics, it should not have affected the sample's representativeness over time.

Second, in order to limit the disparity between our sample and Canada's adult population, we carried out a weighting process (Mercer et al., 2018) to adjust for identifiable socio-demographic deviations of our sample, based on available data from Statistics Canada. The weighting process was conducted under the function "calibration" from the icarus package on R. The weighting process selected the best combination of calibration variables (among gender, province of residence, number of people in the household, number of minors in the household, Canadian born, Aboriginal origin, mother tongue and education) fitting model by retaining the one that minimized the average estimation error on a range of 13 external benchmark measurements based on data available from Statistics Canada. In short, the weighting procedure used tried to find the balance between reducing the bias due to the lack of representativeness of the sample and artificially increasing standard errors. The maximum range of the weights was fixed at 2.5 and the weighting procedure consequently allowed us to create weights ranging from 0.5231 to 3.0231 with a mean of 1. The weighting process reduced bias by 9.56% according to the selected benchmark variables. The analysis was performed with and without the weights. Since result patterns were the same, analyses including the weights are presented in order to improve the sample's representativeness.

Procedure

The participants could choose which language (French or English) they preferred to complete the survey. Completion took between 15 and 20 min per questionnaire and was carried out online using an electronic device such as a cellphone, tablet, or computer. Participants who completed the first wave were invited to complete all subsequent ones. In other words, even if they missed one or more waves, they had the possibility to return to their participation at each new one. As a result, the number of waves to which participants responded may vary from participant to participant. Participants were rewarded with approximately 2.50 Canadian dollars per completed questionnaire obtained in the form of points redeemable at one of the partner companies of their choice.

Measures

Objective 1: Trajectory groups of prejudice

Prejudice against Chinese people

From waves 3 to 10, participants were asked to report their personal feelings toward "Canadians" and "Chinese people" using a Likert scale, ranging from 1 (*extremely negative)* to 10 (*extremely positive*). Participants who preferred not to answer were given the option of choosing: "Prefer not to answer" in which case their answer was coded as missing.

To create a measure of prejudice against Chinese people, a "difference" score was used: the attitude toward Chinese people was subtracted from the attitude towards Canadians. Positive scores indicated higher prejudice against Chinese people, while a negative score indicated a prejudice in favor of Chinese people. A score of zero indicated that the participant judged Canadians and Chinese people alike, that neither group is better rated than the other. This method was used in previous studies to indirectly evaluate prejudice towards an outgroup, as it consists in a more appropriate measure of prejudice than simply assessing attitudes (Guimond and Palmer, 1993; Guimond and Dambrun, 2002; Levin et al., 2002; Guimond et al., 2003; de la Sablonnière et al., 2013). This method has also been used to evaluate prejudice in the context of COVID-19 (Zingora et al., 2021).

Objectives 2 and 3: Linking the trajectory group membership of prejudice with antecedents

Objective 2: Socio-demographic factors

At wave 1, participants were asked to report their age (open question), their gender (coded as 0 = *female*, 1 = *male*, or 2 = *other*), and their political affiliation using a Likert scale ranging from 1 (*strongly left)* to 10 (*strongly right)*.

Objective 3: Psychological mechanisms

Economic threat

At wave 1, participants were asked to report their level of personal and collective relative deprivation using a Likert scale ranging from 1 (*extremely deteriorated)* to 10 (*extremely improved)*. We adapted relative deprivation items widely used in the literature to the COVID-19 pandemic context (de la Sablonnière et al., 2010, 2013) such as: "Compared to before the COVID-19 pandemic, my economic situation has…" (personal relative deprivation) and "Compared to before the COVID-19 pandemic, Canadians' economic situation has…" (collective relative deprivation). The items were then recoded so that a higher score indicated more economic threat.

Identity status

First, to measure the degree to which participants identified themselves as Canadians and global citizens, an adapted version of Cameron's (2004) identification scale was used. At wave 1, participants indicated their level of agreement using a Likert scale, ranging from 1 (*strongly disagree)* to 10 (*strongly agree)* to the following statements: "I think of myself as a Canadian" and "I think of myself as a global citizen." Literature supports that identification can be adequately measured with a single item (Postmes et al., 2013; Reysen et al., 2013).

Second, to evaluate identity status, we examined the difference score between identification to Canadians and identification to global citizens to create a global–local identification score. The goal behind this measure is to assess the degree of inclusiveness based on the global–local continuum of identification strategy. The same formula as for the "difference" score measurement of prejudice was used to create the identity score: we subtracted identification with global citizens from identification with Canadians. Positive scores indicated that the participant's identification strategy was more local (i.e., Canadian), while a negative score indicated the contrary, a global and more inclusive identification strategy (i.e., global citizenship identification). A zero score indicated that the respondent did not favor a particular identification strategy.

Control variable

Chinese ethnicity

Information about the ethnicity of participants was provided externally by the survey firm. Participants were asked to select one or more ethnicities from a large list. We controlled for Chinese ethnicity (coded as 0 = *non-Chinese*, or 1 = *Chinese*).

Data analysis plan

Objective 1

The first objective of data analysis was to identify several trajectory groups of prejudice. Analysis were carried out using the PROC TRAJ procedure on SAS 9.4 software (Jones et al., 2001; Jones and Nagin, 2007), and the figures were generated with the function "ggplot" from the R package ggplot2. To evaluate objective 1, we used a semiparametric group-based modeling developed by Nagin (1999). The goal of this analysis is to identify who reports similar levels of change in prejudice over time from the overall sample groups of participants. Thus, the modeling of trajectory groups makes it possible to explore the intra-individual (e.g., over time) and inter-individual (e.g., between the identified sub-groups) change in a characteristic or a behavior. The trajectory groups were modeled with the censored-normal distribution (CNORM, Nagin, 1999) as the variables were continuous and followed a relatively normal distribution. To conduct a trajectory analysis, the first step requires determining the optimal number of trajectory groups with the proportion of participants in each trajectory group. The second step is to determine the optimal shape of each trajectory group (e.g., increase, decrease, stable, hump-shaped). We compared models ranging from one to six trajectory groups. The guideline to estimate trajectory groups advises that for a trajectory group to be sufficient at least 5% of the sample should be assigned to it. It is possible for larger samples such as ours to omit the 5% criteria, as long as each trajectory has at least 100 participants assigned to it (Frankfurt et al., 2016). The selection of the final model was based on the Bayesian Information Criterion (BIC) for which the value closest to zero indicates a better fit of the model with the data (Dunger et al., 1998; Nagin, 1999).

Objectives 2 and 3

The second and third objectives were to test the association between these trajectory group membership and antecedents: socio-demographic factors (i.e., age, gender, political affiliation) and psychological mechanisms (i.e., personal relative deprivation, collective relative deprivation, global–local identification). To test our hypotheses, we ran a multinomial logistic regression model. It allowed to estimate the probability of being assigned to each trajectory groups (compared to a reference trajectory group) based on individual-level factors. First, we entered all our antecedent variables in the model (i.e., age, gender, political affiliation, personal relative deprivation, collective relative deprivation, global–local identification). Second, we added the control variable (i.e., Chinese ethnicity) in the model.

Missing data

In trajectory groups analysis, missing data are handled via the Full Information Maximum Likelihood (FIML) method.

Thus, that algorithm allows for the inclusion of participants who have missing data on the variables used to create the trajectory groups (Nagin, 1999; Jones et al., 2001). However, missing data for antecedent variables were not estimated and participants who had not answered all of the independent variables were automatically excluded from the analysis (Nagin, 1999). We did not have missing data on the antecedent variables since they were measured at wave 1 and participants were required to answer them to submit their surveys. However, there is missing data ($n = 417$, 16.95%) for the control variable (i.e., Chinese ethnicity) as it was assessed separately by the survey firm, so these participants were excluded from the regression analysis.

Results

Extreme scores and outliers

The assumption of normality of the variables is not required by mixed nonparametric models (Dupéré et al., 2007), but all variables were still normally distributed with skewness and kurtosis scores between +/−3 (Kline, 2016). Regarding univariate outliers, between 16 and 28 participants (0.9–1.4% of the sample for the wave in question) were identified as outliers on all eight variables of prejudice, and 17 (7%) on the collective relative deprivation variables. The Mahalanobis distance also identified 26 (1.06%) multivariate extreme scores.

The analyses were performed with and without extreme scores. To limit the potential impact that extreme scores may have had on results, univariate extreme scores were reduced to the limit of +/− 3.29 standard deviation and multivariate extreme scores were removed. Since their inclusion did not alter the results, participants with extreme scores (both univariate and multivariate) are included in the presented results.

Descriptive and main analysis

Table 4 presents the means, standard deviations, and correlations between continuous variables.

Objective 1: Trajectory groups of prejudice

Four trajectory groups of prejudice were identified. Table 5 presents the BICs for the model selection based on the number of trajectory groups. A model with 6 groups did not have enough participants for one group, so we did not run models with more groups even if the BIC tended to be better as we added groups. Moreover, even if the BIC of the model with 5 groups was better than the BIC for the model with 4 groups, we chose with parsimony to keep 4 groups. Indeed, as we added a 5th group, the 4th group splitted into two groups following the same trajectory of change with little difference regarding the initial level of prejudice.

Although trajectory groups looked relatively stable in their levels of prejudice against Chinese people from early April to late December 2020 (see Figures 1, 2), the model that best fitted the data revealed significant changes in prejudice over time. The parameters of the chosen model are presented in Table 6. Parameters of each trajectory group were determined using the BIC as well as their level of significance. This four-trajectory group model was made up of two trajectory groups that remained stable regarding their levels of prejudice over time (i.e., varying intercept order): a very high prejudiced trajectory group (5.26% of the sample; in black) and a high prejudiced trajectory group (18.47% of the sample; in blue). Otherwise, the majority of participants belong to a low prejudiced trajectory group (71.40%; in green) which shows a slight, but significant change in prejudice over time (i.e., cubic order), that is an inverted S starting by a decrease. Finally, a minority of participants (4.87%; in red) reported a better attitude towards Chinese people than Canadian people, that is to say they hold a low prejudice *in favor* of Chinese people over Canadian people, that becomes more positive over time (i.e., linear order).

Labels of these trajectories were described according to two characteristics. First, the starting level of prejudice; second, the stability or malleability of its evolution over time. Thus, the four trajectory groups were, respectively, labelled and classified: 1) "Low and Increasing" (in red), 2) Low and Fluctuating" (in green), 3) "High and Stable" (in blue), and 4) "Very High and Stable" (in black). It can be noted that the low levels of prejudice of the first trajectory group (i.e., in red) that will be interpreted in this paper as a low prejudice in favor of Chinese people could also be considered as having a low prejudice against Canadian people which would thus increase over time (due to our operationalization of prejudice in terms of a difference score in attitudes).

Objectives 2 and 3: Linking the trajectory group membership of prejudice with antecedents

Antecedents of trajectory group membership are divided into socio-demographic factors (objective 2) and psychological mechanisms (objective 3). Antecedents were all entered in the multinomial logistic regression model. Then, the control variable was added.

Results are reported in Tables 7, 8. The probabilities of membership for each trajectory group were estimated compared to a reference group. The second trajectory group ("Low and Fluctuating" in green), served as a reference group for two reasons: first, because of all trajectory groups, its level of prejudice is closest to 0 and can consequently provide a neutral baseline. Second, because it is the majority group.

Objective 2: Socio-demographic factors

We hypothesized that age, gender and political affiliation would be associated with trajectory group membership (H2).

TABLE 4 Means, standard deviations, and correlation matrix.

Variables	Mean	Standard deviation	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Age W1	50.04	16.72	—												
2. Political affiliation W1	5.20	1.94	0.08**	—											
3. Personal relative deprivation W1	6.25	1.83	0.07**	−0.01	—										
4. Collective relative deprivation W1	8.00	1.97	0.15**	−0.05*	0.35**	—									
5. Global–local identification W1	1.80	3.05	0.06**	0.11**	0.07**	0.08**	—								
6. Prejudice W3	1.17	2.18	−0.01	0.09**	−0.03	−0.03	0.14**	—							
7. Prejudice W4	1.12	2.20	0.07**	0.14**	0.01	0.01	0.20**	0.56**	—						
8. Prejudice W5	0.98	2.13	0.05*	0.14**	−0.02	−0.00	0.16**	0.54**	0.63**	—					
9. Prejudice W6	1.01	2.23	0.04	0.11**	−0.01	−0.02	0.17**	0.55**	0.63**	0.67**	—				
10. Prejudice W7	1.03	2.23	0.04	0.13**	−0.02	−0.02	0.18**	0.57**	0.66**	0.62**	0.67**	—			
11. Prejudice W8	0.95	2.17	0.02	0.16**	−0.03	0.01	0.18**	0.56**	0.65**	0.64**	0.67**	0.71**	—		
12. Prejudice W9	1.05	2.29	0.02	0.11**	0.00	0.01	0.17**	0.56**	0.60**	0.63**	0.66**	0.67**	0.71**	—	
13. Prejudice W10	0.89	2.12	0.03	0.13**	−0.01	−0.05	0.18**	0.50**	0.57**	0.59**	0.65**	0.63**	0.66**	0.67**	—

*$p < 0.05$; **$p < 0.01$.

TABLE 5 BICs and probabilities for the selection of the 4-trajectory groups model.

No. of trajectory groups	BIC	Model probability	% of participants per trajectory group
1	−32623.84	0.00	100
2	−29724.19	0.00	86.0; 14.0
3	−28942.92	0.00	72.7; 21.8; 5.5
4	**−28438.67**	**0.00**	**4.9; 71.4; 18.5; 5.3**
5	−28275.21	0.00	4.4; 63.0; 20.5; 8.0; 4.0
6	−28228.14	1.00	2.8; 4.6; 62.6; 19.9; 8.0; 4.0

BIC = Bayesian information criterion. All trajectories were coded in cubic order. The bold values correspond to the selected model.

While there was no sub-hypothesis for age and gender, age showed significant association, but only with one trajectory group: more specifically, younger participants were more likely to belong to the "Low and Decreasing" (in red) compared to the "Low and Fluctuating" (in green) trajectory group than older participants (a 2% increase in probability per younger year, odds ratio [OR] =0.98; 95%CI = 0.96–0.99; $p = 0.001$). Gender was not significant.

Regarding political affiliation, results supported that conservatives would be more likely to belong to high trajectory groups of prejudice than liberals (H2a). More specifically: participants were 16% more likely to belong to the "High and Stable" (in blue) compared to the "Low and Fluctuating" (in green) trajectory group as they reported 1 extra point towards a more conservative affiliation (OR = 1.16; 95%CI = 1.09–1.24; $p = 0.000$). The percentage was up to 18% when comparing the "Very High and Stable" (in black) and the "Low and Fluctuating" (in green) trajectory groups (OR = 1.18; 95%CI = 1.01–1.37; $p = 0.034$). Difference between the "Low and Decreasing" (in red) and the "Low and Fluctuating" (in green) trajectory groups was not significant.

Objective 3: Psychological mechanisms

Economic threat

We hypothesized that participants who felt more economically threatened would be more prejudiced (H3). More specifically, it was expected that participants who reported more personal (H3a) and collective (H3b) relative deprivation would be more likely to belong to high trajectory groups of prejudice. Results did not support our hypotheses H3a and H3b, as the more participants reported personal relative deprivation, the more they were likely to belong to the "Low and Decreasing" (in red) compared to the "Low and Fluctuating" (in green) trajectory group (a 24% increase in probability for each extra point on the personal relative deprivation scale; OR = 1.24; 95%CI = 1.06–1.46; $p = 0.008$). Other trajectory group comparisons were not significant. Regarding collective relative deprivation, results were not significant either. In other words, the more participants felt economically threatened the more they were likely to belong to the trajectory group of prejudice which favor Chinese people over Canadian people. Moreover, this result only stems from personal threat since there were no trajectory group difference regarding collective threat.
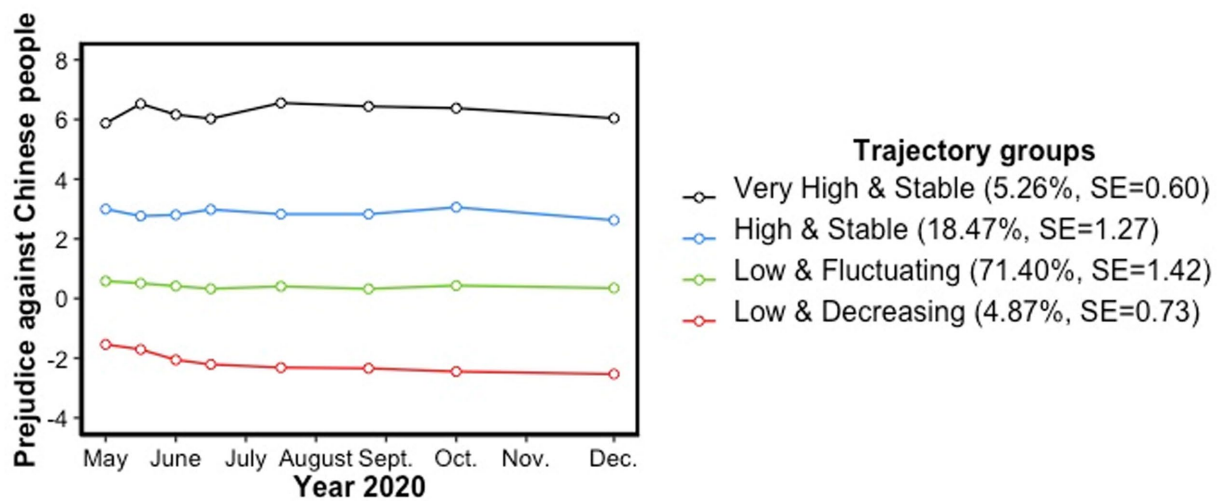
FIGURE 1
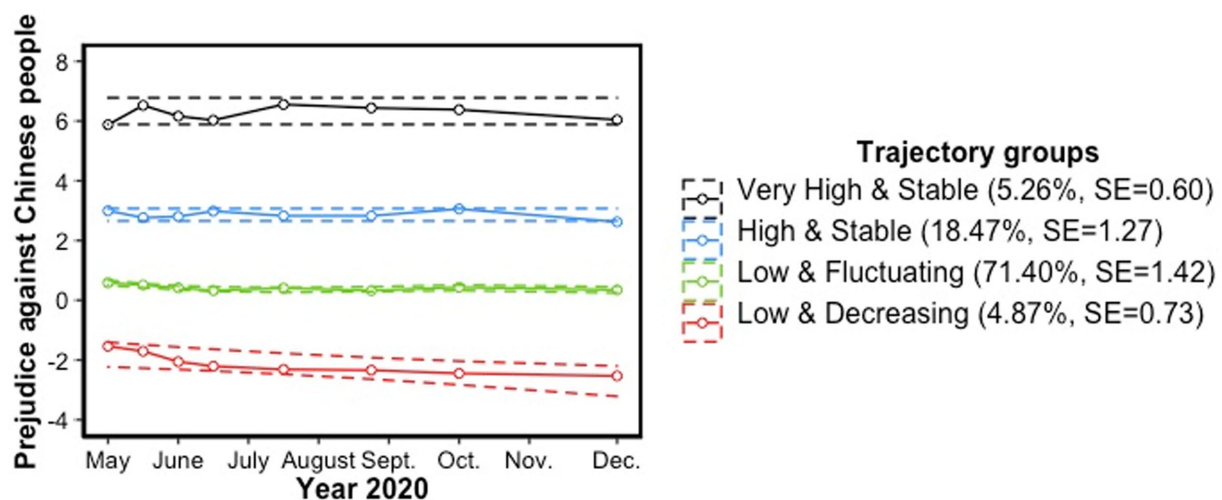Trajectory groups of prejudice against Chinese people.

FIGURE 2
Trajectory groups of prejudice against Chinese people with confidence intervals.

Identity status

We also hypothesized that participants who identified more locally instead of globally would be more likely to belong to high trajectory groups of prejudice (H4). Results supported our hypothesis: the more participants favored a local over a global strategy of identification, the more they were likely to belong to the "High and Stable" (in blue) compared to the "Low and Fluctuating" (in green) trajectory group (an 8% increase for each extra point towards the local strategy; OR = 1.08; 95%CI = 1.04–1.13; p = 0.000). This percentage was up to 19% when comparing "Very High and Stable" (in black) and "Low and Fluctuating" (in green) trajectory groups (OR = 1.19; 95%CI = 1.08–1.29; p = 0.000). Finally, participants were 19% less likely to belong to the "Low and Decreasing" (in red)

compared to the "Low and Fluctuating" (in green) trajectory group as they reported one extra point towards a more local (over a global) strategy of identification (OR = 0.84; 95%CI = 0.74–0.95; p = 0.005).

Control variable

Chinese ethnicity was added in the model as a control variable to examine if participants who considered themselves as Chinese were more likely to belong to certain trajectory groups than non-Chinese participants, especially the "Low and Decreasing" (in red) trajectory group. When controlling for Chinese ethnicity, age was no longer associated with trajectory membership. Otherwise, results showed that when comparing to the "Low and Fluctuating" (in green) trajectory group, Chinese participants were 547% more likely to

TABLE 6 Coefficients estimates for the group-based trajectory model.

Trajectory group	Parameters	Estimate	Standard Error	value of p
1. Low and decreasing	Intercept	−1.82	0.21	0.000
	Linear	−0.03	0.01	0.003
2. Low and fluctuating	Intercept	0.59	0.04	0.000
	Linear	−0.06	0.01	0.000
	Quadratic	0.00	0.00	0.000
	Cubic	−0.00	0.00	0.001
3. High and stable	Intercept	2.28	0.11	0.000
4. Very high and stable	Intercept	6.36	0.18	0.000
	Sigma	1.51	0.03	0.000

TABLE 7 Antecedents of trajectory group membership of prejudice.

Variable	Trajectory group (ref. group = 2)	Estimate	Standard Error	Value of p	Odd Ratio	95% CI
Constant	1	−2.77	0.90	0.002	0.06	(0.01–0.37)
	3	−2.57	0.43	0.000	0.08	(0.03–0.18)
	4	−3.20	0.74	0.000	0.04	(0.01–0.17)
Age	1	−0.02	0.01	0.001	0.98	(0.96–0.99)
	3	0.00	0.00	0.357	1.00	(1.00–1.01)
	4	−0.00	0.01	0.971	1.00	(0.99–1.01)
Gender	1	0.52	0.28	0.060	1.68	(0.98–2.89)
	3	0.17	0.14	0.232	1.19	(0.90–1.57)
	4	0.11	0.24	0.644	1.12	(0.70–1.77)
Political affiliation	1	−0.13	0.09	0.138	0.88	(0.75–1.04)
	3	0.15	0.03	0.000	1.16	(1.09–1.24)
	4	0.16	0.08	0.034	1.18	(1.01–1.37)
Personal relative deprivation	1	0.22	0.08	0.008	1.24	(1.06–1.46)
	3	0.01	0.04	0.794	1.01	(0.93–1.09)
	4	−0.01	0.08	0.901	0.99	(0.85–1.15)
Collective relative deprivation	1	0.04	0.08	0.661	1.04	(0.88–1.22)
	3	−0.01	0.04	0.792	0.99	(0.92–1.07)
	4	−0.09	0.07	0.196	0.92	(0.80–1.05)
Identity status	1	−0.18	0.06	0.005	0.84	(0.74–0.95)
	3	0.08	0.02	0.000	1.08	(1.04–1.13)
	4	0.17	0.05	0.000	1.19	(1.08–1.29)

CI, Confidence interval; Trajectory groups 1, Low and Decreasing; 2, Low and Fluctuating (reference group); 3, High and Stable; 4, Very High and Stable.

belong to the "Low and Decreasing" (in red; OR = 5.47; 95%CI = 2.58–11.59; p = 0.000) and 52.6% (OR = 0.19; 95%CI = 0.05–0.76; p = 0.019) less likely to belong to the "Very High and Stable" (in black) trajectory groups than non-Chinese participants. Differences between "High and Stable" (in blue) and "Low and Fluctuating" (in green) trajectory groups were not significant.

Additional analysis: Removing Chinese participants from the sample

The goal of these additional analyses was to examine if results are replicated when participants of Chinese ethnicity are removed from the sample (N = 2,287). The model that best fitted the data was the same four-trajectory groups model regarding the number of groups and the shape of each trajectory group (Supplementary Tables 1, 2; see Supplementary material). Supplementary Figures 1, 2 (see Supplementary material) showed that trajectories of prejudice looked similar over time. The distribution of participants in each trajectory group was also quite similar (with a loss of approximately 1% participants in the "Low and Decreasing" trajectory group; in red). Regarding the multinomial logistic regression model for association with antecedents, the patterns of results were relatively similar (Supplementary Table 3; see Supplementary material). There were two differences: first, the association between personal

TABLE 8 Antecedents of trajectory group membership of prejudice with the control variable.

Variable	Trajectory group (ref. group = 2)	Estimate	Standard Error	Value of p	Odd Ratio	95% CI
Constant	1	−3.61	1.20	0.003	0.03	(0.00–0.28)
	3	−2.52	0.45	0.000	0.08	(0.03–0.19)
	4	−3.52	0.87	0.000	0.03	(0.01–0.16)
Age	1	−0.02	0.01	0.113	0.98	(0.97–1.00)
	3	0.00	0.00	0.647	1.00	(0.99–1.01)
	4	0.00	0.01	0.463	1.00	0.99–1.02
Gender	1	0.40	0.31	0.205	1.49	(0.81–2.74)
	3	0.20	0.16	0.214	1.22	(0.89–1.66)
	4	0.00	0.26	0.987	1.00	(0.61–1.66)
Political affiliation	1	−0.12	0.11	0.299	0.89	(0.71–1.11)
	3	0.16	0.04	0.000	1.17	(1.09–1.26)
	4	0.20	0.08	0.017	1.22	(1.04–1.44)
Personal relative deprivation	1	0.19	0.09	0.040	1.21	(1.01–1.46)
	3	0.02	0.04	0.605	1.02	(0.94–1.11)
	4	−0.05	0.09	0.541	0.95	(0.80–1.12)
Collective relative deprivation	1	0.06	0.10	0.529	1.07	(0.88–1.30)
	3	−0.01	0.04	0.740	0.99	(0.91–1.07)
	4	−0.05	0.08	0.553	0.95	(0.82–1.11)
Identity status	1	−0.17	0.08	0.028	0.84	(0.72–0.98)
	3	0.08	0.02	0.000	1.09	(1.04–1.14)
	4	0.16	0.05	0.001	1.17	(1.07–1.28)
Chinese ethnicity	1	1.70	0.38	0.000	5.47	(2.58–11.59)
	3	−0.90	0.46	0.051	0.41	(0.16–1.00)
	4	−1.67	0.71	0.019	0.19	(0.05–0.76)

CI, Confidence interval; Trajectory groups 1, Low and Decreasing; 2, Low and Fluctuating (reference group); 3, High and Stable, 4, Very High and Stable.

relative deprivation and trajectory group membership (occurring between the "Low and Decreasing" and the "Low and Fluctuating" trajectory groups) was not significant anymore. Second: regarding identity status, there were no longer any significant differences between the "Low and Decreasing" (in red) and the "Low and Fluctuating" trajectory groups (in green).

Discussion

The aim of the present study was to deepen our understanding of change in prejudice against Chinese people within the adult Canadian population during the COVID-19 pandemic. Previous studies using a long-term perspective focused on the dynamic of prejudice, with a general approach where the population was considered as a homogeneous entity. Other correlational or experimental studies investigated the antecedents of prejudice, regardless of their dynamics over time. Overall, the literature suggested a general increase in prejudice during the first months of the pandemic, pointing out some antecedents linked to prejudice. Yet, no study explored if this observed increase in prejudice is truly embraced by everyone in a given population, or inversely, if there is a possibility for individuals to be divided into several subgroups which follow a different trajectory of change in

prejudice over time. Our focus on the inter-individual heterogeneity regarding change in prejudice addressed the limitation of the general approach used by long-term perspective studies. At the same time, it addresses the limitations of cross-sectional and experimental studies regarding their lack of interest toward the dynamics of prejudice while maintaining the study of antecedents of change in prejudice as secondary objectives.

Prejudice trajectory groups

The first objective was to identify different trajectory groups of prejudice within a large, representative sample of the adult Canadian population by age, gender and province of residence, from May 2020 to December 2020. According to the first hypothesis, the Canadian population has been shown to be heterogeneous regarding their initial levels of prejudice and, to a lesser extent, their variations over time. Four trajectory groups of prejudice relatively stable over time were identified. Specifically, we observed during the investigated period that about a quarter of the Canadian population had a stable, high or very high prejudice against Chinese people during the pandemic. However, most Canadians (approximately 70%) had low levels of prejudice which

fluctuated according to the results, but looked, in fact, very stable over time. Besides, changes in prejudice for this trajectory group were characterized by very small effect sizes which could be attributed to the large proportion of participants assigned to this group. Finally, a minority of Canadians (less than 5%) reported low prejudice in favor of Chinese people which became more positive throughout 2020. Not surprisingly, individuals who considered themselves as Chinese were more likely to belong to this "Low and Decreasing" trajectory group, just as they were less likely to belong to the "High [or] Very High and Stable" trajectory groups of prejudice against Chinese people, compared to the "Low and Fluctuating" trajectory group against Chinese people. Nevertheless, future national-level studies on prejudice should consider including members of minority groups as they are part of the population in everyday life, whether they emigrated or were born citizens of different ethnic origins. Just as the exclusion of Chinese participants in the present study did not erase the "Low and Decreasing" trajectory group which favor Chinese people over Canadian people, there is a possibility for individuals, particularly of minority groups, to internalize prejudice against their own ingroups (Kite and Whitley, 2016).

Regarding the literature on prejudice against Chinese people during the pandemic, the present study did not replicate any tendency towards an increase in prejudice over the first months of the pandemic since no trajectory group followed this pattern of change. On the contrary, we observed that low prejudiced individuals displayed a slightly lower level of prejudice over time, while high prejudiced individuals remained stable over time. Overall, the trend of the trajectory groups looked nevertheless very constant over time which did not support the strong resurgence of the international "anti-Chinese sentiment" in the Canadian population (Rad, 2020). It also suggested that even if prejudice is malleable, it seemed highly resistant to change even in such a social, dramatic context. This resistance to change, especially in the case of high prejudice, supports attitudinal research which shows that more extreme attitudes are more likely to be crystallized than more "centered" attitudes (Eagly and Chaiken, 1995). Besides, change in prejudice could have occurred before our prejudice's data collection gathered from May 2020, since previous studies suggested an increase in prejudice following the first months of the pandemic (Vachuska, 2020). Finally, there is also a possibility that change in prejudice against Chinese people differed by countries. Thus, even if Chinese Canadians were also facing more racism since the pandemic (Rad, 2020), the stability (and the decrease for one group) in prejudice observed in the present study could be explained by a cultural "shifting blame." Thereby, Hirsch et al. (2022) found that if Canadians first considered the Chinese as being responsible for the pandemic, they rather gradually blamed people who did not respect the sanitary measures over the course of the first months. Future studies could focus on prejudice against several groups to investigate how it varied simultaneously.

Antecedents of prejudice trajectory groups

The second and third objectives were to associate trajectory group membership of prejudice with antecedents: socio-demographic factors (i.e., age, gender, political affiliation) and two psychological mechanisms (i.e., economic threat, identity status).

After the identification of different trajectory groups of prejudice, the second most important result of the present study related to the link between identity status and trajectory group membership of prejudice. With our original operationalization of identity status based on a global–local continuum, we showed that participants were more likely to have higher and stable prejudice against Chinese people as they favor a local over a global strategy of identification. Thus, the present study corroborates the literature regarding the assumption that local identification is positively associated with the highest level of prejudice while global citizenship identification is negatively associated with prejudice (Castano et al., 2002; McFarland, 2017; Sparkman and Eidelman, 2018; Bourhis, 2020; Jetten et al., 2020). Nonetheless, the literature distinguishes two forms of local identification while considering a national level (de Zavala et al., 2009; Kervyn et al., 2015; also see Marchlewska et al., 2022). The secure national identity is positive and characterized by national pride and openness toward outgroup members. The narcissistic national identity, related to an exaggerated belief about the national ingroup's greatness and a rejection of outgroup members, is negative since it is generally associated with detrimental intergroup outcomes such as lower intergroup forgiveness (Hamer et al., 2018), greater intergroup aggressiveness and prejudice (de Zavala et al., 2009; de Zavala and Lantos, 2020). It might also influence how we collectively respond to major social issues, as the study of Bertin et al. (2021) shows for example that national collective narcissism predicts a lower acceptance of climate science through a greater endorsement of climate change conspiracy beliefs. Future studies should consider the dual conception of identification while investigating prejudice to better understand how and why these processes are related.

The second psychological mechanism proposed in the present study is economic threat and has shown an unexpected association with trajectory group membership of prejudice. Results did not support the hypothesis that participants who felt more economically threatened will be more likely to belong to high trajectory groups of prejudice. We found that economic threat was only related to low trajectory groups of prejudice and predicted the membership in the "Low and Decreasing" compared to the "Low and Fluctuating" trajectory group. Moreover, this association concerned personal (but not collective) economic threat as assessed by relative deprivation. Nevertheless, the association between personal relative deprivation and trajectory group membership of prejudice only concerned the "Low and Fluctuating" trajectory group, which is over-represented by Chinese people. Besides, results became non-significant when Chinese participants were removed from the analysis. In this

perspective, we could argue that this surprising result related specifically to Chinese people included in our sample. A possible interpretation could thus be that Chinese people would more likely be (increasingly) prejudiced against Canadian people as they perceive a deterioration of their economic situation due to the pandemic. Such an interpretation would better fit the scientific literature which supports that the more individuals felt economically threatened the more they report prejudice.

Apart from this result, the absence of a link between economic threat and prejudice contradicts previous studies. For example, Dhanani and Franz (2021) experimentally demonstrated that American people facing severe economic threat in the pandemic context were more prejudiced against Asian people than American people feeling mildly economically threatened. A possible explanation of such contradictory results could be attributed to the study context. Specifically, the eventual means put in place by each country to address the economic impact of the pandemic could compensate for the economic losses eventually experienced by its population. In the United States, although there were some governmental financial supports for the population at the beginning of the pandemic, the management of the crisis by Trump's administration would have led to an "immense economic pain and an increase in social inequality" according to The New England Journal of Medicine (Kolata, 2021, para. 9). Comparatively, the Canadian Federal Government came up with a multitude of financial support programs for individuals, communities, businesses, and sectors such as tourism and transport, plus financial assistance from provincial governments (Government of Canada, 2022) making it possible to ensure that no one in Canada was left behind. This rapid and supportive response to its population may have helped to create an atmosphere of social cohesion and economic security that in turns may explain that the perception of personal or collective economic deterioration was not associated with the evolution of prejudice against Chinese people in our study. Future studies are needed to understand why there are contradictory results, exploring, for example, which factors moderate the link between economic threat and prejudice in a cross-national setting.

Another explanation could be proposed in line with the relative deprivation theory. Although literature widely supports that relative deprivation is associated with prejudice (Smith et al., 2012), the study of Guimond and Dambrun (2002) did not systematically find a link between relative deprivation and prejudice. Rather, Guimond and Dambrun (2002) found that relative gratification could be even more related to prejudice than relative deprivation. Several subsequent studies support the existence of a V-curve hypothesis (Dambrun et al., 2006; Anier et al., 2016; Eller et al., 2020). Future studies could use two distinct measures, by exploring, for example, whether participants report more prejudice as they perceive either an improvement (relative gratification) or a deterioration (relative deprivation) in their economic situation compared to before the pandemic.

Regarding socio-demographic antecedents, results were also mixed. First, the sub-hypothesis which presumed that conservatives compared to liberals would be more likely to belong to the highest trajectory group of prejudice was supported, replicating previous studies (Tsai et al., 2020; Dhanani and Franz, 2020a, b, 2021). Nevertheless, recent literature recognizes that both liberals and conservatives can be prejudiced but against different groups, as prejudice would be a result of the perception of ideological divergences rather than a matter of political affiliation *per se* (Kite and Whitley, 2016). Then, future studies could investigate which groups are prejudiced depending on each political affiliation, how these prejudices evolved during the pandemic, and examine if individuals react the same way based on their political affiliation (e.g., discrimination).

Second, while no sub-hypothesis was made for age and gender, results suggested that younger people were more likely to belong to the "Low and Decreasing" compared to the "Low and Fluctuating" trajectory group (in green), but this difference became non-significant when controlling for Chinese ethnicity. Generally, associations between age and prejudice have never been well supported in the literature (Allport, 1979). Even studies on prejudice against Asian people during the pandemic found contradictory results: some demonstrated that the older people were the more prejudiced they were against Asian people (Dhanani and Franz, 2020a, b, 2021), while some demonstrated that younger people were the more prejudiced they were against Asian people (Tsai et al., 2020). Otherwise, age and prejudice may be linked by a much more complex than a linear association. For example, Henry and Sears (2009) found some evidence for an inverted V-curve of prejudice in adulthood with a peak around middle age. Thereby, if developmental theories of prejudice in childhood are well documented (see Kite and Whitley, 2016), those in adulthood still need further investigations.

Finally, we did not find that women or men were more likely to belong to certain trajectory groups of prejudice than other trajectory groups. Then, the study suggested that gender might have nothing to do with the levels of prejudice, at least within the Canadian population, particularly in the case of prejudice against Chinese people.

Implications, limitations, and futures directions

The present study has two main implications. As a first theoretical implication, the present study demonstrates the importance of considering inter-individual differences when it comes to understanding prejudice and its change over time. The use of group-based modeling, to our knowledge, has never been used in the study of prejudice against Chinese people during the context of the COVID-19 pandemic. This methodological choice constitutes a major and original contribution of the present study. It allowed us to deepen our understanding of previous studies by addressing the question: Did a given population report the same trajectory of prejudice against Chinese people over the course of the pandemic?

The consideration of inter-individual differences also applied while we investigated the antecedents of prejudice. A second theoretical and practical implication of the present study results from the exploration of antecedents associated with the different

trajectory groups of prejudice. By demonstrating that some socio-demographic categories are more likely to belong to high and stable trajectory groups of prejudice (i.e., individuals of conservative political affiliation), the present study informs governments and practitioners about who could benefit from awareness and interventional efforts to prevent prejudice against Chinese people during the pandemic. As suggested by Litam (2020), behind the victims of discrimination, there are prejudiced perpetuators who need to be educated. Most importantly, the present study provides suggestions in terms of application. It demonstrates that relying on and promoting a more global and inclusive identity instead of a local one is a promising way to harmonize interpersonal and even international relationships. This is particularly relevant in the context of dramatic social change, which is characterized by societal and individual changes so profound that they might lead to an identity threat (e.g., changes in the group's values, attitudes, behaviors) and consequently impact intergroup relationships (de la Sablonnière, 2017; Cárdenas and de la Sablonnière, 2020).

Taken together, these two main implications are even more relevant as we consider that the present study is the first Canadian one to provide empirical data on prejudice against Chinese people during the pandemic. In addition, one of the main strengths of this study is to benefit from a large and representative sample of the adult Canadian population by age, gender and province of residence, that allowed the generalization of results to the entire studied population. On the one hand, the present study specifically addressed Canadian circumstances (e.g., governmental, public health), which may benefit from such empirical data regarding its population. On the other hand, the present study contributes to the international literature on prejudice against Chinese people during the pandemic, which is relevant as countries differ in terms of prejudice (Guimond et al., 2013; Guimond, 2019; de la Sablonnière et al., 2020b).

Despite its contributions, the present study has nevertheless certain limitations. First, we chose to focus on prejudice against Chinese people because of the anti-Chinese rhetoric related to the COVID-19 pandemic. Yet, several authors claimed that Chinese and Asian people were not the only minorities at risk to be targets of prejudice and discrimination since the onset of the pandemic (Lund, 2020). The study of Vachuska (2020) demonstrated, for example, that the COVID-19 pandemic has also been associated with an increasing "anti-Hispanic sentiment." Therefore, future studies should investigate which social groups have been the most impacted during the pandemic in terms of intergroup relationships and which ones need social support.

A second limitation of the present study relates to our late assessment of prejudice, which started in May 2020. In the present study, the different trajectory groups of prejudice identified looked relatively stable over the course of the pandemic. Such results do not replicate previous literature that suggests an increase in prejudice against Chinese people during the first months of the pandemic (Nguyen et al., 2020; Schild et al., 2020; Vachuska, 2020). Yet, anti-Chinese and anti-Asian racism have also been reported in Canada since the pandemic (Rad, 2020). Future

Canadian studies are needed to compare prejudice against Chinese people before and after the pandemic. For example, correlational studies could use a direct, retrospective measure of prejudice. Researchers could also conduct qualitative studies among Canadian participants to deeply explore the dynamic of prejudice against Chinese people before and during the ongoing pandemic.

The assessment of political affiliation also constitutes a limitation of the present study. The liberal–conservative continuum has been used as a single item by several studies focusing on prejudice (Pettigrew and Meertens, 1995; Tsai et al., 2020) and even on political ideology (Van Leeuwen and Park, 2009; Calvillo et al., 2020), suggesting that it consists in an adequate explicit measure of political affiliation as it leads for example to the same results as an implicit measure of political affiliation (Van Leeuwen and Park, 2009). Nevertheless, the use of the liberal–conservative continuum has been criticized since it relates to concepts (e.g., "liberal" or "left") which evokes different representations and appears to be very abstract for most individuals (Bauer et al., 2017). In the same vein, Wojcik et al. (2021) found that the liberal–conservative continuum (referred as "left" and 'right" in their studies) endorses different meanings for Eastern and Western European participants. In addition, Wojcik et al. (2021), assessed two dimensions of liberalism: cultural (or social) and economic, and found them to be differently associated with the liberal–conservative continuum. Since previous studies also showed evidence that considering these different dimensions of political affiliation has important implications on outcomes of interest (Carney et al., 2008; Cichocka and Jost, 2014), further studies could benefit from using it. The use of multiple items rather than a single one would help to improve the fidelity and validity of the measurement tool, but more importantly it would allow to explore the complexity of political affiliation.

Finally, although the present study benefited from a large, representative sample of the Canadian population regarding age, gender and province of residence, it still should be mentioned as a fourth limitation that some groups such as high-educated individuals are over-represented in the sample (in Canada 28.5% of the population has a university degree whereas in our sample that proportion reached 54.3% in the first wave of the study; see de la Sablonnière et al., 2020a). Although we addressed the impacts of this limitation by relying on a weighting process to adjust for such socio-demographic deviations, readers should keep this information in mind when considering the conclusions of the present study.

Conclusion

Since prejudice is a natural and universal intergroup bias, it is widespread in human relationships. There is even more prejudice against certain groups in times of crisis such as during wars, starvation or epidemics. As prejudice increases in intensity, it may turn into negative actions from antilocution to extreme mass extermination (Allport, 1979). Thus, prejudice constitutes a major social issue which needs to be addressed by asking the right

questions. In the COVID-19 pandemic context, previous studies investigated whether there was an increase in prejudice against Chinese people or they examined which factors led to this prejudice. The present study kept these two concerns in mind but came up with the original perspective of inter-individual heterogeneity. We hope that this report regarding the Canadian population and prejudice against Chinese people during the COVID-19 pandemic and their antecedents will offer useful information and solutions to political and public health authorities, as well as offering researchers new theoretical and methodological perspectives.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Ethics statement

The studies involving human participants were reviewed and approved by The University of Montreal's research ethic committee in education and psychology. The participants provided their written informed consent to participate in this study.

Author contributions

VF contributed to the research idea, statistical analysis, and preparation of the manuscript was under the theoretical and methodological supervision of ÉL, RS, and MP-D. ÉL, AD, MP-D, J-ML, DS, and RS was responsible for the project programming and implementation. All authors contributed to the article and approved the submitted version.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Supplementary material

The Supplementary material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fpsyg.2022.901352/full#supplementary-material

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Creativity and (global, ethnic, host) cultural identifications: An examination in migrant and host national samples

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We live in an era of unprecedented interconnectivity and challenges (e.g., climate change, pandemics) that require global mindsets and creative approaches. While research on global identification has increased in recent years, the question of whether it can facilitate creativity remains largely unexplored. Moreover, despite the evidence linking multicultural experiences and global identities, migrant populations have been overly underrepresented in this area of research. We examine the association between global culture identification and creativity in the Alternate Uses Test, across two different samples residing in Spain: a host national and majorly student sample (N=326) and a culturally diverse immigrant sample (N=122). Additionally, we test the predictive value of ethnic identification (in both samples) and host culture identification (in the immigrant sample). Regression analyses reveal that global culture identification positively predicts creativity among host national participants, and host culture identification predicts creativity among immigrant participants. Our results suggest that developing a cultural identity that transcends the one acquired through enculturation (i.e., global culture identification for the host national sample, host culture identification for the immigrant sample) has the potential of facilitating creative behavior.

KEYWORDS

global culture identification, host culture identification, ethnic culture identification, creativity, immigrant sample, migration

Introduction

Nowadays, people may feel connected with others who live in any part of the world, far beyond their own current geographical location and related local communities and personal relationships (McFarland et al., 2019). Scholars have defined and measured such feelings of global identification using many related constructs and instruments, including identification with a global or world community (Buchan et al., 2011; Marcus et al., 2017), being a world citizen (Smith et al., 2017), intercultural identity (Sussman, 2000),

identification with all humanity (IWAH, McFarland et al., 2012), cosmopolitan orientation (Leung et al., 2015), and global-human identity (Türken, 2006; Nickerson and Louis, 2008). However, in parallel to feeling identified with people all around the world, people may also feel part of a global culture, including events, practices, models of lifestyle and consumption, and information (symbols, images) that are developed in different parts of the world and shared transnationally (see Arnett, 2002; Bobowik et al., 2022). Multicultural experiences, that underlie the development of such superordinate identifications, are known to promote creative thinking and behavior (Cheng and Leung, 2013; Fee et al., 2013; Crisp and Gocłowska, 2014; Cheng and Tan, 2017; Chua, 2018). Scholars have found that the more personally relevant the multicultural experience is, or the stronger the identification with the different cultures involved, the greater the creative benefits it will produce (Tadmor et al., 2012a; Cheng and Tan, 2017; Chua, 2018).

Nevertheless, little attention has been paid to the link between a superordinate identification with a global culture and individual creative behavior. Moreover, research has rarely focused on global identification among underrepresented sectors of the society such as migrants. To address these gaps, we hereby examine the role of identification with a global culture in predicting creative behavior across two samples: host nationals and immigrants. Furthermore, we study its relationship with creativity comparatively, in tandem with identification with the host culture (for immigrants) and identification with one's ethnic culture of origin.

Levels of identification resulting from acculturation

From a social constructivist perspective, identities are constructed in relation to and in interaction with other people and their systems of representation (Glăveanu and Tanggaard, 2014), and derive from one's membership or attachment to a social group (Hamer et al., 2021). In line with this approach, all individuals go through the process of *enculturation* when they are in contact with and internalize their origin culture (e.g., its salient values, norms, and rituals) through early socialization (Kim and Alamilla, 2007). This way, they become competent members of their own cultural group and acquire a sense of identity attached to their ethnic/heritage culture (Ferguson et al., 2016).

In parallel, in multicultural societies, people go through *acculturation* when they are in contact with a different culture (see Sam and Berry, 2010). Acculturation is usually studied in the context of migration, but it can more broadly be understood as the psychological processes that people go through when adapting to a new cultural group membership. As a result, individuals may develop dual or multiple cultural identities (Crisp and Gocłowska, 2014). For example, immigrants may develop identification to the host culture while preserving their ethnic identity.

Individuals who develop—through acculturation—dual (or multiple) identities are more likely to integrate these different cultural representations into wider and higher-order identity configurations, such as European or global human identities (Amiot et al., 2007; Crisp and Gocłowska, 2014). Among immigrants and expatriates, global identity constitutes an identity management strategy linked to the integration of both home and host cultures (i.e., bicultural identity integration, Benet-Martínez and Haritatos, 2005; Bobowik et al., 2022) or to a "balanced identity" pattern (Kohonen, 2008). There is also evidence (with people who study abroad) that the longer the engagement with a second culture, and the more significant the cultural differences between host and home cultures, the greater the increase in global or world mindedness (Douglas and Jones-rikkers, 2001; see also Crisp and Gocłowska, 2014). Thus, acculturation processes derived from globalization or contact with multiple cultural contents could also result in identification with a global community or with all humanity (Arnett, 2002; Chen et al., 2008; Reysen, 2022), which reflect the more inclusive and superordinate levels of self-categorization (McFarland et al., 2012, 2013, 2019).[1]

Experiences of cultural diversity encourage the development of these more inclusive, plural, and transnational identity configurations (Lubbers et al., 2007; Sparkman and Hamer, 2020; Reysen, 2022). Consequently, the development of global mindsets has often been studied in multicultural contexts such as expatriate assignments (Fee et al., 2013), participation in multicultural teams (Erez et al., 2013) and global networks (Grimalda et al., 2018), exposure to and contact with different cultural elements or people (Sparkman and Eidelman, 2018; Sparkman and Hamer, 2020), and cultural diversity in one's personal social network (Lubbers et al., 2007; Mao and Shen, 2015; Bobowik et al., 2022).

Creativity as a potential outcome of identification processes

Creativity is the most widely studied intrapersonal outcome of multicultural experiences (e.g., Leung et al., 2008; Leung and Chiu, 2010; Crisp and Gocłowska, 2014) and multicultural identities (Cheng et al., 2008; Kharkhurin, 2009; Maddux et al., 2009; Saad et al., 2012; Tadmor et al., 2012a). These types of experiences stimulate creative thought because they require individuals to adopt new ways of thinking that often collide with their previous mental schemas (Crisp and Gocłowska, 2014), pushing them to contrast and connect culturally distant ideas. This results in recategorization processes that ultimately enhance their cognitive flexibility (Ritter et al., 2012; Gocłowska et al., 2018; Chirico et al., 2020), integrative complexity (Cheng et al., 2011), and creative skills (Kharkhurin, 2011).

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1 Still, being exposed to and learning from a new culture do not necessarily produce identification with that culture (Hong et al., 2007; Cheng et al., 2014). Individuals have a cultural identity when they express their attachment to that particular culture (Cheng et al., 2014).

The stronger the identification with the different cultures, the greater potential for creativity it produces, because individuals will be more motivated to cognitively process and resolve the cultural discrepancies perceived (Cheng et al., 2011; Tadmor et al., 2012b; Cheng and Tan, 2017; Chua, 2018). In this line, bicultural individuals show more complex cultural representations than monoculturals (Benet-Martínez et al., 2006), and those who perceive their different cultural identities as compatible and in harmony (vs. incompatible and in conflict) better integrate ideas from their different cultures in creativity tasks (Cheng et al., 2008; Chua, 2013; Cheng and Tan, 2017).[2]

Similar to the effect of multicultural experiences "loosening" categorical thinking and allowing for new and more flexible representations, global citizenship values are thought to foster greater acceptance to diverse ideas and ways of perceiving the world (Tidikis and Dunbar, 2019).[3] Consistent with this idea, evidence shows that global identification is linked to outcomes that involve greater openness to others and acceptance of new ways of perceiving world, such as concern for human rights and global issues (Buchan et al., 2011; McFarland et al., 2012), cooperative behavior (Buchan et al., 2011; Grimalda et al., 2018), and volunteering (McFarland, 2016). Acquiring a new cultural framework, thus, stimulates the flexible and complex type of thinking processes that are the foundation for creativity, and individuals who can integrate newly developed cultural identities with their ethnic or origin culture are more likely to reap the creative benefits of multiculturalism (Cheng et al., 2011). The development of wider (e.g., global) identities may as well promote creativity by broadening the base of ideas, interests, norms, values, and behaviors that are accepted, incorporated and cognitively accessible (Crisp and Gocłowska, 2014).

In comparison to more inclusive levels of identifications, we know little regarding ethnic identification and creative behavior. Given that novelty is an important component of creativity, strong attachment to one's origin ethnic culture may hinder creative behavior, since it may reinforce and rigidize old and pre-established cultural representations (see Kharkhurin, 2011). Yet, some authors suggest that identification with a national/local/ethnic culture can also derive in creativity (Sun, 2018; Mehta, 2019),[4] especially when conceptualized as national

attachment or *constructive patriotism* (i.e., love for one's country) vs. *glorification* or superiority of one's home nation over other nations (see Clerkin, 2013; Tidikis et al., 2018). Only a few recent studies examine the associations between global or local (ethnic) identifications and creativity, and results are inconclusive. Tidikis and Dunbar (2019) found that global citizenship predicted creativity in different domains (i.e., everyday, scholarly and mechanic/scientific creativity). In contrast, Tidikis et al. (2018) showed that a global prime condition increased creativity only among US participants, while national ethnic identification increased creativity among Lithuanian participants. In any case, with the exception of biculturalism, cultural identity processes have rarely been considered to shape creative behavior directly (Gläveanu and Tanggaard, 2014), and, to our knowledge, the role of global vs. ethnic culture identification, or global vs. host culture identification (e.g., in migrants) have not been considered in tandem.

Finally, with some recent exceptions involving university (Hamer et al., 2021; Feng et al., 2022) and community (Buchan et al., 2011; Katzarska-Miller et al., 2012; Sparkman and Hamer, 2020; Chen et al., 2022) samples from diverse countries, and minority/underrepresented (Kunst and Sam, 2013; Koc and Vignoles, 2016; Bobowik et al., 2022) samples, general research exploring global identification has focused on WEIRD (Western, Educated, Industrialized, and Democratic) populations (see Henrich et al., 2010; Sparkman and Hamer, 2020). This creates generalization problems. Moreover, Tadmor et al. (2018) suggest that achieving the benefits of multicultural experiences may be difficult when these are perceived as costly or depleting. Immigrants develop new cultural identifications in contexts often characterized by prejudice, unequal power distribution and access to rights, and colonial laws. These difficulties may negatively impact the creative benefits that could derive from their acculturation processes. Literature needs to incorporate underrepresented and underprivileged samples, such as migrated individuals who often develop attachment to both a new host culture and to a global community (Arnett, 2002; Kunst and Sam, 2013), and explore the implications that their multiple cultural identifications may have on creativity.

Present research

We examine the link between global culture identification and creativity, in two different samples residing in Barcelona (Spain): a host national (and largely student) sample and a diverse community sample of people of migrant origin. Given the existing mixed findings on the effects of global vs. ethnic national/local identity on creativity (Tidikis et al., 2018; Mehta, 2019), and the lack of research examining both cultural identifications comparatively, our goal was to study the contributions of both global and ethnic culture identifications on creativity. Moreover, drawing on previous literature on multicultural identities, we included the potential contribution of host culture

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2   Compared to monocultural individuals, dual-identity individuals learn to alternate between their different identities (see cultural-frame switching; Benet-Martínez et al., 2002), reconciling discrepant values or cognition, and broadening their self-definition (Crisp and Gocłowska, 2014).

3   The personality trait of openness to experiences has also been identified as a predictor of superordinate identifications such as IWAH (Hamer et al., 2019). For a review of both predictors and outcomes of global human identification, see McFarland et al. (2019).

4   According to Mehta (2019) and Sun (2018), individuals who strongly identify with a national local culture are more faithful and respectful of local traditions, and strongly value relationships within their local community. This translates into a high relationship focus that makes them better at generating relationships between loosely connected ideas, which is also the basis for creativity.

identification to creativity in the immigrant sample. We expected global culture identification to be positively associated with creativity in both the immigrant (H1a) and the host national (H1b) samples. Additionally, we hypothesized that the process of acquiring a different cultural identity in the context of migration could also facilitate creativity, i.e., that host culture identification would be positively associated with creativity in the immigrant sample (H2). Finally, even though previous research on multicultural experiences points to a negative or null relationship between ethnic identification and creativity, some authors also suggest the opposite (i.e., a positive relationship). Thus, we took an exploratory approach to examine the association between ethnic identification and creativity, in both samples.

Materials and methods

Participants

The data derived from two different samples. The community immigrant sample consisted of 122 adults with immigrant background (59% females, *mean age* = 33 years, *sd* = 10.33, range 19 to 64). They resided in Barcelona, a bicultural and bilingual region of Spain in which two cultural identities coexist (Spanish and Catalan). Participants were born in Ecuador (*n* = 30, 66.7% females, *mean age* = 32, *sd* = 11.28), Morocco (*n* = 30, 63.3% females, *mean age* = 30, *sd* = 11.24), Pakistan (*n* = 31, 38.7% females, *mean age* = 29, *sd* = 8.31) or Romania (*n* = 31, 67.7% females, *mean age* = 38, *sd* = 8.32). A small group (*n* = 7) were born in Spain and had at least one parent born in one of the aforementioned countries. All participants had good working knowledge of one or both host languages (Catalan or Spanish), and had resided in Spain for a minimum of 5 years.

The host national sample consisted of 316 adults (55.7% females, *mean age* = 24 years, *sd* = 7.77, range 18 to 61), born in Spain. This was a predominantly student sample, since 75.3% (*n* = 238) of participants were studying at the time.

Additional sociodemographic characteristics for both the immigrant and the host national sample can be found in Supplementary Tables S1, S2.[5]

Procedure

The data used in this article comes from two different studies, approved by the Ethics' Committee of the University Pompeu Fabra. Data were collected at the University's laboratory installations, *via* the Qualtrics platform. When *in situ* data collection was not possible, participants were offered to take the survey online.[6] Participants were able to choose the language of preference (among the two host languages, i.e., Catalan or Spanish) to fill out the surveys. Details on the recruitment for both samples can be found in Supplementary material.

Data from the immigrant sample was collected in two stages. During the first stage (2012), a larger sample of participants (*N* = 216) was recruited *via* relevant migrant and cultural associations in the city of Barcelona, to participate in a social networks' study that included some acculturation and identity variables (see Repke and Benet-Martínez, 2018). We aimed for a minimum of 200 participants to allow the possibility of detecting small to moderate effect sizes in our regression models. Sample size was determined by the possibilities of access to this particular population, as well as by time and money constraints. The second phase took place approximately 1 year later (2013–2014). Participants were re-contacted and invited to participate in a study that included measures of creativity, multicultural experiences, and intergroup attitudes. We were able to recruit 56.4% (*N* = 122) of the first stage study sample. Participants received monetary compensation (15 euros) for their participation in each study stage.

Data collection for the host national sample took place in 2015. The original study included an experimental manipulation designed to impact intergroup attitudes (that at the end yielded null effects). Besides assessing attitudes, it also measured creativity and included questions about multicultural experiences. Participants received monetary compensation (8 euros). Sample size was determined based on effect sizes from similar experimental studies.[7]

Measures

Global, ethnic, and host culture identification

Drawing on previous studies (e.g., Benet-Martínez and Haritatos, 2005), we selected measures of self-identification with *global*, *ethnic*, and *host* (for immigrants) cultural communities. Participants were asked to indicate their degree of identification with each culture ("Please, indicate your degree of identification with the following cultures and communities, marking the answer that you consider more appropriate"), on a scale from 1 (*not at all*) to 7 (*very strongly*). Both samples indicated their degree of identification with a "global, international, world" culture. Ethnic culture identification referred to the country of

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[5] The immigrant sample has been used in previous studies (i.e., Repke and Benet-Martínez, 2018; Bobowik et al., 20212022).

[6] Only 13.1% of the immigrant participants and 13.8% of the host national participants chose the online method.

[7] Sample size for a 2 × 2 experimental design (ANOVA, fixed effects) was determined using the G.Power calculator (Faul et al., 2009). It was established that, in order to detect effect sizes similar to the ones found in relevant literature (between *d* = 0.36 and *d* = 0.8) with 80% power (alpha = 0.05, two-tailed), we required a minimum total sample of between 52 (*d* = 0.8) and 245 (*d* = 0.36) participants.

TABLE 1 Means, standard deviations, and bivariate correlations between variables under study for the immigrant sample (N=118/122).

	1	2	3	4
M	5.41	4.29	3.88	3.12
SD	1.58	1.21	1.76	1.05
1. Ethnic culture identification	1			
2. Host culture identification	0.07	1		
3. Global culture identification	0.09	0.31**	1	
4. Creativity	−0.04	0.20*	0.04	1

ID = Identification. Identification is measured on a 1 to 7 scale range. Creativity score is computed as an average of fluency, flexibility, and originality mean, across all three objects. We used pairwise deletion of missing values, thus the total sample size was between 118 and 122.
*$p < 0.05$; **$p < 0.01$.

origin (i.e., Ecuador, Morocco, Pakistan, or Rumania) for immigrants, whereas it was operationalized as identification with Catalan and Spanish cultures for host nationals. Immigrant participants were additionally asked about their identification with the host cultures (Catalan and Spanish cultures separately). Since all participants resided in a bicultural region of Spain, an average of the two local cultures (Catalan and Spanish) was computed, to create the indexes of ethnic (for host nationals) and host (for immigrants) culture identification.

Creativity

Both samples performed the Alternate Uses Task (Guilford, 1967), a widely used test that assesses divergent thinking and creativity (e.g., Leung and Chiu, 2008; Tadmor et al., 2012a). Participants were given 4 min to write as many uses as they could think of for common household items. The objects were a plastic bottle, a brick, and a cardboard box for the immigrant sample. The host national sample performed the task only with the plastic bottle. Following previous literature (Tadmor et al., 2012a,b), responses were coded in each study by a team of two raters, for (a) *fluency* (i.e., number of uses generated, per object), (b) *flexibility* (i.e., number of different use categories generated, per object), and (c) *originality* (i.e., originality mean of the different uses generated). Flexibility captured the breadth of categories represented in each object, generated *via* discussion between the coders (see Leung and Chiu, 2008; Tadmor et al., 2012a).[8] Originality was operationalized as the combination of novelty and usefulness, following Amabile (1983), and it was evaluated on a scale from 1 (*not at all original*) to 5 (*extremely original*). Since the immigrant sample generated uses for three objects, we used the average scores of fluency, flexibility and originality across the three objects.

Interrater reliabilities (intraclass correlation) were calculated for all dimensions. For the immigrant sample, a high interrater reliability coefficient was achieved for fluency (ICC = 0.83), flexibility (ICC = 0.91), and originality (ICC = 0.78) in a first subsample of 54 individuals. The remaining responses were coded by one of the two raters. For the host national sample, a high interrater reliability was achieved for fluency (ICC = 0.99), flexibility (ICC = 0.98) and originality (ICC = 0.99) for a subsample of 141 participants rated by two coders. An average of both coders was used to get the final scores. The remaining responses were coded by one of the two raters. For subsequent analyses, we use a computed average of the standardized scores of all three dimensions (fluency, flexibility, and originality mean), which represents overall creativity ($\alpha_{immigrant\ sample}$ = 0.66, $\alpha_{national\ sample}$ = 0.69).

Sociodemographic control variables: Gender, age, and education

There is some evidence that certain sociodemographic factors, such as gender (Abraham, 2016), age (Binnewies et al., 2008; Frosch, 2011; Rietzschel and Zacher, 2015; Aytug et al., 2018), and education (see Simonton, 2000) can be associated with creativity. Since both samples differed in terms of these relevant characteristics, we included these as control variables in supplementary analyses. Gender was conceived as a binary variable (1 = "Male," 2 = "Female"). Age was measured as a continuous variable. Education represented—for both samples—the highest educational level achieved, on a scale from 1 (*No formal education or less than 5 years of schooling*) to 9 (*PhD degree*).[9]

Analytical strategy

We used correlation and regression analyses to examine the link between identity and creativity. We ran two regression models, one for each sample. For the immigrant sample, ethnic, host, and global culture identifications were introduced as predictors of creativity. For host nationals, ethnic and global culture identifications were used as predictors. We additionally tested the same models including relevant sociodemographic control variables (see Supplementary material).

Results

Descriptive data and correlations

Table 1 (for immigrants) and Table 2 (for host nationals) show means and standard deviations of each variable used in

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8   Examples of categories for the plastic bottle were: liquid container, lighting, weapon, clothing and accessories, sound, and music.

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9   The educational level items were adapted from the International Standard Classification of Education, by the UNESCO Institute for Statistics (2012).

TABLE 2 Means, standard deviations, and bivariate correlations between variables under study for the host national sample (*N*=312/315).

	1	**2**	**3**
M	4.56	4.49	5.36
SD	1.09	1.58	1.72
1. Ethnic culture identification	1		
2. Global culture identification	0.06	1	
3. Creativity	0.02	0.13*	1

ID = Identification. Identification is measured on a 1 to 7 scale range. Creativity score is computed as an average of fluency, flexibility, and originality mean. We used pairwise deletion of missing values, thus the total sample size was between 312 and 315. *$p < 0.05$.

TABLE 3 Ethnic, host, and global culture identification predicting creativity among the immigrant sample (*N*=118).

Variable	*B*	*SE*	β	*p*	$CI_{95\%}$
Ethnic culture identification	−0.01	0.05	−0.01	0.87	[−0.10, 0.08]
Host culture identification	0.12	0.06	**0.20**	0.04	[0.00, 0.24]
Global culture identification	−0.01	0.04	−0.02	0.83	[−0.09, 0.07]

ID, Identification. Statistically significant coefficients are shown in bold. The dependent variable (creativity) was computed as the average of the standardized scores of fluency, flexibility, and originality mean. B, unstandardized regression coefficient; SE, standard error; β, standardized regression coefficient; $CI_{95\%}$, Confidence interval. Due to missing values, the total sample size was $N = 118$.

TABLE 4 Ethnic and global culture identification predicting creativity among the host national sample (*N*=311).

Variable	*B*	*SE*	β	*p*	$CI_{95\%}$
Ethnic culture identification	0.01	0.04	0.02	0.777	[−0.06, 0.08]
Global culture identification	0.06	0.03	**0.12**	0.028	[0.00, 0.11]

ID, Identification. Statistically significant coefficients are shown in bold. The dependent variable (creativity) was computed as the average of the standardized scores of fluency, flexibility, and originality mean. B, unstandardized regression coefficient; SE, standard error; β, standardized regression coefficient; $CI_{95\%}$, Confidence interval. Due to missing values, the total sample size was $N = 312$.

the study. Correlation results in Table 1 reveal significant positive relationships between host culture identification and creativity ($p = 0.028$), as well as between global culture identification and host culture identification ($p = 0.001$), for the immigrant sample. There were no significant correlations between ethnic identification and creativity or global culture identification. Contrary to our expectations, global culture identification and creativity were not correlated. In contrast, for the host national sample, Table 2 shows a significant positive correlation between global culture identification and creativity ($p = 0.026$), and no other significant relationships.

Regression analyses

Results with global, ethnic, and host culture identifications predicting creativity are shown in Table 3 (for immigrants) and in Table 4 (for host nationals, with only global and ethnic culture identifications). Results confirm H1b, but not H1a. For the host national (but not the immigrant) sample, global culture identification significantly predicted creativity. For the immigrant sample, host culture identification significantly predicted creativity, supporting H2. There were no significant associations between ethnic culture identification and creativity, in any of the samples. Supplementary Table S3 (for immigrants) and Supplementary Table S4 (for host nationals) show results controlling for gender, age, and education level.[10] Developing an identification that transcended the one acquired through enculturation (i.e., transcending Catalan or Spanish identification for host nationals, transcending ethnic identification for immigrants) was thus associated with creative behavior.

Discussion

This research contributes to the scarce work investigating the link between creativity and identification with a global culture, in tandem with host and ethnic culture identification. We examined this link in two samples, including a diverse community immigrant sample—a type of population underrepresented in the literature on both global identification and creativity. Our findings partially support (for the host nationals) the hypothesis that a stronger global (vs. ethnic) culture identification would be associated with more creativity, in line with some previous research (Tidikis and Dunbar, 2019). However, our results also show that host (vs. global or ethnic) culture identification is positively linked to creativity among immigrants. Finally, we did not find any significant relationship between ethnic identification and creativity in any of the samples, in line with research on the positive impact of the acquisition of new and different cultural identities on creativity.

Our results suggest that developing an identity that transcends the one acquired through enculturation (i.e., going beyond one's ethnic origin identity) has the potential of facilitating creative thinking processes. In line with the literature clarifying the role of multicultural experiences in creative performance (Leung et al., 2008; Ritter et al., 2012; Cheng and Tan, 2017; Dunne, 2017; Gocłowska et al., 2018; Bobowik et al., 2020, manuscript in

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10 For immigrants, the effect of host culture identification became marginally significant ($p = 0.067$) after controlling for gender, age, and education (see Supplementary Table S2). For host nationals, the effect of global culture identification remained significant after including controls (see Supplementary Table S4).

preparation[11]), the development of higher levels of other-culture identification is associated with the ability to provide creative solutions to everyday life problems, because it results from constant contact with unfamiliar cultural information. This includes both direct contact (i.e., interactions) with a different culture (e.g., culture of settlement in the case of immigrants), and indirect contact (i.e., exposure) with any culture of the world through cultural products such as literature, movies, music, dance, or food (see Aytug et al., 2018; for a review, see Maddux et al., 2021). Moreover, both interactions with culturally diverse others and exposure to cultural diversity appear to contribute to identifying oneself as part of a global community (Sparkman and Hamer, 2020; Reysen, 2022).

Hence, we argue that for host nationals with limited abroad experiences, the predominant identification process derives from globalization-based acculturation (Chen et al., 2008; Kharkhurin, 2011) acquired through indirect exposure to different cultures. This results in global culture identification positively impacting creativity processes. In contrast, for immigrants, the predominant acculturation process involves attachment to the culture(s) of the new country of residence. Thus, host culture identification more significantly and directly impacts creativity. Recent research finds that a diverse social network predicts global culture identification in immigrants, and this relationship is mediated by a higher degree of integration of their ethnic and host culture identities (Bobowik et al., 2022). Globalization-based acculturation may thus in their case happen primarily through direct interactions (and identification) with culturally diverse others.

In this line, developing a host cultural identity (and integrating it with one's ethnic identity) may be a first step to build a sense of global culture identity for migrant individuals. Our correlational results preliminarily support this assumption, by revealing a positive association between host and global culture identifications. Previous literature shows that *hybrid* or *balanced* identities (that embrace and integrate home and host cultures) are linked to global identity configurations (Sussman, 2000; Kohonen, 2008). Specifically, Kohonen (2008) equates a balanced identity pattern to an intercultural or global identity pattern of "world citizens" who are able to manage and interact in different cultural settings (see Sussman, 2000). Furthermore, previous research states that creativity increases when individuals integrate and feel personally attached to their different cultural identities (for a review, see Cheng and Tan, 2017). Future research should examine the association between ethnic, host and global culture identifications over time (e.g., longitudinal studies), and explore the contexts in which other-culture or balanced identity configurations precede (or not) global culture identification, and, in turn, creativity.

Finally, our results do not find any significant relationship between ethnic culture identification and creativity, in any of the samples. In other words, ethnic identification proves irrelevant for our samples' creative skills, which again reinforces previous evidence on the potential of diversifying experiences (e.g., multicultural) in loosening category boundaries, attenuating the rigidity of the human mind, and ultimately boosting divergent thinking (Kharkhurin, 2011; Gocłowska et al., 2018). Our creativity task consisted of generating novel and unrelated ideas from diverse categories, and thus it rewarded divergent thinking, or the capacity to draw on different conceptual categories. Future studies should test this relationship using different creativity measures.

Limitations and future directions

We acknowledge the limitations of our findings related to the immigrant sample, due to its non-random nature and its size. Moreover, it is a diverse sample in itself (i.e., participants from four different national origins), composed of people that had been in Spain for at least 5 years and had a good working knowledge of the host language.[12] Thus, our results may not generalize to migrant populations with other characteristics. However, research on global identification or creativity with migrant populations is scarce, and we would like to emphasize the value of this sample. First, migrating comprises a deep multicultural experience that has the potential to strongly affect both individuals' identity configurations and creativity, so one would expect scholars in these areas of research to incorporate migrant samples. Second, social psychology's findings are overly informed by WEIRD populations. This undermines generalization, contributes to the replication crisis (Henrich et al., 2010) and offers a limited ethnocentric view of psychological phenomena. Third, people who migrate exercise creativity in their everyday lives by adapting to an unfamiliar culture while challenging the status quo and culturally dominant behavior patterns (Dixon et al., 2010; Bobowik et al., 2020, manuscript in preparation[11]). Consequently, they may bring new and diverse forms of creativity (e.g., problem-solving skills) to the settled societies (Franzoni et al., 2014; Shao et al., 2019). Future studies should provide more data on global identification and creativity with migrant populations.

Although the online recruitment system applied with host nationals allowed us to implement a simple random sampling methodology and to obtain a gender-balanced sample of people born in Spain, the pool was mainly composed by young university

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11   Bobowik, M., Benet-Martínez, V., Repke, L., and Soler-Pastor, E. (2020). The role of intercultural and intracultural social networks for creativity among immigrants.

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12   We included these requirements to ensure that participants would clearly understand the survey questions and elaborate on the answers, and to minimize the potential "language advantage" of the host national sample in the creativity task. Moreover, 5 years was considered sufficient for developing identification to the host culture.

students. Even though we were interested in comparing this type of sample - typically found in social-psychological research - to a more diverse, underrepresented, and non-WEIRD type of sample, its student nature limits the generalizability of our results. Future studies should include large, representative and diverse samples in order to test and build on our current findings.

As an additional limitation, culture may have influenced the precise assessment of creativity. According to Shao et al. (2019), culture may influence: (a) the expression of creativity in individuals' outputs (e.g., due to cultural familiarity with the creativity instrument), and (b) the subjective assessment of creativity (which is related to the cultural background of raters). In relation to the first point, the instrument used in our study (i.e., the Alternate Uses Task, by Guilford, 1967) was developed in the United States, and so it may have biased performance in favor of the host national (Western) sample. Moreover, language—as an integral aspect of culture—can influence the generation of creative output expressed in verbal forms (Shao et al., 2019). In this line, and even though immigrant participants had a good command of either one or the two host languages, they may have still been disadvantaged in comparison to the host national participants. With regards to the second point made by Shao et al. (2019), the team of creativity coders were from the dominant Western culture. Even though we tried to take an emic-etic approach (Berry, 1999) when coding creativity, by keeping in mind the universe of uses generated by the same cultural group (criterion adapted from Goclowska et al., 2012),[13] coders' cultural background may have biased results in favor of host nationals. Future studies should more carefully acknowledge and control for the influence of culture in the measurement of creativity, for example by using raters that match the cultural background of their study participants (for some examples, see Sun, 2018; and Tidikis et al., 2018).

Moreover, in this study we used a single item measure to assess each of the cultural identifications. Other researchers could further expand on these findings by using different and broader assessments of global identity—such as the IWAH scale; (McFarland et al., 2012), or by distinguishing how the two components of identification with humanity (i.e., bond and concern, see Hamer et al., 2021) differently contribute to each dimension of creativity.

Finally, we cannot determine causality from our research design. Even though our study does not measure creative personality, it may be easier for creative people to develop broader or other-culture identifications, or perhaps there is a bidirectional relationship. Our results including control variables suggest that, for the immigrant sample, education might be a more significant predictor of creativity than host culture identification. Although we controlled for some

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13   For example, one use could be very common in Morocco but more novel and thus original in Ecuador.

previously identified predictors of creativity (i.e., gender, age, education), other uncontrolled variables could influence creativity as well (e.g., level of acculturation stress, previous multicultural experiences, openness to experience). Future research could use experimental or longitudinal designs to help establish causal relations between identification measures and creativity.

Conclusion

One of the outcomes of living in a highly interconnected and globalized world is the development of identifications that transcend our own cultural origin and that include culturally diverse others. Identification with a global culture is considered one of the more inclusive and superordinate levels of self-categorization (see McFarland et al., 2019). Cultural identifications become multiple and complex in the face of globalization and multicultural contexts. For example, migrants may preserve their ethnic culture while developing attachment to the host dominant culture and to a global culture (Arnett, 2002; Kunst and Sam, 2013). The present study contributes to the yet scarce research investigating the link between global culture identification and creativity, in comparison to national (ethnic and host) identifications. Importantly, it explores this relationship in a typical national sample and in a highly underrepresented and diverse community immigrant sample. Results differ depending on the sample; global culture identification is linked to creativity among host nationals, and host culture identification is associated with creativity among immigrants. For both samples, results suggest that creative thinking may result from the process of acculturation, in which new and different cultural identities are formed.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, upon request.

Ethics statement

The studies involving human participants were reviewed and approved by Parc de Salut MAR—Clinical Research Ethics Committee. The participants provided their written informed consent to participate in this study.

Author contributions

ES conceptualized the paper, participated in the study design and data collection, analyzed the data, and drafted the article. MB

conceptualized the paper, provided crucial feedback on the analytical strategy and the preliminary results, analyzed the data, edited the manuscript, and revised it critically, adding important intellectual content. VB conceptualized the paper, was responsible for the study design and data collection, provided feedback on the preliminary results, and provided critical edits and comments on the manuscript. All authors contributed to the article and approved the submitted version.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Supplementary material

The Supplementary material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fpsyg.2022.1007034/full#supplementary-material

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Superordinate identities and self-transcendent emotions: Longitudinal study in Spain and Chile

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Recent studies suggest that identification with all humanity (IWAH), apart from being related to universalistic values, could also be related to self-transcendent emotions (STE). In this scenario, the general objective of this cross-cultural longitudinal study is to examine the relationship between identification with proximate categories (i.e., community and country) and superordinate one (all humanity), and their association with positive self-oriented and STEs during a traumatic global phenomenon such as COVID-19 pandemics. Additionally, we explore variations regarding the patterns of those associations in different cultural contexts (Chile and Spain) and examine whether they change among two different time points (T1–T2). The total sample was composed of 403 participants, of whom 224 were residents in Chile (*M* = 39.25, *SD* = 12.56; range 18–71 years; 49.6% women) and 179 were residents in Spain (*M* = 36.35, *SD* = 12.12; range 18–68 years; 59.8% women). Data collection was carried out in September (T1) and November (T2) 2020, through online surveys administered via Survey Monkey® platform. Overall, results show, as expected, greater identification with proximate categories rather than superordinate ones, and an association between STEs and IWAH, but also with national and community identification. IWAH, but not STEs decreased significantly (T1–T2) in both countries. Thereafter, these emotional and behavioral responses decline as a symptom of growing fatigue with the pandemic situation, and also reflect a shift from broader to more local

concerns. Analysis regarding comparisons between countries indicated higher levels of identification with community and with all humanity in Spain and with country in Chile. The results are discussed in the context of new developments in studies on IWAH.

Introduction

The recent pandemic affected humans' lives on an enormous scale, both at an individual and collective level. This experience showed all of us that more than ever we require common solutions for shared problems and collective threats. However, in the absence of a global governance system (Dietz, 2003; Held, 2010), it is necessary for individuals to develop capacities that enable them to respond individually or collectively to these challenges. According to Bartelson (2008), the greatest obstacle to the conceptualization of a global society is the division of humanity into groups, since these create identities that are possibly adversarial or in conflict. Therefore, a superordinate, inclusive identity is required, incorporating the diversity of current social distinctions, and encompassing the entire world. This could be the perception of being mutually linked with all humanity (Karlberg, 2008; McFarland et al., 2019). Although identification with all humanity (IWAH) has been studied mainly as a latent individual characteristic, which could be developed through socialization processes, we believe that it is important to investigate circumstances, conditions and mechanisms that could help to encourage, promote it or enlarge it (see Reysen et al., 2022; Sparkman et al., 2022). In this regard, the pandemic could promote inclusive attitudes by creating a common in-group identification in the face of a global threat, because psychosocial responses of the general population to previous pandemics included a greater sense of empowerment and compassion toward others (Taylor, 2019; Chew et al., 2020). This shows that not only in-group cohesion and out-group exclusion and stigmatization are triggered by an epidemic, but inclusion and solidarity can also occur (see Páez and Pérez, 2020). As de Rosa and Mannarini (2020) argue, collective traumatic events and threats, such as COVID-19, can increase awareness of human vulnerability, consequently creating broader representations of identity where the in-group is considered to be the humanity as a whole. On the other hand, recent studies have shown that IWAH, apart from being potentially triggered by collective threats, is also related to shared benevolence and universalistic values (Daniel et al., 2014; McFarland et al., 2019), and self-transcendent emotions (STE) (Alfaro-Beracoechea et al., 2019;

Alfaro-Beracoechea and Contreras-Tinoco, 2021; Pizarro et al., 2021a). In fact, the induction of three different STEs, even controlling for individuals' value orientations, explained fusion of identity with all humanity, as well as collective intentions to help others (Pizarro et al., 2021b). Nevertheless, as far as we know there are no recent studies which would analyze those links, STEs and superordinate identities, during these adverse pandemic times. Therefore, considering the challenges of the unpredictable scenario established by the COVID-19 pandemics, it is necessary to examine the levels of identification (proximate and superordinate ones) and to explore its relation with self-transcendent and self-oriented emotions (SOE) (and the associations between the two). Additional, in line with other studies carried out in the midst of the pandemic (Brooks et al., 2020; Ruiz et al., 2021), we believe it is important to emphasize the impact produced by quarantine, as well as the differences that can be found in the comparison between countries, since most of the studies are based only on single country samples (see for example: Bauer et al., 2020 in Germany; Camitan and Bajin, 2021 in Philippines; Enea et al., 2021 in Romania; Fawaz et al., 2021 in Lebanon; Filgueiras and Stults-Kolehmainen, 2020 in Brazil; Khan et al., 2020 in Bangladesh; Moreira et al., 2020 in Portugal; Mousavi, 2020 in Iran; Landi et al., 2020 in Italy; Liu et al., 2020 in China; López Steinmetz et al., 2022 in Argentina; Rodríguez-Rey et al., 2020 in Spain; Rosen et al., 2020 in the United States; van Tilburg et al., 2020 in the Netherlands). That is why we decided to focus on two different cultural regions (Spain and Chile) and explore the changes over time during the first wave of COVID-19 pandemic.

Proximate identifications: Community and country

The Social Identity Theory (Tajfel and Turner, 1979) has been very useful in helping to understand the nature of psychological affiliation to large social groups such as community and nation. These types of proximate identification refer to a specific subtype of social identity (Smith et al., 2005; Nigbur and Cinnirella, 2007); the self-recognition and the active identification of individuals along with an emotional attachment

or belonging to a nation or community (Der-Karabetian and Ruiz, 1997).

Social Identity Theory (Tajfel and Turner, 1979, 1986; Tajfel, 1981) states that individuals tend to make favorable differentiations for the in-group ("us") and as a consequence behavior such as prejudice, discrimination, ethnocentrism, stereotypes and prejudices may arise in relation to the out-group, for example, to people from other countries or cultures ("them"). In addition, a strong and positive proximate identification (in-group: community and country) presupposes feelings of belonging, satisfaction and pride, as well as engagement and participation in one's own social and cultural practices. In this sense, strong proximate identities may imply a reactionary position that, in the long run, can produce an incubation of contradictions and resentments that at a certain point might provoke unfavorable reactions toward the out-group (Stupar-Rutenfrans et al., 2021; Zhai and Yan, 2022), for example, to people from other countries or cultures. However, it also may represent an element of union and cohesion in the face of external aggression (from another country or the dominant culture against the minority culture or a natural catastrophe like COVID-19 pandemics). Studies show the importance of in-group social identity, as well as reaffirm that experiences of catastrophes induce inclusive helping behaviors. A study found that personal exposure to COVID-19 increases prosocial behavior (charitable donations), but this increased altruism is mostly in-group oriented: donors predominantly benefited the local level because donations toward country and world levels were half as large. Moreover, confirming the importance of social identity, the greater the identification with the local collective, the more donations for this in-group, but, at the same time, the greater the identification with the world, the more donations to the world in general (Grimalda et al., 2021).

In contrast to proximate identifications or in-group identifications, like identification with the world or superordinate identification categories implies seeing ourselves as members of the human race, regardless of nationality, culture, religion, race, political orientation, or socioeconomic status (McFarland et al., 2012, 2013). In this line, McFarland et al. (2012) used the concept of IWAH to define a type of social identity that refers to recognizing that all of humanity is one's in-group.

Superordinate identity: Identification with all humanity

The idea of IWAH dates back to the times of Diogenes of Sinope (412 BC) and Chrysippus who argued that cosmopolitanism would take hold by diminishing the importance of national identities. Within modern psychology, the concept of IWAH appeared in the theories of Adler, Maslow, Allport, and Erikson (for a more extensive

review, see Hamer et al., 2019; McFarland et al., 2019). Contemporaneously, it is worth mentioning studies devoted to predictors and consequences of IWAH (McFarland et al., 2012; Hamer et al., 2017, 2018, 2019; McFarland, 2017), psychological sense of being part of a global community (Hackett et al., 2015), identification with the world at large (Buchan et al., 2011), the concept of global citizenship (Katzarska-Miller et al., 2012), and world citizenship (Türken and Rudmin, 2013).

By definition, it is assumed that IWAH refers to being aware of and willing to engage in combating global problems of the human race that concern us all (such as climate change or human rights violations) by adopting practices and values of a global culture (McFarland et al., 2012; Reese et al., 2015) such as democracy, human rights, and freedom. In terms of consequences, studies reveal that IWAH predicts human rights orientation, concern for global issues (McFarland et al., 2012, 2019), prosocial activities toward people from different countries, cultures intergroup forgiveness (Hamer et al., 2017, 2018), acceptance of refugees, as well as support for international volunteering and international charities (McFarland et al., 2019).

Furthermore, several studies confirmed that openness to experience, empathy, and universalism-tolerance values are the psychological underpinnings of this identification, whereas ethnocentrism, blind patriotism, right-wing authoritarianism, social dominance orientation, and religious fundamentalism are negatively related (Hamer et al., 2019; McFarland et al., 2019). However, the general pattern that has been found is that identification with the community, the nation, and all of humanity are positively associated and not contradictory (McFarland and Hornsby, 2015; Alfaro-Beracoechea et al., 2019). Although in general people identify more with the community or the nation as compared to superordinate levels such as all humanity (Hamer and Gutowski, 2009; McFarland et al., 2019; Hamer et al., 2021).

Nevertheless, studies on cross-cultural validation and replicability of these findings are still scarce, especially outside Europe and the United States. Consequently, as McFarland et al. (2019) point out, there is a need to test these results using more complex measures and to expand this research to different cultural contexts, especially underrepresented ones (a representative sample from Africa, Oceania, Latin America, rural areas, and small cities would be needed).

Self-oriented and self-transcendent emotions

Within the various emotional families, a classic dichotomization of emotions is based on their orientation; SOE and others-oriented emotions. Fernández et al. (2020) point out the importance of distinguishing between them since they respond to different motivations and their

connotation differs significantly. The former are focused on internal states and individual goals, while the latter pay more attention to the social context and the interdependence of others (Piff and Moskowitz, 2018). That is, in the case of SOE, the motivation is selfish, seeking to mitigate one's own discomfort, while the motivation of others-oriented emotions is altruistic; they are evoked from a feeling of empathy toward the suffering of others and their final goal is to mitigate it (see Fernández et al., 2020). Therefore, STEs tend to reduce or minimize the importance of and attention to oneself, so they are close to others-oriented emotions (Fu et al., 2022). Additionally, numerous studies propose that STEs increase positive behaviors and attitudes toward different out-groups and foster social inclusion (see Van Cappellen and Saroglou, 2012; Yaden et al., 2017); hence, they may be related to higher levels of IWAH (de Rivera, 2018; McFarland et al., 2019).

Various studies proved that individuals experience STEs, such as kama muta or 'being moved by love' (Van Cappellen et al., 2013; Seibt et al., 2017, 2018; Zickfeld et al., 2017; Schubert et al., 2018; Fiske et al., 2019) or moral elevation (Haidt, 2000, 2003; Algoe and Haidt, 2009; Aquino et al., 2011; Diessner et al., 2013; Pohling and Diessner, 2016), while being exposed to touching or moving stimuli. In other words, the experiences that elicit these emotions are intrinsically social and have been described as involving issues of affiliation and social relationships, and evaluations of shared moral virtues, and they allow to elaborate a more complex understanding of others and increase proximity and overcoming obstacles (Shiota et al., 2007; Haidt and Morris, 2009; Rimé, 2009; Cova and Deonna, 2014; Menninghaus et al., 2015; Stellar et al., 2017).

Consequently, studies have found that STEs like elevation and social awe, can be evoked by exemplary actions of health care workers and by supportive community responses to the pandemic of COVID-19 (Páez and Pérez, 2020; Zlobina and Dávila, 2022). Thus, it is possible that the pandemic may have triggered these emotional reactions to poignant experiences such as, for example, health care workers giving their lives for the lives of others, stories of separation and reunion after ICU, stories about the death of the loved ones, suffering for others, acts of kindness, compassion, sacrifice, generosity, etc. That is, circumstances that can move and inspire individuals to experience a feeling of devotion to a common identity.

Relationship between self-transcendent emotions and identification with all humanity

Within the family of positive emotions, STEs can mobilize individuals to connect with the people around them (Van Cappellen and Rimé, 2014). Some studies have previously shown that these emotions motivate the strengthening of more inclusive identities which can be translated into an increase in people's sense of identification with humanity (Pizarro et al., 2021a,b).

For example, studies show that STEs such as kama muta make people feel love, solidarity, compassion and identification with others (Zickfeld et al., 2017; Pizarro et al., 2021b). That is, individuals feel oneness, union, or dissolution of the self into some bigger entity such as nature, earth, or the cosmos (Schubert et al., 2018; Seibt et al., 2018). On the other hand, Bai et al. (2017), in line with other studies (i.e., Shiota et al., 2007; Pizarro et al., 2021b) found that awe can reduce individual self-consciousness and self-absorption, thus promoting identification with the culture of the collective, for example, with one's own community. Consequently, the experience of awe causes individuals' egocentric tendencies to decrease and their collective identity to be strengthened, which ultimately turns people's attention to the broader collective (Piff et al., 2015; Wijk, 2021). Specifically, studies show that by increasing the perception of the self as small, this emotion boosts global citizenship identification, understood as feelings of connectedness or oneness with the world (Seo et al., 2022).

Furthermore, Negami (2020) found that threat-based awe, due to its association with powerlessness, would facilitate engagement with smaller social groups, compared to positive awe, which would be related to superior groups. In line with these results, Wang et al. (2020) also showed that negative awe has a positive effect on enhancing national identity. Accordingly, a recent study has shown that STEs, especially awe and kama muta were evoked more strongly during small informal group meetings, than during large collective and societal experiences (Cusi et al., 2022). These results suggest that STEs are related to all forms of social identifications. Therefore, it is important to remember that proximate or in-group identifications are not contradictory with superordinate identification (McFarland and Hornsby, 2015; Alfaro-Beracoechea et al., 2019).

In general, it is known that the various manifestations of STEs like elevation, awe and kama muta have shown strong associations with values which emphasizes appreciation, protection and voluntary concern for the well-being of others (Cusi et al., 2018; Pizarro et al., 2018, 2021a,b; Negami, 2020) and prosocial behavior (Daniel et al., 2014; McFarland et al., 2019). In addition, they also show associations with identity fusion (Pizarro et al., 2021b), greater focus on social identity (Rufi et al., 2016) and disposition to celebrate and honor our common humanity (Cusi et al., 2018; Pizarro et al., 2018).

In sum, given that it has been shown that STEs can promote both proximate and superordinate identifications it is especially necessary to explore those associations especially in uncertain and difficult times.

Current state of issue

In a two-time longitudinal design, we analyze the responses of the general population of Chile and Spain collected in September and November 2020, when each country was going through its particular sanitary situation.

In Spain, the alert declaration approved by Parliament on March 14, 2020, granted sole command to the central government to manage the health crisis. It brought a lockdown of the entire population and mobility restrictions until June 21, 2020, when the decree was lifted, and the autonomous governments took control over their respective Autonomous Communities. From then on, free movement within the national territory was allowed, although borders with other countries by land and air were not opened until July 1, 2020. After the lockdown in the summer period (July and August), new infections increased progressively and significantly, which constituted the so-called "second-wave" of coronavirus. In the first half of September, 122,700 new cases were recorded and the total number of deaths since the beginning of the pandemic reached 30,000. The second half ended with 778,607 people diagnosed positive for coronavirus, a 16.7% occupancy rate in Intensive Care Units (ICU) and a total of 31,973 deaths nationwide (Ministerio de Sanidad, 2020a). By November 2020 the total number of infected persons was 1,656,444, ICU occupancy reached 26.3% and the number of deceased persons reached 45,511 (Ministerio de Sanidad, 2020b). Given that data, regional governments began to implement restrictive measures relating to the closure of non-essential stores, and restaurants and implemented perimeter closures even between municipalities and basic health areas (Basque Country, Region of Murcia and Madrid).

In Chile, on March 3rd, Chilean health authorities reported the first case of COVID-19. Two weeks later, on March 16th, the government announced the closure of universities, schools and 2 days after, on March 18th, the closure of the country borders and declaration of the national emergency, accompanied by several concrete interventions to further contain the outbreak in the region (MINSAL, 2020). Soon after, on March 22nd, the government declared a night-time curfew, localized lockdowns (i.e., intermittent lockdowns at the municipality level depending on total cases and case growth) and the first total quarantine period, on March 25th (Ministerio de Salud, 2020a).

By July 19th, the Chilean government implemented the "step by step" strategy. This plan considered five different stages of gradual opening, at the municipality level, based on the monitoring of epidemiological and health system indicators. In September, Chile had a total of 462,991 infections, an ICU occupancy rate of 39% and a death toll of 12,741 people (Ministerio de Salud, 2020a), with partial lockdowns until the end of the month in most regions. In November, after declaring greater mobility freedoms for a large part of the country's regions, there was an increase in the number of infected persons

(552,864), in ICU occupancy (76.4%), and in the number of deaths, which amounted to 15,430 (Ministerio de Salud, 2020b). These rates demanded a new partial quarantine period which lasted until December 2020 in Santiago de Chile and other regions.

Studies on responses to collective disasters have found that in a first phase (called the honeymoon phase) there is a positive emotional arousal and a significant altruistic response and openness to those affected, which lasts for a few weeks. Thereafter, these emotional and behavioral responses decline, and people focus on more limited issues (Rimé, 2020). For instance, collective applause to health workers and helping to members of the community were important at the beginning of the pandemic and after some weeks declined (Zlobina and Dávila, 2022).

Objectives and hypotheses

Despite the long theoretical research on IWAH, on the one hand, and STEs on the other, empirical evidence examining their relationship is almost non-existent. In this scenario, the present study aims to examine the pattern of relationships between different levels of identification and their association with STEs in two different countries in the context of the COVID-19 pandemic. Specifically, we first propose to test whether proximate identifications (i.e., community and country) are compatible with superordinate identifications (i.e., all humanity). Second, we will explore how these are associated with experiences of STEs. Hence, these are the hypotheses on which this study is based:

> (H1a) We expect that the levels of proximate identifications (community and country) will be higher than the level of superordinate identification (IWAH). (H1b) We assume that the relationship between all the different levels of identification will be positive.

> (H2a) STEs should be strongly associated with both proximate and superordinate identifications, more than SOE. (H2b) We also expect that the more STEs participants experience, the more they will identify with a superordinate category (IWAH).

> (H3) In addition, we expect a decline in STEs and all humanity identification from Time 1 to Time 2.

> (H4) Finally, as a more exploratory goal, we want to know if there are mean differences between the two countries, as well as differences in the association between the study variables (levels of identification and emotions).

Materials and methods

Participants and procedure

The total number of participants was 403 persons of legal age, of whom 224 were residents in Chile (M = 39.25, SD = 12.56; range 18–71 years; 49.6% women) and 179 were residents in Spain (M = 36.35, SD = 12.12; range 18–68 years; 59.8% women). Sociodemographic characteristics of the sample can be found in **Supplementary Table 1**. The questionnaires were administered through online surveys, created on the Survey Monkey® platform. The data collection process took place between September and November 2020. We contracted the services of Offerwise, a research panel company that provides programming, data collection, processing and analysis services[1]. This company convenes panelists through television advertising and social networks, currently managing a panel of more than 6 million active participants, who have their socio-demographic characteristics mapped and classified into consumer profiles. In this way, it was possible to adjust the recruitment to the characteristics of the population required for the present research, i.e., Chilean and Spanish citizens over 18 years of age. Finally, all participants received informed consent for the study, in which the voluntariness and anonymity of their participation were made explicit. The procedure was approved by the Ethics Committee of the Universidad Católica del Norte (Ref: 0041/2019).

Measures

Fredrickson's Positivity Test (Fredrickson, 2009; Wlodarczyk et al., 2021). This scale examines various positive emotional reactions that may have been experienced due to the coronavirus outbreak. It was decided to divide positive emotions into two categories or emotional families: self-oriented and self-transcendent. In this sense, we calculated two indexes: first, SOE composed of the average of two items ("What is the most joyful, glad, or happy you felt?" and "What is the most serene, content, or peaceful you felt?"); and second, STE composed of the average of five items which are particularly related to self-transcendence (Emmons, 2005) ("What is the most awe, wonder, or amazement you felt?"; "What is the most grateful, appreciative, or thankful you felt?"; "What is the most hopeful, optimistic, or encouraged you felt?"; "What is the most inspired, uplifted, or elevated you felt?"; and "What is the most love, closeness, or trust you felt?"). Participants responded ranging from "Not at all" to "Extremely."

Identification with all humanity (McFarland et al., 2012; Hamer et al., 2021). The full-scale captures in 27 items

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1   https://www.offerwise.com/

concern and supportive behavior toward the disadvantaged, an endorsement of human rights and strong responses in favor of community, country, and global harmony. Specifically, participants must answer whether they agree with each of the items (e.g., "How much would you say you have in common with the following groups?") that make up this scale and answer according to each social or identity category (1 = "My Community"; 2 = "My Country" and; 3 = "All Humanity"), ranging from 1 (lowest score) to 5 (highest score). In order to carry out the analyses shown below, variables were created. For this purpose, the corresponding items were grouped by each of the social categories explored in this study ("My Community," "My Country," and "All Humanity"). Based on CFA presented in previous studies (please see Reese et al., 2015; Reysen and Hackett, 2016; Sparkman and Hamer, 2020; Hamer et al., 2021; Sparkman, 2022) we decided to calculate two subscales of the "All Humanity" dimension. First subscale is called "Bond" (items 1–4), it refers to the cognitive categorization and affective feelings of closeness linked to the group. Second one is called "Concern" (items 6–9), and it refers to the feelings of care and responsibility for people all over the world. Since item 5 loaded on both factors (as in the aforementioned previous study, see Hamer et al., 2021), we decided to exclude it from both subscales (the Spanish IWAH scale can be found in the **Supplementary Appendix**). Indicators of internal consistency showed acceptable scores for both scales (see **Supplementary Table 2**).

Results

First, regarding H1a, in order to compare the levels of proximate (community and country) and superordinate (all humanity) identifications we carried out t-test analysis and calculated their effect size using Cohen's d (Lovakov and Agadullina, 2021; see **Table 1**). In favor of what was hypothesized, participants scored higher on identification with their own community [$t(392)$ = 12.513; p = 0.000; d = 0.613] and their country [$t(393)$ = 5.636; p = 0.000; d = 0.239] compared to IWAH. In this sense, it is observed that participants reported higher identification with their own community, followed by their country, and finally, with humanity as a whole. However, the concern subscale of all humanity dimension showed higher mean scores than all other levels of identification, being these differences statistically significant in the case of identification with one's own community [$t(394)$ = −3.378; p = 0.001; d = 0.172], as well as in the case of identification with one's own country [$t(396)$ = −10.280; p = 0.000; d = 0.507].

In addition, Pearson correlation analyses were carried out to explore the association among all levels of identification (see also **Table 1**). Supporting H1b, we obtained a significant positive association between proximate identifications (community and

TABLE 1 Means, standard deviations and correlations among IWAH scale's dimensions and subscales in the total sample.

Variables	M	SD	Community	Country	Humanity	Bond
Community	3.54	0.69	–	–	–	–
Country	3.27	0.71	0.51	–	–	–
Humanity	3.11	0.70	0.52	0.62	–	–
Bond	2.57	0.77	0.42	0.59	0.87	–
Concern	3.67	0.81	0.48	0.51	0.88	0.54

$N = 403$.
The reported scores refer to the average of T1 and T2. Pearson correlation (unilateral).
All correlations are significant at $p \leq 0.001$.

country) and superordinate identification (all humanity: bond and concern), with medium-high effect sizes.

Concerning H2a, STEs were related to both proximate and superordinate identifications as expected (see **Table 2**). However, partially at odds with H2b, STEs showed the strongest associations with the country dimension ($r = 0.40$), followed by all humanity dimension ($r = 0.33$), and finally, with the community dimension ($r = 0.27$). Considering that STEs are the central element of the study, we wanted to test the differences of the magnitude of the above presented correlations. For this purpose, we carried out sample-weighted correlations comparison analyses (Diedenhofen and Musch, 2015) taking as reference the r-value of the correlation between STEs and all humanity dimension ($r = 0.33$), and we compared it with the correlation values of the community ($r = 0.27$) and country ($r = 0.40$) dimensions, respectively. The comparison of correlations did not result statistically significant for community dimension ($z = -1.300$; $p = 0.097$), whereas for country dimension it did ($z = 1.752$; $p = 0.040$). Additionally, we performed partial correlations between self-oriented and STEs and IWAH controlling for identification with community and country (see **Supplementary Table 3**). Those correlations were not statistically significant in the whole sample, nevertheless when analyzed separately, in Spain correlation was positive for both emotions and in Chile only for self-transcendent ones (see **Supplementary Table 3** for detailed analysis).

To explore whether there were any changes in the levels of the study variables from T1 to T2 in each country (H3), we carried out repeated measures analysis. Following what we expected, we observed a decline in the levels of STEs and IWAH from Time 1 to Time 2. As can be seen in **Table 3**, in the case of Spain and Chile, IWAH decreased, while all other variables remained stable. In Chile, participants reported lower identification with their country in T2. In both Chile and Spain, the mean score of the subscale of concern decreased significantly at T2, while the subscale of bond remained stable. Finally, respondents in Chile reported experimenting significantly more SOE in T2.

Regarding differences between nations (H4), as can be seen in **Table 4**, there are statistically significant mean differences in all dimensions of the IWAH scale between Spain and Chile. Identification with community and all humanity mean scores were higher in Spain, while identification with the country

was higher in Chile. Regarding the subscales identification of all humanity, Spanish residents reported higher levels of concern than Chilean ones, whereas the mean scores of bond subscale did not vary between the countries. Further, both self-oriented and STE's mean scores were higher in Chile than in Spain.

Furthermore, to explore possible differences between different cultural contexts characterized also by distinct health and mobility situations at the time of data collection (periods of non-strict confinement were inverse in Chile and Spain), we used a comparative t-test analysis to examine the differences between the two countries at both T1 and T2 separately (see **Supplementary Table 4**).

Results for both Spain and Chile show mean-above the arithmetic average at T1 (September), with higher levels in people residing in Spain compared to those who reside in Chile, on community dimension [$t(395) = 4.086$; $p = 0.000$; $d = 0.424$], all humanity dimension [$t(395) = 2.712$; $p = 0.007$; $d = 0.271$], and its concern subscale [$t(398) = 5.206$; $p = 0.000$; $d = 0.518$]. On the contrary, statistically higher means were found in Chile compared to Spain regarding country dimension [$t(397) = -3.111$; $p = 0.002$; $d = 0.321$] and STEs [$t(397) = -2.240$; $p = 0.026$; $d = 0.217$], although mean differences are not significant in the case of bond subscale [$t(398) = -1.660$; $p = 0.098$; $d = 0.167$], and SOE [$t(397) = -0.428$; $p = 0.669$; $d = 0.041$].

With respect to the differences found at T2 (November) comparing the Spanish and Chilean populations, it should be noted that the means were statistically higher in the case of community dimension [$t(401) = 4.329$; $p = 0.000$; $d = 0.435$], all humanity dimension [$t(401) = 2.923$; $p = 0.004$; $d = 0.298$], and concern subscale [$t(401) = 6.173$; $p = 0.000$; $d = 0.625$], with higher averages in the Spanish population. However, the Chilean sample showed statistically higher means of country dimension [$t(401) = -2.465$; $p = 0.014$; $d = 0.246$], SOE [$t(401) = -3.468$; $p = 0.001$; $d = 0.353$], and STEs [$t(401) = -4.223$; $p = 0.000$; $d = 0.414$]. As can be seen, the differences are not statistically significant in the case of bond subscale ($p = 0.195$), showing a similar pattern as at T1. The differences at T2 are not statistically significant in the case of bond subscale [$t(401) = -1.299$; $p = 0.195$; $d = 0.129$] as at T1. However, in contrast to T1, SOE did show an increase at T2.

To find out which country had undergone the greatest change over time in the study variables, we calculated the

TABLE 2 Correlation comparison between emotional scales and IWAH scale's dimensions and subscales in the total sample.

Variables	Community		Country		Humanity		Bond		Concern	
SOE	0.13[b]		0.19[a]		0.17[a]		0.26[a]		0.04	
STE	0.27[a]		0.40[a]		0.33[a]		0.38[a]		0.21[a]	
	z	p	z	p	z	p	z	p	z	p
	−3.529	0.002[b]	−5.457	0.000[a]	−4.101	0.000[a]	−3.153	0.001[a]	−4.234	0.000[a]

$N = 403$.
The reported scores refer to the average of T1 and T2.
Pearson correlation (unilateral).
[a] $p \leq 0.001$; [b] $p \leq 0.01$.
To test group differences in correlations between countries we used Dunn and Clark's (1969) z-statistic.

TABLE 3 Repeated measures analyses of the study variables between T1 and T2 by country.

Variables	Range	M (SD)		F	Sig.	η^2
Spain		T_1	T_2			
Community	1–5	3.72 (0.68)	3.73 (0.72)	0.049	0.825	0.000
Country	1–5	3.20 (0.68)	3.13 (0.70)	3.229	0.074	0.018
Humanity	1–5	3.27 (0.61)	3.20 (0.70)	5.607	0.019[c]	0.031
Bond	1–5	2.50 (0.73)	2.51 (0.80)	0.117	0.732	0.001
Concern	1–5	4.01 (0.71)	3.89 (0.73)	11.211	0.001[a]	0.060
SOE	0–4	2.00 (0.94)	1.91 (0.93)	2.300	0.131	0.013
STE	0–4	2.04 (0.98)	1.96 (0.90)	1.380	0.242	0.008
Chile						
Community	1–5	3.41 (0.79)	3.39 (0.82)	0.155	0.694	0.001
Country	1–5	3.43 (0.80)	3.31 (0.83)	7.913	0.005[b]	0.035
Humanity	1–5	3.07 (0.83)	2.96 (0.84)	5.305	0.022[c]	0.024
Bond	1–5	2.64 (0.92)	2.62 (0.90)	0.141	0.708	0.001
Concern	1–5	3.57 (0.95)	3.35 (0.96)	14.957	0.001[a]	0.063
SOE	0–4	2.04 (1.01)	2.28 (1.14)	9.516	0.002[b]	0.041
STE	0–4	2.25 (0.96)	2.37 (1.06)	2.832	0.094	0.013

$n_{Spain} = 179$; $n_{Chile} = 224$.
[a] $p \leq 0.001$; [b] $p \leq 0.01$; [c] $p \leq 0.05$.

TABLE 4 Means, standard deviations of the study variables, between-country t-test comparisons and effect sizes.

Variables	SpainM (SD)	ChileM (SD)	t-Test	Sig.	Cohen's d
Community	3.72 (0.62)	3.40 (0.72)	4.664	0.000[a]	0.472
Country	3.16 (0.65)	3.37 (0.75)	−2.905	0.004[b]	0.297
Humanity	3.23 (0.62)	3.01 (0.75)	3.128	0.002[b]	0.316
Bond	2.50 (0.70)	2.62 (0.81)	−1.577	0.110	0.157
Concern	3.95 (0.67)	3.46 (0.85)	6.238	0.000[a]	0.632
SOE	1.95 (0.84)	2.16 (0.91)	−3.624	0.000[a]	0.239
STE	1.99 (0.84)	2.31 (0.86)	−2.326	0.020[c]	0.376

$n_{Spain} = 179$; $n_{Chile} = 224$.
The reported scores refer to the average of T1 and T2.
[a] $p \leq 0.001$; [b] $p \leq 0.01$; [c] $p \leq 0.05$.

subtraction of T2 and T1 to obtain the resulting score as a comparative value. Cross-country mean-comparison analyses were carried out (see Table 5). The only differences found between Spain and Chile over time were in SOE ($d = 0.318$) and STEs ($d = 0.193$). No statistically significant differences

were found in any of the dimensions nor subscales (bond and concern).

Finally, to find out the association between the study variables in both countries, correlation analyses were carried out by summing both times, T1 and T2. As can be observed

TABLE 5 Means, standard deviations, and t-test among the study variables by country and between time points (T2-T1).

Variables	Spain M (SD)	Chile M (SD)	t-Test	Sig.	Cohen's d
Community	0.01 (0.64)	−0.01 (0.70)	0.430	0.668	0.030
Country	−0.06 (0.47)	−0.11 (0.61)	0.961	0.337	0.091
Humanity	−0.07 (0.42)	−0.11 (0.71)	0.570	0.569	0.067
Bond	0.01 (0.60)	−0.02 (0.80)	0.492	0.623	0.042
Concern	-0.12 (0.51)	−0.22 (0.84)	1.253	0.211	0.140
SOE	−0.09 (0.81)	0.23 (1.14)	−3.235	0.001[a]	0.318
STE	−0.07 (0.83)	0.11 (1.01)	−1.995	0.047[b]	0.193

n_{Spain} = 179; n_{Chile} = 224.
The reported mean-scores refer to the subtraction between T2 and T1.
[a] $p \leq 0.001$; [b] $p \leq 0.05$.

in Table 6, overall, correlations were stronger in Chile than in Spain, especially among different levels of identification (proximate as well as superordinate: community, country, and all humanity).

Exploring the differences between Spain and Chile, between-country correlation analysis (Diedenhofen and Musch, 2015) showed statistically significant differences regarding associations between (a) community and country identification, (b) community and all humanity identification (also bound subscale), (c) country and all humanity identification (also bound subscale), and (d) SOE and community identification, being those associations higher in Chile (see Table 7).

Moreover, we conducted correlation analysis between the two families of emotions (self-oriented and self-transcendent) and the different levels of identification in T1 and T2 in Spain and Chile (see Supplementary Table 5). Overall, results show a greater association of STEs versus SOE with each level of identification in both times, and in both countries. In Spain, SOE were significantly related to all humanity dimension, yet only represented by bond subscale. On the other hand, STEs showed a positive and statistically significant association with all dimensions except for community dimension in T2. In Chile, all the associations were positive and statistically significant except for the relationship between all humanity dimension in T1 and SOE in T2.

In addition, Supplementary Table 6 shows the association between variables based on the mean correlation weighted by sample size. Overall, it shows the strongest associations of STEs with all levels of identification with medium effect size, evidencing the robustness of our results. Statistically significant r-values had a confidence interval that did not include zero.

Discussion

The aim of this study was to explore the associations between STEs and proximate and superordinate identifications based on analysis of cross-cultural longitudinal data gathered during first wave of COVID-19 in 2020. Moreover, we sought

to explore the existence of variations regarding the patterns of those relations in two different cultural contexts, that is in Chile and in Spain. Subsequently, we aimed at examining within-person and between country changes in the levels of proximate and superordinate identifications and emotions during two time points of the pandemic.

As to H1, our study partially confirmed what was expected, since the results showed that, in times of pandemic, participants reported greater identification with proximate identities. Specifically, they were more likely to identify with their own community, secondly with their country and finally with broader identifications such as all humanity. More precisely, it was concern (feelings of care and responsibility for people all over the world), the subscale of the all humanity dimension, which obtained the highest scores. In addition, in the total sample, all of the dimensions of the IWAH scale were positively associated with each other, indicating that a proximate level of identification does not exclude being able to identify oneself with superordinate categories (H1b).

Although both self-transcendent and SOE were associated with all the levels of identification, the former showed stronger associations with superordinate levels of identification, being all the differences statistically significant and supporting H2a. Globally, results confirmed that STEs are more strongly associated with different dimensions of identifications than SOE. Regarding H2b, STEs showed an association with all humanity dimension, but the strongest association was the one with country dimension.

Considering the longitudinal nature of our study, we wanted to explore the differences between T1 and T2 on the study variables (H3). In both countries, IWAH, but not STE levels decrease. In the case of Chile, the dimension of country decreased significantly. In contrast, SOE increased significantly in T2; this variable was the only one with a significant magnitude of change between T2 and T1 and between the countries. The results confirm that over time the initial inclusive response triggered by the collective catastrophe weakens (Rimé, 2020). However, the STEs are maintained, suggesting that these

TABLE 6 Correlations of the study variables by country.

Variables	Community	Country	Humanity	Bond	Concern	SOE	STE
				Spain			
Community	–	0.43[a]	0.41[a]	0.34[a]	0.37[a]	0.02	0.30[a]
Country	0.64[a]	–	0.55[a]	0.44[a]	0.53[a]	0.10[d]	0.37[a]
Humanity	0.55[a]	0.72[a]	–	0.89[a]	0.88[a]	0.15[c]	0.34[a]
Bond	0.52[a]	0.66[a]	0.89[a]	–	0.58[a]	0.22[b]	0.34[a]
Concern	0.48[a]	0.62[a]	0.89[a]	0.60[a]	–	0.06	0.27[a]
SOE	0.25[a]	0.22[a]	0.21[a]	0.28[a]	0.09[d]	–	0.56[a]
STE	0.35[a]	0.40[a]	0.38[a]	0.40[a]	0.29[a]	0.74[a]	–
				Chile			

n_{Spain} = 179; n_{Chile} = 224.
The reported scores refer to the average of T1 and T2. Pearson correlation (unilateral).
[a] $p \leq 0.001$; [b] $p \leq 0.01$; [c] $p \leq 0.05$; [d] $p \leq 0.10$.
Correlations above the diagonal correspond to the Spanish sample and those below the diagonal correspond to the Chilean sample.

TABLE 7 Between-country comparison of correlations among the study variables.

Variables	Community		Country		Humanity		Bond		Concern		SOE	
	z	p	z	p	z	p	z	p	z	p	z	p
Community	–	–	–	–	–	–	–	–	–	–	–	–
Country	3.027	0.001[a]	–	–	–	–	–	–	–	–	–	–
Humanity	1.845	0.033[c]	2.875	0.002[b]	–	–	–	–	–	–	–	–
Bond	2.216	0.013[c]	3.211	0.001[a]	0.049	0.481	–	–	–	–	–	–
Concern	1.309	0.095	1.210	0.112	0.602	0.274	0.275	0.392	–	–	–	–
SOE	−2.341	0.010[b]	−1.262	0.103	−0.675	0.250	−0.654	0.257	−0.349	0.364	–	–
STE	−0.587	0.279	−0.325	0.373	−0.434	0.332	−0.653	0.257	−0.279	0.390	−3.196	0.001[a]

n_{Spain} = 179; n_{Chile} = 224. The reported scores refer to the average of T1 and T2.
[a] $p \leq 0.001$; [b] $p \leq 0.01$; [c] $p \leq 0.05$.
To test group differences in correlations between countries we used Dunn and Clark's (1969) z-statistic.

affective responses are more stable than the socio-cognitive ones of identification with the collective. This is an important and encouraging result, indicating that people find ways to generate emotions of connection with others despite isolation and a decline in initial altruistic responses.

With respect to between-country exploratory analysis (H4), we observed statistically significant differences regarding almost all the study variables in both countries. In the case of Spain, participants reported higher levels of identification with the community (this dimension being the one with the highest means) followed by IWAH, and its subscale of concern. The differences found between the means of subscale of bond, in comparison with Chile, were not statistically significant. On the other hand, Chile showed higher means for the country dimension. With respect to emotions, participants in Chile reported experimenting significantly more self-oriented and STEs in comparison with those form Spain. As for the associations between the variables, we found, in a generalized

way, significantly greater strength between the study variables in Chile, both between the levels of identification and emotions.

COVID-19 has caused a great alteration in the way we live, feel and identify with social groups. In the psychological impact of the pandemic, it is difficult to identify aspects that have not been negatively marked at both the individual (Pedrosa et al., 2020) and group levels (Marmarosh et al., 2020). During the first wave of COVID-19, the enforced social isolation caused a distancing among individuals resulting in a decrease in social connectivity or affiliation (Best et al., 2020; Folk et al., 2020). Moreover, as the uncertainty spread, and mortality rates of the virus continued to increase during the second wave of data collection, individuals have been able to experience a need for survival (self-survival and survival of the people who are dearest or closest) that has diminished the ability to redirect their attention to the external, focusing on a specific more local area. Given that all decisions made at the local level directly affected our daily lives (e.g., availability of artificial ventilators, ICU beds, and healthcare workers, economic crisis, unemployment levels,

among others), people were more likely to report concern for the local than for the superordinate community (see Abrams et al., 2021). That is, stressful and demanding conditions imply focusing on immediate need and a more concrete way of thinking (Caballero et al., 2021), which in consequence may hinder identification with broader categories.

In the case of our study, identification with the community was also more salient in both countries (particularly in Spain, where regional or ethnic identities like Basque or Catalonian are important) which could be explained by the tendency of human beings to identify more closely with proximate identities, with the pandemic being a factor that may have accentuated this tendency (see Wang et al., 2020). However, we also know that people can incorporate several levels of identity at the same time. A universally inclusive superordinate identity does not preclude the possibility of multiple and overlapping identities, whether ethnic, cultural, national or religious in origin, being grouped into a whole. As Karlberg (2008) put it, "A global 'we' can accommodate multiple secondary distinctions between 'us' and 'them' when those distinctions are not understood in a hostile or adversarial manner" (p. 315). An illustration of this view might be the integration strategy of Berry's (1995) acculturation model, and the bicultural identity model of Benet-Martínez et al. (2002), according to which different cultural identifications can develop in parallel, and thus, to some extent, cease to be incompatible. Accordingly, our data show that all three levels of identification show positive associations, results that are also supported by other previous studies using the IWAH scale (see Hamer and Gutowski, 2009; Alfaro-Beracoechea et al., 2019; McFarland et al., 2019; Hamer et al., 2021; Sparkman, 2022; Sparkman et al., 2022).

Furthermore, our results considering country-comparison revealed that IWAH was higher among participants in Spain than in Chile. One of the possible explanations could be related to the differences in levels of national identification and patriotism (see Ariely, 2012; based on WVS data). Chilean participants reported higher levels of identification with the country, patriotism, and willingness to fight for it, as compared to the Spanish ones (Ariely, 2012). On the other hand, this result could be explained by the differences in religiosity levels between participants[2] from both countries. As found by McCutcheon et al. (2015), IWAH was higher among skeptics than religious believers. Although Katzarska-Miller et al. (2014) did not find a significant association between global citizenship identification (superordinate) and religiosity. Therefore, it is evident that the cross-cultural literature concerning levels of IWAH and its predictors is not yet sufficiently consistent and rather scarce, thus, much more research is needed in this area (especially in the context of pandemics).

Accordingly, emotional mechanisms involved in enhancing broader social identifications in case of adverse circumstances are certainly complex and urgently require attention and rigorous research due to its important social implications. Thus, this study intended to examine positive emotions that may have some important influence in shaping the superordinate identifications. Several studies have confirmed the increase in negative emotions, stress, anxiety, and depression disorders, both, in Spain (Odriozola-González et al., 2020) and in Chile (Caqueo-Urízar et al., 2020). Our study focused partly on understanding the role of both self-oriented and STEs in times of pandemic.

Our results indicated that participants experienced more self-transcendent (than self-oriented) emotions. This is in line with studies on STEs that were conducted during collective traumatic events (Piff et al., 2015; Gordon et al., 2017; Septianto et al., 2022; Wang et al., 2022). For example, awe can be considered ambivalent since it can be triggered by both purely positive elements and by those that may be considered negative. In fact, awe is characterized as a self-diminish emotion, allowing individuals to orient themselves toward broader identities (Keltner and Haidt, 2003). Gordon et al. (2017) examined negative awe in threatening circumstances (e.g., tornadoes, terrorist attacks, angry God). Through a series of studies, they demonstrated that this STE can be evoked by threatening stimuli and that through eliciting the sense of a small self that characterizes it (see also Piff et al., 2015) individuals tend to create a sense of global community among people that ultimately increases participant's willingness to help people in disaster-affected areas. In this regard, other studies also support these findings (Septianto et al., 2022; Wang et al., 2022), showing that when faced with powerful and even destructive catastrophes, people may be more likely to maintain a sense of smallness as part of the global community, paying less attention to their differences in race, nationality, and religion, reminding people of their common identity of a shared global community and promoting mutual aid.

Accordingly, recent studies also suggest that cultivating STEs serve as a buffer against pandemic suffering and help to minimize its negative impact on mental health (Wong et al., 2021). For example, an experimental study carried out by Datu et al. (2022) and held in the Philippines, highlights the importance of exploring STEs such as gratitude and kindness in times of crisis such as the pandemic, given the emotional benefits associated with the promotion of these emotions. Specifically, these authors found that these STEs (compared to the control condition) were associated with greater affective and emotional well-being, and they argued that cultivating these positive virtues may facilitate satisfaction of basic psychological needs. These results were explained by the fact that people in the gratitude and kindness condition showed significantly higher means of positive emotions than those in the control condition. Likewise, Algoe and Haidt (2009) show

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2 Participants from the Chilean sample reported significantly higher levels of religiosity [$t(401)$ = −10,853; p = 0.000; see **Supplementary Table 1**].

that STEs such as elevation, gratitude, and admiration differ from each other and, more importantly, are different from more commonly studied forms of positive affect such as joy and amusement.

Our data indicated a positive and strong relationship between self-transcendent and SOE. However, the STEs showed the strongest associations with all the social or collective identification levels. These results may suggest that, although related, these two types of emotions may involve qualitatively different effects, being the identification with collectives (local, national, and global) a central aspect of STEs. Moreover, our data demonstrated that STEs, as compared to self-oriented ones, were significantly more strongly associated with IWAH dimension. In short, according to other studies, we corroborated that self-transcendent and not SOE, allow individuals to connect with people and feel part of something bigger than the self, such as humanity (see Van Cappellen and Rimé, 2014; Pizarro et al., 2021a,b).

Regarding differences between countries, as to proximate identities, in Chile we observed a decrease in identification with the country (in Spain it remained stable). It may be related to citizens' dissatisfaction with governments' facing the COVID-19 pandemic as suggested by Hamer et al. (2021). Thus, lower satisfaction with the management of the pandemic by the authorities could be related to the decline in the identification with the country. In the case of IWAH, it turned out that between September and November of 2020, its levels decreased in both countries. Specifically, the aspect related to concern for people around the world declined. This decrease, which can be observed in both countries, may be considered another symptom of fatigue with the pandemic situation and was also found in other studies, for example, Hamer et al. (2021). On the other hand, the rise of SOE levels in Chile, may be influenced by socio-sanitary situation (i.e., lockdown). In November, the strict lockdown measures were lifted across various regions, which could be one of the reasons to experience more joy and serenity among the residents of the country.

It is important to note that understanding and studying self-transcendent positive emotions can help to understand the new gap that has been created within the field of positive and social psychology. In this respect, in recent years, emotional processes have become of interest to researchers in the framework of studies on relationships where social identity becomes salient. Such a conception, if well channeled, could help to develop an active change in the way individuals and specific social groups think (i.e., by defining themselves as members of the human race), and, perhaps, in how they act. On the other hand, the study of superordinate identities may also be relevant. According to the Common In-group Identity Model (Gaertner and Dovidio, 2000), the salience of a more inclusive superordinate identity category

containing both in- and out-group identities reduces intergroup stereotypes and can foster harmony between conflicting groups (Gaertner and Dovidio, 2000; González and Brown, 2002, 2006; González et al., 2008).

Previous studies in the midst of the pandemic have already shown that individuals have diminished social cohesion and identification with broader categories feeding polarization and extremism, such as an increase in rejection toward the out-group, greater prejudice, discrimination, stigma, race-based threat, and xenophobia (Roberto et al., 2020; see Gover et al., 2020; Inman et al., 2021; Li and Nicholson, 2021; Gao, 2022; Kahn and Money, 2022). In this regard, the broadest, and at the same time the most inclusive, superordinate level of identification which is IWAH can help individuals, at least to some extent, reduce intergroup threats (Riek et al., 2010). Based on the common group identity model (e.g., Gaertner et al., 1993), if we want to reduce the intergroup bias, we need both groups to be recategorized as a single one. In this way, we can use tools such as STEs and superordinate categories as they lead us to connect with all of humanity (McFarland et al., 2012). Thus, maybe categorizing ourselves as just another citizen of the world could help to expand the mind and understand that we live interconnected, and what happens on the other side of the world can have serious repercussions on our countries, our people and our daily lives.

Study limitations

Although our study makes several important contributions to the literature, of course it is not without its limitations. First, it should be noted that the samples used for the study were not entirely representative at the country level. On the other hand, despite the fact that most of the patterns of the results obtained in the Chilean context have also been confirmed in the Spanish, which definitely gave stability and scope to the results and conclusions of the study. Nevertheless, in order to better understand the relationships raised, it would be of great interest to expand the sample to other cultural contexts and countries as suggested by McFarland et al. (2019).

Another important limitation to consider is that, although one of the objectives of the study was to evaluate the relationship between IWAH and STEs in the context of a pandemic, this study has no precedents, so there is no empirical evidence on this matter. As a result of the aforementioned, it is not possible to make an adequate prediction of the behavior that people will maintain and how this will influence their IWAH. This is also related to the fact that the hypotheses proposed in the present study were not fulfilled, since, for example, it was expected that within the pandemic context to which the individuals were exposed, they would experience more SOE,

whereas participants reported more STEs. All these limitations will be considered, and an attempt will be made to reduce them in future studies.

Future research

Further studies are needed that include more representative population groups of different socio-economic and educational levels, ethnicity, etc., which would allow us to assess whether there are socio-demographic or socio-economic, or other psychosocial variables that could explain the differences in the interaction between these phenomena.

On the other hand, as Fredrickson (2002) suggests, there is a need for methods that make it possible to experience positive feelings more frequently in difficult moments of life, to keep an open mind, and to be more cooperative (Fredrickson, 2004). In times of COVID-19, it is essential to find ways to experience positive emotions that help us to decentralize our attention from the current shocking events for at least a moment. It is also necessary to have the concrete tools to try to experience these kinds of emotions that dislodge the self-focus and shift our attention away from the self and toward broader concepts.

Following this line, the study of the different STEs would also make it possible to design useful interventions for everyday life that not only seek to alleviate negative emotions but also produce positive effects on creating a superordinate identity.

Data availability statement

The original contributions presented in this study are included in the article/**Supplementary material**, further inquiries can be directed to the corresponding authors.

Ethics statement

The studies involving human participants were reviewed and approved by Ethics Committee of the Universidad Católica del Norte (Ref: 0041/2019). The patients/participants provided their written informed consent to participate in this study.

Author contributions

AW was the primary investigator of the study, provided comments and ideas, and drafted and revised the manuscript. AW, LM, and OC worked equally in the data collection, data analysis performance and development, and revision of the manuscript. ST, JM, and DP contributed providing ideas and discussing the results. JM, MB, DD, FB, and AL contributed significantly to data collection. All authors contributed to the last revision and approved the submitted version of the manuscript.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Supplementary material

The Supplementary Material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fpsyg.2022.989850/full#supplementary-material

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On the relationships linking intrinsic and extrinsic sense of freedom with pro-environmental attitudes. Synergic and buffering effects of the identification with all humanity

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This study aimed to examine whether the individual way of understanding freedom is related to pro-environmental attitudes. This idea has not been studied before. In the paper, the authors examined whether understanding freedom as extrinsic (absolute and unconditional) was related to a decrease in environmental concern and pro-environmental behavior, while understanding it as intrinsic (conditional, limited by the needs of other people) had the opposite effect. Another set of hypotheses concerned the moderating role of identification with all humanity (IWAH). The authors hypothesized that in people with a high level of IWAH, the positive relationship between intrinsic freedom and pro-environmental attitudes was stronger, and the negative relationship between extrinsic freedom and pro-environmental attitudes was weaker compared to people with a low level of IWAH. The study was conducted on a sample of 773 Polish young adults (18−29 years) using a professional research panel. The results provide empirical evidence that intrinsic and extrinsic way of understanding freedom is related to environmental concern and pro-environmental behavior. Moreover, the hypothesis concerning the moderating role of IWAH was confirmed. These results contribute to a better understanding of the factors that determine commitment to climate protection.

Introduction

Climate change is one of the biggest challenges humanity is facing today. Based on the trends in vital planetary signs, Ripple et al. (2021) declared a climate emergency and called for transformative change to protect life on Earth. Scientists predict that climate change can destroy plants, animals, ecosystems worldwide, and human societies (IPCC, 2014; Ferguson et al., 2016). The need for global action on the climate crisis has led to a growing interest among researchers to investigate the factors that may contribute to reducing the negative impact of humans on the environment. According to Clayton et al. (2015), research on human perception and behavior is as important as research on economic or technological trends driving climate change. Without human support and involvement, implementing policies aimed at environmental protection will not be possible.

Studies conducted by psychologists focus on identifying factors influencing environmental concern and pro-environmental behavior. The former means "the degree to which people are aware of environmental problems and support efforts to solve them and/or indicate a willingness to contribute personally to their solution" (Dunlap and Jones, 2002, p. 485), and the latter concerns all forms of actions aimed at avoiding harm to and/or benefiting the environment (Steg and Vlek, 2009). In their review, Gifford and Nilsson (2014) described 18 personal and social factors influencing pro-environmentalism.

Among the personal factors were personality and self-construals, locus of control, values, political beliefs, and worldviews.

A study by Arnocky et al. (2007) found that one's independent self-construal was related to more egoistic or self-directed attitudes toward the environment. Interdependent self-construal and meta-personal self-construal were associated with ecological cooperation, caring about the environment for its own sake, and pro-environmental behavior. Correspondingly, the internal locus of control has been related to stronger pro-environmental intentions and behavior (Ando et al., 2010; Fielding and Head, 2012). Studies based on Schwartz's theory of values showed that the values that build self-transcendence were related to greater environmental concern and pro-environmental behavior. In contrast, the values of self-enhancement had the opposite effect. Finally, compared to conservative beliefs, liberal political beliefs result in more commitment to environmental protection (see: Gifford and Nilsson, 2014).

So far, we do not know much about how pro-environmental attitudes are related to how people perceive their freedom. Studies focus on economic or press freedom rather than personal experience (Graafland, 2019; Riti et al., 2021). The only explored aspect of personal freedom was reactance triggered by pro-environmental messages (Kavvouris et al., 2020; Chinn and Hart, 2021).

Two constructs closely related to freedom could be self-direction and autonomy. The former is one of Schwartz's basic human values and refers to the goals of creativity, freedom, autonomy, and independence (Schwartz, 2012). Zibenberg and colleagues found that in the Russian sample, self-direction was related to higher pro-environmental behavior and environmental concern (Zibenberg et al., 2018). On the other hand, autonomy, as an important element of Self-Determination Theory, is related to the experience of integration and freedom, which is essential to intrinsic motivation (Deci and Ryan, 2000). In a study by Cooke et al. (2016), perceived autonomy (choice and self-direction) was related directly to higher self-determined motivation for pro-environmental behavior and indirectly to pro-environmental behavior.

The current study

We believe that different ways of understanding freedom could be another personal factor related to pro-environmentalism. From an individual point of view, pro-environmentalism, though desirable for humanity and the whole planet, is related to restricting existing rights and freedoms (e.g., restrictions on consumption, traveling, or choosing means of transport). Therefore, one can ask whether individuals for whom personal, unlimited freedom is essential will be less concerned about the environment and less involved in pro-environmental activities compared to those willing to limit their freedom for the benefit of others.

Pro-environmentalism and the sense of freedom

Concepts of freedom are present in political philosophy through the work of Erich Fromm (1941/1970) and Isaiah Berlin (1969). Both authors distinguished between two kinds of freedom: negative (or, according to Fromm, "freedom from") and positive ("freedom to"). An attempt to apply the idea of two freedoms into psychology was made by Radkiewicz and Skarzynska (2019); Radkiewicz (2021). According to them, a psychological meaning of that distinction lies in extrinsic or intrinsic location.

Extrinsic freedom is based on the belief that being free means the opportunity to fully and immediately achieve one's own goals. Being free is possible only when there are no external restrictions or barriers to achieving personal goals and values. Any factors that may limit this freedom are perceived as aversive. Extrinsic freedom can also be understood as the ability to be oneself and to express oneself freely, regardless of external circumstances or the well-being of others.

On the other hand, intrinsic freedom means following one's own values, life goals, and worldview. The feeling of freedom comes not from external circumstances but from achieving what a person considers good, right, or authentic – as long as it does not violate other people's rights. Intrinsic freedom is not absolute, and its realization is limited by the freedom and well-being of other

people and the sense of responsibility for one's actions. However, such limitations are not seen as inhibiting self-expression.

Both forms of freedom are noticeably correlated with self-direction. Nevertheless, they are empirically separate constructs related to different human values and moral intuitions. In a study based on Schwartz's theory of basic human values (2012), the extrinsic sense of freedom turned out to be positively related to the value of power, while intrinsic freedom was positively related to benevolence and social security values (Radkiewicz and Skarzynska, 2019). For people who perceive freedom as the absence of external constraints, power and resources are important because they allow them to control and dominate others – and thus achieve extrinsic freedom. For people with an intrinsic sense of freedom, being close to others, social stability, and harmony seem more important (Radkiewicz, 2021).

Further analyzes were based on Haidt's (2012) concept of moral foundations. Intrinsic freedom was positively related to moral intuitions based on care and fairness in social relations but negatively related to moral values of in-group loyalty and respect for authorities. In the case of extrinsic freedom, relationships were the opposite. Extrinsic form of experiencing freedom was positively related to moral values of care for others and fairness and negatively related to ingroup loyalty and respect for authority (Radkiewicz and Skarzynska, 2019).

Reducing or eliminating activities destructive to the environment requires long-term action and limiting one's privileges or certain freedoms for the good of others. It is contrary to the extrinsic, "unconditional" view of freedom characterized by an aversion to restrictions, but it goes hand in hand with intrinsic, "conditional" freedom, which is limited by the needs of and respect for other people. Moreover, intrinsic freedom postulates the importance of different values and assumes that a combination of other values (like caring for the environment) may be necessary to feel free. Therefore, people with a high level of intrinsic freedom should be more concerned about the environment and involved in pro-environmental behavior than those who understand freedom in the extrinsic way.

Identification with all humanity as a moderator between the sense of freedom and pro-environmentalism

According to Ferguson et al. (2016), studies on identifying individual factors responsible for psychological reactions to climate change should be conducted from a social identity perspective. People are motivated not only by beliefs, goals, habits, or values but also by their social identity. From a social identity perspective, people define themselves as individuals and as members of different groups (e.g., local, national, or global communities). Those who categorize themselves as members of a particular group assimilate its norms, feel more responsible for the welfare of other members and adjust individual behavior to protect the interests of comrades (Turner

and Reynolds, 2012). Motivation to serve ingroup's welfare can also influence their attitudes and behavior toward the environment. For example, perceiving oneself as a member of an environmental group is positively related to engagement in protecting the environment (Fielding et al., 2008). Environmental identity can also mediate the relationship between mortality salience and pro-environmental attitudes (Fritsche and Häfner, 2012).

We believe that another type of social identity, identification with all humanity (IWAH), could moderate the relationship between the sense of freedom and pro-environmentalism. The IWAH construct was proposed by McFarland et al. (2012) to describe the tendency to identify with people all over the world, feel close and care for them, and perceive them as an ingroup. One can derive the origins of IWAH from Adler's concept of *gemeinschaftsgefühl* ("sense of oneness with all humanity"; Adler, 1927/1954) and Maslow's (1954) concept of human kinship. In this approach, IWAH is a stable individual characteristic that is measured with a psychometric scale. Its characteristics include empathy, universalism, and openness to experience (Hamer et al., 2019). In the case of such a superordinate identity, everyone is a member of an ingroup, so people highly identified with all humanity should be more concerned and willing to help people from different countries. Studies on IWAH confirmed its crucial positive role in predicting concern for humanitarian behavior (Hamer et al., 2019). IWAH was also positively related to pro-environmental attitudes (Lee et al., 2015), pro-environmental behavior (Loy and Reese, 2019), and the relevance attributed to the global crisis of climate change (Loy et al., 2021).

For the above reasons, we expect that IWAH will also predict a higher level of pro-environmentalism in our study. However, that is not the only IWAH effect we believe should be expected. Pro-environmental actions to stop climate change need global coordination and cross-border cooperation. We think identification with all humanity can help with this, because it implies ingroup inclusiveness and universalistic perspective. Therefore it appears as a form of social identity that could facilitate/buffer some pro- or anti-environmental psychological effects.

In the case of our study, we suppose that IWAH can moderate the effects of intrinsic and extrinsic freedom. First, we expect a synergy effect with the former. In people with high IWAH, the intrinsic sense of freedom should favor pro-environmental attitudes stronger than those with low IWAH. Second, we expect IWAH's buffering effect on the negative effect of extrinsic freedom. If the extrinsic sense of freedom decreases pro-environmental attitudes, this effect should be weakest among people with high IWAH and strongest among people with low IWAH.

Hypotheses of the current study

To sum up, we aimed to examine the relationships between intrinsic/extrinsic sense of freedom, identification with all

humanity, and pro-environmentalism (environmental concern and pro-environmental behavior). We hypothesize that:

H1: Intrinsic freedom is related to higher pro-environmentalism (H1a), while extrinsic freedom is related to lower pro-environmentalism (H1b).

H2: Identification with all humanity is positively related to pro-environmentalism.

H3: IWAH moderates the association between the sense of freedom and pro-environmentalism. The positive relationship between the intrinsic sense of freedom and pro-environmentalism is strongest among people with high IWAH (synergistic effect - H3a). The negative relationship between the extrinsic sense of freedom and pro-environmentalism is weakest among people with high IWAH (buffering effect - H3b).

Materials and methods

Participants and recruitment

The research was a part of a project on internet technologies and financial decisions conducted in many countries. The sample consisted of $N = 773$ Polish young adults recruited online *via* the professional consumer research panel from the general population. The questionnaire contained four attention-check questions (asking participants to choose a certain answer when responding to a question). Participants who answered to at least three control questions correctly were included in the final sample ($N = 556$). We decided that because of the survey length, one incorrect answer did not mean that participants were inattentive. The criterion of all four correct answers would be excessively stringent, and it would mean a loss of another 129 participants (the total number of excluded participants would be 45% of the original sample size).

The final sample consisted of 455 (81.8%) women, 97 (17.4%) men, and 4 (0.7%) nonbinary persons. Participants were between 18 and 30 years old ($M = 24.8$, SD = 3.2). Almost half (49.3%) of the respondents completed Junior High School or High School, and the remaining 50.7% had completed a higher education level.

Procedure

We carried out the research between 27 May and 1 June 2021. The data was collected using the online survey tool *Qualtrics* after receiving approval from the Regional Ethics Committee of the Local University. We informed participants that the study would be conducted online. Before completing the demographic questions and self-reported questionnaires, respondents were informed about the confidentiality policies and provided electronic informed

consent. As a reward for participating in the study, respondents got points, which they could later exchange for small 'gifts'.

Measures

Environmental concern was measured with a six-item instrument developed by Busic-Sontic et al. (2017). Four of the items were reversed. Participants responded using a five-point Likert scale ranging from "strongly agree" (1) to "strongly disagree" (5). The scale was formed by taking the sum of all items (there was no missing data). The internal reliability of the scale was $\alpha = 0.75$. Sample items: "My behavior and everyday lifestyle contribute to climate change" and "The effects of climate change are too far in the future to really worry me" (reversed item).

Pro-environmental behavior was measured with an eight-item instrument also developed by Busic-Sontic et al. (2017). Participants responded using a five-point Likert scale ranging from "always" (1) to "never" (5). All items represented environmental habits that are relatively cheap to implement. The scale was formed by taking the sum of all items. The Cronbach's alpha of the scale amounted to .60. One of the possible reasons for the low reliability could be that in the case of two items ("Use public transport rather than travel by car" and "Car share with others who need to make a similar journey") the answer might depend rather on car ownership than participants pro-environmental attitudes. Sample items: "Leave your TV on standby for the night," "Switch off lights in the rooms that are not being used."

Intrinsic and extrinsic freedom was measured with a 12-item instrument developed by Radkiewicz and Skarzynska (2019). Both components consisted of six items. Participants responded to what extent they agreed or disagreed with subsequent statements, using a five-point Likert scale ranging from "strongly agree" (1) to "strongly disagree" (5). Internal reliability for both subscales was $\alpha = 0.89$ and .80, respectively. Sample items for the intrinsic freedom: I feel really free when … "I do what is consistent with my values," "I can do what I want without harming others." Sample items for the extrinsic freedom: I feel really free when… "I speak and do what I want, regardless of consequences," "I do what I want and do not have to pay attention to the situation/circumstances."

Identification with all humanity was measured using the full nine-item IWAH scale developed by McFarland et al. (2012), translated and prepared in Polish by Hamer et al. (2021). Participants were asked to indicate to what degree they identify with people worldwide. They answered with a five-point Likert scale ranging from "not at all close" (1) to "very close" (5) or from "hardly ever" (1) to "very often" (5). Internal reliability for the scale was $\alpha = 0.90$.

Results

Intrinsic ($M = 4.24$; SD = 0.75) and extrinsic ($M = 3.81$; SD = 0.77) freedom had a substantial positive correlation,

$r(556) = 0.61$, $p < 0.001$. The former one was weakly positively linked to the identification with all humanity (IWAH) $r(556) = 0.16$, $p < 0.001$, while the relationship of extrinsic freedom with IWAH was statistically non significant. The correlation between environmental concern and pro-environmental behavior amounted to $r(556) = 0.30$, $p < 0.001$ (see Table 1).

We verified our hypotheses using multiple regression analysis with the forced entry of all variables. For testing interaction effects, we applied macro taken from Hayes's (2018) *Process 4.0*. The individual hypotheses were assigned to two models. In model 1, we tested the effects of the independent variable intrinsic freedom (H1a), moderator variable IWAH (H2), and their interaction (H3a). Extrinsic freedom was included in the model as a covariate to remove its impact from the effects tested by hypotheses H1a, H2, and H3a. In turn, model 2 tested the effects of the independent variable extrinsic freedom (H1b), moderator variable IWAH (H2), and their interaction (H3b). In this case, intrinsic freedom was included in the model as a covariate to remove its impact from the effects tested by hypotheses H1b, H2, and H3b. The analyzes for models 1 and 2 were performed separately for both measures of pro-environmentalism (dependent variables): environmental concern and pro-environmental behavior.

We used the IBM SPSS Statistics 27.0.1 statistical package. In all analyzes, we applied the listwise deletion of missing values. Indicators of the predictors' internal correlation showed that in all analyzes, the collinearity of the predictors was at an acceptable level: Tolerance ranged between 0.59 and 0.97 and the Variance Inflation Factor between 1.03 and 1.67.

According to the H1a hypothesis, the results of the regression analysis for model 1 confirmed that intrinsic freedom is a significant positive predictor of pro-environmentalism - in the case of environmental concern, we obtained $\beta = 0.33$, $p < 0.001$, and for pro-environmental behavior, it was $\beta = 0.30$, $p < 0.001$.

In model 2, we confirmed that – according to the H1b hypothesis – extrinsic freedom was a negative predictor of environmental concern, $\beta = -0.17$, $p < 0.001$. However, this effect seems not so markedly as in the case of intrinsic freedom. Besides, it was statistically non-significant for pro-environmental behavior. Moreover, in line with H2, the increase in pro-environmentalism was positively predicted by the growing identification with

humanity. The IWAH effects were not very strong but statistically significant. For environmental concern, it was $\beta = 0.20$, $p < 0.001$ (model 1 and 2), while for pro-environmental behavior, we obtained $\beta = 0.13$, $p = 0.005$ (model 1), and $\beta = 0.12$, $p = 0.006$ (model 2).

Most importantly, as shown in Table 2, our interaction hypotheses – H3a and H3b – found significant empirical support. First, consistent with H3a, identification with all humanity appeared to moderate the positive predictive effects of intrinsic freedom on environmental concern, $\beta = 0.13$, $p = 0.001$, and on pro-environmental behavior, $\beta = 0.17$, $p < 0.001$ (model 1). Second, in accordance with H3b, IWAH moderated negative predictive effects of extrinsic freedom on environmental concern, $\beta = 0.12$, $p = 0.002$ and on pro-environmental behavior, $\beta = 0.16$, $p < 0.001$ (model 2).

While the interaction effects are consistently positive, the nature of the interactions in models 1 and 2 are fundamentally different. As Figure 1 shows, in the case of intrinsic freedom, the moderating effect of IWAH is synergistic. The regression coefficients for simple effects show that intrinsic freedom's positive relationship with both measures of pro-environmentalism is statistically non-significant when IWAH is low. However, it becomes very expressive as IWAH is high ($\beta = 0.38$ and 0.43, $p < 0.001$, respectively).

On the other hand, Figure 2 evidences the buffering effect of IWAH on the predictive effects of extrinsic freedom. The simple slopes show that extrinsic freedom's negative relationship with both measures of pro-environmentalism is strongest when IWAH is lowest ($\beta = -0.21$, $p < 0.001$ and $\beta = -0.13$, $p = 0.042$, respectively), and it becomes non-significant at higher levels of IWAH.

As stated in the methodology section, we conducted statistical analyzes on 556 individuals. However, to ensure that including participants who gave one incorrect answer in the attention check did not affect the results, we repeated the analyzes in Table 2 on a sample of 427 individuals. Excluding a further 129 individuals did not change the patterns of results. In particular, it did not affect the direction and statistical significance of the interaction effects.

Discussion

To our knowledge, this is the first study examining how the sense of freedom is associated with pro-environmentalism. In addition, we show how identification with all humanity can contribute to understanding these relationships.

The results provide empirical evidence that the way of understanding freedom is related to environmental concern and pro-environmental behavior. People with a high level of intrinsic freedom are more concerned about the environment and get more involved in pro-environmental behavior. The intrinsic sense of freedom means that, even if our freedom is important to us, it should not affect the well-being of other people. Moral judgments and values followed by people who understand freedom in this

TABLE 1 Intercorrelations and descriptive statistics.

	1	2	3	4	5
Intrinsic freedom (1)					
Extrinsic freedom (2)	0.61**				
Identification with all humanity (3)	0.16**	0.00			
Environmental concern (4)	0.24**	0.03	0.26**		
Pro-environmental behavior (5)	0.25**	0.10*	0.18**	0.30**	
M	4.24	3.81	2.81	21.14	31.81
SD	0.75	0.77	0.78	4.27	4.73

$**p \leq 0.001$, $*p \leq 0.05$.

TABLE 2 Moderating effects of identification with all of humanity (IWAH) on the relations of intrinsic and extrinsic freedom with pro-environmental behavior and environmental concern.

	Environmental concern			Pro-environmental behavior		
	β	B(SE)	η^2	β	B(SE)	η^2
Model 1						
Constant		1.13 (0.18)***			30.80 (0.19)***	
Intrinsic freedom	0.33	1.44 (0.22)***	0.07	0.30	1.42 (0.25)***	0.06
IWAH	0.20	0.88 (0.18)***	0.04	0.13	0.55 (0.19)**	0.02
Intrinsic freedom × IWAH	0.13	0.56 (0.19)***	0.02	0.17	0.81 (0.20)***	0.03
Covariate						
Extrinsic freedom	−0.16	−0.70 (0.22)***	0.02	−0.07	−0.32 (0.24)	0.00
$F(1;551)$ change for interaction	9.85***	17.26***				
ΔR^2 for interaction	0.02***	0.03***				
$F(4;551)$ total	22.83***	17.72***				
R^2 total	0.14	0.11				
Model 2						
Constant		21.22 (0.17)***			30.92 (0.19)**	
Extrinsic freedom	−0.17	−0.76 (0.22)***	0.02	−0.08	−0.40 (0.24)	0.00
IWAH	0.20	0.87 (0.18)***	0.04	0.12	0.55 (0.20)**	0.01
Extrinsic freedom × IWAH	0.12	0.49 (0.16)**	0.02	0.16	0.66 (0.18)**	0.02
Covariate						
Intrinsic freedom	0.33	1.45 (0.23)***	0.07	0.30	1.43 (0.25)**	0.06
$F(1;551)$ change for interaction	9.41***	14.32***				
ΔR^2 for interaction	0.02***	0.02***				
$F(4;551)$ total	22.79***	16.91***				
R^2 total	0.14	0.11				

***$p \leq 0.001$, **$p \leq 0.01$, *$p \leq 0.05$. SE, standard error of B coefficient; η^2, effect size.

way are not selfish, and freedom itself does not have to be realized immediately (Radkiewicz and Skarzynska, 2019). Concern for the environment and pro-ecological behavior, although in the short term can be associated with restrictions of freedom, in the long term serve the good of both the individual and others. Therefore it can be crucial to those who understand freedom intrinsically.

Extrinsic freedom is related to lower environmental concern, though we found no significant relationship with pro-environmental behavior. Such an understanding of freedom means an aversive reaction to freedom's limitations and the striving to immediately satisfy one's desires and whims (Radkiewicz and Skarzynska, 2019). Concern for the environment requires implementing some restrictions and considering the well-being of others. People who tend to understand freedom unconditionally are unlikely to be interested in environmental problems – unless they start to feel the consequences.

The results of our study also confirmed that IWAH strengthens the positive relationship between the intrinsic sense of freedom and pro-environmentalism and buffers the decrease in pro-environmental attitudes appearing with the growing extrinsic freedom. Intrinsic freedom and IWAH are both related to prosocial values focused on caring and helping, enhancing their positive effect on environmental concern and pro-environmental behavior. People with high intrinsic freedom care for the environment and act on it more when they identify with all humanity. Those who tend to understand freedom in the extrinsic

way are more focused on themselves and loyalty to ingroup. Relatively high identification with all humanity may encourage them to include others in their ingroup and thus act to the benefit of themselves and others.

Our study's results align with previous research showing that the more people perceive all humanity as an ingroup that requires care, the more concerned they are about the environment and the more involved in pro-environmental behavior (Loy et al., 2021). It is also in line with the SIMPEA (*Social Identity Model of Pro-Environmental Action*), linking the process of social identification with the relevance of climate change and climate-protective behavior (Loy et al., 2021; Masson and Fritsche, 2021). Categorizing oneself as a member of all humanity promotes people's engagement in prosocial behaviors, including pro-ecological behaviors.

Limitations and future perspective

This study has several limitations. A cross-sectional design was used, and participants completed the survey at a single time point. Therefore it is impossible to determine whether the IWAH and the sense of freedom influence pro-environmental attitudes causally. Experimental and longitudinal studies are needed to establish the causal relationship between the variables.

Another limitation is that the data had been collected online, and only self-reported measures were used. According
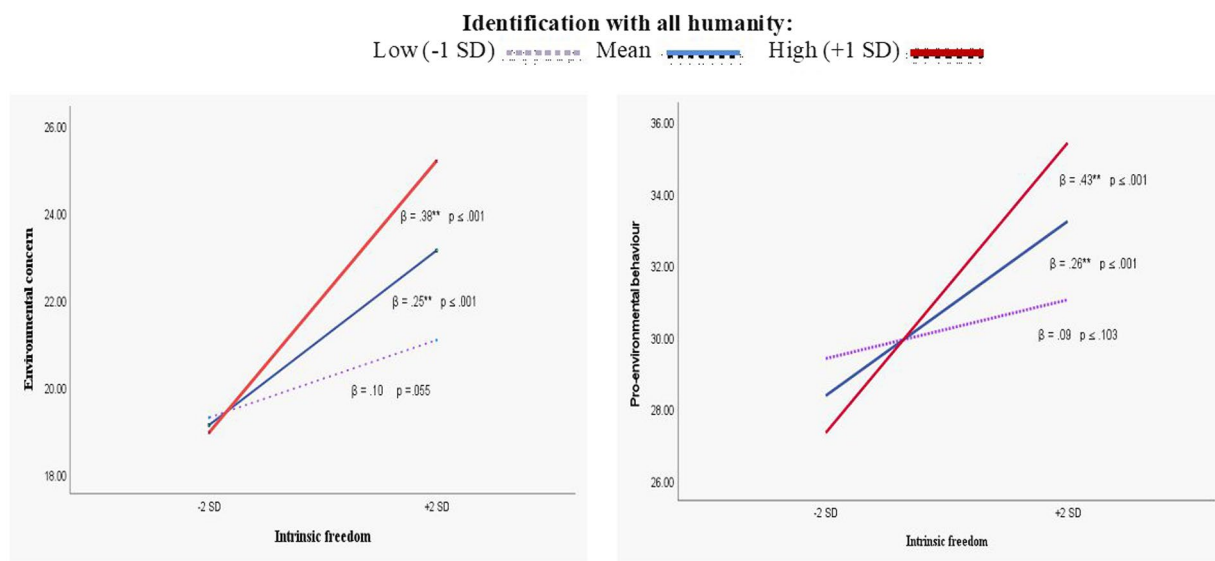
FIGURE 1
Synergistic effects of identification with all of humanity on the positive relationship between intrinsic freedom, environmental concern an pro-environmental behavior (Model 1).
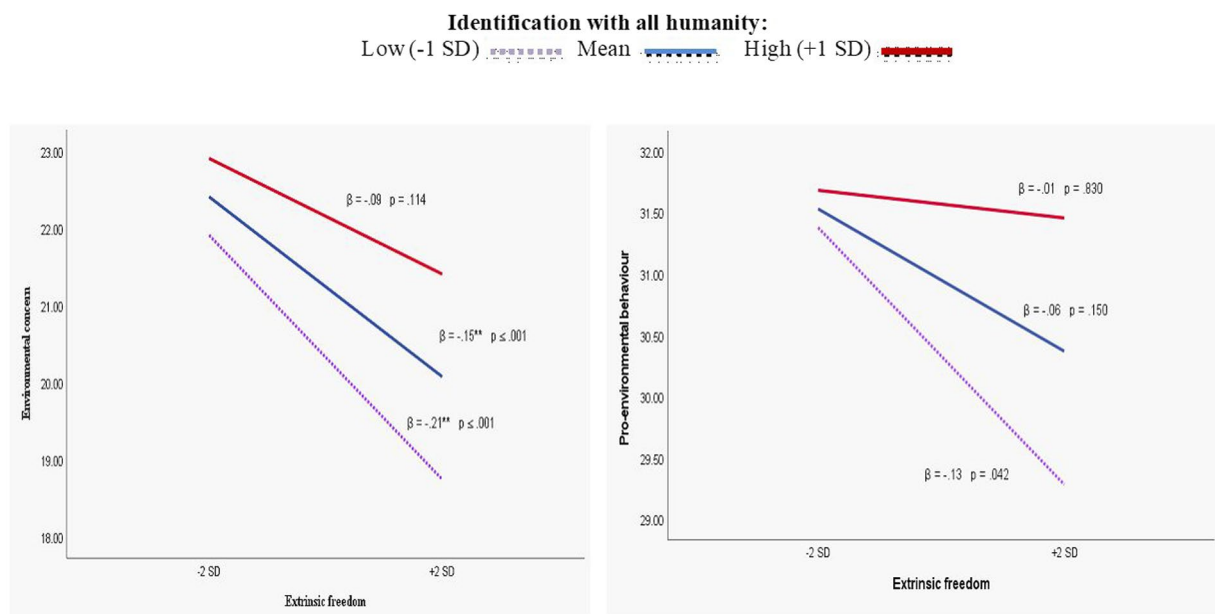
FIGURE 2
Buffering effects of identification with all of humanity on the negative relationship between extrinsic freedom, environmental concern and pro-environmental behavior (Model 2).

to Lange et al. (2018), self-reported measures (primarily behavioral) may be affected by social desirability, consistency biases, and individual differences in the interpretation of the items. Other methods like field observations of pro-environmental behavior, informant or trained observers, and device measurements should be used in future research.

The data set was limited to a Polish sample of young people, mostly female. It means that before drawing firm conclusions, the results should be replicated on a more representative sample. Also, the relatively low reliability of the pro-environmental behavior scale suggests that the study's results have to be treated with caution. It should be replicated with different, more reliable measures of pro-environmental behavior.

Despite all limitations, findings from this study provide insight into the role of a sense of freedom and IWAH in pro-environmental attitudes. They have practical implications for scientific communication regarding climate change and promoting pro-environmental behaviors – especially in Western countries, where the idea of unlimited personal freedom is particularly widespread.

Data availability statement

The data that support the findings of this study are available from the corresponding author, BU, upon request.

Ethics statement

The studies involving human participants were reviewed and approved by Bioethics Committee at University of Bologna. The participants provided their written informed consent to participate in this study.

Author contributions

BU conceived of the study's idea and wrote most of the manuscript. PR supervised the empirical findings and performed the statistical analysis. All authors contributed to the interpretation of the results, final manuscript.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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At the roots of attribution of human rights to migrants

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Introduction: This study (N=141, M_{age}=20.15) aimed at deepening knowledge on the factors that can lead young adults to deny the inalienability of human rights to migrants by examining whether, under realistic and symbolic intergroup threat (versus no-threat), the denial of human rights to migrants increases. In doing so, the role of fraternalistic relative deprivation in mediating this relation was examined. Also, two potential positive factors were considered: in-depth exploration of personal identity in the educational domain and identification with the human group. Intergroup threat was expected to enhance perceived relative deprivation, thus reducing the attribution of human rights to migrants. Such relation was expected to be mediated by those factors expressing complex views of self and others (in-depth exploration of identity in the educational domain and identification with the human group).

Method: Realistic and symbolic threat were experimentally manipulated through a written scenario. In the no-threat condition, no scenario was presented.

Results: Showed significant effects of intergroup threat on the attribution of human rights to migrants, on perceived fraternalistic relative deprivation, on in-depth exploration of identity in the educational domain and identification with the human group. More specifically, intergroup realistic threat, but not symbolic threat, reduced the attribution of human rights to migrants and identification with the human group. Symbolic threat, but not realistic threat, increased the perception of fraternalistic relative deprivation, whereas both realistic and symbolic threat reduced in-depth exploration of identity in the educational domain, and identification with the human group. As shown by the sequential mediation analysis, and as expected, the effect of intergroup threat in reducing attribution of human rights to migrants was mediated by in-depth exploration of identity in the educational domain, identification with the human group, and fraternalistic relative deprivation. Implications of findings concerning the processes underlying identification with the human group and its beneficial effects in terms of humanization of a stigmatized outgroup were highlighted by stressing the intertwined nature of personal identity and social identity processes. The importance of complex views of self and others in helping to create inclusive generations of adults was also highlighted.

Introduction

Migrants represent a crucial issue for governments and society (International Organization for Migration, 2022). Wars, economic crises, and political or ethnical persecutions continuously lead people to move outside their country of origin, but recently we have witnessed a worldwide call to establish barriers against "foreigners" and defend our own nations against migrants (Annan, 2006). Not only are migrants targets of prejudice, but they are also denied membership in the human group, that is, they are dehumanized and depicted as less deserving human beings (Haslam, 2006; Albarello and Rubini, 2008, 2012b, 2015; Rubini et al., 2017; Albarello, 2020). Along this line, the acknowledgment of human deservingness and membership of migrants to the human community (Opotow, 1990) in terms of the inalienability of human rights (Albarello and Rubini, 2012a) is a core issue deserving attention given that alienation of human rights is conceived as an explicit form of dehumanization that implies withdrawal of human deservingness to others (Albarello et al., 2018a) in a conscious, propositional, and deliberative way (cf. Gawronski and Bodenhausen, 2006). In light of this contention, our contribution aimed to understand what factors can promote the attribution of humans rights to stigmatized social groups among young people – as the next generation of adults – by employing a cross-fertilizing approach that considers the intertwined nature of personal and social identity processes in explaining relations with others (cf. Albarello et al., 2021, in press-a; Crocetti et al., 2018, 2021, 2022).

Specifically, both detrimental factors that can lead to the denial of human rights to migrants and beneficial factors that can promote the humanization of such outgroupers were considered (e.g., Albarello et al., 2020; Bobba et al., 2022). First, the role of a well-known antecedent of prejudice – that is, perceived *intergroup threat* (Stephan and Stephan, 2000) – was examined. The effects of both realistic intergroup threat (threats to the ingroup's existence, economic and political power, or physical or material well-being) and symbolic intergroup threat (threats to the values and worldviews of the ingroup) were analyzed. Moreover, looking at political discourse that often calls into play perceptions of relative deprivation (Gurr, 1970) in natives in order to mobilize people against migrants, the role of perceived *fraternalistic (or group) relative deprivation* – "the feeling that one's group is unfairly deprived of desirable goods in comparison with relevant outgroups" (Meuleman et al., 2020, p. 593; see also Moscatelli et al., 2014) – was examined.

Not only detrimental factors, but also beneficial ones were considered. We looked at the intersection between personal and social identity processes in explaining intergroup attitudes (cf. Albarello et al., 2018b, 2020, 2021, in press-a, in press-b). In particular, in the current contribution, we considered *in-depth exploration of identity in the educational domain* (Crocetti et al., 2008), that is, a cognitive and motivational process at the roots of personal identity formation in the educational domain (which is the context wherein young people spend most of their time,

develop their relations with others and their future commitments and identities; Albarello et al., 2018b; Crocetti et al., 2022). In-depth exploration represents the extent to which adolescents think actively about the commitments they have enacted, reflect on their choices, search for additional information about their commitments, and talk with others about them" (Crocetti et al., 2010, p. 173). Thus, through in-depth exploration, individuals actively seek and process information to make accurate and thoughtful decisions. In this vein, thinking about educational identity choices can go hand in hand with thorough information processing that can be extended to the social relational domain (cf. Bobba et al., 2022), for instance, to inclusive views of self and others as members of the common superinclusive group of human beings (Albarello et al., 2020): When an individual thoroughly reflects on his/her educational identity, multiple potential social categorizations applying to one's self might become salient, thus activating cognitive complexity (Crisp and Turner, 2011; Prati et al., 2016). Such cognitive complexity can lead to reduced use of simple social categorization of others in terms of dichotomous ingroup versus outgroup categorization and more abstract, cognitively complex self-representations such as identification with the human group. This, in turn, can reduce prejudice in the heinous terms of denying humanness to others.

Given these premises, an experimental study was conducted to examine whether the activation of realistic and symbolic intergroup threat would lead to a reduced attribution of human rights to migrants. In doing so, the study considered potential detrimental (perceived fraternalistic relative deprivation) and beneficial (in-depth exploration of identity in the educational domain; identification with the human group) factors that could mediate such relation.

Detrimental factors leading to the denial of human rights to migrants

Social psychological literature has long paid attention to antecedents of prejudice and discrimination against stigmatized social groups (Dovidio et al., 2004; Bodenhausen et al., 2009). Even though explaining attitudes towards (im) migrants and the threat caused by immigration has been a major topic of study in recent years (Allport, 1954; Vezzali et al., 2012), less attention has been dedicated to ethnic threat or even fraternalistic relative deprivation (Meuleman et al., 2020).

Intergroup threat

The idea that real competition over scarce resources can result in ethnic conflict and negative attitudes towards outgroups has been highlighted by Sherif and Sherif's (1964) group conflict theory. In line with this theorization, several studies (e.g., Esses et al., 2001) confirmed the relation between realistic threat and anti-immigrant attitudes, which are more widespread in adverse

economic contexts (e.g., Quillan, 1995). More recently, intergroup threat has been highlighted as a factor that can explain intergroup prejudice against outgroups (for a review, see Rios et al., 2019). Meta-analytical evidence has been collected on the relation between various typologies of threat and (prejudicial) attitudes towards outgroupers (Riek et al., 2006). Stephan and Stephan's (2000) intergroup threat theory formalized this idea that different types of threat work as antecedents of prejudice by highlighting how attitudes towards outgroups, especially ethnic groups, are affected by the perception that "migrants steal our jobs" or "overwhelm our cultural or national values" (*cf.* Esses, 2021). For instance, the criminalization of migrants, emphasizing delinquent or terrorist acts, or the risks deriving from a cultural invasion of migrants have been used by political parties as a strategy to increase support for policies against immigration in Italy (Mazzara et al., 2020), as well as in other European countries. For instance, Pereira et al. (2010), using data from a European survey, showed that the relation between prejudice and opposition to immigration was mediated by realistic threat. Using representative samples in two countries with different traditions of immigration (i.e., Switzerland and Portugal), they also highlighted that symbolic threat perception mediated the link between prejudice and opposition to the naturalization of migrants. Importantly, no study has examined whether intergroup threat enhances the tendency to deny human rights to migrants.

Fraternalistic relative deprivation

As stated in the relative deprivation theory (Runciman, 1966), two forms of relative deprivation can be experienced depending on the reference chosen as a comparison: if egoistic relative deprivation refers to the "outcomes of intra- or interindividual comparisons" (Walker and Mann, 1987, p. 275), *fraternalistic* relative deprivation refers to the perception of (unfair) discrepancies between one's ingroup (e.g., the national ingroup; favorite soccer team, etc.) and some other reference group (Runciman, 1966; Walker and Pettigrew, 1984; Meuleman et al., 2020). That is, fraternalistic relative deprivation might emerge as a result of comparative judgements if individuals perceive that their group is losing the status it deserves in comparison to relevant outgroups. Such perceptions can thus be unrelated to objective outcomes (Stouffer et al., 1949; Ellemers and Bos, 1998), and prejudice might derive from comparing the situation of one's ingroup and a certain standard, that is, what people think their ingroup "should obtain." As a consequence, fraternalistic relative deprivation has been highlighted as a factor augmenting intergroup prejudice and discrimination (Moscatelli et al., 2014), since it is possible that, independently of the objective wealth of the groups at hand, individuals perceive that they are deprived of resources that should be given to natives rather than to immigrants (Meuleman et al., 2020).

Also, the political discourse often deals with such an alleged and increasing deprivation of rights/resources of the majority group of natives (Leviston et al., 2020). In this respect, Meuleman et al. (2020) recently underlined the relation between fraternalistic relative deprivation and the perception of ethnic threat across 20 European countries. Their correlational study found a considerable association between fraternalistic relative deprivation and ethnic threat at the individual and the country levels. Nonetheless, no evidence is available on whether manipulation of intergroup threat that is thought to be caused by migrants leads people to feel fraternalistic relative deprivation nor on whether such a perception might, in turn, affect the extent to which individuals attribute inalienability of human rights to migrants (Albarello and Rubini, 2012a; Albarello et al., 2018a).

Beneficial factors leading to the acknowledgment of human rights to migrants

Recently, attention has also been devoted to the reduction of the aggravated form of prejudice rooted in the denial of full humanness to others, that is, dehumanization (Bar-Tal, 2000; Leyens et al., 2000; Haslam, 2006; Albarello and Rubini, 2008, 2012b). For instance, Albarello and Rubini (2012a) showed that providing individuals with a definition of a Black immigrant target based on multiple belongingness (e.g., a black Christian male young person, born in Italy, having immigrant parents) reduced implicit (i.e., attribution of uniquely human secondary emotions; Leyens et al., 2000) and explicit forms (i.e., denial of human rights) of dehumanization of the Black target. Albarello and Rubini (2012a) showed that the optimal condition for reducing dehumanization towards a Black target was when human identity (*cf.* Turner et al., 1987) was made salient, and the Black target was defined with multiple categorization. Similar approaches considered human identity in different guises as a factor that can modify intergroup outcomes (e.g., Wohl and Branscombe, 2005).

A minority of studies highlighted the negative effects of activation of shared humanness. For instance, Morton and Postmes (2011) showed that perceiving shared humanness with others increased moral defense of the perpetrated harm (for similar evidence, see also Wohl and Branscombe, 2005). Focusing on the relations between victims and perpetrators, Greenaway and Louis (2010) highlighted that a benevolent representation of humanity enabled perpetrators to legitimise harm-doing to the victims yet preserving negative attitudes towards them.

On the contrary, many other contributions underlined the positive effects of acknowledgement of shared humanness. Among these, *identification with humanity* was considered as the psychological bond between the individual and the human group (Albarello et al., 2020, 2021, in press-a). Identification with all humanity is conceived as a stable individual characteristic that can be easily assessed with scales (McFarland et al., 2013; Hamer et al., 2019). Importantly, identification with all humanity has positive effects on a wide range of attitudinal and behavioral outcomes such as less prejudice, greater concern for human rights and global

crises (McFarland et al., 2019). It is also associated with human rights orientation (Hamer et al., 2018) and opposition to torture (McFarland et al., 2013), etc. To the aim of highlighting its predictors, Hamer et al. (2019) conducted two cross-sectional studies intending to explain individual differences in the extent to which people identified with the superinclusive human group. They showed that openness to experience, empathy, and values such as universalism-tolerance directly enhanced identification with all humanity. In contrast, right-wing authoritarianism, social dominance orientation, and ethnocentrism partially mediated the effects of these factors on identification with humanity. Sparkman and Eidelman (2018) also showed that contact with cultural elements predicted identification with the human group, which mediated the effect of contact with cultural elements on ethnic prejudice.

If the aforementioned contributions relied on the assumption of dispositional stability of human identification (e.g., Hamer et al., 2019), other studies conceived identification with the human group as a psychological property of individuals that can be situationally activated or made salient (Albarello et al., 2018a) and vary across time depending on specific factors that might enhance or reduce it (Albarello et al., 2020, 2021). In this respect, Albarello et al. (2020) argued that identification with the human group tapped social inclusivity at a cognitive level by expressing the extent to which the individuals acknowledge their own and others' shared membership to the human group and feel embedded within it, irrespectively of the variety of social groups encompassed in it.

For instance, recent evidence (Albarello et al., 2020) showed that prejudicial attitudes towards a stigmatized outgroup affected later identification with the human group and that the extent to which individuals identified with the human group was associated with adolescents' social well-being (Albarello et al., 2021). That is, the more individuals identified with the human group, the more they felt integrated and able to play an active role within the communities and society they were embedded in (Keyes, 2005). Relatedly, identification with the human group should also affect the extent to which people perceive that the ingroup is relatively deprived and does not obtain what it deserves.

Most interestingly, recent studies highlighted that processes underlying both personal and social identity can jointly affect the view that individuals develop about others. Albarello et al. (2018b) showed that the processes involved in personal identity formation (i.e., commitment, in-depth-exploration of identity, reconsideration of commitment; Crocetti et al., 2008) in the educational and the relational domain (i.e., identification with classmates and friends) were deeply intertwined over time with social identity. This evidence suggests that it is worthwhile to explore their interconnections, if we aim to thoroughly unravel how individuals develop their views of themselves and others.

In particular, in the current contribution, we considered *in-depth exploration of identity* in the educational domain (Crocetti et al., 2008) – a process at the roots of personal identity formation in the educational domain, a core developmental context (Eccles and

Roeser, 2011; Sani and Bennett, 2011; Crocetti, 2017). In-depth exploration of identity in the educational domain refers to the active process of thinking on current commitments, looking for additional information, and talking with others about them, in order to make accurate and thoughtful decisions. For instance, it is known that in-depth exploration of identity in the educational domain is positively associated with openness to experience (Crocetti et al., 2010; Hatano et al., 2016), a factor linked to low prejudice (e.g., Flynn, 2005). Moreover, in-depth exploration of identity in the educational domain is also conceived as a core feature (Zimmermann et al., 2012; Crocetti et al., 2013) of the information-oriented identity style (Berzonsky, 1989), whereby individuals actively seek and process relevant information to make accurate and thoughtful decisions (Berzonsky, 1989) in contrast to superficial information processing. Importantly, this style was found to be positively associated with pro-diversity and pro-equality values (Erentaitė et al., 2019) and civic engagement (Crocetti et al., 2014), and negatively associated with forms of closure to experiences or others, such as the need for cognitive closure (Crocetti et al., 2009) and different forms of prejudice (i.e., racism and xenophobia; Soenens et al., 2005). It has been shown that adolescents who adopt such an information-oriented identity style also have a high degree of cognitive complexity and employ a vigilant and systematic processing style in decisional situations (Berzonsky and Ferrari, 1996); thus, it can be assumed that they are also less susceptible to use social cognitive simplifications that lead to social prejudice (Allport, 1954).

In this vein, in-depth exploration of identity in the educational domain might go hand in hand with the dismissal of cognitive simplifications of social reality (e.g., ingroup bias, social stereotypes, etc.) and might be connected to more inclusive views of others, for instance, identification with the common superinclusive human ingroup (Albarello et al., 2020; *cf.* Gaertner and Dovidio, 2000). In other words, resembling the effect of openness to experience on identification with all humanity highlighted by Hamer et al. (2019), it could be possible that high in-depth exploration of identity in the educational domain leads to high identification with the human group.

Moreover, situational threats (e.g., enhanced salience of intergroup threat due to migrants) might affect the extent to which individuals proceed in exploration processes, for instance enhancing the individuals' need for cognitive closure (Mula et al., 2022; see also Albarello et al., 2022), leading – in turn – to enhanced negative attitudes towards migrants. Thus, it could be expected that the salience of intergroup threat (realistic or symbolic) reduces individuals' in-depth exploration of identity in the educational domain to maintain certain, secure knowledge (Webster and Kruglanski, 1994) on individuals' views about oneself and own educational choices.

The current study

Given these premises, an experimental study was conducted on a sample of first-year university students to

examine whether realistic and symbolic intergroup threat (versus no-threat) lead to a reduced attribution of the inalienability of human rights to migrants. Realistic and symbolic threat were manipulated through previously employed scenarios (Albarello et al., 2017, 2019; Albarello and Rubini, 2018). In order to deepen knowledge of the psychological processes that lead individuals to deny human rights to migrants when threats (e.g., realistic and symbolic threat) are activated, the study also considered detrimental (fraternalistic relative deprivation) and beneficial (in-depth exploration of identity in the educational domain; identification with the human group) factors that could mediate such relation.

Specifically, given that threat has been shown to restrict intergroup boundaries and increase prejudicial attitudes towards migrants (e.g., Pereira et al., 2010; Ho et al., 2013), it was expected that realistic and symbolic threat would lead individuals to refrain from attributing human rights to migrants in contrast to the absence of threat (hypothesis 1). In this respect, considering that recent correlational evidence suggested that ethnic threat and natives' relative deprivation compared to migrants were associated (Meuleman et al., 2020), we expected that under intergroup threat, the perception of own national ingroup's relative deprivation would be enhanced (hypothesis 2). Based on this, we also expected that the effect of threat on the attribution of inalienability of human rights to migrants would be mediated by natives' increased feeling of being relatively deprived (hypothesis 3).

Since intergroup threat has various effects on the mind, brain and behavior of social perceivers (cf. Chang et al., 2016) related to group-protection and self-protection motives (e.g., high tendency to over-exclude potentially dangerous outgroupers; Krosch and Amodio, 2014; Albarello et al., 2019), it could also hinder the exploration of identity alternatives in the educational domain as a self-protective reaction (hypothesis 4a) and reduce the extent to which people identify with the common superinclusive ingroup that includes also migrants (hypothesis 4b).

Moreover, since in-depth exploration of identity in the educational domain represents a core feature of the information-oriented identity style (Berzonsky, 1989; Crocetti et al., 2013) leading to the dismissal of cognitive simplifications of social reality, we expected that it would affect the extent to which individuals identify with the human group, thus mediating – in this sequence – the relation between threat and attribution of human rights (hypothesis 5).

Given that identification with the human group represents the extent to which a person acknowledges his/her own and others' membership in the most inclusive ingroup (Turner et al., 1987; Albarello et al., 2020), it could, in turn, lessen the perception of fraternalistic relative deprivation. That is, we expected the effect of threat on the attribution of inalienability of human rights to migrants to be sequentially mediated by in-depth exploration of identity in the educational domain, identification with the human group, and perceived fraternalistic relative deprivation (hypothesis 6).

Materials and methods

Participants and procedure

One hundred and forty-one first-year Italian university students ($M_{age} = 20.15$, $SD = 0.89$, females: 75.2%) participated in the study voluntarily. A convenience sample was recruited during university lectures on social psychology of communication during the second spread of the Coronavirus (COVID-19) disease in the spring of 2021. Post-hoc power analysis with G*Power entering the sampled participants ($N = 141$), a medium size effect's size (0.30), and the three group conditions (no-threat, realistic threat, symbolic threat) revealed that the reached power (1 - β error probability) was equal to 0.75. Participants with non-Italian nationality were excluded from the sample. The majority of participants were full-time university students ($n = 130$; 92.2%), and only a minority also had a job ($n = 11$; 7.8%). Participants came from 11 out of the 20 Italian regions and mainly from central regions of Italy ($n_{center} = 82$; 58.2%), followed by southern regions ($n_{south} = 57$; 40.4%) and northern regions ($n_{north} = 2$; 1.4%). The most represented region was Lazio (center of Italy, $n = 70$), followed by Campania (south of Italy, $n = 22$). The distribution of participants and the descriptives referred to the study's variables depending on the region of origin of respondents are reported in Table 1.

Participants were asked to fill-in an anonymous online questionnaire on Qualtrics aimed to assess issues related to the self and relations with others. Once participants gave their informed consent, they were exposed to the threat manipulation and were randomly assigned to one of three conditions: no-threat, realistic threat, symbolic threat. Both realistic and symbolic threat were manipulated through a written scenario employed in previous research (Albarello et al., 2017, 2019; Albarello and Rubini, 2018). The realistic threat scenario referred to the threat posed by migrants in terms of unemployment and costs of health and social welfare. The symbolic threat scenario referred to the cultural differences between migrants and natives. In the no-threat condition, no-scenario was presented.

Specifically, the realistic threat scenario read as follows: "Recent research by the national statistical institute showed that during the past year unemployment increased for Italians (+3%) and 176.000 Italians lost their jobs. Conversely, migrants' employment level increased (+200.000). Moreover, migration led to increased costs for public health, education, and welfare policies aimed to promote migrants' integration." The symbolic threat scenario read as follows: "Recent research by the national statistical institute showed strong cultural differences between Italians and migrants. Migrants have different habits, traditions, ideologies, and moral values when compared with those of Italians. Migrants are also radically different in terms of their lifestyles, the ways in which they behave at work and also at home,

TABLE 1 Descriptive statistics for each Italian region.

Italian region	N	% of respondents from each Italian region	n males	n females	Age	In-Depth exploration of identity in the educational domain	Identification with the human group	Fraternalistic relative deprivation	Inalienability of human rights to migrants
						M(SD)	M(SD)	M(SD)	M(SD)	M(SD)
Liguria	2	1,4	0	2	19.50 (0.71)	3.80 (0.56)	3.50 (1.06)	2.25 (0.35)	4.67 (0.47)
Tuscany	4	2,8	1	3	20.75 (1.50)	3.55 (0.44)	3.38 (1.61)	2.25 (0.87)	4.92 (0.17)
Umbria	8	5,7	1	7	20.38 (0.52)	4.03 (0.55)	4.19 (0.69)	1.44 (0.58)	5.00 (0.00)
Abruzzo	7	5,0	3	4	20.00 (0.58)	3.57 (0.68)	3.82 (0.70)	2.04 (0.78)	4.55 (0.58)
Lazio	70	49,6	18	52	20.11 (0.92)	3.58 (0.54)	3.89 (0.78)	1.84 (0.78)	4.80 (0.50)
Basilicata	4	2,8	0	4	20.00 (0.00)	3.85 (0.44)	3.63 (0.47)	1.69 (0.85)	4.95 (0.08)
Campania	22	15,6	5	17	20.14 (0.77)	3.76 (0.60)	3.99 (0.58)	1.81 (0.75)	4.84 (0.40)
Puglia	9	6,4	3	6	20.56 (1.33)	3.87 (0.39)	4.11 (0.61)	1.64 (0.70)	4.96 (0.11)
Calabria	5	3,5	1	4	20.00 (0.00)	3.20 (1.26)	3.45 (0.76)	2.95 (1.15)	4.30 (1.04)
Sicilia	6	4,3	2	4	20.00 (0.00)	3.63 (0.53)	3.83 (0.83)	2.29 (1.05)	4.83 (0.41)
Sardegna	4	2,8	1	3	20.00 (0.00)	3.50 (0.50)	3.44 (0.72)	1.88 (0.43)	4.54 (0.81)
Total	164	100	35	106	20.14 (0.86)	3.88 (0.76)	1.88 (0.80)	4.80 (0.48)	3.65 (0.59)

The study's variables of interest did not vary depending on the region of origin of respondents, as shown by one-way ANOVAs (region), F_s (10, 130) $\leq$ 1.67, $p_s \leq$ 0.095, $\eta^2 =$ 0.114.

for instance, in terms of the children's educational policies they endorse."

Subsequently, participants filled out a questionnaire aimed to collect the research measures of interest (as listed below) and participants' demographics. The last part of the questionnaire thanked and carefully debriefed participants. In order to obtain the course credit, participants were then redirected to a different section of the questionnaire on Qualtrics wherein they could provide their names and e-mails.

Measures

In-depth exploration of identity in the educational domain

In-depth exploration of identity choices in the educational domain was measured with the in-depth exploration of identity in the educational domain subscale of the Utrecht-Management of Identity Commitments Scale (U-MICS, Crocetti et al., 2008; Italian validation by Crocetti et al., 2010). The instrument consists of five items ($\alpha = 0.70$) scored on a 5-point Likert-type rating scale, ranging from 1 (*completely false*) to 5 (*completely true*). Sample items include: "I think a lot about my education," "I am interested in deeply understanding the value of my formation."

Identification with the human group

To assess identification with the human group, the four-item identification with the human group scale (Albarello and Rubini, 2012a) was employed ($\alpha = 0.78$). This scale was originally developed in Italian. Sample items are: "I identify with all human beings," "I am like all human beings, irrespectively of ethnic, political, religious, social or ideological differences." Participants rated the items on a 5-point Likert-type rating scale from 1 (*completely false*) to 5 (*completely true*).

Fraternalistic relative deprivation

Fraternalistic relative deprivation was assessed with a four-item scale ($\alpha = 0.92$) inspired by the work by Ellemers and Bos (1998). Sample items are: "In general, I think that the situation of Italians has become more critical as a consequence of the increased number of migrants in the territory" and "In general, I think that the outcomes of Italians are worse than those they are entitled to as a consequence of the increased number of migrants in the territory." Participants rated the items on a 5-point Likert-type rating scale from 1 (*not at all*) to 5 (*very much*).

Inalienability of human rights

The attribution of the inalienability of human rights to the outgroup of migrants was assessed with six items taken from the scale developed by Albarello and Rubini (2012a). The six items (e.g., "All human beings are born free and equal in dignity and rights"; "Everyone is entitled to rights and freedoms, without distinction of any kind as regards to race, colour, sex, language, religion, political or other opinions"; $\alpha = 0.95$) were taken in order to reduce the length of the questionnaire. Alpha of the scale was comparable to that of the original 10-items version ($\alpha = 0.98$; *cf.* Albarello and Rubini, 2012a). Participants rated the items on a 5-point Likert-type rating scale from 1 (*not at all*) to 5 (*very much*).

Manipulation checks and demographics

As in previous research (Albarello et al., 2019), participants rated on 5-point Liker-type scales (1 = *not at all,* 5 = *very much*) the extent to which they experienced "fear" and "concern" ($\alpha = 0.85$) reading the information provided at the beginning of the research session (i.e., description of the groups and information on migrants). Participants' demographics (i.e., age, gender, occupation, place of residence) were also assessed (see Table 1).

Results

Preliminary analyses

One-way (threat: no-threat, realistic threat, symbolic threat) Analyses of Variance (ANOVAs) were conducted on all the dependent variables. Importantly, the results showed that the mean score of experienced threat due to threat manipulation significantly differed among the three threat conditions ($M_{\text{no-threat}} = 1.99$, $SD = 1.09$; $M_{\text{realistic threat}} = 3.03$, $SD = 1.15$; $M_{\text{symbolic threat}} = 3.29$, $SD = 0.62$), $F(2, 138) = 25.49$, $p < 0.001$, $\eta^2 = 0.270$. Participants in both the realistic threat and symbolic threat conditions felt more worried than in the no-threat condition ($p_s < 0.001$ at the Bonferroni post-hoc comparisons).

As highlighted in Table 2, intergroup threat significantly reduced the attribution of human rights to migrants (*hypothesis 1*) in comparison with the no-threat condition ($M_{\text{no-threat}} = 4.93$, $SD = 0.22$; $M_{\text{realistic threat}} = 4.60$, $SD = 0.70$; $M_{\text{symbolic threat}} = 4.74$, $SD = 0.55$), $F(2, 138) = 5.76$, $p = 0.004$, $\eta^2 = 0.077$. As expected, participants in the realistic threat condition attributed human rights to migrants to a lower extent than in the no-threat condition ($p = 0.004$ at the Bonferroni post-hoc comparison). On the contrary, the comparison between the symbolic threat condition and the no-threat one did not reach the statistical significance ($p = 0.127$). Also no difference emerged between the realistic and the symbolic threat conditions ($p = 0.690$).

Intergroup threat also enhanced the extent to which participants felt that their national ingroup was relatively deprived (*hypothesis 2*), if compared to the no-threat condition ($M_{\text{no-threat}} = 1.70$, $SD = 0.72$; $M_{\text{realistic threat}} = 2.05$, $SD = 0.75$; $M_{\text{symbolic threat}} = 2.06$, $SD = 0.91$), $F(2, 138) = 3.62$, $p = 0.029$, $\eta^2 = 0.050$. Bonferroni post-hoc comparisons showed a marginally significant difference in the expected direction between the symbolic and the no-threat conditions ($p = 0.072$). In contrast, the realistic threat condition did not differ from both the no-threat ($p = 0.109$) and the symbolic threat ($p = 1.00$) conditions.

A significant main effect of intergroup threat in reducing in-depth exploration of identity in the educational domain in contrast to the no-threat condition ($M_{\text{no-threat}} = 3.92$, $SD = 0.49$; $M_{\text{realistic threat}} = 3.34$, $SD = 0.45$; $M_{\text{symbolic threat}} = 3.42$, $SD = 0.65$) emerged, $F(2, 138) = 28.60$, $p < 0.001$, $\eta^2 = 0.212$. Importantly, as expected (*hypothesis 4a*), participants in both the realistic and the symbolic threat conditions reported lower in-depth exploration of identity in the educational domain ($p_s < 0.001$ at the post-hoc Bonferroni comparison) than those in the no-threat one.

Intergroup threat also reduced identification with the human group (*hypothesis 4b*), in comparison to the no-threat condition ($M_{\text{no-threat}} = 4.07$, $SD = 0.74$; $M_{\text{realistic threat}} = 3.48$, $SD = 0.85$; $M_{\text{symbolic threat}} = 3.86$, $SD = 0.57$), $F(2, 138) = 7.43$, $p = 0.001$, $\eta^2 = 0.097$. Bonferroni post-hoc comparisons highlighted that the realistic threat condition significantly differed from the no-threat one ($p = 0.001$). The comparison between the realistic and the symbolic threat conditions was marginally significant ($p = 0.086$). In contrast to the expectations, the symbolic threat condition did not differ from the no-threat one ($p = 0.405$).

Importantly, as shown by Pearson's correlation analysis (see Table 3), high levels of in-depth exploration of identity in the educational domain corresponded to high levels of identification with the human group ($r = 0.298$, $p < 0.001$) and attribution of human rights to migrants ($r = 0.184$, $p = 0.029$). Participants with high identification with the human group reported lower fraternalistic relative deprivation ($r = -0.245$, $p < 0.001$), and rated higher inalienability of human rights to migrants ($r = 0.279$, $p = 0.001$). Those who reported higher fraternalistic relative deprivation attributed lower inalienability of human rights to migrants

TABLE 2 In-depth exploration of identity in the educational domain, identification with the human group, fraternalistic relative deprivation, and inalienability of human rights to migrants as a function of intergroup threat.

	In-depth exploration of identity in the educational domain	Identification with the human group	Fraternalistic relative deprivation	Inalienability of human rights to migrants
No-threat	3.92$_a$ (0.49)	4.07$_a$ (0.74)	1.70$_a$ (0.75)	4.93$_a$ (0.22)
Realistic threat	3.34$_b$ (0.47)	3.48$_b$ (0.85)	2.05$_{ab}$ (0.75)	4.60$_b$ (0.69)
Symbolic threat	3.42$_b$ (0.65)	3.86$_{ab}$ (0.57)	2.06$_b$ (0.90)	4.74$_{ab}$ (0.55)

Standard deviations are reported in parentheses. Means with different subscripts within columns significantly differed ($p < 0.05$).

TABLE 3 Pearson's correlations among study's variables ($N = 141$).

	In-depth exploration of identity in the educational domain	Identification with the human group	Fraternalistic relative deprivation	Inalienability of Human rights to migrants
In-depth exploration	–			
Identification with the human group	0.289***	–		
Fraternalistic relative deprivation	0.005	−0.245**	–	
Inalienability of Human rights	0.184*	0.275**	−0.333***	–

*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.

($r = −0.333$, $p < 0.001$). Overall, such associations allowed us to test the specific sequential mediational paths that had been hypothesized.

Mediational analysis

In order to test the expected mediational paths (*hypothesis 3, hypothesis 5, hypothesis 6*), bootstrapping sequential mediational analyses (5,000 re-samples) testing direct and indirect effects in multiple step mediations models – as prescribed by Hayes et al. (2011) – were conducted. The expected conceptual multiple step mediational model is represented in Figure 1. Using the method described by Hayes and Preacher (2014) for mediational models employing multicategorical independent variables, the independent variable was recoded as two dummy variables: D_1 contrasted the no-threat (coded 0) and realistic threat (coded 1) conditions; D_2 compared the no-threat (coded 0) and the symbolic threat (coded 1) conditions. D_1 and D_2 were entered simultaneously as predictors in the regression model. The PROCESS 3.3 macro for SPSS (model 6) was used, since it produces omnibus tests of total and direct effects indicating whether there is an effect of the independent variables on the outcome variable without specifying which dummy variable is responsible for it.

As shown in Table 4, this analysis highlighted significant relative total effects of both D_1 and D_2 on the attribution of inalienability of human rights to migrants, respectively, $B = −0.32$, $SE = 0.10$, and

$B = −0.19$, $SE = 0.09$; $p_s \geq 0.042$. The omnibus test of total effect of D_1 and D_2 was significant, $F (2, 138) = 5.76$, $p = 0.004$, $R^2 = 0.08$. When the mediators were included in the model, the omnibus test of direct effects of D_1 and D_2 turned to non-significance, $F (2, 135) = 1.28$, $p = 0.282$, $R^2 = 0.02$, and the relative direct effects of D_1 and D_2 on the outcome variable became non-significant, $p_s \geq 0.113$.

As for the specific indirect effects, the analysis revealed, as expected (*hypothesis 3*), that the indirect effect of threat through fraternalistic relative deprivation was significant both for D_1 and D_2 (respectively, $B = −0.06$, $SE = 0.01$; $B = −0.07$, $SE = 0.05$), since the 95% Confidence intervals (CI) did not include zero, respectively [−0.16, −0.00] and [−0.18, −0.00].

Contrary to expectation (*hypothesis 5*), the sequential indirect effect of threat through in-depth exploration of identity in the educational domain and, in turn, identification with the human group, was not significant, with the 95% CIs including zero both for D_1, $B = −0.02$, $SE = 0.01$, 95% CI [−0.04, 0.00], and for D_2, $B = −0.01$, $SE = 0.01$, 95% CI [−0.04, 0.00]. Even if not predicted, the analysis revealed a further significant sequential indirect effect of threat on the attribution of human rights to migrants through in-depth exploration of identity in the educational domain and, in turn, fraternalistic relative deprivation both for D_1, $B = 0.02$, $SE = 0.02$, 95% CI [0.00, 0.07], and D_2, $B = 0.02$, $SE = 0.02$, 95% CI [0.00, 0.06].

Most importantly, and as expected (*hypothesis 6*), the bootstrapping mediational analysis revealed a significant sequential indirect effect of threat on attribution of human rights to migrants through in-depth exploration of identity in the educational domain, identification with the human group, and fraternalistic relative

FIGURE 1
Conceptual multiple step mediation model of the effect of intergroup threat (dummy coded as D_1 and D_2) on inalienability of human rights to migrants through in-depth exploration of identity in the educational domain, identification with the 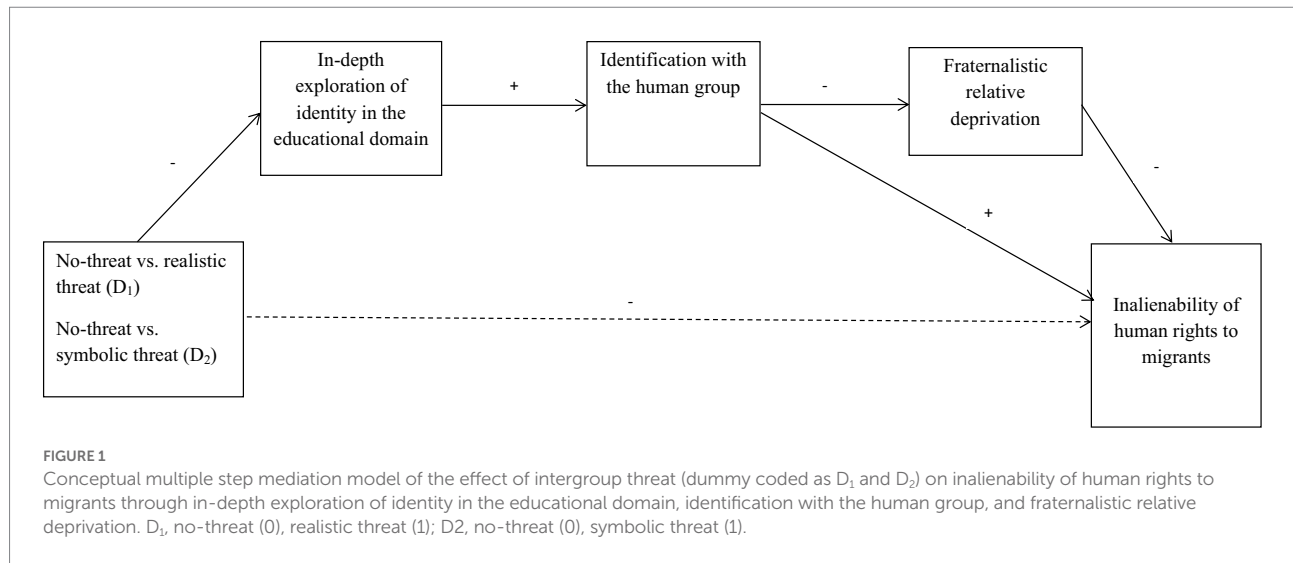human group, and fraternalistic relative deprivation. D_1, no-threat (0), realistic threat (1); D2, no-threat (0), symbolic threat (1).

TABLE 4 Total, direct, and indirect effects of predictors of inalienability of human rights to migrants.

Predictor	Total effect			Direct effect			Indirect effect 95% CI through fraternalistic relative deprivation				Indirect effect 95% CI through in-depth exploration of identity in the educational domain and identification with the human group				Indirect effect 95% CI through in-depth exploration of identity in the educational domain, identification with the human group, and fraternalistic relative deprivation			
	B	*SE*	*p*	*B*	*SE*	*p*	*B*	*SE*	*LL*	*UL*	*B*	*SE*	*LL*	*UL*	*B*	*SE*	*LL*	*UL*
D_1	−0.32	0.10	0.002	−0.17	0.11	0.113	−0.06	0.04	−0.16	−0.00	−0.02	0.01	−0.04	0.00	−0.01	0.01	−0.02	−0.00
D_2	−0.19	0.09	0.042	−0.08	0.10	0.423	−0.07	0.05	−0.10	−0.00	−0.02	0.01	−0.04	0.00	−0.01	0.01	−0.02	−0.00

D1, no-threat (0), realistic threat (1); D2, no-threat (0), symbolic threat (1); B, unstandardized beta weights; SE, standard error; LL, lower limit; UL, upper limit

deprivation both for D_1, $B=−0.01$, $SE=0.00$, 95% CI [−0.02, −0.00], and D_2, $B=−0.01$, $SE=0.00$, 95% CI [−0.02, −0.00].[1]

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1 Following Albarello et al.'s (2019) method, an alternative sequential mediational model was tested reversing the hypothesized sequential mediational path, thus entering identification with the human group, fraternalistic relative deprivation, and attribution of human rights to migrants as mediators of threat's effect on in-depth exploration of identity in the educational domain. The analysis revealed that the relative total effect of both D_1 and D_2 on in-depth exploration of identity in the educational domain was significant (respectively, $B=−0.59$, $SE=0.11$; $p<0.001$; $B=−0.50$, $SE=0.11$; $p<0.001$). The omnibus test of total effect of D_1 and D_2 was significant, $F(2, 138)=18.60$, $p<0.001$, $R^2=0.21$. When the mediators were included in the model, the omnibus test of direct effects of D_1 and D_2 was still significant, $F(2, 135)=14.74$, $p<0.001$, $R^2=0.16$, and the relative direct effects of D_1 and D_2 on the dependent variable were still significant, $p_s<001$. Importantly, the sequential indirect effect of threat on in-depth exploration of identity in the educational domain through the three sequential mediators was not significant both for D_1, $B=−0.00$, $SE=0.00$, 95% CI [−0.01, 0.01], and D_2, $B=−0.00$, $SE=0.00$, 95% CI [−0.00, 0.00].

Overall, evidence of this analysis highlighted that the effects of both realistic and symbolic intergroup threat in reducing attribution of human rights to migrants were mediated by fraternalistic relative deprivation, a factor eliciting salience of intergroup distinction. Nonetheless, this path was also challenged by processes involved in individuals' personal identity formation in terms of thoughtful exploration of identity choices and by high levels of identification with the human group, with all this entails in terms of acceptance of different outgroupers within the common human ingroup.

Discussion

This study aimed to tackle the underexplored association between realistic and symbolic intergroup threat as antecedents of a negative form of discrimination such as dehumanization, expressed as the denial of human rights (Albarello and Rubini, 2012a) to migrants by young adults.

Intergroup threat was conceived as a factor that might increase the denial of human rights to migrants (*cf.* Albarello et al., 2022; Mula et al., 2022), leading to various adverse

outcomes as the ones highlighted in this contribution. By endorsing a cross-fertilizing approach that combined insights deriving from personal and developmental psychology with a social identity approach to intergroup relations, we aimed to analyse whether the effect of intergroup threat on the denial of human rights to migrants could be mediated. To this aim, we considered fraternalistic relative deprivation (Moscatelli et al., 2014) as a detrimental factor, as well as beneficial processes related to complex views of self and others (Albarello et al., in press-a) as in-depth exploration of identity in the educational domain (Crocetti et al., 2008; Bobba et al., 2022) and identification with the human group (Albarello et al., 2020, 2021).

Results highlighted that realistic threat led to a reduced attribution of human rights to migrants, and it increased the perception that the ingroup of natives was relatively deprived. Moreover, it reduced in-depth exploration of identity in the educational domain, and led to lower identification with the human group. That is, it restricted intergroup boundaries leading to the exclusion of the outgroup of migrants from the common ingroup of human beings (Opotow, 1990) in terms of denial of human rights, as well as reducing the extent to which young adults acknowledge their own belongingness to the human group.

Symbolic threat seemed less effective in leading to these negative outcomes, since its effects in increasing the denial of human rights of migrants and reducing identification with the human group were not fully significant. Nonetheless, it reduced the extent to which young adults reported questioning their educational choices.

Most importantly, the findings highlighted the paths through which intergroup threat can lead to denial of human rights to migrants by highlighting the detrimental role of fraternalistic relative deprivation as a consequence of threat activation directly on reduced attribution of human rights. Results showed that this is only one possibility, since further indirect sequential mediational effects emerged. Findings showed that intergroup threat, both realistic and symbolic, froze in-depth exploration of identity choices leading, in turn, to increased fraternalistic relative deprivation. Moreover, threat led to the denial of human rights to migrants by reducing in-depth exploration of identity, thus leading to lower identification with the human group, which in turn affected the extent to which young adults felt that the ingroup of natives was relatively deprived, increasing denial of human rights to migrants.

Nonetheless, focusing on the no-threat condition, findings also underlined that the effect of threat could be contrasted by a beneficial path involving exploration of own personal identity choices in the educational domain (Crocetti et al., 2008), which had the positive outcome of fostering complex and more abstract (cf. Albarello et al., 2020, 2021) self-definitions. Consequently, the perception of relative deprivation of the ingroup of natives was reduced, hindering the dehumanization of the minority outgroup of migrants when intergroup threat was not activated.

This study showed that threat led to explicit dehumanization of migrants in terms of denial of human rights by hindering the beneficial effect of factors that can challenge the dichotomous view of "us versus them," such as in-depth exploration of personal identity choices in the educational domain and identification with the common human group, leading to higher perception of fraternalistic relative deprivation.

Overall, this evidence suggests that the psychological processes leading to the restriction of intergroup boundaries and exclusion of outgroups from the human community (Opotow, 1990) – the most important good that can be acknowledged to others (Walzer, 1983) – is very complex and rooted in the intertwined nature of personal and social identity processes (Albarello et al., 2018b, 2021; Crocetti et al., 2022). This evidence thus stresses the importance of considering both personal and social processes to thoroughly understand the underlying processes that can lead to (de) humanization of stigmatized outgroupers. In this vein, these findings underline that developing complex views of self and others (cf. Albarello et al., in press-a) can help create inclusive generations of adults.

The role of complex views of self and others in promoting attribution of human rights

By deepening knowledge of the destructive path that leads to the denial of human rights to migrants when a threatening situation is at stake, this study also highlights that beneficial processes related to personal and social identifications can challenge dehumanization of stigmatized outgroupers widening of one's moral community (Opotow, 1990). This contribution provides the pivotal evidence that the more individuals think thoroughly about themselves and their identities, both in terms of a comprehensive identity exploration and acquisition of abstract identifications, the more they acknowledge human deservingness to outgroupers, expressed in complex, ideological terms – such as attribution of human rights – and the less they rely on ingroup categories and suffer from the negative outcome of perceived relative deprivation of their ingroup. These are thus crucial identity resources, like an "identity baggage" that young adults might develop to become less prejudiced adults.

In this respect, interventions that foster exploration of identity choices in various domains of an individual's life experience (including the educational one, as we showed) and promote individuals' identification with the most inclusive common ingroup – the human group – help disrupting the negative consequences of the factors that enhance salience of intergroup boundaries, such as intergroup threat and its negative consequences (e.g., arising of feelings of relative deprivation).

Importantly, this study highlights the positive association between a thorough investigation of own identity and self-identification with the human ingroup as resources against the

dehumanization of migrants. Future studies should build on this pivotal evidence by developing manipulations of in-depth personal identity exploration. Moreover, measures of identity exploration in broader and less specific domains might be developed to be able to assess the mechanism through which identity exploration can work as a beneficial factor in challenging prejudice, also in its more extreme forms such as dehumanization.

Future contributions should tackle more directly the sources of such exploration processes. In this vein, in-depth exploration of identity might be associated with epistemic quests, like the one characterizing the seizing phase of individual's need for cognitive closure (Webster and Kruglanski, 1994). Epistemic quest starts when individuals are confronted with a question to which they do not have an answer and stops when the answer is found. In this respect, two phases of this quest have been highlighted: the seizing one, in which individuals are motivated to find an answer that can provide stable knowledge in the present and the future, and the freezing phase, when they are instead motivated to defend their existing knowledge. In this vein, in-depth exploration of identity might be related to quest processes characterizing the seizing phase, thus explaining the connection with higher human identification, as the acknowledgment of self and others' belongingness to the human group, with the commonalities and differences that this entails.

Into the negative spiral of threats

Overall, this study showed that situational threats (e.g., intergroup threat) might challenge and stop such advanced, thorough cognitive processing of own and others' identities. This was particularly evident in the realistic threat condition. Symbolic threat's effects were less potent than the ones of realistic threat. This could be related to the specific events that happened when data were collected. During the last two years, several global crises have been experienced: The recent war in Ukraine, as well as the pandemic due to the COVID-19, have been perceived as global threats leading people to experience concern and uncertainty (Mula et al., 2022). Such experiences might have sensitized people and young adults to conceive them as threats to themselves and ingroups' well-being and survival. This is in line with evidence showing that perceived threat is associated with greater intolerance and punitiveness towards outgroups (Marcus et al., 1995; Feldman and Stenner, 1997; Jackson et al., 2019), as well as higher ethnocentrism (Schaller and Neuberg, 2012). For instance, it has been also shown that concern with COVID-19 threat, by leading to higher desire for cultural tightness (Gelfand et al., 2011), also enhances prejudice towards immigrants (Mula et al., 2022). In this vein, other threats (e.g., COVID-19, ecological disasters, wars, etc.) might hinder the beneficial paths underlined in this study.

In this vein, future studies should disentangle the role of various types of threat and the role of perceptions of threatening factors/events on in-depth exploration of identity, identification with the human group, and dehumanization of outgroups.

Acknowledgment of the potential boost effect from various contextual society-threatening events on prejudice and discrimination could be of utmost importance to timely set effective social policies aimed to promote harmonious intergroup relations in modern globalized societies. This would be very informative for social agendas, as well as for scholars' ones, since it means that the study of prejudice and discrimination still needs to be updated and contextualized to actual global social issues.

Limitations

Notwithstanding the aforementioned important implications, this study has several flaws that might be more carefully tackled in future research. It might be worthwhile to address why the effect of symbolic threat seemed less effective than the realistic threat in reducing the attribution of human rights to migrants. Moreover, studies with larger samples might be conducted. A convenience sample was employed to reach participants to whom in-depth exploration of identity in the educational domain could apply. Participants were recruited during university lectures during the COVID-19 lockdowns in Italy in the spring of 2021. This constraint made it difficult to enlarge the sample without providing monetary rewards. Moreover, the sample mainly comprised females. A more balanced sampling in terms of respondents' gender should be obtained. Nonetheless, the findings of this study are noteworthy since they show that also females, who are usually regarded as more "communal" (e.g., Suitner and Maass, 2008) than males, react to situational threats restricting the scope of application of human rights to migrants, thus refusing to include them into their human moral community (Staub, 1989; Opotow, 1990).

Cross-cultural studies would also be needed. In particular, the actual percentage of immigrants in respondents' place of residence might be included in research as a second-level variable that might help address the factors that lead young people to dehumanize migrants when intergroup threat is made salient. In this vein, the nature of actual contact (positive or negative) with (im) migrants should also be considered in future studies.

Conclusion

This contribution provides pivotal evidence of the complex and intertwined nature of personal and social identity processes in leading to the attribution or denial of human deservingness to a very salient outgroup, migrants – who are still the targets of widespread prejudice, which can be risen by activation of various types of threat (e.g., intergroup symbolic or realistic threat, etc.). In this vein, this contribution paves the way for a fruitful integration of different theoretical approaches in tackling prejudice and aggravated forms of discrimination such as dehumanization. Endorsing a complex view of self and others might represent a "safety-baggage" against such prejudices by contrasting the effects of dichotomous ingroup versus outgroup categorizations, at least when threat is not activated.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Ethics statement

The studies involving human participants were reviewed and approved by University of Bologna, Ethics Commitee of the Department of Psychology. The participants provided their written informed consent to participate in this study.

Author contributions

FA and MR conceived of the current study and participated in its design and coordination. FA performed the statistical analyses, and wrote the manuscript. MR helped to draft the manuscript. All authors read and approved the final manuscript.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Prosociality and health: Identification with all humanity is a replicable predictor of prosocial motivation for health behaviors

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The acute phase of the COVID-19 pandemic may have passed, but the pandemic remains a major worldwide health concern that demands continued vigilance. Are there individual differences that predict the motivation to continue to wear masks and to create physical distance in public? Previous research conducted early in the pandemic had suggested that a particular social identity—*identification with all humanity*—is one underlying factor that contributes to people's cooperation with health behavior guidelines. This highlights that the pandemic is not only an issue to be tackled with the tools of immunology and epidemiology. It also requires the tools from psychology—to measure the representations people have about themselves and others and how these representations drive values and decisions related to health. Here we report work on U.S. respondents that examined whether individuals' level of identification with all humanity predicts their prosocial health behaviors aimed at mitigating the spread of COVID-19. In 3 convergent studies (total $N=1,580$), we find that identification with all humanity predicted the prosocial motivation to wear masks and to engage in physical distancing when in public without a mask. The results were obtained while controlling for a host of covariates, including demographics, educational attainment, and Big Five personality dimensions. We find that some people have a marked drive to care for the health of strangers, which is significantly linked to their concern for *all humanity* rather than being restricted to their care for their community or country. Discussion focuses on this social identification with humanity and its enduring, replicable role in predicting the motivation to engage in prosocial health behaviors. We note key implications for theories in social and developmental psychology as well as for research that may lead to practical applications for lessening the human toll of the current and future pandemics.

KEYWORDS

prosociality, identification with all humanity, COVID-19, mask-wearing, physical distancing, social interaction, social cognition, ingroups

1. Introduction

The COVID-19 pandemic has been one of the most pressing challenges to global society in the early 21st century—and there are considerable barriers to its mitigation. On September, 14th, 2022, *The Lancet* COVID-19 Commission concluded that the unprecedented human and economic costs of the pandemic could be traced in large part to issues of prosociality (Sachs et al., 2022; The Lancet, 2022). Often defined as actions that benefit others, prosociality is a key concept in the biological and social sciences (Keltner et al., 2014). In the context of addressing and ending the pandemic, the Commission argued that prosociality would involve a reorientation of priorities from meeting the needs of individuals toward meeting the needs of society as a whole. As noted by Sachs et al. (2022), societies are organized into levels—ranging from the individual, to national, to global levels—and prosociality to combat COVID-19 can occur both within and between these levels. This view holds that governments can empower individuals to engage in prosocial health behaviors aimed at mitigating COVID-19, and individuals can take responsibility for carrying out such behavior, inasmuch as they feel it is the right thing to do. An important question then becomes, *who* is likely to proactively enact such health behaviors, even in the absence or reduction of governmental guidelines and legal enforcements?

Peoples' social groups and identities are important for motivating their behavior (Walton and Cohen, 2011). Individuals generally tend toward identifying and engaging prosocially with their own immediate social group (Tajfel and Turner, 1979), often called ingroup favoritism. However, there has also been a historical process that has led people toward identifying at broader levels. As discussed by McFarland (2011), especially since the beginning of the 20th century, there has been a trend whereby people are becoming increasingly identified with "all humanity." This concept of stretching our ingroup to a wider circle of humans—perhaps to members of the human species in general—has implications for both our explicit reflections about moral obligations and also for our quick, gut-level feelings of connectivity to our fellow travelers. This psychological process may then influence our everyday public health behaviors.

Data collected by Barragan et al. (2021) in the first months of the pandemic showed that individuals around the world were generally reliant on government mandates guided by the World Health Organization (WHO). In the initial months of the pandemic, U.S. public health messaging was aimed toward recommending/requiring people to stay home to "flatten the curve"—a behavior aimed especially toward helping health workers manage COVID-19 hospitalizations (Block et al., 2020). But as the pandemic unfolded, public support for these health behaviors began to fragment, with some people continuing to comply with the recommendations/requirements (e.g., staying home, mask wearing, social distancing) and others rejecting the continuation of these behaviors. Some regarded these health behaviors as a violation of their individual liberties (Studdert and

Hall, 2020). Building on the proposals by McFarland (2011), here we suggest that a key individual predictor of *who* will continue to engage in health behaviors aimed at mitigating the spread of COVID-19—even as specific governmentally mandated requirements are relaxed—involves a feeling of *identification with all humanity*.

The felt obligations or connectivity to fellow humans, even strangers, was investigated in the classic studies of rescuers in Nazi-occupied Europe—people who voluntarily placed themselves at grave personal risk in order to help strangers survive (Oliner and Oliner, 1988; Monroe, 1996). Rescuers explained the motivation behind their own actions as a self-imposed commitment to extend prosociality toward all humans. One rescuer articulated this drive as follows: "I sensed I had in front of me human beings being hunted down like wild animals. This aroused a feeling of brotherhood with the desire to help" (Oliner, 2002, p. 125). Such prosociality toward strangers ("heroic altruism") is an important topic in social psychology (Batson, 2011), and it is illuminating to examine this motive and its expression in the context of the prosocial behaviors needed to mitigate the current pandemic. In the COVID-19 context, we acknowledge that the threat is not to a specific group of humans based on religion, ethnicity, or other minority status as it was in Nazi-occupied Europe. Rather, the threat derives from a virus that "hunts" all humans and kills, or saps the health of, those it strikes. In such a context, contemporary individuals have an opportunity to engage in "a feeling of brotherhood" by participating in health behaviors that can help to curtail the spread of the coronavirus to others, including strangers.

1.1. Identification with all humanity and prosocial health behaviors during COVID-19

Using the identification with all humanity scale developed by McFarland et al. (2012), empirical studies conducted prior to the pandemic, and in other more typical contexts, show that this psychological scale uniquely predicts a range of prosocial actions in a variety of situations (e.g., McFarland et al., 2013; Reese et al., 2015; Hamer et al., 2019). In the first study on identification with all humanity conducted during the pandemic, Barragan et al. (2021) collected data on respondents from 87 countries during the initial outbreak of the crisis (April–June 2020). The results demonstrated that identification with all humanity was the strongest predictor of (i) adopting the health behaviors recommended by WHO and (ii) showing prosociality toward others on a variety of experimentally presented scenarios, e.g., donating masks to a hospital in need, helping people who exhibited COVID-19 symptoms. Building on this work, Sparkman (2022) used a sample of U.S. respondents and showed that in August 2020, identification with all humanity predicted cooperation with recommended health behaviors, and the effect was robust to many of the same (and

more) covariates as used in Barragan et al. (2021). The effect of identification with all humanity on cooperation with recommended health behaviors was maintained into the first "winter crest" of COVID-19 infection, as demonstrated in Marchlewska et al.'s (2022) report that in December of 2020, identification with all humanity significantly predicted cooperation with newly emerging governmental recommendations for combating the pandemic, i.e., willingness to vaccinate.

As the pandemic extended into its second year, national and local government health agencies relaxed or dropped their requests for local governments and individuals to cooperate with previously recommended health behaviors, notably masking and social distancing (Centers for Disease Control and Prevention, 2022). In the U.S., this meant that the continued enactment of these behaviors became less a decision to cooperate with guidelines and laws, and more of a personal choice. Despite the changes to messaging by the government, many individuals may feel motivated to continue to engage in the previously recommended health behaviors to prevent the spread of the disease—often for the sake of strangers, and at some cost to the self. We hypothesized that, in the context of lapsed health guides of early autumn of 2022, the identification with humanity might account for peoples' continued enactment of health behavior that is aimed at benefitting others even while controlling for other likely covariates. That is, whereas in previous phases of the pandemic, enactment of health behaviors could be interpreted as conforming behavior to recommended and legally-mandated actions, peoples' continuance of these behaviors (in spite of the expiration of mandates and the relaxation of guidelines) may have a strong *prosocial* component: wearing a mask and engaging in social distancing for the sake of protecting strangers.

1.2. Current studies

We collected the data from U.S. respondents during the interval between September 8th-September 13th 2022. Study 1 was conducted on Amazon Mechanical Turk, a method often used in psychology research studies (Paolacci and Chandler, 2014). Study 2 was also carried out on Turk, as an exact replication (Brandt et al., 2014). Study 3 was carried out on the Prolific Academic platform, with the purpose of testing generalizability, inasmuch as the demographics of participants on Turk and Prolific are known to be different (see below). According to scientific studies of the two recruitment pools, respondents on Prolific are more racially diverse than respondents on Turk (Peer et al., 2017). Moreover, respondents on Prolific are less experienced with taking psychology surveys than participants on Turk (Palan and Schitter, 2018). Finally, Prolific uses an algorithm to obtain a "representative sample" of respondents in terms of age, sex, and ethnicity (Prolific Team, 2022), which we used. We thus reasoned that an initial attempt at generalizability could be achieved by conducting the study not only on Turk but also on Prolific. As in related research

(Barragan et al., 2021; Marchlewska et al., 2022; Sparkman, 2022), all analyses were conducted using regression.

2. Study 1

2.1. Sample size and power analyses

Using G*Power (Faul et al., 2007) with pilot data, we found that a sample size of $N = 176$ respondents would afford 80% power for detecting a small- to medium-sized effect of identification with all humanity on prosocial outcome variables, assuming an alpha of 0.05 (2-tailed tests) and a multiple regression analysis plan. In order to align with calls within social and personality psychology toward larger samples than required by power analyses (Fraley and Vazire, 2014), we predetermined to request exactly 575 respondents from the Amazon Turk platform. This prespecified number was expected to yield an analytic sample size of approximately 500, which would place our study among the top 5–10% of sample sizes in the field (Sassenberg and Ditrich, 2019). We also requested exactly $n = 575$ for each of the replications (Study 2 and 3), so that the stopping rule was the same for all studies.

2.2. Participants, methods, and procedure

Out of an original 575 respondents, the analytic sample was $n = 553$ participants. Excluded respondents were those who did not provide a valid Amazon Turk ID, had participated in the pilot study, or had taken the survey more than one time (only their first submission was retained). The demographics of the analytic sample are shown on Table 1. The survey was constructed using Qualtrics.

2.3. Measures

With the exception of the block of questions about demographics, which always appeared first, the remaining five blocks of questions were administered in a random order.

Demographics. We measured five standard demographic variables: Age, gender, race/ethnicity, educational attainment, and household income. For age, respondents clicked on the number representing their age in years. For gender, the choices were female, male, non-binary, prefer to self-describe (text response), and prefer not to say; responses were effect coded as female (+1) or non-female (−1; consistent with coding used in Barragan et al., 2021; see also Galasso et al., 2020). Race/ethnicity were assessed by asking participants to select all options that may apply: American Indian or Alaskan Native, Asian, Black or African-American, Hispanic or Latin, Native Hawaiian or Other Pacific Islander, White, and Other. Responses were coded as White only

TABLE 1 Descriptive statistics for predictor and outcome variables in Study 1, 2, and 3.

Variables	Study 1 (N=553)		Study 2 (N=485)		Study 3 (N=542)	
	M or %	SD	M or %	SD	M or %	SD
Predictors						
Age (years)	36.06	10.77	36.83	10.46	45.98	16.57
Gender (% female)	42.13		40.62		49.45	
Race (% White)	86.26		77.94		73.43	
Education	7.31	1.20	7.29	1.15	6.85	1.34
Income	3.22	0.81	3.19	0.82	2.71	0.92
Risk (% high risk)	54.61		48.04		19.93	
Conservativism	3.97	2.12	3.98	2.12	3.26	1.71
Extraversion	3.93	1.17	3.96	1.10	3.24	1.68
Agreeableness	4.34	1.05	4.53	1.06	5.33	1.20
Conscientiousness	4.52	1.13	4.64	1.17	5.45	1.29
Stability	4.42	1.11	4.56	1.22	4.81	1.59
Openness	4.30	1.06	4.36	1.07	4.99	1.27
Community	3.87	0.75	3.88	0.71	3.64	0.86
Nation	3.94	0.75	3.90	0.77	3.52	0.85
Humanity	3.96	0.80	3.93	0.81	3.59	0.87
Outcome						
Prosocial health behaviors	4.07	0.87	4.09	0.83	3.56	1.34

(+1) or non-White (−1; Williams et al., 2022, suggest White/non-White differences in COVID-19 concerns). Educational attainment was measured on a 9-point scale: No formal education, incomplete primary school, completed primary school, incomplete secondary school, completed secondary school, incomplete college (no degree), completed college (obtained degree), incomplete graduate/professional school (no degree), or completed graduate/professional school (obtained degree). Household income, following the General Social Survey (Marsden et al., 2020), was measured on a 5-point Likert-type scale by asking participants to rate their household income in comparison to U.S. households in general (1 = "Far below average" to 5 "Far above average").

Big Five Personality Dimensions. The 10-Item Personality Inventory (TIPI) is a short inventory designed for research in which personality is not the central topic of interest (Gosling et al., 2003). It assesses the Big Five personality dimensions (agreeableness, conscientiousness, emotional stability, extraversion, and openness to experience). Participants were asked to consider the extent to which short descriptions of personality dimensions apply to themselves (e.g., "reserved, quiet," "disorganized, careless"), and responses are measured using a 7-point Likert-type scale (1 = "Strongly disagree" to 7 "Agree strongly").

Political Ideology. Participants were asked to place themselves on a 7-point Likert-type scale (1 = "Very liberal" to 7 "Very conservative").

COVID-19 High Risk. Using the same measure as in prior research (Barragan et al., 2021), we asked participants "Do you consider yourself to be at high risk for severe illness if infected with COVID-19?" Participants selected yes (coded as +1), no, or not sure (coded as −1).

Identification with Community, Nation, and All Humanity. Identification with community, nation, and humanity are related psychological tendencies that can be assessed together (McFarland et al., 2012). Prior work established that four items of the original scale can be considered a subfactor that is especially relevant for predicting prosociality (Reese et al., 2015; Sparkman and Hamer, 2020; Hamer et al., 2021; Sparkman, 2022). The four items isolated by that work, which are each asked separately in regard to community, nation, or humanity are: (i) "How much do you want to be a responsible citizen of your community (identification with community)/your country (identification with nation)/the world (identification with all humanity)?" (ii) "How much do you believe in being loyal to my community (identification with community)/ my country (identification with nation)/all humanity (identification with all humanity)?" (iii) "How much would you say you care (feel upset, want to help) when bad things happen to people in my community (identification with community)/my country (identification with nation)/all over the world? (identification with all humanity)" (iv) "When they are in need, how much do you want to help people in my community (identification with community)/people in my country (identification with nation)/ people all over the world (identification with all humanity)?" As in prior work (McFarland et al., 2012; Barragan et al., 2021), we had respondents rate the extent to which each of these items applied to themselves using a 5-point Likert-type scale (1 = "Not at all" to 5 = "Very much"). For each respondent's ratings, average scores were calculated for the "identification with community" variable (4 community items), the "identification with nation" variable (4 country items), and the "identification with all humanity" variable (4 world items). As in McFarland et al.'s (2012) original work in scale development, good internal consistency was achieved for each scale: The identification with community scale (Cronbach's α = 0.86), the identification with nation scale (Cronbach's α = 0.81), and the identification with all humanity scale (Cronbach's α = 0.84). The score analyzed was the mean of the four items for each of the three scales (identification with community, identification with nation, identification with all humanity). Our chief hypothesis pertained to the identification with all humanity scale, however prior work has also shown interesting effects for identifications with community and nation and so we thought it was useful to include all three constructs.

Prosocial Motivation for Health Behaviors. We constructed a measure tapping prosocial health behaviors. One item was *prosocial motivation to wear masks* ("How important is it to wear

a mask to protect strangers in public?") measured on a 5-point Likert-type scale (1 = "Not at all important" to 5 = "Extremely important"). A second item was *prosocial motivation for physical distancing to avoid spreading COVID-19* ("If you find yourself in public without a mask, how motivated are you to increase your physical distance from other people to avoid spreading COVID-19?") measured on a 5-point Likert-type scale (1 = "Not at all" to 5 = "Extremely"). The presentation order of the two items was randomized. The items had good internal consistency (Cronbach's α = 0.74) and were averaged together into a single index of prosocial motivation for health behaviors.

2.4. Results

As hypothesized, identification with all humanity significantly predicted prosocial motivation for health behaviors ($b = 0.29$, b s.e. = 0.04, $t = 6.92$, $p = 1.3^{-11}$). The identification with community and high risk variables were also significant predictors and no other variable was a significant predictor (see Table 2).

3. Study 2

Study 2 was an attempt to conduct an exact replication of Study 1, and was run after data collection for Study 1 had been completed. See Brandt et al. (2014) for motivation(s) for replications in psychological sciences.

3.1. Participants and procedure

As in Study 1, we requested 575 respondents. The resulting analytic sample was composed of $n = 485$ participants. Respondents who were not included in the analytic sample were those who did not provide a valid Amazon Turk ID, were in the pilot study, or were identified as a repeat respondent (only their first submission was retained). The demographics are shown on Table 1.

3.2. Results

As hypothesized, identification with all humanity significantly predicted prosocial motivation for health behaviors ($b = 0.23$, b s.e. = 0.04, $t = 5.33$, $p = 1.5^{-7}$). Identification with community and nation were also significant, as were being female, being less educated, high risk, less extraverted, more open to experience (see Table 2).

4. Study 3

Study 3 conducted an extension of Study 1 and 2, by using the same survey questions with the somewhat different population afforded by the Prolific platform, which has previously been used with research on identification with all humanity early in the pandemic (Sparkman, 2022). This platform allows the researcher to elect an option for a "representative" U.S. sample, which

TABLE 2 Multiple regression analysis using identification with all humanity predicting prosocial motivation for health behaviors in Study 1, 2, and 3.

Predictors	Study 1 (N=553)			Study 2 (N=485)			Study 3 (N=542)		
	b	b SE	p	b	b SE	p	b	b SE	p
Age	−0.03	0.03	0.379	0.03	0.03	0.308	0.09	0.06	0.137
Female	0.00	0.03	0.946	0.07	0.03	0.021	0.10	0.05	0.039
White	0.03	0.05	0.493	−0.07	0.04	0.069	−0.19	0.06	<0.001
Education	0.03	0.03	0.422	−0.06	0.03	0.047	0.02	0.05	0.687
Income	0.01	0.03	0.816	−0.02	0.03	0.456	−0.03	0.05	0.508
Risk	0.12	0.03	<0.001	0.08	0.03	0.015	0.30	0.06	<0.001
Conservativism	−0.04	0.03	0.214	−0.01	0.03	0.647	−0.48	0.06	<0.001
Extraversion	0.02	0.03	0.608	−0.07	0.03	0.043	−0.10	0.06	0.086
Agreeableness	0.00	0.04	0.975	0.02	0.04	0.561	0.02	0.06	0.722
Conscientiousness	−0.05	0.05	0.288	−0.06	0.04	0.154	0.06	0.06	0.316
Stability	−0.02	0.04	0.580	−0.05	0.04	0.202	−0.14	0.06	0.027
Openness	0.05	0.04	0.216	0.13	0.04	<0.001	0.09	0.06	0.101
Community	0.18	0.04	<0.001	0.19	0.05	<0.001	0.12	0.09	0.174
Nation	0.05	0.04	0.257	0.13	0.04	0.002	0.05	0.09	0.566
Humanity	0.29	0.04	<0.001	0.23	0.04	<0.001	0.20	0.07	0.008
Model summary	$F(15, 537) = 19.61$			$F(15, 469) = 20.14$			$F(15, 526) = 18.53$		
	$R^2 = 0.35$, $p < 0.001$			$R^2 = 0.39$, $p < 0.001$			$R^2 = 0.35$, $p < 0.001$		

In Study 1, all VIFs < 3, tolerance > 0.40. In Study 2, all VIFs < 3, tolerance > 0.40. In Study 3, all VIFs < 4, tolerance > 0.25.

we selected. Of course, that option was not available in Study 1 or 2, conducted on Turk.

4.1. Participants and procedure

As in Study 1 and 2, we requested 575 respondents. The analytic sample was composed of 542 participants. Respondents who were not included in the analytic sample were those who did not provide a valid Prolific ID, were identified as a pilot respondent, or were identified as a repeat respondent (only their first submission was retained). The demographics are shown on Table 1.

4.2. Results

As hypothesized, identification with all humanity predicted prosocial motivation for health behaviors ($b = 0.20$, b s.e. $= 0.07$, $t = 2.65$, $p = 0.0083$). Being female, non-White, high risk, low in emotional stability, and not conservative were also significant predictors of prosocial motivation for health behaviors (Table 2).

5. Cross-study effect sizes

Following prior research (Barragan et al., 2021), we computed the mean effect sizes (Cohen's d) across the three studies. To accomplish this, we computed d for each predictor in each study by dividing the predictor coefficient by the product of the coefficient standard error and the square root of the sample size. Then, across the studies, we computed the mean effect size and standard error of the effect size for each predictor. These mean effect sizes are displayed in Figure 1. The patterns showed that identification with all humanity had the largest positive effect size of all of the 15 predictors. COVID-19 high risk was the second largest positive effect size for each outcome, while conservatism was the largest negative effect size.

6. General discussion

Consistent with the perspective that identification with all humanity is a unique social identity predictor of prosociality (McFarland et al., 2012; Hamer et al., 2019; Barragan et al., 2021; Sparkman, 2022)—one that is perhaps more consequential than other "less abstract" social identities, i.e., community, nation—we found that identification with all humanity significantly predicted prosocial motivation for health behaviors during COVID-19. Moreover, this was the case while controlling for demographics (age, gender, etc.), personality, political ideology, and other covariates. Of special note is that this paper also incorporated a direct replication and a (modest) generalization study. Consistent with calls within social psychology for faithful replications (Brandt et al., 2014), Study 2 was an exact replication of Study 1 using the

same survey questions and platform (Amazon Turk), and Study 3 was an initial attempt to assess whether the effects would generalize to the Prolific platform, which is known to be more racially diverse. These findings thus contribute to the movement to conduct replication/generalizability studies in psychological research (Open Science Collaboration, 2015), and show that identification with all humanity is a psychological tendency that has a robust connection with the motivation to engage prosocially with strangers—whereas none of the other variables was as consistently predictive.

6.1. Examining psychological contributors to prosocial health behaviors

It is known that, over the long term, isolated actions can accumulate into consistent patterns of behavior (Cohen and Sherman, 2014; Funder and Ozer, 2019). In the case of the current research, a person highly identified with all humanity may engage in relatively more prosocial health behaviors, e.g., creating physical distance when in public and without a mask, than a person with lower identification. When these actions are repeatedly done by independent individuals, such prosocial behaviors benefit public health and society as a whole. Indeed, these patterns contribute to the emerging idea that there may exist an "ideology" that emphasizes prosociality toward collectives (Nezlek, 2022). In this case, the collective of "all humanity."

In addition to identification with all humanity, we found that high perceived risk from COVID-19 complications also predicted prosocial motivation for health behaviors (Table 2), a pattern we also found in the first months of the pandemic (Barragan et al., 2021). Why would this be the case? One possibility is that many participants may seek only to protect themselves, perhaps due to fear of COVID-19 that induces a perception of risk to themselves (Feng et al., 2022). Another related possibility is that perceived high risk for the *self* may enhance the individual's proclivity for understanding the risk for *others*. Such a psychological process is consistent with the idea that social cognition involves seeing one's own self in others—the view that others are, or should be, "like-me," (e.g., Meltzoff, 2007, 2013). This "like-me" representation of others is first manifest prelinguistically in infant behavior and also is deeply-rooted human brain functioning (Meltzoff and Marshall, 2020). Building on this idea, we speculate that people who reflect on their own susceptibility for COVID-19 and its possible lifelong complications (Crook et al., 2021) may have experiences, thoughts, and feelings that they generalize or extend to others using an implicit practical syllogism: "me = vulnerable," "others are like me," thus "others = vulnerable warranting protection." In this manner, the self may seek to maximize the health of humanity inclusive of itself, and therefore engaging in prosocial health behaviors creates an ultimate "positive externality" that benefits the whole of society. This understanding of others in terms of the self may thus support and motivate behavior that is aimed at benefiting others. These issues merit future empirical study.
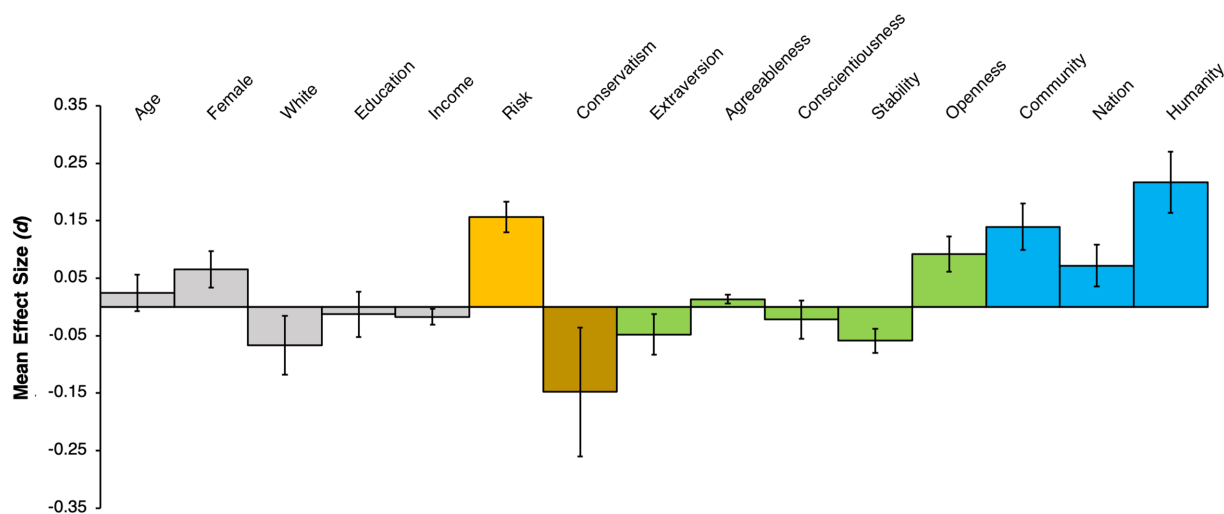
FIGURE 1
Mean effect sizes (estimated Cohen's *d*) of predictor variables for prosocial health behaviors across three studies. The predictors are grouped into five classes (indicated by color): demographics (grey), high risk (orange), conservatism (brown), Big 5 personality dimensions (green), identification with community, nation, and all humanity (blue). See main text for definitions of each variable. Positive values indicate that the predictor is associated with a higher score for the prosocial health behavior outcome measure. Error bars represent the standard error of the mean effect size.

Some of our results also suggest a role for political conservatism in predicting lower prosocial health behaviors, but this was significant only in Study 3 (Table 2), and therefore we do not wish to draw firm inferences about this pending further research. We acknowledge that in the U.S. context of our samples, the pandemic has been highly politicized (Gollwitzer et al., 2020) with those who identify as conservatives generally more opposed to health mandates than those identifying as liberals (DeMora et al., 2021; Baxter-King et al., 2022). This is probably not a cultural universal, given that conservative officials in some countries, e.g., Britain, played a role in enhancing their conservative constituents' compliance with COVID-19 health recommendations (Taraktaş et al., 2022), which suggests that an association between identification with all humanity and political ideology may be sensitive to cultural context and/or influenced by other as yet unidentified factors. Nonetheless, a (potential) association may be worth pursuing (cf. Sparkman, 2022), inasmuch as it is known that conservatives and liberals often operate with different sets of values (Graham et al., 2009), and identification with all humanity is negatively correlated with at least some right-wing ideologies (Hamer et al., 2019; McFarland et al., 2019).

We come now to a question about the specificity of the reported links between all humanity and prosocial health behaviors. There were also significant effects of identification with community on prosocial health behaviors, but only in Study 1 and 2, and significant effects of identification with nation on prosocial health behaviors, but only in Study 2 (Table 2). These patterns are similar to previous patterns of data in the pandemic (Barragan et al., 2021), suggesting that although identification with one's own community (Sparkman, 2022) and nation (Bonetto et al., 2021;

Van Bavel et al., 2022) can predict prosocial health behaviors, identification with all humanity seems to be a more consistent predictor. Examining these identifications in tandem with other techniques for measuring identifications with broad social groups (Hamer et al., 2021; Carmona et al., 2022), could prove fruitful. We also note the importance of cultural context: For example, some nations have had strikingly robust governmental responses to the crisis (e.g., China, Israel, New Zealand). It may be the case that, if a nation takes such approaches and a person identifies highly with the nation, their identification with the nation may predict their prosocial health behaviors to a greater extent than might be the case in countries that do not adopt such a robust stance on the pandemic. More generally, cross-cultural work has the potential to greatly expand our theoretical perspectives. Research involving identification with all humanity is increasingly being conducted in multiple cultures (e.g., Deng, 2021; Hamer et al., 2021; Feng et al., 2022; Marchlewska et al., 2022), and it would be fruitful to examine the generalizability of the effects reported here outside the U.S. context.

An additional pattern is that we did not generally find that Big Five personality dimensions predicted prosocial COVID-19 health behaviors; the patterns were mostly non-significant, and also inconsistent (Table 2). At the same time, we note that research using more comprehensive Big Five questionnaires than used in the current study (e.g., the 60-item version, Soto and John, 2017) reported significant correlations between some of the Big Five dimensions and prosocial health behaviors during COVID-19 (Bogg and Milad, 2020; Zettler et al., 2022). This raises at least three issues. First, Big Five personality dimensions may be detectable as significant predictors of prosocial health behaviors but shortened assessments of the Big 5 may not

be sufficiently sensitive. Second, it is possible that Big 5 may not be a significant predictor of prosocial health behaviors during COVID-19 when measures of social identifications and large number of covariates are taken into account in the model (as in our study). Third, other research examining the effect of personality on responding to the pandemic has suggested that different personality factors may be more or less predictive at different phases of the pandemic (Wright and Fancourt, 2021; Daniel et al., 2022). These complexities merit further testing to more closely examine how personality predicts prosocial health behaviors, under what circumstances, and when controlling for which other covariates.

6.2. Limitations and future directions

Although these studies have notable strengths, we acknowledge that there are a number of limitations. First, the study populations were obtained through Amazon Turk and Prolific, and the results may only be applicable to people who choose to take online surveys for the compensation offered on these platforms. As shown in Table 1, the Amazon Turk samples (Study 1 and 2) tended to have fewer women and more Whites than the Prolific sample (Study 3). Both platforms had fewer Hispanic/Latinx respondents and higher educational attainment than in the general U.S. population. For this reason, it would be judicious for future research to recruit samples that more closely mirror the general population in addition to using additional surveying methodologies, e.g., large-scale random probability sampling. Yet, despite the differences between the Amazon Turk and the Prolific samples, what is notable is that with both platforms, identification with all humanity is a significant psychological predictor of prosocial health behaviors—a finding that fits well with cross-cultural work examining constructs related to identification with all humanity (Chen et al., 2022).

Second, we did not examine the full scale of identification with all humanity. Although initially proposed as a unidimensional construct (McFarland et al., 2012), the identification with all humanity scale is increasingly considered to be comprised of two subfactors (Reese et al., 2015; Sparkman and Hamer, 2020; Hamer et al., 2021; Sparkman, 2022). In the current research, we examined the four items sometimes described as subfactor "global self-investment" or "concern for all humanity" rather than the "global self-definition" or "bond with all humanity" subfactor. As such, the current research does not address the full construct originally discussed by McFarland et al. (2012), and it is important to consider that the bond with all humanity subfactor may not consistently predict multiple dimensions of prosociality during COVID-19 (Sparkman, 2022). Rather, it is the four items forming a concern with all humanity subscale of identification with all humanity that may most consistently predict prosocial health behaviors during the pandemic.

Third, although the effect sizes in the current work could be described as "small" (Cohen, 1988), more recent meta-analyses

of the literature on individual differences suggest that these effect sizes may more appropriately be classified as "medium"—typical effect sizes for individual differences research that predicts meaningful health and lifetime achievement outcomes (Gignac and Szodorai, 2016). Additionally, whether the effect is classified as "small" or "medium," what is key is that identification with all humanity is the most robust/consequential predictor in these studies of the motivation to protect the health of strangers, suggesting the potential practical importance of the effect (see Conclusion).

Fourth, our outcome measure was a composite of two items (about masks and physical distancing) that were designed to tap salient contemporary issues and to be suitable for rapid online testing. We acknowledge that a larger and more nuanced battery of outcome measures would have been desirable to allow us, for example, to more clearly differentiate the degree to which respondents were concerned about protecting self versus protecting others. Relatedly, some of our predictor variables were single-item measures, e.g., the conservativism and the high risk variables, and it would be useful to test whether multi-item assessments of these constructs yield the same patterns. Indeed, research shows that simple, single-items scales of political ideology are problematic (Bauer et al., 2017; Wojcik et al., 2021), and it is known that political ideology has multiple dimensions, including sociocultural and economic dimensions (Johnston and Ollerenshaw, 2020). Future research involving identification with all humanity and prosocial health behaviors should take this multidimensionality into account.

Fifth, this work is purely correlational in nature. Although the studies show that identification with all humanity consistently predicts self-reported motivation for prosocial health behaviors, they do not demonstrate that identification with all humanity induces prosocial health behaviors. This begs the question: Is there a possibility that an intervention that promotes identification with all humanity will cause great prosocial health behaviors directed towards the welfare of others? Some studies suggest that identification with all humanity can be experimentally manipulated (Reese et al., 2015), but this has not always replicated (Reysen et al., 2021; Sparkman et al., 2022). Nevertheless, it is known that some social identities are modifiable through experimental treatments (Walton and Cohen, 2011; Belmi et al., 2015; Brady et al., 2020) and further experimental research would be desirable before concluding that identification with all humanity can or cannot have a causal impact on important health outcomes, such as the prosocial health behaviors measured here.

6.3. What are the developmental roots of identifying with all humanity?

We are particularly interested in extending this research in a new direction, towards the *child developmental origins* of identification with all humanity. This identification seems to be clearly in place by late adolescence (Albarello et al., 2021).

Maslow (1970) considered adults' feelings of affection for a wide circle of others, including strangers, as an aspect of reaching high levels of psychological well-being that might be influenced by childhood experiences. However, we know of no research directly examining the possibility that parents' level of identification with all humanity may have a measurable effect on children's developing prosociality (cf., Hagel et al.'s, 2022 work on people's memories of their parents). Consistent with proposals by McFarland et al. (2013), such an intergenerational process could occur, inasmuch as it has been shown that children's' expression of prosociality toward others is impacted by their caregivers (e.g., Bowlby, 1969; Barragan and Meltzoff, 2021), and in the pandemic, children may be receiving both implicit and explicit messages from parents related to showing care for others by engaging in prosocial health behaviors (e.g., mask wearing). At a more abstract level, some parents engage in behaviors that promote children viewing other people, even strangers, as "like me" (Meltzoff, 2013), and this may support and enhance a basic proclivity that is present in primitive form during infancy prior to formal verbal discussions with the child (Meltzoff and Moore, 1995; Barragan and Meltzoff, 2021). Future research is needed using direct assessments of parents' values, their verbal explanations to their children, and the children's own behavior to probe the potential intergenerational transmission of identification with all humanity and prosociality more generally.

7. Conclusion

Psychology plays a considerable role in human health (Taylor et al., 1997; Fredrickson, 2001), and the present research shows peoples' identification with all humanity is key to predicting their willingness to contribute to the health of *others*. That is, while much of social and personality psychology examines the nature and course of prosocial interactions within families, cultures, and societies (Keltner et al., 2014), the work on identification with all humanity is consistently suggesting that there is a portion of the population, across multiple cultures, that strives for showing concern not only for their kin, community, or country, but for all humans (McFarland and Hornsby, 2015; McFarland et al., 2019; Sparkman and Hamer, 2020; Barragan et al., 2021; Deng, 2021; Hamer et al., 2021; Wang et al., 2021; Feng et al., 2022; Zagefka, 2022).

We suggest that, alongside being a social identity (McFarland et al., 2012; Sparkman et al., 2022), this identification is a *generative belief*—a mental representation of accrued social-cultural-historical experience. Such broad beliefs ("mindsets") can engender or become stable patterns of behavior, i.e., "dispositions" or "personality," but they may also remain modifiable through environmental input (Cohen, 2003; Dweck, 2008). It is possible that future interventions may succeed in promoting both identification with all humanity as well as its (potential) prosocial behavioral sequelae. That is, by studying, understanding, and promoting identification with all humanity, societies may be able to strengthen their response to pan-human crises, including socioeconomic upheavals, climate catastrophes, and international conflicts.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Ethics statement

The studies involving human participants were reviewed and approved by University of Washington Human Subjects Division (HSD). Written informed consent for participation was not required for this study in accordance with the national legislation and the institutional requirements.

Author contributions

RCB and ANM conceptualized and developed the design of the studies. RCB conducted data collection and analyses. All authors contributed to the article and approved the submitted version.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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The role of early intergroup experiences for identification with all humanity in adulthood

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Identification with all humanity (IWAH), defined as a bond with and concern for people all over the world, predicts concern for global problems, commitment to human rights, and prosocial activities. However, it is still unknown how such a broad social identification develops and if early experiences play any role. Two studies explored the role of diverse childhood and adolescence intergroup experiences in predicting IWAH in adulthood. We focused on experiences such as being raised in diversity and having intergroup friends, helping or being helped by various others, and having experiences leading to re- or de-categorization, and introduced a new Childhood/Adolescent Intergroup Experiences (CAIE) scale. Study 1 (N = 313 U.S. students, M_{age} = 21) and Study 2 (N = 1,000, a representative Polish sample, M_{age} = 47) found that this kind of intergroup experiences during childhood and adolescence predicted IWAH beyond the effects of its other known predictors, such as empathy, openness to experience, universalism, right-wing authoritarianism, social dominance orientation or ethnocentrism. These results, obtained on various samples and in countries with different ethno-cultural contexts, point to potential ways of enlarging IWAH during childhood and adolescence.

KEYWORDS

identification with all humanity, global human identification, childhood, adolescence, early intergroup experiences, intergroup contact, parental styles

1. Introduction

Global social identifications [such as identification with all humanity (IWAH) or global citizenship] are concepts of the growing interest of researchers, practitioners, and the general population (for a review, see McFarland et al., 2019), and in recent decades there has been a surge in calls for education for "global citizenship" (UNESCO, 2014, n.d.). The relevance of studying and developing them worldwide is of growing importance, especially in our world fighting global problems which can be solved only by a global effort, such as climate change, refugee crisis, hunger, or the spread of the COVID-19 pandemic. And still, nationalism and a backlash against globalization have been increasing in many places (see, e.g., Huddy et al., 2021; Pástor and Veronesi, 2021). In this context, global human identification, Gandhi's belief that "All humanity is one undivided and indivisible family" can be seen as an important contrasting ideal.

The concept of identifying with all humanity has been present in psychological theories for decades. All humanity is considered the highest level of possible self-categorization in self-categorization theory (Turner, 1987). It also appeared in the classical works of Maslow (1954), where it was considered the highest level of self-actualization; Adler (1927/1954),

where it was a characteristic of the most mature individuals; Allport (1958) who claimed that without humanity becoming a common ingroup human conflict is endless and inevitable, and Erikson (1968) who perceived it as the desired direction of identity development. McFarland et al. (2012, 2019) describe IWAH as reflecting an active caring and concern for people all over the world and regarding them as members of one's ingroup. Assessed by the IWAH scale, it is a relatively stable individual disposition, distinct from personality, empathy, or universalism, which are among its predictors (McFarland et al., 2012, 2019; Hamer et al., 2019).

Global social identifications can be studied as individual dispositions or made situationally salient (see more in Hamer et al., 2019). In this manuscript, we use the former approach, aiming to explore the potential role of childhood and adolescence intergroup experiences in developing dispositional IWAH. More specifically, we ask if this broad identification can be enlarged by such experiences during childhood or adolescence to become a quality of individuals as adults. Because IWAH embodies a sense of connection with all people, regarding them as members of one's own group and within one's range of concern, early social intergroup experiences can likely either enhance or hinder its development. So far, despite researchers' efforts, there are hardly any results showing significant connections between early experiences and IWAH (for a review, see McFarland et al., 2019). Our paper brings a new contribution to this topic. In two cross-sectional studies (on 313 U.S. students and a representative sample of 1,000 Polish citizens) conducted in countries with different ethno-cultural contexts (see, e.g., Hamer et al., 2020), we test early experiences that might predict IWAH in adulthood, exploring socialization, as well as broader social experiences from school, neighborhood, and community, including interactions with adults, peers, and observations of interactions of others. Thus, we explore not only parental childrearing styles, which so far were not proven to be significant IWAH's predictors (McFarland et al., 2019) or weakly connected at best (Hamer, 2017) but also diverse intergroup experiences from childhood and adolescence that might have helped individuals become more aware of the common humanity and open up to diverse others and their needs, no matter what their "race" or ethnic and cultural background. Since such a broad social identification most probably emerges later in social (see, e.g., Maslow, 1954; Allport, 1958; Erikson, 1968) and cognitive development (Corenblum and Armstrong, 2012), we conducted our studies on adults, asking about their early experiences and measuring their IWAH.

1.1. Identification with all humanity

Individuals who strongly identify with all humanity declare feeling close to people all over the world, caring for them, and perceiving them as a single ingroup. IWAH predicts support for universal human rights, concern for global problems such as the spread of potentially dangerous diseases around the planet (e.g., COVID pandemic, Zika, etc.), refugee cris.es, poverty, global warming, and willingness to work toward solving them, an array of prosocial activities from donating blood and volunteering to humanitarian helping and supporting international charities (Hamer and Baran, 2022, July; McFarland, 2017a; McFarland et al., 2019; Sparkman and Hamer, 2020), support for refugees

(Bassett and Cleveland, 2019), cooperative health behavior and willingness to vaccinate during the COVID-19 pandemic (Barragan et al., 2021; Deng, 2021; Murphy et al., 2021; Marchlewska et al., 2022; Sparkman, 2022), sustainable behaviors (see, e.g., Der-Karabetian et al., 2014, 2018; Loy et al., 2021, 2022; Pong, 2021), and forgiveness toward former national enemies (Hamer et al., 2017, 2018). IWAH is also connected to greater knowledge of global humanitarian issues and actively learning about them, less tendency to dehumanize outgroups, and lower Islamophobia (Dunwoody and McFarland, 2018; McFarland et al., 2019; Sparkman and Hamer, 2020). A laboratory study showed the positive role of IWAH while performing tasks in inter-ethnic dyads (Hamer et al., 2022). Thus, enlarging this broad identification can be seen as potentially beneficial for societies and humanity (see e.g., UNESCO, 2014).

IWAH is also connected to political attitudes and collective action. While it gives mixed results regarding the connection to political orientations in different countries, studies conducted by Hamer and McFarland showed its negative relation with support for building a wall on the U.S.-Mexican border and isolationism and positive relation to granting U.S. citizenship to "Dreamers" and internationalism regarding humanitarian aid (McFarland et al., 2019). In the context of the COVID pandemic, Lantos et al. (2022) demonstrated that IWAH led not only to donation intentions toward vulnerable groups but also predicted political action intention to put pressure on politicians to make the best decisions for the community and challenge bad decisions.

Earlier research has shown that IWAH is positively predicted by dispositional empathy, openness to experience, and universalism and negatively predicted by ethnocentrism and its two main roots (Altemeyer, 1998), right-wing authoritarianism (RWA), and social dominance orientation (SDO; Hamer et al., 2019). It is negatively correlated with blind patriotism, indices of self-centeredness, psychopathy, and Machiavellianism (McFarland et al., 2012, 2019). It is related also to the positively perceived impact of globalization around the world, on one's own country, and world-minded value orientation (i.e., a concern for the welfare of people around the world, sharing of resources, tolerance of diversity, and international cooperation; see Der-Karabetian et al., 2018).

But how can global human identification be developed? Do early intergroup experiences contribute to IWAH in adults? So far, only Hamer (2017) found a weak but significant correlation between IWAH and the father and mother giving autonomy and acceptance to a child for both student and representative national Polish samples. McFarland et al. (2013) found no relationships between seven general parenting factors (e.g., punitive, affectionate, spoiling, religious) and IWAH. We decided to explore this issue further, thus focusing on diverse types of early intergroup experiences rather than just general parenting styles, exploring both socialization and broader social experiences from school, neighborhood, and community.

1.2. Potential role of early social experiences

There are empirical and theoretical reasons to think that early social experiences can shape openness toward other people and, thus, the breadth of social identifications. Evidence suggests that

children show signs of intergroup biases from early childhood and that these biases increase with age (Raabe and Beelmann, 2011; Skinner and Meltzoff, 2019). Ingroup favoritism among children appears early: 2 days-old newborns already prefer to listen to the speech stream of their native language (Moon et al., 1993), while 3-month-olds prefer own-race faces (Bar-Haim et al., 2006). Further, 4-year-olds show biases in favor of own-gender children (e.g., Cvencek et al., 2011), and 5-year-olds prefer to befriend native speakers of their own language than children with foreign accents (Kinzler et al., 2009). In studies by Renno and Shutts (2015), "White" 3-year-olds gave more resources to unfamiliar "White" than to unfamiliar "Black" children and to unfamiliar same-gender than unfamiliar other-gender children. Chinese and African pupils ages 4–5 attending ethnically homogeneous or heterogeneous kindergartens already correctly identified themselves with their own ethnic group and recognized the ethnicity of dolls (De Caroli et al., 2013). McLoughlin et al. (2018) noted childhood dehumanization of members of geographically-based or gender outgroups: 5- and 6-year-olds presented explicit ingroup preferences, while 6-year-olds also showed a tendency to perceive ambiguous morph faces as less human when they belonged to an outgroup. In another study, 6-year-olds produced a greater diversity of mental state terms when talking about their own social group (McLoughlin and Over, 2017). An international study showed that preference for the national ingroup appears by 6 years of age in all national groups (Barrett et al., 2004; see also Ruble et al., 2004). Therefore, it can be concluded that research demonstrated ingroup favoritism appearing already during childhood.

Moreover, developmental psychologists argue that this early stage of life is an optimal developmental phase to intervene upon intergroup biases before these become entrenched patterns of thought and behavior, as it is harder to change these biases in adulthood (Lee et al., 2017; Skinner and Meltzoff, 2019). A few studies proved it to be successful. Bar-Haim et al. (2006) experimentally showed that preference for own-race faces is moderated by infants' exposure to members of other races in the immediate social environment – when it is diverse, there is no ingroup preference. Other research has shown the effectiveness of extended contact (knowing of ingroup members being friends with outgroup members) even for 5-year-olds, which improved their attitudes toward refugees (Cameron et al., 2006). Based on this research, it is plausible that early experiences that expose children and young adolescents to positive contact with persons of different groups can help offset these intergroup biases and provide a foundation for IWAH.

1.3. What type of experiences during childhood and adolescence can help build identification with all humanity?

Using an example of ethnic identity, Corenblum and Armstrong (2012) argue that in children and young adolescents, the social identity reflects attitudes and emotional reactions of significant others, their socialization efforts, as well as broader acculturation processes present at school, in neighborhoods, and community. We believe it may also be true for IWAH. Below

we present the results of our search for potential clues on what type of experiences during childhood and adolescence can help build IWAH in three areas: (a) research on intergroup contact, (b) research on the influence of adults regarding intergroup attitudes (thus understood broader than just parental styles), (c) early experiences described in biographies of people meritorious for human rights or saving others' lives.

1.3.1. Intergroup contact

Intergroup contact has long been considered one of the most effective strategies for improving intergroup relations (Dovidio et al., 2003; Pettigrew and Tropp, 2006). The basic assumption of the intergroup contact theory is that "interactions between members of different groups improve attitudes toward the other group(s) and thus reduce intergroup tensions. The contact approach provides a clear and concise guideline for systematic interventions: to improve interethnic relations, persons with different ethnic backgrounds should be brought in direct (i.e., face-to-face) contact or should experience indirect (i.e., contact without face-to-face interactions)" (Lemmer and Wagner, 2015, p. 152) or imaginary contact (see a meta-analysis by Miles and Crisp, 2014; see also Smith and Minescu, 2022).

As the meta-analysis by Pettigrew et al. (2011) shows, intergroup contact typically reduces prejudice through increased empathy and reduced anxiety in intergroup interactions. Among the positive outcomes, there is also increased intergroup trust. Moreover, these effects typically generalize to the whole outgroup, other situations, and even to other outgroups not involved in the contact. These positive outcomes also appear to be universal and replicated across nations, genders, and age groups. Since more prejudiced people are less prone to include all humans in their group (see, e.g., Sparkman and Hamer, 2020), it is reasonable to assume that early intergroup contact, which lowers prejudice and increases trust, may also have positive effects on forming IWAH.

The quality of contact appears important as well: Positive experiences and cooperation with outgroup members reduce intergroup bias more than do less positive experiences (Pettigrew et al., 2011; Skinner and Meltzoff, 2019). Studies by Wolsko et al. (2003) and Voci and Hewstone (2003) reveal how intergroup contact not only reduces prejudice but also undermines group stereotypes, increasing the perceived variability of persons in outgroups. However, a review of the effects of intergroup contact on ethnic relations prepared by Amir (1969) showed that only "favorable" conditions tend to reduce prejudice, while "unfavorable" tend to increase intergroup tension and prejudice.

Additionally, interpersonal interactions enable de-categorization, leading to greater attention to the unique attributes of team members instead of focusing on their outgroup membership (Ensari and Miller, 2001). Studies show the benefits of teaching de-categorization (for primary school pupils, see, e.g., Jones and Foley, 2003). Interpersonal interactions also enable seeing shared commonalities, thus recategorization, which means adopting a superordinate level of categorization, common for both ingroup and outgroup. Common Ingroup Identity Model (Gaertner et al., 1989; Gaertner and Dovidio, 2000) research shows the beneficial effects of strengthening one-group representations while weakening separate-group representations. It demonstrates how the situational activation of a broad social identification (e.g., with "humans") positively affects attitudes toward former outgroup

members, who now become fellow members of a common ingroup. Eller and Abrams (2003) found that more intergroup contact in social settings predicted weaker separate group representations, which in turn predicted lower levels of prejudice. Stronger superordinate, one-group representations predicted lower levels of intergroup anxiety and more favorable outgroup evaluations. Levin et al. (2003) longitudinal study revealed that a common ingroup identity (i.e., a one-group representation) leads, over time, to an increased formation of "outgroup" friendships.

As various meta-analyses have shown, intergroup friendship is particularly important in reducing prejudice (e.g., Pettigrew et al., 2011), especially when cross-group friendships involve socializing and more time spent together (Davies et al., 2011). Even having a friend who has an outgroup friend (thus, indirect contact) reduces prejudice (Pettigrew et al., 2011).

Based on these considerations, we hypothesize that early intergroup contact would contribute to developing IWAH.

There is also research directly linking intergroup contact to IWAH, although in adulthood. German participants who imagined engaging in a simulated chat with a Paraguayan had higher IWAH scores as compared to a control group (Römpke et al., 2018). Studies on U.S. samples found that having more contact and experiences with people from foreign cultures and their cultural elements (art, music, cuisine, etc.) was associated with a stronger bond with all humanity (Sparkman and Eidelman, 2018), and studies on a Polish nationwide sample confirmed these results also for concern for all humanity (Sparkman and Hamer, 2020). A study on IWAH and traveling (Loy et al., 2021) showed that the quantity and experienced quality of contact with local people met during international journeys were positively related to IWAH. Further, increasing international salience *via* exposure to posters of the globe or flags of different countries increased concern with all humanity compared to a control group and resulted in giving more money to global and local charities (Reese et al., 2015). Similar results were obtained for other measures of global attachment: increasing international salience *via* exposition to news about People's World Peace Project (an organization working for a global peace community) caused a significant increase in the sense of global community compared to ordinary news or news about fashion (de Rivera and Mahoney, 2018).

Since we know from these studies that intergroup contact in adulthood (real or imagined) is positively connected to IWAH (or even has the potential to enlarge it), it is time to research its potential role in childhood and adolescence, which is the aim of our current research.

1.3.2. The influence of adults

Children often acquire biased or unbiased attitudes and behaviors from observing the behavior of trusted adults, from parental socialization messages and unintended cues (e.g., non-verbal signals; Skinner and Meltzoff, 2019). Research has shown that children's attitudes toward others are more affected by parents' behaviors than by their words. Parental intergroup friendships are associated with less intergroup bias among children (Pahlke et al., 2012), while there is only a weak relationship between the memories of parents' providing children with information about intergroup relations and children's prejudices (Skinner and Meltzoff, 2019). On the other hand, studies have found that children's implicit (but not explicit) racial biases were consistent with their parent's

explicit racial biases (Sinclair et al., 2005; Pirchio et al., 2018). Other results have shown that children's explicit intergroup biases were consistent with parents and other close adults' implicit intergroup biases (Skinner and Meltzoff, 2019).

Teaching values and empathy (especially if not only by words but also modeled) can also be beneficial (Stepien and Baernstein, 2006; UNESCO, 2014; Malti et al., 2016). According to Duriez et al. (2005, p. 317), "educational programs that try to tackle the societal problem of prejudice by promoting certain values will never be entirely successful unless they focus simultaneously on the promotion of Openness to Change and Self-Transcendence values." Brito-Pons et al. (2018) found that adults' participation in a 9 week Compassion Cultivation Training program that taught empathy, embracing shared common humanity and compassion toward all beings, enhanced both participants' empathic concern and IWAH scores.

On the basis of these considerations, we assume that parents/caretakers having intergroup friendships, promoting being open to all, intended or unintended, and teaching empathy and universalistic values can contribute to developing IWAH in children and adolescents. We would distinguish, however, between parents' general styles of childrearing and their specific teaching of empathy and openness toward all. From previous research, we know that RWA and SDO are IWAH's predictors (Dunwoody and McFarland, 2018; Hamer et al., 2019; McFarland et al., 2019). On the other hand, Duckitt (2001) claimed that punitive socialization lies in the roots of RWA, while unaffectionate socialization lies in the roots of SDO. Thus, we use Duckitt's socialization practices scale to test if parental practices (punitive and unaffectionate) or maybe rather early experiences significantly contribute to IWAH in adulthood. We hypothesize that whether parents are strict or lenient, affectionate or unaffectionate, may be less important for the development of IWAH (see McFarland et al., 2019) than the specific opportunities for intergroup contact and teachings they impart.

1.3.3. Experiences of people meritorious for human rights or saving others

While reading biographies or interviews with individuals who were meritorious for human rights or helping others during WW2, one often sees sentences showing their high IWAH. Monroe (1996) summarizes her interviews with altruists who rescued Jews and others during WW2 as follows:

> *Altruists seem to conceive of themselves as part of all mankind rather than as members of any particular group or subgroup. This perception of themselves as part of common humanity and not personalistic or empathic ties to family, gender, and religious, national, or ethnic groups, most aptly captures the systematic and consistent differences between paradigmatic rational actors and altruists (Monroe, 1996, p. 204).*

> *The idea of being welded together, of belonging to one human family, surfaced over and over again in my interviews; indeed, I was struck by the similarity of expressions used (Monroe, 1996, p. 205).*

Individuals distinguished for their contributions to human rights also show their connection with all humanity in writings, interviews, or memoirs (McFarland, 2022). What patterns can one discover in their early experiences, potentially enlarging their social IWAH? Below we present our conclusions from analyzing selected examples of biographies of (1) people meritorious for human rights (chosen from the book *Heroes of Human Rights* by McFarland, 2022) or (2) people known for risking their lives to save "others."

Being raised or educated in diversity and *having intergroup friends* are common memories of people who saved the lives of others during WW2 or/and were meritorious for contributions to human rights. We find these recollections in the lives of Raphael Lemkin, who coined the term "genocide" and fought for many years to make it an international crime (McFarland and Hamer, 2016), Japanese consul Chiune Sugihara (later known as Sempo Sugiwara), who saved around 10,000 Jews by giving them Japanese visas during WW2 to escape to safety (Levine, 2019), Irena Sendler, Polish Righteous Among the Nations, who was a mastermind behind the action to rescue several hundreds of Jewish children from the Warsaw ghetto during WW2 (Mieszkowska, 2018), and Jean Henry Dunant, who led in creating the First Geneva Convention, on treating war wounded, requiring that both the enemy's and one's own wounded to be treated, and the International Red Cross to provide this treatment (Moorehead, 1999).

Another recurring memory is *being moved by seeing the suffering* of other people (including outgroups), which relates to what we can label as empathy-related responding (Malti et al., 2016). Raphael Lemkin remembered being deeply moved by the suffering of others while as a child reading about the atrocities of the Romans toward the Christians under Nero, or "the French king, who watched the hanging of the Huguenots from his balcony. Ordered more light on the scene so that he might better see the tormented faces of the dying." (McFarland and Hamer, 2016, p. 70). While still a child, Lemkin heard of a pogrom against Jews in Bialystok, a nearby city, in which "the mobs opened the stomachs of their victims and stuffed them with the feathers from the pillows and the feather comforters." (McFarland and Hamer, 2016, p. 70). From these experiences, Lemkin learned that "a line of blood led from the Roman arena through the gallows of France to the pogrom at Bialystok." (McFarland and Hamer, 2016, p. 70). As a result, he "grew up with a strong sense of feeling that persecution must cease and that justice and love will finally prevail" (Lemkin, 2013, pp. 17–18). This belief was strengthened while learning about the massacre of more than 1,200,000 Armenians committed by the Turkish Interior Minister Pasha, which led Lemkin to coin the term "genocide" and to lead the struggle to create the 1948 U.N. *Convention on the Prevention and Punishment of the Crime of Genocide* (McFarland and Hamer, 2016).

Being moved by seeing the suffering of others appears also in Henry Dunant's memories of the horrors of the 1859 Battle of Solferino (McFarland, 2017b) and of Chiune Sugihara, who, during his service in Manchuria, could not stand Japanese atrocities toward Chinese and, as an act of protest, submitted his resignation (Gmitrzak, 2010). The later suffering of Jews fleeing Poland during WW2 was Sugihara's main reason for granting them Japanese visas against the decision of his own government, which ruined his diplomatic carrier and risked his life (Levine, 2019). As he said, "After struggling and agonizing, I concluded that humanity is

paramount. Then, fearing nothing, I decided to issue those visas" (Sugihara, n.d.).

Adults teaching children and adolescents to pay attention to the suffering of others and to be empathetic toward all is another common pattern we find in these biographies. Sugihara attended the famous Goko national academy founded by Shimpei Goko, who also established its code to take care of others and not expect rewards for one's own goodness (Levine, 2019). Helping others in need was an important value during Henry Dunant's childhood in Geneva. He had seen his parents help the sick, poor, orphans, and prison parolees. Following their example, as a late teen, he joined the Geneva Society for Alms Giving, volunteering time to care for the sick and poor and prisoners.

Eleanor Roosevelt, one of the key authors of the *Universal Declaration of Human Rights*, also as a child learned about the suffering of those around her and was taught to help:

> *Very early I became conscious of the fact that there were people around me who suffered in one way or another. I was five or six when my father took me to help serve Thanksgiving dinner in one of the newsboys' clubhouses. My father explained that many of these ragged little boys had no homes and lived in little wooden shanties in empty lots, or slept in vestibules of houses or public buildings, anyplace where they could be moderately warm. I was not in ignorance that there were sharp contrasts, even though our lives were blessed with plenty* (Roosevelt, 1961, pp. 12—13).

As a result, Roosevelt devoted great effort throughout her life to ending the suffering and mistreatment of others, both for fellow Americans and for all people (McFarland, 2014).

We find a similar pattern in other biographies. When Robert Bernstein, a founder of Human Rights Watch was just 10 years old, a governess who worked for his wealthy New York City family took him on weekends to Central Park where they would visit encampments of "men and women wearing ragged clothes stooped over little cooking fires." As he wrote in his autobiography, "I began to realize that a lot of people had it very rough in the world" (Bernstein, 2016, p. 5). Bernstein carried this lesson with him throughout his life, leading him to create Human Rights Watch, which monitors human rights abuses around the world.

Irena Sendler, known for saving more than 2,500 children from the Warsaw Ghetto during WW2, remembered that her parents' house was always open for those in need. Her physician father often treated poor farmers and Jews free of charge, saying that if someone needed help, one needed to provide it. She recalled: "I was raised to believe that the question of religion, nation, belonging to any race is of no importance – it's a human being that matters!" (Dzięciołowska, 2018). As a child, she played with poor Jewish friends. Later, at Warsaw University, she opposed the practice of segregating Jewish students. During WW2, she helped both wounded Polish soldiers and Jews, who were then officially served only by the Jewish institutions. Later, she helped smuggle clothing, food, and other necessities into the Warsaw Ghetto. Risking her life, she helped the Jews who escaped the ghetto and helped smuggle children out of it.

Not only intergroup contact but also *being helped by an outgroup member* appears to be another factor enabling common ingroup identification of humans. An example may be the

experience of Franz Uri Boas, later known as the "Father of American Anthropology," whose crusade against "scientific" racism was a breakthrough in modern anthropology. Being 23 years old at the time, on his first expedition to study the Inuit Eskimo on Baffin Island, he once wandered lost and frozen. The Inuit saved him, taking him into a warm igloo and feeding him, sharing what they had. This experience made Boas see the humanity of the peoples he would continue to study. He wrote, "the Eskimo is a man as we are; his feelings, his virtues, and his shortcomings are based on human nature, like ours" (Hyatt, 1990, p. 10).

These abovementioned early life experiences are biographical examples of how social identity could be shaped by socialization and broader social experiences in families, at schools, in neighborhoods, and community. We decided to include these types of experiences in our studies and check if they can be connected to IWAH in adulthood.

1.4. Current research

The goal of the current research was to empirically test the connection between recollections of childhood and adolescent intergroup experiences that might have the effect of increasing awareness of common humanity and concern for a wider range of people, fostering the development of dispositional IWAH as a quality seen in adulthood. We decided to study adults and assess their memories because, as we have mentioned before, such a broad social identification most probably emerges later in social (see, e.g., Maslow, 1954; Allport, 1958; Erikson, 1968) and cognitive development (Corenblum and Armstrong, 2012).

We included a range of intergroup experiences, such as interactions with adults and peers and observations of interactions of others. Based on the considerations presented in the introduction (see section 1.3), we created Childhood/Adolescent Intergroup Experiences (CAIE) scale depicting experiences that could have the possible effect of increasing awareness of common humanity and concern for a wider range of people, enabling the development of IWAH. We chose those which were found as important in the research we described in the introduction, that repeatedly appeared in numerous biographies, or were considered almost as forming experiences (such as being saved by an outgroup member).

More specifically, we included items regarding experiences related to being raised in diversity and having intergroup friends ("*I grew up having friends from different cultural or/and ethnic background from my own,*" "*I grew up in an environment with people from different cultural or/and ethnic background present or visiting*"), being taught empathy ("*My parents/caregivers taught me how to be empathetic toward all people*") and compassion for all, also by experiencing suffering of others ("*I deeply experienced suffering of someone from a different cultural or/and ethnic background during my childhood or adolescence;*" "*During my childhood or adolescence I did not like it when a person from different cultural or/and ethnic background was discriminated against.*"), experiences involving helping or being helped by various others ("*During my childhood or adolescence, a person from a different cultural or ethnic background helped me when I needed support,*" "*During my childhood or adolescence a person from different cultural or/and*

ethnic background helped a person from my group when s/he needed support"), and those leading to re- or de-categorization ("*During my childhood or adolescence, I had an experience showing me that skin color, attractiveness, body built, or other 'trivial' differences between people do not really matter compared to their personality,*" "*I had an "opening up" experience with people from different cultural or/and ethnic background during my childhood or adolescence*").

In the following studies, we tested if such experiences predict IWAH beyond the possible role of general parenting styles (study 1) and known IWAH predictors (study 1 and 2), such as empathy (especially perspective taking and empathic concern), openness to experience, the value of universalism, right-wing authoritarianism (RWA), social dominance orientation (SDO), and ethnocentrism (see Hamer et al., 2019; McFarland et al., 2019).

2. Study 1

We formed three hypotheses to test in this study:

H1. Adults with more childhood and adolescent intergroup experiences opening them up to others will have higher IWAH than adults with fewer experiences of this kind.

H2. These kinds of childhood and adolescent intergroup experiences contribute more to IWAH in adulthood than do general parenting styles.

H3. These kinds of childhood and adolescent intergroup experiences contribute to IWAH in adulthood beyond other predictors of IWAH, including openness to experience, dispositional empathy, universal values, right-wing authoritarianism, social dominance orientation, and ethnocentrism.

2.1. Method

2.1.1. Participants

The participants consisted of 313 U.S. junior and senior students at a public university in Kentucky, 72% female, ages 18–73 ($M = 21$, $SD = 5.5$), 88% White, 3.5% African-American, 2.6% Hispanic, 2.2% Asian, 2.2% mixed, all U.S. citizens, who took part in an anonymous survey *via* Survey Monkey. Students could participate in a drawing for cash prizes as a reward for taking part in this study.

2.1.2. Measures
2.1.2.1. Early intergroup experiences

To measure childhood and adolescent intergroup experiences, we used our own nine-item Childhood/Adolescent Intergroup Experiences (CAIE) scale, described in section 1.4 (for the whole scale, see the **Supplementary material 1.1**). The scale assesses the adults' memories of their own intergroup experiences from childhood and adolescence that might have the effect of increasing awareness of common humanity and concern for a wider range of people. The responses were coded on a 4-point scale from 1 (*This statement does not describe me at all*) to 4 (*This statement very much describes me*).

TABLE 1 Structure matrix for the full 9-item CAIE scale (study 1, the USA, and study 2, Poland).

Structure matrix	USA Component			Poland Component	
	1	2	3	1	2
1. I grew up having friends from different cultural or/and ethnic background from my own.	**0.797**	0.107	0.4	**0.821**	0.305
2. My parents/caregivers taught me to be empathetic toward all people.	0.122	0.789	−0.059	0.343	0.885
3. I had an "opening up" experience with people from different cultural or/and ethnic background during my childhood or adolescence.	**0.421**	0.241	0.767	**0.814**	0.463
4. I deeply experienced suffering of someone from different cultural or/and ethnic background during my childhood or adolescence.	0.307	−0.035	0.816	**0.791**	0.476
5. I grew up in an environment with people from different cultural or/and ethnic background present or visiting.	**0.82**	0.151	0.311	**0.87**	0.397
6. During my childhood or adolescence a person from different cultural or/and ethnic background helped me when I needed support.	**0.858**	0.192	0.312	**0.873**	0.356
7. During my childhood or adolescence I did not like it when a person from different cultural or/and ethnic background was discriminated against.	**0.502**	0.567	0.086	**0.691**	0.57
8. During my childhood or adolescence a person from different cultural or/and ethnic background helped a person from my group when s/he needed support.	**0.808**	0.233	0.256	**0.868**	0.345
9. During my childhood or adolescence I had an experience showing me that skin color, attractiveness, body built or other "trivial" differences between people do not really matter compared to their personality.	0.215	0.693	0.445	**0.519**	0.828

Extraction method: Principal component analysis. Rotation method: Oblimin with Kaiser Normalization. Loadings > 0.4 in the first factor are bolded.

To examine the structure of the CAIE scale in the U.S. sample, we subjected all items to a principal components analysis (PCA) using direct oblimin rotation (see **Table 1**, and for full details see **Supplementary material 3**). Results of a scree plot suggest a multi-component solution (the eigenvalue of the first component was 3.56, with 40% of variance explained). Although no clear second factor was found, we decided to remove the items which loaded on the first factor < 0.4. It left us with six items out of the original 9. This time factor analysis showed a clear single-component solution (see **Table 2**) with an eigenvalue of 3.21, with 53.5% of variance explained. The mean scores of the six items constituted the CAIE-USA composite score. Cronbach's α for the shortened 6-item scale was = 0.82.

2.1.2.2. Identification with all humanity (IWAH)

IWAH was assessed with McFarland et al.'s (2019) original nine-item IWAH scale [e.g., "*How close do you feel to each of the following groups:*" (a) People in my community, (b) Americans, (c) people all over the world (scale: 1 - *not at all* to 5 - *very close*); "*How often do you use the word 'we' to refer to the following groups of people?*' (a) People in my community, (b) Americans, and (c) people all over the world (scale: 1 - *almost never* to 5 - *very often*)]. Mean scores from identification with "people all over the world" subscale constitute "raw" scores of IWAH (α = 0.81). However, following Dunwoody and McFarland (2018), we additionally used the "pure" IWAH measure to control for the IWAH correlations with remaining identifications (the mean of the IWAH items was regressed onto the means of the other identifications, and the standardized residual was the "pure" IWAH measure). We additionally analyzed the results of IWAH scale looking at its two subscales: bond with (items 1–4; α = 0.71), and concern for (items 6−9, α = 0.78) all humanity (see more in: Hamer et al., 2021).

2.1.2.3. Openness to experience

To measure openness to experience, we used 10 openness-to-experience items from a 60-item version of the HEXACO Personality Inventory-Revised (Ashton and Lee, 2009; e.g., "*I'm interested in learning about the history and politics of other countries,*" "*I like people who have unconventional views*"). The responses were coded on a 5-point scale from 1 (*strongly disagree*) to 5 (*strongly agree*). Cronbach's α = 0.80.

2.1.2.4. Universalism

To measure universalism, we used nine items from the universalism subscale of Schwartz's Portrait Values Questionnaire (Cieciuch and Schwartz, 2012; e.g., "*It is important to him/her to be tolerant toward all kinds of people and groups*"). Responses to the PVQ were made on a 6-point Likert-like scale ranging from 1 (*not like me at all*) to 6 (*very much like me*). Cronbach's α = 0.83.

2.1.2.5. Empathy

To assess dispositional empathy, we used the two highly correlated subscales from the Interpersonal Reactivity Index (IRI; Davis, 1994), previously found to predict IWAH (see Hamer et al., 2019): (1) perspective taking, defined as a tendency to spontaneously consider the psychological viewpoints of others (e.g., "*When I'm upset at someone, I usually try to 'put myself in his shoes' for a while*"), and (2) empathic concern, defined as a tendency to experience feelings of sympathy or compassion for unfortunate others (e.g., "*I often have tender, concerned feelings for people less fortunate than me*"). Each subscale consisted of seven items with a 5-point response scale ranging from 1 (*does not describe me well*) to 5 (*describes me well*). Cronbach's α for the 14-item scale = 0.83.

TABLE 2 Component matrix for the shortened CAIE-USA (study 1) and
CAIE-PL (study 2) scales.

Component matrix[a]		
	Component	Component
	USA	Poland
I grew up having friends from different cultural or/and ethnic background from my own.	0.807	0.799
I grew up in an environment with people from different cultural or/and ethnic background present or visiting.	0.804	0.861
During my childhood or adolescence a person from different cultural or/and ethnic background helped me when I needed support.	0.834	0.854
During my childhood or adolescence a person from different cultural or/and ethnic background helped a person from my group when s/he needed support.	0.786	0.849
I had an "opening up" experience with people from different cultural or/and ethnic background during my childhood or adolescence.	0.570	0.818
During my childhood or adolescence I did not like it when a person from different cultural or/and ethnic background was discriminated against.	0.524	0.727
I deeply experienced suffering of someone from different cultural or/and ethnic background during my childhood or adolescence.	–	0.806
During my childhood or adolescence I had an experience showing me that skin color, attractiveness, body built or other "trivial" differences between people do not really matter compared to their personality.	–	0.614

Extraction method: principal component analysis. [a], 1 components extracted.

2.1.2.6. Right-wing authoritarianism

Right-wing authoritarianism was measured using a 12-item version of Funke's (2005) three-dimensional RWA scale. It assesses three components of authoritarianism: aggression (e.g., "*What our country really needs is a strong, determined leader which will crush the evil and set us on our right way again*"), submission (e.g., "*Obedience and respect for authority are the most important values children should learn*") and conventionalism (e.g., "*The withdrawal from tradition will turn out to be a fatal fault one day*"). The responses were coded on a 5-point scale from 1 (*strongly disagree*) to 5 (*strongly agree*). Cronbach's α for the full scale was = 0.87.

2.1.2.7. Social dominance orientation

Social dominance orientation was assessed using a 15-item SDO scale (Pratto et al., 1994; e.g., "*It's ok if some groups have more of a chance in life than others*"; Cronbach's $\alpha = 0.92$). The responses were coded on a 5-point scale from 1 (*strongly disagree*) to 5 (*strongly agree*).

2.1.2.8. Ethnocentrism

To assess the ethnocentrism of participants, defined as unfavorable attitudes toward other groups, we used a short 6-item version of the Manitoba Ethnocentrism Scale (Altemeyer, 1996; e.g., "*It is simply a waste of time to train some races for good jobs; they simply don't have the drive and determination it takes to learn a complicated skill*"; Cronbach's $\alpha = 0.77$). The responses were coded on a 5-point scale from 1 (*strongly disagree*) to 5 (*strongly agree*).

2.1.2.9. Parenting socialization styles

We assessed the students' memories of their parents or other caregivers' socialization styles using Duckitt's (2001) measures of punitive and unaffectionate parenting styles. The six-item punitive style measure (Cronbach's $\alpha = 0.62$) consists of three items measuring harsh parenting (e.g., "*I was often physically punished in a painful manner while growing up*") and three assessing strict parenting (e.g., "*I was strictly disciplined while growing up*"), although the two subscales load on a single factor. The items from Duckitt's seven-item measure of unaffectionate socialization (e.g., "*I grew up in an unaffectionate environment*") load on a second factor (Cronbach's $\alpha = 0.86$). The responses were coded on a 4-point scale from 1 (*This statement does not describe me at all*) to 4 (*This statement very much describes me*), same as CAIE.

2.2. Results

Table 3 provides the correlations, means, and standard deviations of the measured variables. An inspection of the correlations reveals significant negative correlations between early intergroup experiences measured by CAIE-USA and RWA, and ethnocentrism (and statistical trend for SDO), and positive correlations between early intergroup experiences and all remaining variables: IWAH (both "pure" and "raw" scores), openness to experience, empathy (perspective taking and empathic concern) and universalism. All earlier predictors of IWAH (both "raw" and "pure" scores) correlated with it again in this sample. IWAH or CAIE-USA did not correlate with punitive and unaffectionate parenting socialization styles.

We conducted hierarchical regression analysis upon IWAH[1], in the first step considering all predictors apart from early experiences: openness, dispositional empathy, universalism, authoritarianism, social dominance, and ethnocentrism. In the second step, we added all variables measuring early experiences (parental styles and CAIE-USA) to see how they would contribute to the explained variance. As shown in Tables 4a, b, in regression analyses using either "pure" or "raw" IWAH scores, early experiences as assessed by the CAIE-USA predicted higher IWAH, confirming Hypothesis 1. These

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1 Additional regression analyses for IWAH factors (bond with and concern for all humanity) are presented in **Supplementary material 2**. CAIE-USA predicted bond, but not concern factor.

TABLE 3 Correlations, means, and standard deviations for measured variables (study 1).

Variables	1	2	3	4	5	6	7	8	9	10	11
1. IWAH "pure" scores	–	0.90**	0.26**	0.31**	−0.41**	−0.32**	−0.41**	0.46**	0.001	0.07	0.37**
2. IWAH "raw" scores		–	0.23**	0.39**	−0.30**	−0.13*	−0.31**	0.44**	−0.04	−0.02	0.25**
3. CAIE-USA			–	0.19**	−0.20**	−0.11*	−0.09^t	0.25**	0.07	0.06	0.17**
4. Empathy				–	−0.29**	−0.05	−0.38**	0.46**	−0.06	−0.05	0.29**
5. Ethnocentrism					–	0.53**	0.65**	−0.48**	0.07^t	−0.03	−0.38**
6. RWA						–	0.45**	−0.48**	0.03	−0.18**	−0.45**
7. SDO							–	−0.55**	0.05	−0.04	−0.36**
8. Universalism								–	−0.04	0.07	0.44**
9. Punitive P									–	0.51**	0.12*
10. Unaffected P										–	0.18**
11. Openness											–
M	0.11	3.42	2.62	3.82	2.85	2.83	1.92	4.54	2.14	1.64	3.52
SD	0.99	0.60	0.65	0.50	0.67	0.77	0.69	0.75	0.66	0.60	0.66

N = 313, M, mean; SD, standard deviation; ** $p < 0.01$, * $p < 0.05$, $^t p < 0.1$ (1-tailed). IWAH, identification with all humanity; CAIE, Childhood/Adolescent Intergroup Experiences scale; RWA, right wing authoritarianism; SDO, social dominance orientation; Punitive P, punitive parental style; Unaffected P, unaffected parental style.

early intergroup experiences measure still positively predicted IWAH (both "raw" and "pure" scores) beyond the effects of openness, dispositional empathy, universalism, authoritarianism, social dominance, and ethnocentrism, confirming Hypothesis 3.

Early experiences measured by the CAIE-USA correlated with IWAH and predicted it in a regression analysis, while parental socialization styles did not; therefore, Hypothesis 2 was also confirmed.

2.3. Discussion

Study 1 confirmed all three hypotheses. The analyses showed a positive relationship between early intergroup experiences (as described by the CAIE-USA scale) and IWAH. However, as expected, no relationship between IWAH and the parenting styles proposed by Duckitt (2001) was found, indicating that general parenting styles, even if underlying the development of RWA and SDO, do not catch the crucial early experiences responsible for developing IWAH. It was also found that early intergroup experiences described by the CAIE-USA positively predicted IWAH beyond the predictive roles of empathy, openness to experience, the value of universalism, RWA, SDO, and ethnocentrism. This is the first study to show a relationship between early social experiences and IWAH (see McFarland et al., 2019). These results indicate that while general parenting styles – harsh or not, strict or lenient, or affectionate or unaffectionate – have little if any effect upon later IWAH, opportunities to personally interact with people of different socio-cultural backgrounds and specific experiences it brings, do enhance thinking of all humanity as part of one's own ingroup, as members of common humanity.

3. Study 2

Study 2 was designed to test: (1) if the CAIE is also a significant predictor of IWAH on a nationwide representative

sample of adult participants and (2) in a different socio-cultural and ethnic context. While Study 1 was conducted on a U.S. university student sample, Study 2 was conducted on a representative nationwide sample of 1,000 Polish adult citizens. The United States and Poland differ on many cultural dimensions. One, especially relevant here, is social diversity. The U.S. is rather diverse while Poland is one of the most nationally and religiously homogeneous countries and its index of ethnic cohesion (more than 97%) is one of the highest in the world (Hamer et al., 2020). Will Hypotheses 1 and 3 from Study 1 also be confirmed even in such a homogenous country? We again assume that adults with more childhood and adolescent intergroup experiences have higher IWAH than adults with fewer experiences of this kind, even in such a homogenous country (Hypothesis 1); and that intergroup experiences still contribute to enlarging IWAH beyond other predictors of IWAH, such as openness to experience, dispositional empathy, universal values, RWA, SDO, and ethnocentrism (Hypothesis 3). Because parental socialization styles did not contribute to IWAH in Study 1, were not found predictive of IWAH in earlier studies (see McFarland et al., 2019), and for reasons of length limitations in the nationwide survey, we did not measure them in Study 2, and therefore did not reexamine Hypothesis 2.

3.1. Method

3.1.1. Participants

The measures were administered as a part of a larger study[2] to a nationally representative sample of 1,000 adult Polish citizens from all regions of the country with the Computer Assisted Personal Interviews (CAPI) method. The participants ranged in age from 18 to 84 years (M = 47.4, SD = 16), with 52% women, all White. The opinion poll company offered them chocolate as a "thank you" for completing the survey.

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2 A part of this sample has been used in previous studies (i.e., Sparkman and Hamer, 2020).

TABLE 4a Predictors of identification with all humanity (IWAH; "raw scores," Study 1).

Variables	Model 1			Model 2		
	β	B (SE)	95% CI	β	B (SE)	95% CI
Intercept		1.27 (0.41)	[0.46, 2.09]		1.22 (0.42)	[0.38, 2.05]
Openness to experience	0.06	0.06 (0.05)	[−0.05, 0.16]	0.06	0.06 (0.05)	[−0.05, 0.16]
Empathy	0.18**	0.21 (0.07)	[0.07, 0.35]	0.16**	0.20 (0.07)	[0.06, 0.34]
Universalism	0.33***	0.26 (0.05)	[0.15, 0.37]	0.31***	0.23 (0.06)	[0.14, 0.35]
RWA	0.15*	0.11 (0.05)	[0.01, 0.22]	0.14*	0.11 (0.05)	[0.01, 0.21]
SDO	−0.03	−0.02 (0.06)	[−0.14, 0.10]	−0.04	−0.04 (0.06)	[−0.16, 0.08]
Ethnocentrism	−0.13[t]	−0.11 (0.06)	[−0.24, 0.01]	−0.10	−0.09 (0.06)	[−0.22, 0.03]
CAIE-USA				0.10*	0.09 (0.05)	[0.00, 0.19]
Punitive P				−0.02	−0.02 (0.05)	[−0.13, 0.08]
Unaffected P				−0.02	−0.02 (0.06)	[−0.13, 0.10]
Adjusted R^2	0.24			0.25		
F	$F_{(6,306)} = 17.63$***			$F_{(9,303)} = 12.26$***		
ΔR^2	0.26			0.01		
ΔF				$F_{(3, 303)} = 1.39$		

$N = 313$, *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, [t] $p < 0.1$. IWAH, identification with all humanity; CAIE, Childhood/Adolescent Intergroup Experiences scale; RWA, right wing authoritarianism; SDO, social dominance orientation; Punitive P, punitive parental style; Unaffected P, unaffected parental style.

TABLE 4b Predictors of identification with all humanity (IWAH; "pure scores," study 1).

Variables	Model 1			Model 2		
	β	B (SE)	95% CI	β	B (SE)	95% CI
Intercept		−1.70 (0.67)	[−3.03, −0.38]		−1.97 (0.69)	[−3.33, −0.62]
Openness to experience	0.15**	0.23 (0.09)	[0.06, 0.39]	0.14*	0.21 (0.09)	[0.04, 0.38]
Empathy	0.08	0.17 (0.12)	[−0.06, 0.40]	0.07	0.14 (0.12)	[−0.08, 0.37]
Universalism	0.22**	0.29 (0.09)	[0.12, 0.47]	0.20**	0.26 (0.09)	[0.08, 0.43]
RWA	−0.02	−0.03 (0.08)	[−0.19, 0.14]	−0.02	−0.03 (0.09)	[−0.20, 0.14]
SDO	−0.09	−0.14 (0.10)	[−0.33, 0.06]	−0.12[t]	−0.17 (0.10)	[−0.37, 0.03]
Ethnocentrism	−0.14*	−0.21 (0.10)	[−0.41, −0.01]	−0.12[t]	−0.18 (0.10)	[−0.38, 0.02]
CAIE-USA				0.13**	0.20 (0.08)	[0.05, 0.35]
Harsh P				−0.007	−0.01 (0.09)	[−0.18, 0.16]
Unaffected P				0.02	0.03 (0.10)	[−0.16, 0.22]
Adjusted R^2	0.27			0.28		
F	$F_{(6,306)} = 20.58$***			$F_{(9,303)} = 14.69$***		
ΔR^2	0.29			0.02		
ΔF				$F_{(3, 303)} = 2.36$[t]		

$N = 313$, *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, [t] $p < 0.1$. IWAH, identification with all humanity; CAIE, Childhood/Adolescent Intergroup Experiences scale; RWA, right wing authoritarianism; SDO, social dominance orientation; Punitive P, punitive parental style; Unaffected P, unaffected parental style.

3.1.2. Measures

We used Polish language adaptations of the same measures as used in Study 1. With the exception of the CAIE, the response scales for all other measures were identical to the U.S. versions.

3.1.2.1. Early intergroup experiences

To measure childhood and adolescent experiences, we used our nine-item Childhood/Adolescent Intergroup Experiences (CAIE)

scale in Polish adaptation by the first author (α = 0.91, see **Supplementary material 1.2**). Responses to the CAIE were made on a 5-point scale ranging from 1 (*does not describe me well*) to 5 (*describes me well*).

To examine the structure of the CAIE scale in the Polish sample, we subjected all items to a principal components analysis (PCA) using direct oblimin rotation, as in Study 1. Results of a scree plot again suggest a single-component solution, which

explains a majority of the variance (the eigenvalue of this component was 5.27, 58.5% of variance explained; see **Table 1** and **Supplementary material 3** for details). Although no clear second factor was found, one item (*My parents/caregivers taught me to be empathetic toward all people*) loaded on the first factor < 0.4 and was removed, following the same strategy as in Study 1. It left us with eight items out of the original nine (see **Table 2**). The factor analysis for the 8-item scale showed a clear single-component solution with an eigenvalue of 5.06, with 63.16% of variance explained. The mean scores of the remaining 8 items constituted the CAIE-PL composite score. Cronbach's α for the shortened scale was = 0.91.

3.1.2.2. Universalism

Universalism was measured in the same way as in Study 1, using the Polish adaptation by Cieciuch and Schwartz (2012). Cronbach's α for the full scale = 0.86.

3.1.2.3. Empathy

Empathy (perspective-taking and empathic concern) was measured in the same way as in Study 1, by two subscales from IRI (Davis, 1994; the Polish adaptation by Kaźmierczak et al. (2007)). Cronbach's α for the full scale was = 0.74.

3.1.2.4. Identification with all humanity (IWAH)

To measure IWAH, we used the same scale as in Study 1 (IWAH, McFarland et al., 2012) but in the Polish adaptation by the first author (Hamer et al., 2021). Cronbach's α for the general "raw" IWAH = 0.92, for the IWAH bond = 0.89, and for the IWAH concern = 0.87.

3.1.2.5. Openness to experience

Openness to experience was measured in the same way as in Study 1, using the HEXACO PI-R in Polish adaptation by Szarota (1995; α = 0.71).

3.1.2.6. Right-wing authoritarianism

Right-wing authoritarianism was measured with the shortened scale (Funke, 2005) from Study 1, using six items in Polish adaptation by Bilewicz et al. (2017; α = 0.78).

3.1.2.7. Social dominance orientation

Social dominance orientation was measured using the same 15-item SDO scale (Pratto et al., 1994), using the Polish adaptation by Duriez et al. (2005), modified by the first author to match U.S. items, used in Study 1. Cronbach's α = 0.65.

3.1.2.8. Ethnocentrism

To assess the ethnocentrism, we used a shortened 3-item Polish version of a Manitoba Ethnocentrism Scale (Altemeyer, 1996) from study 1, in the Polish adaptation by the first author (α = 0.78).

3.2. Results

Table 5 provides the correlations, means, and standard deviations of all variables. An inspection of the correlations reveals significant negative correlations between early experiences measured by CAIE-PL with SDO, ethnocentrism (and statistical

trend for RWA), and positive correlations between early experiences and IWAH (both "pure" and "raw" scores), openness to experience, empathy (perspective taking and empathic concern), and universalism. Most earlier predictors of IWAH were again significantly correlated with it.

As in Study 1, we conducted hierarchical regression analysis upon IWAH[3], in the first step considering all predictors apart from early experiences: openness, dispositional empathy, universalism, authoritarianism, social dominance, and ethnocentrism. In the second step, we added the measure of the early experiences to see if it would contribute to the explained variance. **Tables 6a, b** show that early experiences, as assessed by the CAIE-PL, predicted higher IWAH in adulthood for both the "pure" or "raw" IWAH scores and did so beyond the effects of openness, universalism, authoritarianism, social dominance, and ethnocentrism. These results reconfirm Hypotheses 1 and 3, replicating Study 1 results in a different cultural context and on a representative sample of adult citizens.

3.3. Discussion

The results of Study 2 reconfirm two key results: Early intergroup experiences, as assessed by the CAIE-PL, are significantly related to IWAH in adulthood. Second, these intergroup experiences contribute to predicting IWAH beyond the power of its major predictors found in earlier studies. Also, because these results were found in a different culture, they offer evidence of the validity and cross-national consistency of these findings.

4. General discussion

Growing global problems, such as climate change, the COVID-19 pandemic, refugee crises, world hunger, and others, urge researchers, international organizations (such as, e.g., UNESCO), and the broader population to look for ways to resolve them. Earlier research shows that collective identity leads to positive actions, helps coordinate and create collective sources of support, mitigates against damaging behaviors, and collectivization in a time of emergency increases the chances of survival (Drury et al., 2019, 2020). In this context, IWAH, one of the broadest social identities, can be recognized as an important ideal to be developed. It predicts support for universal human rights, concern for global problems, positive attitudes toward different groups, and international and national prosocial activities, even in the times of crises such as the COVID-19 pandemic. Individuals who identify with all humanity feel closeness and care toward people all over the world and psychologically include them in their ingroup. The question if such a broad identification can be developed by childhood and adolescent experiences has remained unanswered until now. Despite researchers' efforts exploring parental styles in this context, almost no connections have been found, apart from only a weak

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3 Additional regression analyses for IWAH factors (bond with and concern for all humanity) are presented in **Supplementary material 2**. CAIE significantly predicted both IWAH bond and IWAH concern beyond other predictors.

TABLE 5 Correlations, means, and standard deviations for measured variables (study 2).

Variables	1	2	3	4	5	6	7	8	9
1. IWAH "pure" scores	–	0.84**	0.19**	0.06*	−0.24**	−0.19**	−0.04	0.11**	0.24**
2. IWAH "raw" scores		–	0.20**	0.24**	−0.16**	−0.04	−0.10**	0.26**	0.29**
3. CAIE-PL			–	0.16**	−0.06*	−0.05^t	−0.07**	0.10**	0.21**
4. Empathy				–	−0.01	−0.10**	−0.32**	0.55**	0.35**
5. Ethnocentrism					–	0.29**	0.14**	−0.02	−0.17**
6. RWA						–	0.05^t	−0.15**	−0.18**
7. SDO							–	−0.37**	−0.10**
8. Universalism								–	0.33**
9. Openness to experience									–
M	< 0.001	2.91	2.60	3.45	3.33	3.39	2.67	4.48	3.07
SD	1.0	0.80	1.0	0.49	0.90	0.72	0.37	0.72	0.59

N = 1,000, M, mean; SD, standard deviation. ** $p < 0.01$,* $p < 0.05$, $^t p < 0.1$ (1-tailed). IWAH, identification with all humanity; CAIE, Childhood/Adolescent Intergroup Experiences; RWA, right wing authoritarianism; SDO, social dominance orientation.

TABLE 6a Predictors of identification with all humanity (IWAH, "raw scores;" study 2).

Variables	Model 1			Model 2		
	β	B (SE)	95% CI	β	B (SE)	95% CI
Intercept		1.05 (0.33)	[0.41, 1.69]		0.94 (0.32)	[0.30, 1.57]
Openness to experience	0.19***	0.25 (0.05)	[0.16, 0.34]	0.16***	0.22 (0.05)	[0.13, 0.31]
Empathy	0.09*	0.15 (0.06)	[0.03, 0.27]	0.08*	0.13 (0.06)	[0.01, 0.24]
Universalism	0.16***	0.18 (0.04)	[0.10, 0.26]	0.17***	0.19 (0.04)	[0.10, 0.27]
RWA	0.003	0.003 (0.04)	[−0.07, 0.07]	−0.01	−0.01 (0.04)	[−0.08, 0.06]
SDO	0.03	0.06 (0.07)	[−0.08, 0.20]	0.03	0.07 (0.07)	[−0.07, 0.21]
Ethnocentrism	−0.14***	−0.12 (0.03)	[−0.18, −0.07]	−0.13***	−0.12 (0.03)	[−0.17, −0.06]
CAIE-PL				0.13***	0.11 (0.02)	[0.06, 0.15]
Adjusted R^2	0.13			0.15		
F	F (6, 993) = 26.49***			F (7, 992) = 25.98***		
ΔR^2	0.14			0.02		
ΔF				F (1, 993) = 19.91***		

N = 1,000, *** $p < 0.001$,* $p < 0.05$. IWAH, identification with all humanity; CAIE, Childhood/Adolescent Intergroup Experiences; RWA, right wing authoritarianism; SDO, social dominance orientation.

correlation between IWAH and both parents giving autonomy and acceptance to a child and a secure attachment style (Hamer, 2017; see also, McFarland et al., 2013, 2019). Lately, another study was published, showing weak connections between very general "positive parenting behavior" remembered by adult participants and their IWAH (Hagel et al., 2022).

Therefore, we proposed a different approach, expanding our focus from general parental styles to diverse childhood/adolescent intergroup experiences that might increase awareness of common humanity and concern for all people, no matter what their "race" or ethnic and cultural background. We tested early experiences that might predict IWAH in adulthood, exploring socialization, as well as broader social experiences from school, neighborhood, and community, including own interactions and observations of interactions of others that might have had this effect.

We focused on early experiences because research in developmental psychology has shown that childhood is an

optimal phase for intervening in intergroup biases before they become entrenched in thought and behavior (Lee et al., 2017; Skinner and Meltzoff, 2019). Intergroup contact is one of the ways to intervene. Experiments on infants show that social diversity can be beneficial from a very early age: seeing the faces of people from different ethnic origins prevents infants' perceptual narrowing in other-race recognition (Bar-Haim et al., 2006; Anzures et al., 2012). Research on intergroup contact, described in detail in the introduction section, is also very clear on its benefits for lowering stereotypes, prejudice, and intergroup anxiety and for improving intergroup attitudes, trust, and empathy. A few earlier studies showed the possible role of international contact experienced by adults in enlarging their IWAH (see section "1.3.1. Intergroup contact"). Our research has shown the potential benefits of early childhood and adolescence experiences for IWAH.

To find potential early experiences that might enlarge IWAH, we also examined research on parental influence, teaching values,

TABLE 6b Predictors of identification with all humanity (IWAH, "pure scores;" study 2).

Variables	Model 1			Model 2		
	β	B (SE)	95% CI	β	B (SE)	95% CI
Intercept		−0.37 (0.41)	[−1.18, 0.44]		−0.53 (0.41)	[−1.34, 0.28]
Openness to experience	0.17***	0.29 (0.06)	[0.17, 0.40]	0.14***	0.26 (0.06)	[0.12, 0.35]
Empathy	−0.04	−0.08 (0.08)	[−0.23, 0.07]	−0.06	−0.11 (0.08)	[−0.26, 0.03]
Universalism	0.12**	0.17 (0.05)	[0.06, 0.27]	0.12**	0.17 (0.05)	[0.07, 0.28]
RWA	−0.13***	−0.17 (0.05)	[−0.26, −0.09]	−0.14***	−0.19 (0.04)	[−0.28, −0.11]
SDO	0.04	0.11 (0.09)	[−0.06, 0.29]	0.05	0.13 (0.09)	[−0.05, 0.30]
Ethnocentrism	−0.18***	−0.20 (0.04)	[−0.27, −0.13]	−0.17***	−0.19 (0.04)	[−0.26, −0.13]
CAIE-PL				0.15***	0.15 (0.03)	[0.09, 0.21]
Adjusted R^2	0.11			0.13		
F	$F_{(6, 993)} = 21.88^{***}$			$F_{(7, 992)} = 22.80^{***}$		
ΔR^2	0.12			0.02		
ΔF				$F_{(1, 992)} = 25.14^{***}$		

$N = 1,000$, *** $p < 0.001$, ** $p < 0.01$. IWAH, identification with all humanity; CAIE, Childhood/Adolescent Intergroup Experiences; RWA, right wing authoritarianism; SDO, social dominance orientation.

and empathy. Moreover, we analyzed biographies of people meritorious for their human rights contributions or saving others' lives, who declared feeling closeness to all humanity, to see if we could find similar patterns in their early memories, potentially leading to developing such a broad human identity. On the basis of all these considerations, we introduced a new Childhood/Adolescent Intergroup Experiences (CAIE) scale. The CAIE assesses memory of being raised in diversity, helping or being helped by various others, and having experiences leading to re- or de-categorization. In two studies on different samples and in countries with different ethno-cultural contexts we tested the potential role of such childhood/adolescent experiences in opening up individuals toward others and considering all humanity as part of one's ingroup.

The results of Study 1, using 313 U.S. university student participants, showed that childhood/adolescent intergroup experiences, as described by the CAIE-USA scale, significantly predicted IWAH and did so beyond the power of the earlier known IWAH predictors, such as empathy, openness to experience, the value of universalism, right-wing authoritarianism (RWA), social dominance orientation (SDO), and ethnocentrism. To our knowledge, this is the first time such results on the connection between early experiences and IWAH have been obtained. In contrast, general parenting styles (punitive or unaffectionate parenting lying in the roots of RWA and SDO; see Duckitt, 2001), which we tested in Study 1, did not predict later IWAH scores (nor any of its factors). In light of previous failed efforts to find strong connections between parental rearing styles and IWAH (for a review, see McFarland et al., 2019), our results once again indicate that general parenting styles do not catch the crucial early experiences that contribute to the development of IWAH. Focusing on parents' or caregivers' attitudes and behaviors specifically related to IWAH seems more promising, which our results revealed. Also, Hagel et al. (2022), in a study published lately, showed that the extent to which participants perceived

their parents as global citizens explained about one-third of the variance in their own identification as global citizens (for the role of normative environment for developing global citizen identity see also Reysen and Katzarska-Miller, 2013, 2018). Although global human identification and global citizenship identification have some differences in their prototypical meaning (see Carmona et al., 2020), our research, as well as studies by Hagel and colleagues and Reysen and Katzarska-Miller showed that it is not general parenting styles but attitudes and behaviors more specific to global identifications that may be crucial to developing broad social identifications by children and adolescents.

Study 2, conducted on a representative sample of 1,000 adult Polish citizens, reconfirmed key findings from Study 1. Again, childhood/adolescent intergroup experiences, as described by the CAIE-PL, significantly predicted IWAH (and both of its factors) beyond the roles of all other predictors. Our findings from two countries with very different socio-cultural and ethnic contexts (see, e.g., Hamer et al., 2020) reveal an important new predictor of IWAH. Our research also points to a potential way of enlarging IWAH during childhood and adolescence by expanding early intergroup contacts such as being raised in diversity and having intergroup friends, helping or being helped by various others, and having experiences leading to re- or de-categorization. This research is the first in which relationships between early intergroup experiences and later IWAH were found.

The CAIE scale has been demonstrated to be a reliable measure, with no more than one clear factor in both countries. Initial factor analyses on a full 9-item scale showed similar structure and pattern matrixes for both countries, although with some "noise" in the factor structure. Thus, we have decided to remove items loading < 0.4 on the first factor, which resulted in a 6-item scale in the USA and an 8-item-scale in Poland. As a result, we obtained a better, pure one-factor solution in both countries. Interestingly, the deleted item in both countries regarded parents teaching empathy toward all people. Exploratory analyses showed

that this item, although positively correlated with IWAH, does not have a predictive role beyond the role of CAIE and other IWAH's predictors (e.g., see the **Supplementary material 5**). Thus, our research showed that parental teaching, even if it regards empathy, is less important while developing IWAH than having early intergroup experiences.

In the USA, two other items were removed as loading < 0.4 on the first factor, while they loaded > 0.4 in Poland and were kept. They referred to experiencing the suffering of someone from a different cultural or/and ethnic background during childhood or adolescence and experiencing that personality matters more than skin color, attractiveness, body build, or other "trivial" differences between people. We believe that these differences in the structure of the CAIE scale may be connected to the fact that the USA and Poland have significant differences in the ethno-cultural social setup of their citizens: Poland is ethnically almost homogenous, while the USA is much more diverse. Thus, it is much less common to have certain kinds of direct inter-ethnic experiences in homogenous Poland than in the diverse USA, so when they happen, they may have a bigger influence due to their rarity. Moreover, CAIE predicts general IWAH in both countries, but if we look at the IWAH subscales, it predicts only a bond with all humanity in the USA and both bond and concern for all humanity in Poland. Another reason for these dissimilarities may be connected to the differences in the studied samples: a nationwide representative sample of adult Poles versus a much smaller student sample from one of the universities in Kentucky. Thus, the results from Poland may be more representative of the population. In our opinion, the fact that CAIE clearly predicts general IWAH (and bond with all humanity) in both countries despite their differences in social diversity may indicate its universality; however, more research in other countries and on bigger samples is needed.

Our research has limitations, however difficult to overcome. As we mentioned at the beginning, we formulated hypotheses about early experiences, but our participants were adults, and their experiences were of a retrospective and self-reported nature. Of course, it would be more conclusive to explore children's experiences as children. However, for developmental reasons, it is not possible in the case of such a broad identification, as with all humanity, because children do not yet have a chance to develop it fully. There is no empirical research concerning how early IWAH can appear; however, according to Erikson's Theory of Psychosocial Development (1968), it can be expected to occur in middle adulthood. For Maslow (1954), it was the highest level of self-actualization, and for Adler (1927/1954) - a characteristic of the most mature individuals. Research on IWAH shows that students, who are usually young adults, can already exhibit this identification (e.g., McFarland et al., 2012, 2019; Hamer et al., 2017, 2018, 2019), although its level is indeed lower than for older people (see, e.g., Hamer, 2021). Another issue may be a cognitive development process. Since Corenblum and Armstrong (2012) showed its role in the process of developing ethnic identity, we suspect it is similar for developing broader social identifications such as IWAH. Therefore, children most likely cannot be tested for their level of IWAH because developing it is not yet plausible. Future longitudinal studies directly testing intergroup experiences of children and adolescents, followed by measuring the same individuals' level of IWAH after years, may help overcome these difficulties.

It is also possible that adults with stronger IWAH simply better remember experiences with those of other ethno-cultural backgrounds than do people with weaker IWAH. However, research on intergroup contact and all its positive results give reasons to believe that childhood/adolescent intergroup experiences not only bring less prejudice but, as two sides of the same coin, also inclusion and openness to others so that they help enhance IWAH.

Further, the CAIE scale measures the adults' memories of their own early experiences, not their parents' memories. We decided to use this method because previous research has shown a weak relationship between the memories of parents about the information on intergroup relations provided to children and children's prejudices (see, e.g., Skinner and Meltzoff, 2019). Also, the CAIE scale contains a broader range of experiences, including ones with peers and other adults, at schools, in neighborhoods, and in communities. Many of these experiences may be known only to the individuals themselves.

Nevertheless, if we believe that IWAH is a desirable feature in adults, it is important to study intergroup experiences in childhood and adolescence that might foster its development. We believe that we have shown, albeit by inference from studies with adults, that diverse early intergroup experiences, as contrasted to experiences that are more limited to one's narrower ingroup, are an important early precursor of later IWAH.

The results obtained in the USA and Poland were consistent in showing that early intergroup experiences measured by CAIE were a significant predictor of IWAH. Moreover, there are positive correlations between CAIE with IWAH, openness to experience, empathy, and universalism, and negative correlations between CAIE with SDO, RWA, and ethnocentrism. However, future studies should further explore the psychometric properties of the CAIE scale and its relations with psychological characteristics, particularly on bigger (ideally nationwide) samples and in different cultural contexts.

5. Conclusion

Our study offers evidence that retrospectively recalled memories of being raised in diversity and having substantial and meaningful intergroup experiences during childhood and adolescence (such as being raised in diversity and having intergroup friends, helping or being helped by various others, and having experiences leading to re- or de-categorization) connect to stronger IWAH in adulthood. Moreover, that evidence comes from both U.S. students and a nationally representative sample of Polish citizens. The two studies, conducted in countries with different ethno-cultural characteristics, showed that childhood/adolescent experiences, as described by the CAIE scale, significantly predicted IWAH beyond the effects of dispositional empathy, openness to experience, the value of universalism, right-wing authoritarianism, social dominance orientation, and ethnocentrism.

We believe that these results carry important implications for parents, teachers, and others who want to enlarge children's and adolescents' senses that all humankind is their ingroup and boost their concern for people all over the world. Generic childrearing styles, whether the parents or others are punitive or lenient, unaffectionate or not, appear to matter very little, if at all, in this development of global human identification. On the other hand, deliberately exposing children and adolescents to those of different

cultures, helping them create friendships with those from distant cultures, and making them aware of common humanity among people – matters greatly. As children and adolescents develop into adulthood, these specific experiences appear to increase their IWAH, and they do so beyond children's dispositions.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Ethics statement

The studies involving human participants were reviewed and approved by Western Kentucky University Ethics Committee. The patients/participants provided their written informed consent to participate in this study.

Author contributions

KH developed the study concept and design and the scale, performed the data analysis, drafted the manuscript, and made all the revisions. KH and SM performed the testing and data collection. SM provided additions and revisions to the original manuscript. All authors approved the final version of the submitted manuscript.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Supplementary material

The Supplementary Material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fpsyg.2023.1042602/full#supplementary-material

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Relationship between global identity and pro-environmental behavior and environmental concern: a systematic review

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Global issues such as environmental problems and climate change, require collective efforts. Global identity has been linked to the promotion of pro-environmental behavior by international and environmental organizations. In environment-related research, this all-inclusive social identity has been consistently related to pro-environmental behavior and environmental concern, but the underlying mechanisms are not well understood. This current systematic review seeks to examine past studies across disciplines that have reported findings on the relationship between global identity and the constructs of pro-environmental behavior and environmental concern and to synthesize findings on the potential pathways behind this relationship. Thirty articles were identified through a systematic search. We found that most studies reported a positive correlation, and the effect of global identity on pro-environmental behavior and environmental concern was stable across studies. Only nine of the studies empirically examined the underlying mechanisms of this relationship. Three major themes of these underlying mechanisms emerged: obligation, responsibility, and relevance. These mediators highlight the role of global identity in pro-environmental behavior and environmental concern *via* how individuals relate to other humans and how they appraise environmental problems. We also observed a heterogeneity in measurements of global identity and environment-related outcomes. As a topic of interest in multiple disciplines, a variety of global identity labels have been adopted, such as global identity, global social identity, humanity identity, Identification With All Humanity, global/world citizen, connectedness to humanity, global belonging, and psychological sense of global community. Self-report measures of behavior were common, but observations of actual behavior were rare. Knowledge gaps are identified, and future directions are suggested.

KEYWORDS

global identity, identification with all humanity, global citizenship, world citizen, global belonging, pro-environmental behavior, environmental concern, systematic review

1. Introduction

Environmental problems do not recognize borders; their impacts reach all of us across countries and generations, regardless of race or other individual characteristics. Tackling environmental problems and climate change requires world-wide efforts. Organizations appeal to the public to take collective action to combat global problems by reminding us

that we are members of the world. Organizations such as Pure Earth and One Community used slogans such as "Pollution knows no borders" (Bernhardt et al., 2019) and "One Planet. One Home. One Community" (One Community, n.d.) to raise awareness and call for action. International organizations such as UNESCO and the United Nations have also promoted the role of global citizenship in education to facilitate international cooperation and promote social transformation (UNESCO, 2014) and achieve the Sustainable Development Goals (United Nations, 2015).

In environment-related research, the concept of global identity has been gaining increased attention over the past decade (also see review by McFarland et al., 2019). Global identity refers to an all-encompassing, all-inclusive form of group identity, wherein all humans, regardless of race, religion, sexual orientation, and other identifiers, are seen as one group. It has been studied across scholarly disciplines and found to be positively related to pro-environmental behavior (PEB) and environmental concern (EC). However, the mechanisms underlying this relationship are not well understood. The present systematic review aims to synthesize existing findings that have examined the relationship between global identity and PEB and EC and to identify directions for future development in this area of study.

1.1. The construct of global identity

The social identity perspective suggests that group membership guides behavior when membership is salient (Tajfel and Turner, 1979; Turner et al., 1987). In general, individuals are concerned about people who they consider ingroup members and adjust their behavior to serve the ingroup's interests and the welfare of other members (Reese, 2016). In addition, based on the cost-reward model, one would have a great feeling of responsibility for the welfare of another person when the person is perceived to be similar to the self (Dovidio et al., 1991), and ingroup members are perceived as more similar to the self than outgroup members. Empirical evidence indicates that when a more inclusive level of social group membership is made salient (e.g., a fan of football rather than a fan of a specific football team), people even consider formerly rival outgroup members (e.g., a rival football team) as ingroup members and would be as likely to offer help (Levine et al., 2002, 2005).

According to the social identity theory and self-categorization theory, individuals categorize themselves as members of a higher-order social unit and identify themselves with groups on different levels of inclusiveness (Tajfel and Turner, 1979; Turner et al., 1987). There are three levels of inclusiveness in self-categorization (Turner, 1982): The base level is the interpersonal level of differentiating oneself from another ingroup member; the intermediate level is based upon differentiating the ingroup members from outgroup members; and the highest level is the categorization of oneself as part of all humanity. Global identity reflects the highest, all-inclusive level of self-categorization.

Until recently, global identity has received little empirical attention (Reysen, 2022). In two reviews (McFarland et al., 2019; Reysen, 2022) and one empirical analysis (McFarland and Hornsby, 2015), 12 measures of global identity were identified and about half of which were published after the year 2010. Overall,

as a construct, global identity was negatively associated with ethnocentrism, authoritarianism, social dominance orientation, and self-centeredness, and positively associated with dispositional empathy, openness to experience, and values of universalism, care, and justice (Hamer et al., 2019). Over the past decade, there has been a surge in interest in global identity and overall, global identity was found to be related prosociality. For example, global identity predicted humanitarian concerns (McFarland and Hornsby, 2015) and intergroup forgiveness (Hamer et al., 2018), was related to willingness to provide humanitarian help to people in COVID-affected countries (Deng, 2021) and those who suffered from natural disasters (Sparkman and Hamer, 2020), and was associated with greater engagement with the global community, given that globalization was perceived as positive (Reysen, 2022).

1.2. The role of global identity in PEB and EC

As discussed above, the social identity perspective suggests that individuals tend to care about and act in the interest of ingroup members' welfare. Indeed, past findings support the link between social identity and PEB. For example, identification with a pro-environmental initiative that promoted sustainable, low-carbon living that led to local energy autonomy predicted participation intention in the initiative (Bamberg et al., 2015). Similarly, if individuals perceived ingroup members as negatively impacted by environmental problems, they are more likely to take action to mitigate the problems when they strongly identify with the group. For example, identification with the local community was found to be positively related to the intention to participate in a neighborhood initiative for climate protection (Rees and Bamberg, 2014).

In the past decade, there has been a surge of studies on the relationship between global identity and PEB and EC. Global identity has been linked to the promotion of PEB and the mitigation of environmental problems and climate change. Studies were found not just in psychology (Reysen, 2022) but also in business (Russell and Russell, 2010), political science (Chung and Milkoreit, 2021), education (Wynveen et al., 2012), and tourism (Proyrungroj, 2022). Given the growing interests in global identity and PEB and EC, an in-depth systematic review of our understanding of this relationship thus far is warranted. However, to the best of our knowledge, such a systematic review has yet to be done. A review by Reysen (2022) was informative; however, it was not a systematic review and therefore its goal was not to systematically examine the relationship between global identity and the constructs of PEB and EC. Although Reysen (2022) referred to several studies that examined PEB and its related constructs (Reysen and Katzarska-Miller, 2013; Der-Karabetian et al., 2014, 2018; Der-Karabetian and Alfaro, 2015; Rosenmann et al., 2016), they were discussed in relation to the argument regarding globalization. The present systematic review seeks to fill this gap in the literature by systematically examining studies to understand the relationship between global identity and the constructs of PEB and EC. The goal of the current systematic review is twofold: (1) to examine the empirical evidence to date on the relationship between global identity and environmental outcomes/variables and (2) to examine
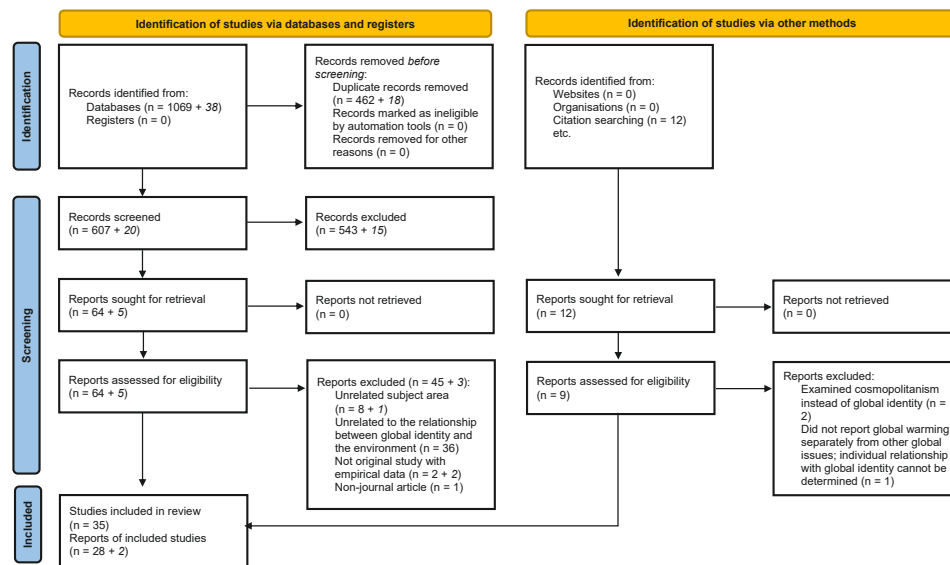
FIGURE 1
PRISMA 2020 flow diagram for new systematic reviews which included searches of databases, registers and other sources. The numbers in italic (after the "+" sign) represent the articles from the search with the additional keywords. Please refer to section "2.6. Screening process and final inclusion" regarding the screening process and the search details in section "4. Additional search with new search terms" in the **Supplementary material**. From Page et al. (2021) for more information, visit: http://www.prisma-statement.org/.

the underlying mechanisms of this relationship. The current review also identifies issues related to measurements and methodology and suggests future directions.

2. Methods

2.1. Databases

Since there is a lack of guidelines as to how databases should be chosen when conducting a systematic review, we chose them based on two principles: one is to choose databases that are conventionally used and second is to consider the topic at hand in relation to the relevant disciplines involved. As such, we referred to other systematic reviews in the field of psychology and expanded the disciplines to also include sociology, education, political science and social sciences in general. The shortlisted databases identified included APA PsycINFO, APA PsycARTICLES, Academic Search Premier, ERIC, and GreenFILE under EBSCOhost, as well as Scopus, ProQuest and Web of Science.

2.2. Search terms

Two sets of search terms were used: one related to global identity and the other related to PEB and EC. For global identity, we combed through the keywords and the content of reviews such as the one that empirically compared different global identities by McFarland and Hornsby (2015) and other scale development studies such as the local-global identity measures (Tu et al., 2012). For PEB and EC, we referred to the search terms used in other relevant systematic reviews (e.g., Udall et al., 2020).

Examples of global identity search terms are: "all humans everywhere," "global citizen*," "Global Belonging" and so on. Examples of environmental-related construct search terms include general behavior (e.g., "green consumer behav*," "pro-environmental behav*"), behavior of specific domain (e.g., "waste recycling behav*," "energy conservation," "travel mode choice"), environmental issues (e.g., "climate change" and "global warming"), attitude (e.g., "environmental attitude*," concern ("environmental concern"), and values (e.g., "ecologic value*"). All search terms are in quotations to search the specific terms. Wildcards were used to cover different forms of the same term. For a full list of the search term, please see Section 1 "Search terms" of the **Supplementary material**).

Since dozens of search terms were involved for each construct and varying string lengths in different databases were a concern (Gusenbauer and Haddaway, 2020), a test on the search term string length was performed before any search was conducted in each database. The result of this test showed that the string length limit was not reached for any of the databases and all the search terms were included in each search. Details of this test are reported in Section 2 "Search term string length test" the **Supplementary material**.

2.3. Search strategies

All searches consisted of both sets of search terms entered with the same field (for example "abstract," "title" or "Keywords"). When possible, we expanded the search to apply equivalent subjects (APA PsycINFO, APA PsycARTICLES, Academic Search Premier, ERIC, and GreenFILE in EBSCOhost). Limiters were set to scholarly (peer reviewed) journal (exclude book reviews), English, journal article (exclude dissertation), human/male/female (exclude

animal). Similar expanders and limiters were used in all other databases (Scopus, ProQuest and Web of Science). The detailed settings and the number of articles returned corresponded to each database can be found in Section 3 "Search settings and related details" in the **Supplementary material**. A total of 1,069 articles were yielded from all eight databases. The search was completed on the same day–April 13, 2022. As such, all articles that were published on the day or before were included.

2.4. Screening and detailed assessment process

The reporting of this systematic review was guided by the standards of the Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA) Statement. We did the initial screening of all 1,069 articles, of which 462 duplicates were identified. The first author read all the abstracts of the remaining 607 articles to identify relevant articles. The following inclusion and exclusion criteria were used throughout the screening process. **Figure 1** shows the screening process and details in a PRISMA flow chart.

2.5. Inclusion and exclusion criteria

Only peer-reviewed journal articles that reported original results with empirical data in English were included. Other types of writing were excluded, such as dissertation (PsycINFO), book review (PsycArticles), book chapter, conference proceedings, unpublished manuscripts, reviews, editorials and commentary. Subject areas that were obviously not related to the current topics were excluded, such as agricultural and biological sciences, engineering, computer science, biochemistry, genetics and molecular biology chemical engineering and so on.

2.6. Screening process and final inclusion

After this initial screening process using abstracts, 64 were deemed relevant for further assessment. Upon review of the full-text, 45 of them were excluded based on the above exclusion criteria. The remaining 19 articles were deemed relevant.

Twelve additional articles were found outside of the systematic search. Ten of these additional articles were identified in the process of reviewing the 64 articles—they were found in the reference lists. One additional article was identified in a recent review on global identity by Reysen (2022) and one was a publication by our research team (Chan et al., 2020). Of the 12 additional articles, three articles were excluded: Two of the articles (Grinstein and Riefler, 2015; Leung et al., 2015) examined cosmopolitanism instead of global identity, and one article (Buchan et al., 2011) measured global warming as part of a set of global issues and reported global issues as a total score but did not report separately the relationship between global identity and global warming (or any of the individual global issues).

During our response to a reviewer's comments, we became aware of two additional keywords related to global identity: "global

identification" and "global-level identification." We then used the terms to look for potential additional sources. To match our main search, we replicated the search in the same databases with the exact same settings and the same PEB and EC search terms, and we limited our search to publications from April 2022 or before. The only difference was that only the two new terms were used for global identity. This second search yielded 38 articles. Using the same inclusion and exclusion criteria and the same screening process, five were deemed relevant for further assessment. Upon review of the full-text, three of the five articles were excluded based on the exclusion criteria and two relevant articles were identified (Furlong and Vignoles, 2021; Aydin et al., 2022). This search result is presented in Section 4 "Additional search with new search terms" in the **Supplementary material**, separate from the main search results. The results of this additional search are shown in italic as an addition to the main search in the PRISMA diagram (**Figure 1**).

Based on the above efforts, 30 articles in total were included in this review. Among the 30 articles, 41 studies were reported but six studies were excluded based on the above inclusion and exclusion criteria stated above. The removal of the six studies left 35 studies from the 30 articles in this review.

The first author coded each article to systematically document the global identity label and definition used by the researchers and the measures used for global identity and PEB and EC. The relevant theories, sample characteristics, the major findings, and other details such as publication year were also coded. The findings were synthesized and reported below.

3. Results and discussion

In the following subsections, we summarize the findings from the literature regarding the relationship between global identity and PEB and EC. We first reported the overall trend of this relationship. Next, we examined the underlying mechanisms of this relationship by reviewing the theoretical foundations used to explain the relationship and reviewing the evidence from nine studies that empirically tested the explanations of the relationship. Lastly, we included observations that are additional to our main objective but nonetheless relevant and important regarding measurement and sampling issues.

3.1. Evidence on the positive relationship between global identity and PEB and EC

We first examined evidence on the relationship between global identity and PEB and EC.

Of the 35 studies reviewed, 30 examined the zero-order correlation between global identity and PEB and EC. Only one study reported no correlation at all (Furlong and Vignoles, 2021); all other studies reported a significant correlation. The results are summarized in **Table 1**, along with other study information. Five studies did not report any zero-order correlation; the reason was either that global identity (Chung and Milkoreit, 2021) or the construct of PEB/EC was dichotomized (Running, 2013), or that testing the correlation was not the main interest of the study (Russell and Russell, 2010; Strizhakova and Coulter,

2013; Strizhakova et al., 2021). These studies conducted other analyses, such as ANOVA (Chung and Milkoreit, 2021) and logistic regression (Running, 2013), and reported a significant relationship between the two constructs. Most of the 35 studies conducted further analyses, such as regression, with a variety of variables controlled for, and still revealed a significant relationship between global identity and PEB and EC.

Among these 35 studies, a wide range of PEB and EC measures were used. The most common type was behavior-related measures, such as intentions to engage in PEB, self-report private-sphere behavioral habits, self-report past behavior, policy support, willingness to pay, and participation in protests. Some studies also included other environment-related measures such as pro-environmental values (Reysen and Hackett, 2016), climate change beliefs (e.g., Chung and Milkoreit, 2021), environmental attitude (e.g., Assis et al., 2017), EC (e.g., Running, 2013), and perceptions (e.g., perception of severity of climate change and perception of whether a global brand was environmentally friendly; Strizhakova and Coulter, 2013).

Overall, it can be concluded from the existing research that global identity is robustly positively associated with stronger engagement in environmental issues. However, further analyses revealed two nuances to consider. We now discuss these nuances individually and offer recommendations for future research.

1. Cross-national differences in this relationship were documented, even in studies with the same research design and the same set of constructs. Across six samples in two studies, Der-Karabetian and Alfaro (2015) examined the relationship between global belonging and PEB, together with five other constructs: globalization general impact, globalization impact on own country, national belonging, world-mindedness, and personal environmental risk (Der-Karabetian et al., 2014; Der-Karabetian and Alfaro, 2015). A significant positive relationship between global identity and PEB in zero-order correlation was found in all samples. But when the five constructs were controlled for in a regression analysis, global identity significantly predicted PEB in only half the samples: in one of the US samples, Taiwan, and Netherlands but not in mainland China (Der-Karabetian et al., 2014), and not in the other US sample or Brazil (Der-Karabetian and Alfaro, 2015). These findings from two studies with the same design suggest that the relationship between global identity and PEB and EC may vary in different societal or cultural contexts when the same set of constructs were controlled for. Based on this observation, *we recommend that researchers use a diverse sample of countries to more systematically document and explain potential cross-national or cross-cultural variability of the relationship [Recommendation #1].*

2. Two studies reported a significant indirect relationship between global identity and PEB, even when the direct effect of global identity on PEB was not significant (Chan et al., 2020; Furlong and Vignoles, 2021). In Chan et al. (2020), global identity only indirectly predicted the intention to turn off non-essential lights and the actual light-off behavior during the Earth Hour event (Chan et al., 2020). The researchers suggested that, when predicting a highly specific behavior (i.e.,

turning off non-essential lights during an event), domain-general motivational factors (e.g., global identity) might exert their effects on behavior indirectly through the influence on domain-specific motivational factors (e.g., behavioral attitude). Furlong and Vignoles (2021) observed that global identity was indirectly associated with participation in an environmental movement *via* moral conviction (defined as a strong and absolute stance on moral issues), anger, and movement-specific identity. *We recommend researchers explore the indirect effect of global identity by considering the underlying mechanisms of the relationship between global identity and PEB/EC [Recommendation #2]* (see also section "3.3. Evidence on the mediating mechanisms underlying the positive relationship").

3.2. Theoretical explanations of the observed positive relationship

Sixteen of the 30 articles explicitly referred to the social identity theory to explain the role of global identity in PEB and EC. This theory posits that, when individuals define themselves as a member of a social group, they are more likely to care about the welfare of members of the group and act in the interest of the group. As such, there are emotional (such as concern for the group) and behavioral (such as prosocial and cooperative behavior) implications of social identity. Six other articles implicitly referred to the social identity theory: Although the social identity theory was not explicitly mentioned, the definitions of global identity based on the social identity theory were cited, and the studies considered the same attributes and implications of the theory (e.g., Leithead and Humble, 2020). In total, we observed that 22 articles referred to the social identity theory when explaining why global identity was expected to be associated with PEB and EC.

It is noteworthy that five of the 22 articles integrated the social identity theory with other theories or frameworks, including the norm activation theory (Joanes, 2019; Kim et al., 2021), the theory of planned behavior (Chan et al., 2020), the social identity model of collective action (Barth et al., 2015; Furlong and Vignoles, 2021), and the encapsulated model of social identity in collective action (Furlong and Vignoles, 2021). All of these five studies conceptualized the role of global identity as an antecedent of the more proximal predictors of behavior. For instance, Joanes (2019) and Kim et al. (2021) conceptualized global identity as the antecedent of ascribed responsibility and personal norm, two key concepts in the norm activation theory, when understanding reduced clothing consumption (Joanes, 2019) and waste reduction and water saving intentions (Kim et al., 2021). Similarly, Chan et al. (2020) referred to the theory of planned behavior and considered moral norm and attitude the pathways through which global identity predicted participation in Earth Hour.

The remaining studies referred to other relevant theories and concepts. These can be grouped into three perspectives: interconnectedness, common threat, and global focus. For the interconnectedness perspective, the theories share the idea that the world is a single community, bound together by a common fate. As members of the community, we have a responsibility to the community and other members. These theories and concepts

TABLE 1   Details of 35 studies in 30 articles on global identity and environment-related constructs.

References	Discipline	Sample origin (size) composition	Mean age	Global identity scale	Pro-environmental outcomes	Results
Assis et al., 2017	Environment	United States (n = 201) student	M = 22.8	Global Citizen [five items; adapted from scales by Doosje et al. (1995) and Reysen et al. (2013)]	Motivation for environmental behavior (23 items; Pelletier et al., 1998)	+ (4 subscales) N.S. (2 subscales)
					Human interdependence with nature (16 items; Corral-Verdugo et al., 2008)	+
					Environmental attitudes (30 items; Pettus and Giles, 1987)	+
					New Environmental Paradigm (12 items; Dunlap and Van Liere, 1978)	+
Aydin et al., 2022	Psychology	**Study 1:** Türkiye (n = 1121) **Study 2:** WVS (n = 40,330 from 43 countries) community samples	M = 35.79	**Study 1:** global identification (two items; adapted from Verkuyten and Yildiz, 2007) **Study 2:** World citizen (one item; WVS, Wave 5, 2005–2009)	**Study 1:** Pro-environmental beliefs (15 items; New Ecological Paradigm; Dunlap et al., 2000) (three items; Climate change beliefs; Stanley et al., 2017). Pro-environmental behavior (items # not reported; Liu and Sibley, 2012; adapted from Lange and Dewitte, 2019). Pro-environmental activism (seven items; adapted from Lange and Dewitte, 2019). **Study 2:** Pro-environmental beliefs (one item; WVS, Waves 5 and 6) Pro-environmental activism (two items; WVS, Waves 5 and 6). Pro-environmental behavior (one item; WVS, Waves 5 and 6)	+
Barth et al., 2015	Psychology	**Study 1:** Germany (n = 450) student sample (**Study 2:** excluded)	M = 28.86	Global identity (four items; adapted from Leach et al., 2008)	Willingness to engage in collective action on behalf of the victims of climate change injustice (eight items)	+
					Donation for an NGO that fights for more climate change justice by passing on the chance to win a gift coupon (one item)	
Chan et al., 2020	Psychology	Hong Kong (university students; n = 62 and university staff members; n = 177) mixed sample	Students: M = 20.69 Staff: M = 32.83	Humanity identity (five items; Buchan et al., 2011; McFarland et al., 2013; Reysen and Katzarska-Miller, 2013; Reese and Kohlmann, 2015)	Intention of turning off lights during Earth Hour (four items; adapted from Fishbein and Ajzen, 2010)	Correlation: + Regression: N.S. Mediation analysis: +
					Actual behavior of turning off lights during Earth Hour (one item)	Correlation: + Regression: N.S.
Chung and Milkoreit, 2021	Political science	United States (students; n = 298) WVS (community; n = 1249) mixed sample	United States students: M = 22.73 WVS: M = 45.90	World Citizen (one item; WVS, Wave 5, 2005–2009; student sample: Y/N/IDK and WVS sample: one-item agreement with statement "I see myself as a world citizen" on a four-point scale)	Climate change beliefs (six items)	+
					Perceived severity of climate change (one item; WVS, Wave 5, 2005–2009; student sample: two items)	Student sample: + WVS: N.S.
Der-Karabetian and Alfaro, 2015	Social science	United States (n = 117) Netherlands (n = 45) Brazil (n = 116) Student sample	United States: M = 21.1 Netherlands: M = 24.6 Brazil: M = 32.0	Global belonging (seven items; Der-Karabetian and Ruiz, 1997)	Sustainable behavior (six items on conservation, consumption and recycling; Der-Karabetian et al., 2014)	Correlations: + Regression: United States: N.S. Netherlands: + Brazil: N.S.

(Continued)

TABLE 1 (Continued)

References	Discipline	Sample origin (size) composition	Mean age	Global identity scale	Pro-environmental outcomes	Results
Der-Karabetian et al., 2014	Psychology	United States (n = 442) Mainland China (N = 516) Taiwan (N = 164) mixed sample	United States: M = 21.9 Mainland China: M = 23.8 Taiwan: M = 23.2	Global belonging (Der-Karabetian and Ruiz, 1997)	Sustainable behavior (six items on conservation, consumption and recycling)	Correlations: + Regression: United States: + Mainland China: N.S. Taiwan: +
Der-Karabetian et al., 2018	Psychology	United States (n = 298) student sample	M = 22.73	Global belonging (Der-Karabetian and Ruiz, 1997)	Sustainable behavior (six items; Der-Karabetian et al., 2014)	+
Furlong and Vignoles, 2021	Psychology	United Kingdom (n = 203) community sample	M = 46.77	Global identification (12 items; adapted from Koc, 2018)	Collective action past behavior (10 items)	N.S.
					Collective action future intentions (10 items)	N.S.
Iwata, 1996	Psychology	Japan (n = 156) student sample	Age not found/reported	Scale #1: belief that national borders are needless (four item)	Pro-environmentalism (27 items; Iwata, 1990)	N.S.
				Scale #2: global communities are bounded common fate (five items)		+
Janmaimool and Khajohnmanee, 2020	Environment	Thailand (n = 423) student sample	M = 20.92	Global citizenship (10 items; Janmaimool and Khajohnmanee, 2020)	Pro-environmental behavior (nine items)	+
Joanes, 2019	Business	United States Germany Sweden Poland (n = 4591; breakdown by country not available) mixed sample	M = 42.17	IWAH (seven items; McFarland et al., 2012; Reese et al., 2015)	Intention to reduce clothing consumption (two items)	+
Kim et al., 2021	Environment	Korea (n = 387) community sample	M = 43.84	Global identity [three items; adopted from various measures, including Tu et al. (2012) on local-global identity]	Waste reduction intention (two items) Water saving intention (two items)	+
Lee et al., 2015	Psychology	Canada (n = 324) student sample	M = 19.7	IWAH (nine items; McFarland et al., 2012)	New Ecological Paradigm (NEP; 15 items; Dunlap et al., 2000)	Significance level not reported (r = 0.14)
					Pro-environmental Behavior (18 items; Kaiser et al., 2007)	+
Leithead and Humble, 2020	Education	Ghana (n = 141 from 3 schools) Student (children) sample	M = 11.0	Global citizenship identification (two items; Leithead and Humble, 2020)	Belief in environmental sustainability (two items; Reysen et al., 2012)	+
Loy and Reese, 2019	Psychology	Germany (n = 258) Mixed sample	M = 27.0	IWAH–adapted version (10 items; McFarland et al., 2012; Reese et al., 2015)	General Ecological behavior (24 items; Kaiser and Wilson, 2000, 2004); Climate policy support (adapted from European Social Survey, Tobler et al., 2012)	+
Loy et al., 2021a	Psychology	**Study 1:** Germany (n = 498) **Study 2:** United Kingdom (n = 508) community samples	**Study 1:** M = 48.1 **Study 2:** M = 47.5	**Study 1:** IWAH (nine items; McFarland et al., 2012; Reese et al., 2015) **Study 2:** Situational IWAH (10 items; McFarland et al., 2012)	**Study 1:** General Ecological behavior (25 items; Kaiser and Wilson, 2000, 2004) **Study 2:** Information viewing and duration; Support for climate initiatives and budget allocated; General Ecological behavior (24 items; Kaiser and Wilson, 2000, 2004)	+
Loy et al., 2021b	Psychology	Students and social media groups in Germany (n = 317) (range = 18 to 65) community sample	M = 28.4	IWAH–adapted version (10 items; McFarland et al., 2012; Reese et al., 2015; Loy and Reese, 2019)	Flight-related CO2 emissions (one item)	Self-definition: N.S. Self-investment: -
					Refraining from flying (one item)	N.S.
					Flight shame (two items)	+

(Continued)

TABLE 1 (Continued)

References	Discipline	Sample origin (size) composition	Mean age	Global identity scale	Pro-environmental outcomes	Results
					Willingness to pay for carbon offsetting (one item)	+
					Amount of compensation on flight-related CO2 (one item)	+
					Support for decarbonized mobility policies (11 items; Loy and Reese, 2019)	+
Loy et al., 2022	Psychology	Germany (n = 401) 42.5 (range = 18 to 82) community sample	M = 42.5	IWAH (10 items; adapted from McFarland et al., 2012)	General Ecological Behavior Scale (34 items; adapted from Kaiser and Wilson, 2000, 2004). Climate Policy support (10 items; Loy and Reese, 2019)	+
Ng and Basu, 2019	Psychology	**Study 1:** WVS (n = 75,934 from 56 countries) **Study 2:** Singapore (undergraduate students; n = 226) **Study 3:** Singapore (UG students; n = 96) **Study 1:** community sample **Study 2 and 3:** Student samples	**Study 1:** M = not found/reported **Study 2:** M = 21.68 **Study 3:** M = 22.07	**Study 1:** World citizen (one item; WVS, Wave 5, 2005–2009) **Study 2:** local-global identity (four items; Tu et al., 2012) **Study 3:** manipulation of global identity	**Study 1:** Personal responsibility toward the environment (one item; WVS, Wave 5) **Study 2:** Willingness to pay for printed materials to be printed on recycled paper (one item) **Study 3:** Willingness to pay for printed materials to be printed on recycled paper (one item)	+
Pong, 2021	Psychology	United States (n = 465) community sample	M = 38.23	IWAH (McFarland et al., 2012)	Food waste reduction intention (eight items)	+
					Policy support (four items)	+
					Behavioral proxies (two items)	N.S./+
Renger and Reese, 2017	Psychology	Germany (n = 469) community sample	M = 30.8	Global identity [four items; adapted from Reese and Kohlmann (2015), Walker et al. (2015)]	Behavioral intentions (three items; Fielding et al., 2008). Self-report current donation to pro-environmental organization (one item)	+
Reysen and Hackett, 2016	Psychology	**Study 1:** United States (n = 239) student sample (**Studies 2** and **3:** excluded)	M = 25.39	IWAH (McFarland et al., 2012; Reese et al., 2015)	Environmental sustainability as prosocial values (two items, **Study 1;** Reysen et al., 2012)	+
Reysen and Katzarska-Miller, 2013	Psychology	**Study 1:** United States (n = 726) **Study 2:** U.S. (n = 1202) student sample	**Study 1:** M = 28.9 **Study 2:** M = 25.86	Global citizenship identification (two items; adapted from Reysen et al., 2012)	Environmental sustainability (two items)	+
Running, 2013	Social Science	WVS (n = 40,330 from 43 countries) community sample	M = 41.84	World Citizen (one item; WVS, Wave 5, 2005–2009)	Concern for global warming (one item; WVS, Wave 5, 2005–2008)	+
Russell and Russell, 2010	Business	**Study 1:** United States (n = 75) student sample (**Studies 2** and **3:** excluded)	M = not found/reported	Global identity (six items; Russell and Russell, 2010)	Purchase intention of a sustainable brand among 13 other listed brands (one item; **Study 1**)	+
Scafuto, 2021	Psychology	United States (n = 277) student sample	M = 19.36	Psychology sense of global community (four items; Hackett et al., 2015)	Climate Change response efficacy (Li and Monroe, 2018; Scafuto et al., 2018)	+
Strizhakova and Coulter, 2013	Business	Brazil = 319 Russia = 328 India = 305 China = 295 United States = 302 Australia = 323 Australia = 40 *equal number of participants in each of three age groups: 18–30, 31–45, and 46–60; community samples	Brazil: M = 37 Russia: M = 37 India: M = 38 China: M = 34 United States: M = 39	Global connectedness (seven items; a subscale—one of three dimensions of global cultural identity; Strizhakova and Coulter, 2013)	Concern for environmentally friendly products (three items*) Willingness to pay extra for environmentally friendly products (three items*) Perceptions of global companies as environmentally friendly (six items*) Likelihood to engage in PEB (four items)	Emerging market: + Developed market: N.S.

(Continued)

TABLE 1 (Continued)

References	Discipline	Sample origin (size) composition	Mean age	Global identity scale	Pro-environmental outcomes	Results
Strizhakova et al., 2021	Business	**Study 2:** United States MTurk (*n* = 450) community sample (**Study 1** was excluded)	**Study 2:** *M* = 34	Global identity (four items; adapted from Strizhakova and Coulter, 2013)	Purchase intention of a fictitious environmentally friendly brand (two items; **Study 2**)	+
Woosnam et al., 2019	Environment	United States college students (*n* = 426) United States community (*n* = 220) mixed sample	*M* = 24.5	Global citizenship identification (22 items; Reysen et al., 2012)	Future environmental volunteering intentions (eight item; adapted from Zaichkowsky, 1985; Sparks et al., 1997)	+

WVS, World Value Survey. For the measurements of global identity and pro-environmental outcomes, if the scales were developed by the authors in the study, no citation is included. In the "Results" column, "+" signs indicate positive and significant results from any analysis (e.g., correlation, regression) regarding the relationship between global identity and the corresponding environment-related outcomes. A "-" sign indicates a negative relationship and "N.S." signifies non-significant results.
*The items were adapted based on Cornelissen et al. (2008); Webb et al. (2008); Kilbourne et al. (2009).

include the triangular model of responsibility (Ng and Basu, 2019), bound by common fate (Iwata, 1996), and sense of community (Woosnam et al., 2019; Scafuto, 2021). For common threat, Der-Karabetian et al. (2014, 2018) and Der-Karabetian and Alfaro (2015) referred to the superordinate goal theory, which suggests that the desire to eliminate perceived common threats as a group leads to cooperation, solidarity, prosociality and group identity reinforcement. Lastly, for global focus, Strizhakova and Coulter (2013) and Strizhakova et al. (2021) referred to the global consumer cultural identity theory, which suggests that individuals with a strong cultural identity are more aware of global (vs. local) consumer culture, which includes concern about the welfare of the global environment. Similar to the social identity theory, these three perspectives explicate the behavioral motivations of global identity.

3.3. Evidence on the mediating mechanisms underlying the positive relationship

We next review the nine studies that empirically examined the mediating psychological mechanisms underlying the positive relationship between global identity and PEB and EC. All these studies considered at least one mediator (Table 2). Based on our coding, we identified three main categories of mediators: obligation (*n* = 4), responsibility (*n* = 4), and relevance (*n* = 2). Other mediators appeared in one study only: attitude (Chan et al., 2020), awareness of needs and outcome efficacy (Joanes, 2019), and moral convictions, anger, and environmental movement-specific identity (Furlong and Vignoles, 2021).

Obligation was found in four studies with different labels: "sense of obligation" (Janmaimool and Khajohnmanee, 2020), "personal norm" (Joanes, 2019; Kim et al., 2021) and "moral norm" (Chan et al., 2020). Although obligation took on different names, all four studies referred to it as one's feeling or sense of obligation to perform a behavior. It was reasoned that individuals with a strong social identity would align their actions with the interests of the group. In the context of environmental problems, individuals with a strong global identity would be more likely to care about the welfare of all humans and be concerned about such problems. Accordingly, strong global identity was conceptualized to be related to a sense of obligation to protect the environment, and in turn,

one would display environmental engagement. Some studies have included other motivational factors in predicting PEB engagement, but all studies have conceptualized obligation as the proximal driver behind PEB (Janmaimool and Khajohnmanee, 2020) or PEB intention (Joanes, 2019; Chan et al., 2020; Kim et al., 2021). The findings of these studies support this conceptualization.

Responsibility refers to a person's sense of shared responsibility regarding harmful outcomes. Although both responsibility and obligation refer to a sense of duty, responsibility implies that an individual perceives themselves as part of the cause of a problem and therefore PEB could be seen as reparation of one's wrongdoing. Meanwhile, obligation implies that an individual is part of the solution to a problem and engaging in PEB contributes to environmental protection. Responsibility was considered in four studies, which either referred to responsibility toward the environment (*n* = 3) or responsibility toward humanity (*n* = 1). The former focused on the negative impacts of human activities on the environment in which all humans live, whereas the latter focused on the negative impacts of human activities on humans directly. It was reasoned that individuals with strong global identity would consider the wellbeing of all humans. Accordingly, strong global identity was theorized to feel a sense of responsibility for the negative impacts of one's inaction on other humans directly or on the environment in which we live, which, in turn is associated with PEB and/or EC. Indeed, the significant findings of all four studies supported responsibility mediating the relationship between global identity and PEB and/or EC.

Relevance refers to how individuals appraise and relate themselves to environmental issues. Three studies considered relevance as a mediator, although they conceptualized relevance using different constructs. Loy et al. (2021a) proposed that global identity is indirectly related to climate change mitigation behavior through relevance attribution. Relevance refers to whether one perceives climate change as interesting, important, relevant, and meaningful. Kim et al. (2021) conceptualized relevance in terms of psychological distance of climate change. According to the construal level theory, four dimensions of psychological distance have been identified: social distance (whether climate change will happen to oneself or others who are socially close or distant), geographical distance (whether climate change will happen geographically close or far away), temporal distance (whether climate change will happen close or far temporally), and

TABLE 2 Summary of the nine studies that empirically examined the relationship between global identity and environmental-related construct.

References	Mediator(s) (scale)	Mediator coded	Theories/Models and explanation
Barth et al., 2015	Solidarity (four items; Likki and Staerklé, 2014)—a form of collective responsibility that motivates humans to take care of the more vulnerable members of a community	Responsibility	Model: SIMCA Explanation: The encompassing quality of global identity generates responsibility toward disadvantaged humans regardless of their nationality and other characteristics. Group membership leads to collective action with the aim to improve the group's conditions *via* solidarity along with other factors based on SIMCA.
Chan et al., 2020	Moral Norm (three items; adapted from Kaiser and Scheuthle, 2003). Attitude (six items; written based on guidelines of TPB; Fishbein and Ajzen, 2010)	Moral obligation attitude	Theories: SIT + TPB Explanation: Humanity identity guides prosocial behavior based on SIT. As a general-domain construct, humanity identity is found to associate with positive evaluation of environmental sustainability and moral obligation toward performing a behavior, which in turn, predict domain-specific behavioral intentions based on TPB.
Furlong and Vignoles, 2021	Moral Conviction (four items; van Zomeren et al., 2019). Anger (two items; adapted by Rees and Bamberg, 2014; van Zomeren et al., 2019). Environmental Movement-Specific Identity (12 items; Koc, 2018)	Moral convictions anger environmental movement-specific identity	Model: SIMCA + EMSICA Explanation: Global identity implies greater sensitivity to injustice of climate change and identification with the victims of climate change who may be geographically and temporally distant
Janmaimool and Khajohnmanee, 2020	Sense of obligation (three items; adapted from Gärling et al., 2003)	Moral obligation	Theory/Model: VBN Explanation: Moral obligation is affected by values and influences our behavior. Global citizenship is argued to enhance one' understanding of interdependence between human and environment, which may lead to formation of altruistic or biospheric views, which are important in the creation of their moral obligation and decision to engage in pro-environmental behavior.
Joanes, 2019	Personal norm (five items*) Awareness of needs (six items*) Ascription of responsibility (six items*) Outcome efficacy (six items*)	Moral obligation responsibility awareness of needs outcome efficacy	Model: NAM + SIT Explanation: global identity is related to prosocial and cooperative behavior based on SIT. It is also found to be associated with interest in events that affect humanity and a felt personal responsibility to better the world, which are linked to the awareness of need and ascription of responsibility in NAM.
Kim et al., 2021	Personal Norm (three items; Scale based on Han et al., 2020) [based on Norm Activation Model (Schwartz, 1977)]. Ascribed Responsibility (three items; scale based on Han, 2014). Psychological Distance (12 items total; 3 items per dimension; Wang et al., 2019)	Moral obligation responsibility relevance	Model: NAM Explanation: Global identity has implications on acting to protect the earth and its people. Climate change means threats to the survival of people within one's community on Earth. And as such, it would mean the frequent climate phenomena are linked to climate change that is happening currently, everywhere, to anyone and with certainty (i.e., low psychological distance in all dimensions: temporal, spatial, social and hypothetical).
Loy et al., 2021a	Relevance attribution: **Study 1:** Personal relevance (four items**) Societal relevance (four items**) **Study 2:** Relevance attribution to a news article	Relevance	Model: SIT Explanation: Environmental issues are collective interests, and the global identity is relevant in the appraisal of and response to environmental crisis.
Ng and Basu, 2019 (**Study 2** only)	**Study 2:** Personal responsibility (Ng and Basu, 2019) (**Study 1** and **Study 3** did not empirically unpack the relationship between global identity and environment-related construct)	Responsibility	Model: TMR Explanation: TMR focus on personal responsibility and global identity focuses on interconnectedness. Since climate change affect all humans, global identity would lead individuals to feel personally responsible toward the environment.

EMSICA, encapsulated model of social identity in collective action; NAM, norm activation model; SIMCA, social identification model of collective action; SIT, social identity theory; TMR, triangle model of responsibility; TPB, theory of planned behavior; VBN, value-belief-norm model. *All measures were adapted from De Groot and Steg (2009) and Nayum et al. (2016). **Both measures were adapted from Spence and Pidgeon (2010) and Weber and Wirth (2013).

hypothetical distance (whether climate change is likely to occur). Regardless of how relevance was defined, climate change was perceived as a threat or crisis. It was theorized that individuals with a strong global identity would take climate change more seriously (Loy et al., 2021a) or be more concerned about the threat of climate change to human survival (Kim et al., 2021). As such, they are more attuned to climate change issues and act to mitigate the threat. The findings of the study by Loy et al. (2021a) support the conceptualization that relevance mediates the relationship between global identity and PEB. Kim et al. (2021) revealed that global identity had a significant direct negative effect on psychological

distance and an indirect positive effect on ascribed responsibility *via* psychological distance. However, further analysis revealed that the indirect relationship between global identity and PEB intention was not significant.

It is worth noting that Kim et al. (2021) was the only study that included all three major mediators: personal norm (obligation), ascribed responsibility (responsibility), and psychological distance (relevance). The findings showed that global identity was related to reduced psychological distance of climate change, but it did not indirectly predict PEB *via* any of the three mediators. The structural model results showed that psychological distance had

a negative indirect relationship with personal norm *via* ascribed responsibility, and personal norm in turn had a direct effect on environmental behavioral intention. This finding suggests that obligation is most proximal to PEB and responsibility had an indirect relationship with PEB *via* obligation, whereas relevance bridged global identity and responsibility. This observation by Kim et al. (2021) suggest that the mediators may have varying levels of association with global identity and PEB. This contrasts with findings from other studies that considered only one of the three major mediators, where the direct and the indirect relationships of global identity and PEB were significant. While the single-mediator studies are valuable and provide a good start in understanding the specific underlying mechanisms, *we recommend that future studies consider a more complex relationship by exploring the interplay of the major mediators and examine how the findings may compare with those by Kim et al. (2021). [Recommendation #3].*

Furlong and Vignoles (2021) considered none of the aforesaid major mediators but factors from the social identity model of collective action (van Zomeren et al., 2012) and the encapsulated model of social identity in collective action (Fattori et al., 2015): moral convictions, efficacy, anger, and environmental movement-specific identity. Their final model suggested that global identity predicted participative efficacy, which in turn indirect predicted PEB *via* movement-specific identity. In addition, global identity was related to moral conviction (defined as an absolute stance on a moral issue), and moral conviction predicted anger. This study by Furlong and Vignoles (2021) has two implications for future studies. First, the effects of global identity and relevant mediators on PEB may depend on the type of PEB in question. The PEB in Furlong and Vignoles (2021) was related to a specific environmental movement that can be categorized as environmental activism (Stern, 2000), such as blocking a road during a demonstration and participating in a hunger strike. Echoing the discussion earlier, this is drastically different from operationalizing PEB as daily behavior in the private sphere, be it refraining from flying (Loy et al., 2021b), reducing food waste (Pong, 2021), or aggregating a list of daily PEB, such as recycling and taking shorter showers (e.g., Der-Karabetian et al., 2014). Referring to existing behavioral models, the major motivational factors in collective action (e.g., collective efficacy, negative group-based emotions, moral conviction and social identity in the social identity model of collective action; van Zomeren et al., 2012) are different from the motivational factors underlying private-sphere behavior (e.g., attitude, subjective norm and perceived behavioral control in the theory of planned behavior; Ajzen, 1991). It is possible that the effect of global identity and mediators may vary depending on the pro-environmental outcomes being measured. *We recommend that future studies consider comparing the effect of global identity and the type of mediators based on the type of PEB [Recommendation #4].*

The second implication of Furlong and Vignoles (2021) is related to emotions; it was the only study in this review that considered the role of emotions. The study was based on two models: the social identity model of collective action (van Zomeren et al., 2008) and the encapsulated model of social identity in collective action (Thomas et al., 2012). Both models considered affective injustice, in particular, anger as a group-based emotion in response to injustice. We observe that group-based emotions is a relevant and underexplored area in global identity research. In social identity research, group-based emotions refer to people's emotional responses to ingroup concerns, as opposed to personal concerns, when their group membership is salient (Yzerbyt et al., 2016). In the context of environmental problems, individuals also experience group-based emotions where they respond emotionally to the responsibility for environmental harm and protection done by their ingroup members, especially when they strongly identify with the group in question (van Zomeren et al., 2008; Harth et al., 2013). Harth et al. (2013) empirically demonstrated that group-based emotions such as anger, pride, and guilt that were directed toward ingroup members were relevant in eliciting different PEBs. For example, anger predicted intentions to punish in-group wrongdoers who have harmed the environment and guilt predicted reparative behavioral intentions such as contributing to repairing the damage to the environment caused by in-group members. These emotions were found to mediate the relationship between in-group responsibility and behavioral intentions.

Another notable feature of Furlong and Vignoles (2021) is that it referred to not only negative emotions (guilt/shame, anger, fear) but also a positive emotion (hope). Although Furlong and Vignoles (2021) did not find hope to be a significant driver of environmental activism, positive emotions may still be relevant to other forms of PEB. Indeed, positive emotions have been linked to PEB in previous studies. For example, pride predicted environmental protection intentions that favored the in-group (Harth et al., 2013). Pride shifts individuals to focus on environmental achievements. Taking responsibility for environmental protection as a group and contemplating the group's past environmental achievements could lead to the emotion of pride, which, in turn, motivates intention for further action. This previous finding suggests that both negative and positive emotions may have a role to play underlying the behavioral effects of global identity and PEB. *We recommend that researchers explore the role of emotions, including group-based emotions and positive emotions, in the relationship of global identity and PEB [Recommendation #5].*

3.4. Additional observations

We made additional observations regarding the research methods used in the reviewed previous research. We now discuss these observations and provide recommendations for future research.

3.4.1. Measurement of global identity

Among the 30 articles reviewed, 17 distinct[1] global identity measures were identified and nine of them were not covered in previous reviews (McFarland et al., 2019; Reysen, 2022) or empirical analysis (McFarland and Hornsby, 2015). One of the nine measures was an established measure: the "Local-Global Identity" measure by Tu et al. (2012) used in two studies (Ng and Basu, 2019; Kim et al., 2021). The remaining eight measures were created

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1 By distinct we mean any adapted version was not counted as a separate scale. For example, different versions of the Identification With All Humanity scale that had been used, from 8 items to 10 items in different languages, were counted as one distinct measure. Similarly, the Global Citizenship Identification by Reysen and Katzarska-Miller (2013) had versions of 2 items, 22 items, and one combined with items from another scale; all adapted versions were counted as one distinct measure.

solely for use in specific studies (Iwata, 1996; Russell and Russell, 2010; Strizhakova and Coulter, 2013; Barth et al., 2015; Janmaimool and Khajohnmanee, 2020; Leithead and Humble, 2020; Furlong and Vignoles, 2021; Aydin et al., 2022) and were not used in other studies on this topic.

Different versions of the same measures were observed in addition to the number of distinct measures. For example, the original Identification With All Humanity scale consisted of nine items and was designed with one dimension. A few studies adopted the conceptualization of Identification With All Humanity with two dimensions by Reese et al. (2015) consisting of eight items. While Identification With All Humanity was designed to capture an individual's stable characteristics (McFarland et al., 2012), one study measured "situational global identity," that is, how participants thought and felt about global identity after having read a news piece on climate change (Loy et al., 2021a). This modified version of the Identification With All Humanity scale included five items assessing the self-definition dimension (merely identifying oneself as a member) and five items assessing the self-investment dimension (a sense of solidarity) to measure situational global identity. Another study also examined the role of momentary increased salience of global identity, but instead of using a scale to measure momentary salience, they adopted a manipulation by asking participants in the experimental group to unscramble sentences related to global identity (Ng and Basu, 2019).

Unlike all other definitions that considered only humans, two studies referred to a broader conceptualization of the world (Renger and Reese, 2017; Kim et al., 2021). The two studies extended global identity beyond all humans to the Earth, for humans were from nature, and humans were emotionally connected to both human society and the Earth. However, only one measure reflected this definition (Renger and Reese, 2017). The other measure did not explicitly reflect the connection to Earth (Kim et al., 2021).

Although the main objective of this systematic review was to understand the relationship between global identity and the constructs of PEB and EC, it also added to the two past reviews and an analysis of global identity measures in psychology (McFarland and Hornsby, 2015; McFarland et al., 2019; Reysen, 2022). Together, the three articles covered 10 unique measures, and the systematic search in the present review yielded seven additional distinct global identity measures. Several of these measures were published after 2010. It is exciting to witness the burgeoning development and use of global identity measures in the past decade. That said, there seem to have been overlapping research efforts in this area. This is an unavoidable problem for an area of research that is still in its infancy. *We recommend that future research empirically examines the convergence and divergence of this wide variety of measures and thereby identify the best way of assessing global identity [Recommendation #6].*

3.4.2. Measurement of PEB and EC

A variety of environment-related constructs were used to operationalize the outcomes. We coded each measure according to type. For example, a scale that measures intention to reduce clothing consumption (Joanes, 2019) would be coded as "intentions." Alternatively, if participants were asked if they were willing to pay for materials printed on recycled paper (Ng and Basu, 2019) would be coded as "willingness to pay." Twenty types of

measures were found. Some studies included more than one type, and 50 measures were used in the 35 studies.

The most common types were behavior-related measures, including behavioral intentions ($n = 11$ studies), self-report on-going habits ($n = 11$), policy support ($n = 4$), willingness to pay ($n = 4$), self-report past behavior ($n = 3$), behavior proxy ($n = 3$), and environmental activism ($n = 1$). Together, these accounted for over 60% of the total measures used in the studies.

Most studies adopted self-report measures. Only one study used observational measures in a laboratory setting as indicators of behavioral intentions (Loy et al., 2021a). Two measures were employed during the study: information viewing time and budget allocation.

Due to the intention-behavior gap (Bamberg and Möser, 2007) and social desirability effect (Vesely and Klöckner, 2020), it is important to examine the effect of global identity on actual behavior with real environmental and personal consequences, and to understand the underlying mechanisms to mobilize global efforts to tackle environmental problems and climate change. For example, researchers may consider observations of behavior in the field using either observers or devices such as smart meters that measure energy consumption (Lange and Dewitte, 2019). Researchers may also consider employing the pro-environmental behavior task developed by Lange et al. (2018) to observe behavior with actual personal time costs in a laboratory setting. *We recommend future studies go beyond measuring behavioral intentions and self-report behavior and consider measuring observations in the laboratory or in the field [Recommendation #7].*

3.4.3. Sampling

We examined the demographics of the samples by coding the country of origin and age group of each study. We chose to identify the country in which the data collection occurred rather than to code the nationality of the participants because of an overall lack of information on the composition of the participants in terms of ethnicity and nationality. Excluding three studies that used data from the World Value Survey (Wave 5, 2005–2009 and/or Wave 6, 2010–2014) in which samples from dozens of countries were drawn, we found that the remaining 32 studies drew samples from a total of 19 different countries (some from multiple countries in the same study), with the US in the lead (15 samples), followed by Germany (7 samples), and all other countries represented only once or twice (Figure 2).

The dominance of Western, educated, industrialized, rich, and democratic (WEIRD) countries (Henrich et al., 2010) in the drawn samples was apparent in other ways: Even when some studies recruited participants from multiple countries, they recruited from Western countries only and countries and regions from other parts of the world were underrepresented. Although the education level distribution of the community samples was largely unavailable, close to half of the studies (14 of the 32 studies) consisted solely of university students as participants. They reported a mean age of 19.36 to 32 years, with two studies reporting a mean age under 20 years, one over 30 years, and the majority of them under 25. Almost two-thirds of these countries are highly developed with a high literacy rate and national income, as indicated by the Human Development Index scores of 0.80 and above (United Nations Development Programme, 2020). Some studies recruited
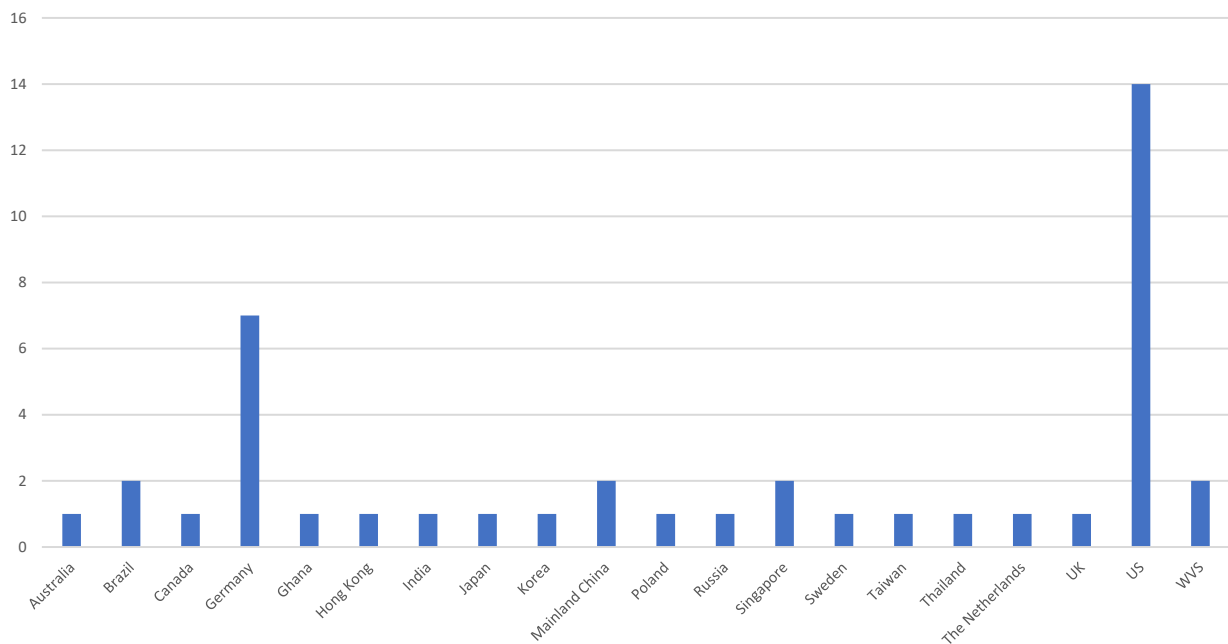
FIGURE 2
Region/country in which data was collected. WVS stands for World Value Survey (2005−2009). Two studies used data from WVS [**Study 1** in Ng and Basu (2019); Running, 2013].

community samples (11 studies) or used a mixed sample of students and community members (5 studies). Nonetheless, the mean age of the participants hovered around 30 to 40 years of age in the community samples. Thus, different generations can be better represented.

This finding of dominance of WEIRD countries is in line with past observations (Arnett, 2002; Tam and Milfont, 2020; Tam et al., 2021). Although this issue is already widely known in psychological and behavioral research, we believe it is of particular importance to this topic, not only because environmental problems concern every population in the world, but also because there is some preliminary evidence on the potential cross-national variability of the relationship between global identity and PEB and EC (Der-Karabetian et al., 2014; Der-Karabetian and Alfaro, 2015). *We recommend that future studies expand the geographic and demographic representation of their samples; accurate and detailed reporting of sample characteristics is also encouraged [Recommendation #8].*

4. General discussion

With growing research interest in the relationship between global identity and environmentalism, there is a need to integrate and synthesize existing research. The present systematic review aimed to meet this need by reviewing the empirical evidence regarding this relationship and examining its theoretical underpinnings. In the following section, we elaborate on the theoretical significance of the synthesized evidence. We will also summarize our recommendations made previously in correspondence with our key observations and propose two additional ones (concerning the potential

dynamics between global identity and other forms of social identity, and emotional burden, specifically in the form of climate anxiety, as a potential psychological consequence of global identity).

4.1. Theoretical significance

Findings in this systematic review reveal strong support to the notion that individuals with stronger global identity have greater EC and are more likely to engage in PEB, which benefit not only the wellbeing of the planet but also the welfare of all humans. These findings are in line with what the social identity theory and self-categorization theory suggest: When identifying with a group, individuals become concerned about the welfare of fellow group members and are more likely to act in the interest of the group. Findings from a small subset of the reviewed studies further support this notion by uncovering the psychological mechanisms underlying the link between global identity and PEB and EC. They referred to such relevant constructs as obligation, responsibility, and relevance, and revealed viable ways to integrate the social identity perspective with other psychological theories and models (e.g., the theory of planned behavior, psychological distance, the norm activation model, the social identity model of collective action).

It should be noted that the role of social identity has been widely discussed in research on humans' responses to environmental issues. Social identity plays as a centerpiece in such models as the social identity model of collective action (van Zomeren et al., 2008; Bamberg et al., 2015), the encapsulated model of social identity in collective action (Fattori et al., 2015)

and, most recently, the social identity model of pro-environmental action (Fritsche et al., 2018). These models similarly suggest that social identity is a key driver behind engagement in collective environmental actions. The findings reviewed in the current systematic review expand these models in the following ways. First, they not only affirm that social identity is a key driver behind environmental engagement but also highlight that the types of social identity that bear environmental implications are not limited to only groups that are explicitly associated with the environmental movement (e.g., environmentalists, a specific environmental campaign), which have been the typical focus in the aforementioned models. Our findings suggest that global identity, a highly inclusive type of identity that does not bear any apparent association with environmentalism, could also bear a significant effect on pro-environmental outcomes. Second, the studies included in the present review considered various types of pro-environmental outcomes that are not limited to only collective action, the main focus in some of the aforementioned models. Global identity has been shown to be associated with a wide range of environmental behavior, including not only collective environmental action such as environmental protests but also private-sphere behavior and policy support.

Third, while the aforementioned models commonly consider group-based grievance and hence anger as a potential mechanism behind the effect of social identity on engagement in collective environmental action, the present review suggests the potential roles of other emotions. For example, in a few studies, one's sense of responsibility for causing cause environmental problems was found to be a mediator behind the effect of global identity and PEB and EC. It is conceivable to expect that guilt, which is often associated with the recognition of one's own wrongdoings and the motivation to repair damages (Harth et al., 2013), could be another emotion that underlies the effect of global identity on PEB and EC. Positive emotions such as hope (Kleres and Wettergren, 2017) and pride (Harth et al., 2013) could be relevant too. It is argued that individuals with stronger global identity may feel a stronger sense of hope and optimism and experience more pride as they reflect on the progress and achievements humans have made so far in the mitigation against environmental problems (e.g., the Paris Agreement, advances in environmental technology).

Taken together, the current review reveals some new nuances regarding how social identity is associated with pro-environmental outcomes. In the following, building upon these new nuances, we recommend some important directions for future research on the topic.

4.2. Future research directions

4.2.1. Recommendations already made

In the discussion in the previous section, we identified eight recommendations for future research. The results are summarized in Table 3. Overall, these recommendations can be categorized into three groups: understanding the relationship between global identity and PEB and EC; expanding the main constructs; and sampling considerations.

The findings of this review suggest that the relationship, though robustly positive, is not always straightforward. This relationship is not necessarily consistent across societal contexts (e.g., Der-Karabetian et al., 2014; Der-Karabetian and Alfaro, 2015). An indirect effect of global identity could exist, even in the absence of a significant direct effect (e.g., Chan et al., 2020; Furlong and Vignoles, 2021). Multiple mediators underlying this relationship are likely to be involved (e.g., Joanes, 2019; Kim et al., 2021). In addition, the strength of the relationship and type of mediating factors may vary depending on the type of PEB (e.g., Chan et al., 2020; Furlong and Vignoles, 2021). Emotions could play a significant role in this relationship; however, they have been understudied. Accordingly, we recommend that future studies explore between-society variability in the relationship (Recommendation #1), explore the potential underlying mediating mechanisms (Recommendation #2), consider the interplay of multiple mediators (Recommendation #3), examine the extent to which the relationship depends on the type of PEB (Recommendation #4), and explore the role of emotions, including group-based emotions and moral emotions, both positive and negative, in the relationship (Recommendation #5). We have summarized the tested mediators of the relationship and the proposed mediators of emotions in Figure 3.

The second set of recommendations concerns the measurement of the two main constructs. For global identity, we observed heterogeneity in the measures for the construct, where a total of 17 distinct measures were identified. In contrast, PEB and EC were almost exclusively assessed using self-report measures, and over 60% of the measures were behavior related. We recommend that future studies examine how the various measures of global identity converge and diverge (Recommendation #6) and use observational measures of actual behavior (Recommendation #7).

The final recommendation concerns sampling. As mentioned, there appear to be cross-national differences in the relationship between global identity and PEB and EC. We also observed that participants from WEIRD countries dominated the samples in the reviewed studies; participants tended to be in their 20 s for university samples and in their 30 s to late 40 s for community samples. We recommend that future studies diversify the geographic and demographic representation of their samples (Recommendation #8).

4.2.2. Two additional recommendations

In addition to the aforementioned recommendations, which correspond to the key observations reported earlier, we make the following two recommendations:

People tend to have multiple group memberships (Turner et al., 1987; McFarland et al., 2012). It is possible that the interests of multiple groups a person identifies with at the same time conflict with each other. One may identify with all humanity (global identity) as well as one's neighborhood (community identity), and the interests of humanity as a whole may conflict with those of the local neighborhood. The Not-In-My-Backyard phenomenon is an illustrative example (e.g., Devine-Wright, 2009). Despite popular public support for renewable energy in opinion polls, renewable energy projects are often met with fierce opposition from residents. These projects may be perceived as disruptions to the neighborhood and the local community, and hence,

TABLE 3 Summary of recommendations.

Recommendation #	Section origin	Description of recommendation	Reason(s)
#1	3.1. Evidence on the positive relationship between global identity and PEB and EC	Consider diverse sampling to explore potential national/cultural differences in the relationship	Cross-national differences found in the relationship between global identity and PEB and EC (some relationships were non-significant; Der-Karabetian et al., 2014; Der-Karabetian and Alfaro, 2015)
#2	3.1. Evidence on the positive relationship between global identity and PEB and EC	Explore the indirect effect of global identity by considering the underlying mechanisms of the relationship between global identity and PEB/EC	A non-significant direct relationship of global identity and PEB but a significant indirect relationship (Chan et al., 2020; Furlong and Vignoles, 2021)
#3	3.3. Evidence on the mediating mechanisms underlying the positive relationship	Explore the interplay between the three major mediators (obligation, responsibility and relevance)	Findings showed that mediators had varying levels of association with global identity and PEB (Joanes, 2019; Kim et al., 2021)
#4	3.3. Evidence on the mediating mechanisms underlying the positive relationship	Compare the effect of global identity and the type of mediators based on the type of PEB	Different theoretical models with different mediators were used to explain different types of PEB, such as collective action model with anger and moral conviction was used in environmental activism (Furlong and Vignoles, 2021), and theory of planned behavior with attitude and obligation in private PEB (Chan et al., 2020).
#5	3.3. Evidence on the mediating mechanisms underlying the positive relationship	Explore the role of emotions, group-based emotions, moral emotions, and positive emotions, in the relationship of global identity and PEB	Findings showed that anger played a role in mediating global identity and environmental activism (Furlong and Vignoles, 2021). This is the only study that considered emotions as a mediator. Emotions are underexplored in the study of the relationship between global identity and PEB and EC
#6	3.4.1. Measurement of global identity	Examine how the various global identity measures converge and diverge	In the 32 articles reviewed, 17 distinct global identity measures were identified. Different versions of the same scales were found (Identification With All Humanity, McFarland and Hornsby, 2015; Global Citizenship Identification, Reysen and Katzarska-Miller, 2013)
#7	3.4.2. Measurement of PEB and EC	Go beyond measuring behavioral intentions and self-report behavior and consider measuring observations in the laboratory or in the field	Over 60% of the studies adopted behavior-related measures and all studies employed surveys to measure PEB and EC with one exception: Only one study (Loy et al., 2021a) used observations in the laboratory
#8	3.4.3. Sampling	Expand the geographic and demographic representation of samples; accurate and detailed reporting of sample characteristics is also encouraged	Dominance of WEIRD countries in sampling. Mean ages of participants were 30 to late 40 s.
#9	4.2.2. Two additional recommendations	Pay close attention to the dynamics between global identity and other social identities and test their effects on PEB and EC in the context of specific environmental problems and issues wherein these different types of social identity may generate differential effects	A person tends to have multiple group memberships and the interests of these groups may conflict with each other. This conflict of interests may have implications on PEB and EC.
#10	4.2.2. Two additional recommendations	Explore maladaptive responses as a potential outcome of global identity	Climate anxiety is a psychological response to climate change (Clayton and Karazsia, 2020). Since strong global identity were related to obligation, responsibility and relevance, it would be important to explore the psychological burden of global identity

a threat to one's community identity. In other words, while supporting renewable energy projects would be in line with a person's support for climate efforts based on their global identity, it may contradict their local community identity. Aydin et al. (2022) empirically examined this line of thought. They compared nationalism (a negative form of national identification related to right-wing authoritarianism and social dominance orientation), patriotism (a positive form of national identification related to place attachment), and global identity. They found that patriotism and global identity were positively related to pro-environmental beliefs and PEB, whereas nationalism was negatively related to

pro-environmental beliefs and activism. This observation implies that the effect of global identity on environmentalism should be situated within the context of the effects of other types of social identity. *We recommend that future studies pay close attention to the dynamics between global identity and other social identities and test their effects on PEB and EC in the context of specific environmental problems and issues wherein these different types of social identity may generate differential effects [Recommendation #9].*

As seen in our review, the existing research on the environmental implications of global identity has tended to focus
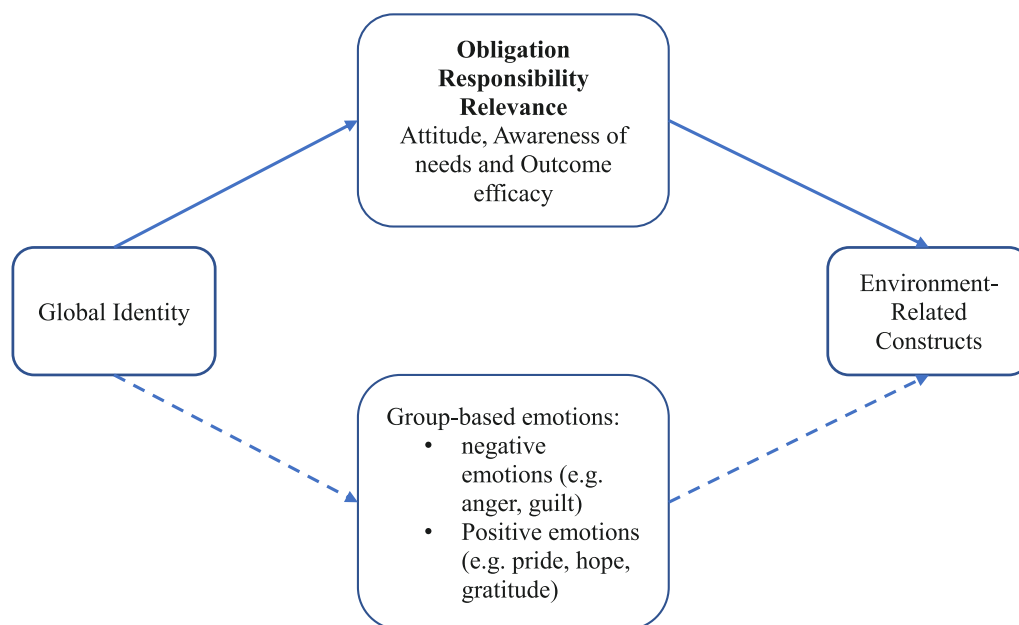
FIGURE 3
Tested and proposed underlying mechanisms. The box with solid lines at the top of the diagram houses the underlying mechanisms tested in the nine studies reviewed. The three mechanisms in bold are the three major themes. The box with the dash lines at the bottom of the diagram showed proposed underlying mechanisms.

solely on its positive effects; that is, previous studies have mostly focused on the extent to which global identity motivates people to respond actively and adaptively to various environmental problems, such as climate change, in the form of PEB. However, it should be noted that humans could also respond to environmental problems in a maladaptive manner. For instance, emerging research shows that climate change can have a negative impact on mental health even among people who do not have a direct experience of climate-related extreme events or disasters *via* the effect of climate change anxiety (Clayton and Karazsia, 2020) or eco-anxiety (Stanley et al., 2021). Findings show that higher climate change anxiety is associated with poorer mental health, including more clinically significant anxiety and depressive symptoms, lower levels of psychological wellbeing, and higher levels of psychological distress and ill-being (e.g., Hickman et al., 2021; Schwartz et al., 2022). In response to the experienced and anticipated impacts of climate change, some people develop cognitive and emotional impairments (e.g., difficulty in concentrating and having nightmares) and functional impairment (e.g., difficulty at work and in interpersonal relationships; Clayton and Karazsia, 2020). Given that global identity represents a greater concern for the environment and the wellbeing of fellow humans, it is conceivable that it can lead to a greater psychological burden and emotional toll in the form of anxiety, impairment, and other mental symptoms as people face climate change and many other environmental problems. To the best of our knowledge, this possibility has not yet been explored in the literature. *We recommend that future research considers maladaptive responses as a potential outcome of global identity [Recommendation #10].*

5. Conclusion

The interconnectedness and common fate among humans, as well as the interdependence between humans and the environment, suggest the imperative to consider an all-inclusive, superordinate identity that can unite everyone in the world together in the battle against global problems such as climate change and environmental crises. The present systematic review exposes the empirical validity of this contention and highlights gaps that are yet to be filled by future research. We call upon researchers across disciplines to consider our recommendations and continue to build a nuanced understanding of this topic.

Data availability statement

The original contributions presented in this study are included in the article/Supplementary material, further inquiries can be directed to the corresponding author.

Author contributions

VP: data curation, formal analysis, methodology, project administration, validation, visualization, writing—original draft preparation, and writing—review and editing. K-PT: conceptualization, methodology, project administration, and writing—review and editing. Both authors contributed to the article and approved the submitted version.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Supplementary material

The Supplementary Material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fpsyg.2023.1033564/full#supplementary-material

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Global social identity predicts cooperation at local, national, and global levels: Results from international experiments

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Individuals who identify themselves with humanity as a whole tend to be more prosocial in a number of different domains, from giving to international charities to volunteering for humanitarian causes. In this paper, we show that global identity is "inclusive" in character. That is, rather than neglecting or diminishing attachments to local and national groups, identification with all of humanity encourages individuals to embrace local and national goals at no lesser intensity than they embrace global goals. We have done so using experimental data on social dilemmas at the local level and nested social dilemmas at the local and national level, as well as at the local and world levels. Experiments were conducted with adult samples in the United States, Italy, Russia, Argentina, South Africa, and Iran. We show that the higher the identification with global collectives, net of identification with local and national collectives, the higher the cooperation at the local, national, and world levels. Conversely, local social identity is not significantly associated with cooperation at any level of interaction, while national social identity, net of local and global identification, tends overall to have a negative correlation with cooperation, particularly at the local level. We also show that individuals with strong global identity are significantly more optimistic of others' contributions than individuals with lower levels of global identification, but they are as accurate as others in predicting others' cooperation at the local and national levels. Their forecast error is instead systematically larger than that of all others for cooperation at the world level.

KEYWORDS

global social identity, cooperation, international experiments, local cooperation, national cooperation, global cooperation, local social identity, national social identity

1. Introduction

One of the tenets of social psychology is that individuals identify themselves with groups and make group goals their own goals (Kramer and Brewer, 1986; Turner et al., 1987; Brewer, 1991; De Cremer and Van Vugt, 1999). Converging evidence has been gathered in support of the idea that individuals who identify themselves with humanity as a whole, rather than (or in addition to) identifying with their nation or their locality, are also more prosocial in a number of different domains, including support for international charities, volunteering for humanitarian causes, collective action against global injustice, environmental activism, and concern for human rights (Barth et al., 2015; Renger and Reese, 2017; McFarland et al., 2019). Individuals with higher identification with humanity as a whole (IWAH) have been shown to be more willing

than others to give to charities, particularly those with global humanitarian goals. This has been shown to be the case in both hypothetical survey questions and actual monetary donation choices. Ethnocentrism, which is attachment to the local community and nation, had a less significant role (McFarland et al., 2012; McFarland, 2017; Hamer et al., 2019; Sparkman and Hamer, 2020).

Using a measure of global social identity that is structurally equivalent to the identity subscale of the IWAH measure, Grimalda et al. (2021) also found that individuals with high social identity were more inclined to donate to charities that are active at the global level in providing COVID-19 relief and were more generous than those who donated at the national or local level. In addition, individuals with high global social identity have been found to be more willing to cooperate at the global level in international cooperation experiments (Buchan et al., 2011).

While this converging evidence suggests that globally identifying individuals are more prosocial than others when interacting at the global level, it leaves open the question as to whether these individuals are more or less prosocial than others when interaction takes place at the lower levels of collectivities—the local and national levels in particular. One could posit that global identity is "exclusive" in character. This would be the case if global identity represents strong psychological identification only with distal others and global-level causes, while at the same time weakening identification with members of local and national communities and diminishing the willingness to support local and national goals. The contrasting hypothesis is that global identification is "inclusive" in character. That is, rather than neglecting or diminishing the attachment to local and national groups, identification with all of humanity may encourage individuals to embrace local and national goals at no lesser intensity than they embrace global goals. What would characterize global social identification, then, would be the propensity to extend the "radius" of prosociality to the highest possible level without abandoning identification with the lower levels.

In this paper, we draw on data collected in previous research by our team (Buchan et al., 2009) to test whether global social identity is exclusive or inclusive in character. In experiments conducted in six different countries using a nested social dilemma paradigm, we were able to assess the role of local, national, and global identity as predictors of contributions to a public good involving local, national, or global collectives. In addition, we evaluated the influence of global identification relative to other measures of globalization and global concerns on cooperation.

The extant literature takes opposing views on the nature of global identity. The theoretical political science literature tends to see national and global identity as mutually exclusive (Smith, 1995; Strange, 1996; see Kymlicka, 2001 for an exception). Identifying with global others entails almost automatically distancing oneself from local or national identification. Thus, the matter of debate is whether globalization fosters one or the other form of identity. Some scholars—most notably Hobsbawm (1992)—have argued that nationalism will progressively wane, because the relentless transnational flow of information, people, and products made possible by globalization (Gygli et al., 2019) reduces the capability for any single national identity to retain its unique significance and distinguish itself from other national identities (Ariely, 2012). Conversely, others—most notably Smith (1995) and Calhoun (2007)—have argued that it is precisely in a time of increased globalization that a sense of national

belonging is even more needed. Some have posited the possibility of a "backlash" against globalization in some groups, while other groups, especially elites, would develop global identities (Norris, 2005; Castells, 2011).

The empirical attempts to measure the impact of country-level globalization on identity have obtained contrasting results. While some have found evidence of a negative link between globalization and nationalism (Norris and Inglehart, 2009; Cichocka et al., 2022), others have found no effect (Jung, 2008). Ariely (2012) detects a negative effect of globalization on some aspects of national identity—namely, patriotism and the view that ethnicity defines national identity—but not on others—namely, national identification and the view that one's national culture is superior to others' cultures. Hamer et al. (2018) show how IWAH connects with national identification, patriotism, nationalism, and collective narcissism.

The social psychology literature has also investigated the notion of inclusiveness, albeit from a different angle. The matter of the debate has been whether prosociality, i.e., the willingness to cooperate with others, is limited to one's ingroup—i.e., the group with which an individual identifies—or is universal. Some have posited an exclusive nature of prosociality (Aaldering et al., 2018; De Dreu et al., 2022), which may be driven by evolutionary processes of group-level selection whereby the development of cooperation for one's ingroup is associated with the willingness to hurt the outgroup (Choi and Bowles, 2007). Others have claimed that individuals classified as prosocials, on the basis of either social value orientation or the humility–honesty scale, are recognizably universal in their prosociality (Thielmann and Böhm, 2016; Aaldering and Böhm, 2020). That is, their willingness to cooperate is not limited to one's ingroup but extends to the outgroup as well.

The main hypothesis we want to test is whether global social identity is inclusive or exclusive in character. In our approach, inclusiveness implies that people identifying with global others should be as cooperative in national and local interactions as they are in global interactions. Exclusiveness implies that people identifying with the global community should be less cooperative in national and local interactions than they are in global interactions. Our previous work (Buchan et al., 2009, 2011) focused exclusively on global cooperation and ascertained that global social identity is highly correlated with cooperation at the global level. Such studies were, therefore, silent on how global social identity correlated with cooperation at the local and national levels. This is the subject of this paper. We find that global social identity is inclusive in character, in that the higher the score in the GSI, the higher the propensity to cooperate at the national and local levels.

After investigating the nature of the relationship between GSI and cooperation, we wanted to better understand the psychological mechanisms underpinning this relationship. It has been posited that expectations on others' cooperation have an important role in shaping individual propensity to cooperate (Brewer, 1986; Yamagishi and Kiyonari, 2000; Foddy et al., 2009). We have posited a theoretical mechanism whereby social identity, at various levels, influences expectations on others' behavior at the same level, which in turn affects cooperation. We test this hypothesis through a Sobel–Goodman mediation analysis.

Finally, after establishing the relevance of expectations as a mediator between GSI and cooperation, we investigate whether the

expectations are accurate or misplaced. Uslaner (2002) and Yamagishi (2007) posit that trusting individuals may be excessively optimistic of others' trustworthiness, thus leading to levels of trust in others that are, in fact, economically unprofitable. A process of cognitive dissonance (Festinger, 1954) may keep up members' motivation to trust others even if these others are not entirely trustworthy. An alternative account is that trusting individuals does hold realistic beliefs on others' low trustworthiness levels, their trust in others being supported by their altruism rather than by their expectations. In relation to this, Dorrough and Glöckner (2016) find large inaccuracies in the way individuals estimate cooperation levels among people from different countries. Comparing our measures of expectations on others' cooperation in the experiment with actual cooperative behavior, we ascertain that individuals scoring high on GSI are somewhat overly optimistic on others' global cooperation levels but are as accurate as others in their expectations at the local and national levels.

2. Methods

The experimental protocol, instructions, and questionnaire are available in the Appendix: Supplementary Methods and at the project repository: https://osf.io/ks2u5.

2.1. Sample

Our project involved adult populations from specific locations in six different countries (Iran, South Africa, Argentina, Russia, Italy, and the United States). Research sites were selected for this research with the goal of representing a sufficient degree of variability on the globalization spectrum as ranked by the Country Globalization Index (CGI), developed by Lockwood and Redoano (2005) (see Appendix: Section A.1 and Table A.1 for details on the CGI index). Six countries were chosen, with the aim of both maximizing the dispersion of each sphere of the CGI—namely, the economic, social, and political spheres—and of ensuring a sufficient geographic dispersion, so that each continent other than Oceania was represented. The resulting countries were Italy and Argentina (at the highest and lowest positions in the economic globalization subindex, respectively); United States and South Africa (at the extremes of the social globalization index); and Russia and Iran (at the extremes of the political globalization index).

We selected several locations in each country that, on the basis of available information prior to conducting the research, represented differing levels of exposure to globalization in terms of, for instance, the relative presence of multi-national corporations or the presence of immigrant populations. In general, in each country a large urban center was designated as the "hub" of the fieldwork, and less globalized towns or villages were selected within a radius of around 100 miles. Hub localities in the United States, Italy, Russia, and Argentina were Columbus (Ohio), Milan, Kazan (Tatarastan), and Buenos Aires, respectively. For logistical constraints, the same strategy was not feasible in Iran and South Africa. In Iran, the two research sites were Tehran, Iran's capital and largest city, and Shiraz, the fifth largest city. In South Africa, the research sites were three districts of Northern Johannesburg and the district of Soweto, residents of the latter district

being almost exclusively of Black ethnic background. The research sites within Iran and South Africa are, nonetheless, characterized by appreciably different degrees of exposure to globalization within each country, thus ensuring the comparability of our samples across the countries.

Approximately 200 participants were recruited in each country according to a quota sampling method, the aim of which is to target a uniform distribution of observations across relevant demographic dimensions. This method is suitable for cross-country research because it achieves comparability. In our study, the criteria determining the quotas were age (three categories: 19–30, 31–50, and 51–70), gender (two categories: male and female), and social economic status (three categories: high, intermediate, and low). Descriptive statistics by country are reported in the Appendix: Table A.2.

2.2. Measurement of cooperation

The participants in our research took part in three experimental decisions that assessed their propensity to cooperate in public goods games (PGG), which entailed cooperation at the local level only (Decision 1), at the local and national level in a nested PGG (Decision 2), and at the local and global level in a nested PGG (Decision 3). Cooperation was measured through a Multi-level Sequential Contribution (MSC) game. The setting is similar to standard PGGs, except that that participants' decisions were made sequentially rather than simultaneously. The participants' decisions affected the payoffs of other participants taking part in future sessions. In turn, the participants' payoffs were determined by their own decisions and by the decisions made by participants in previous sessions.

At each decision stage, every participant was endowed with 10 tokens, each worth the purchasing power equivalent of US $0.50 in each country. In Decision 1, participants could allocate tokens between a "Personal" account and a "Local" group account. Three other individuals from the same locality as the participant also contributed to the Local group account. All tokens allocated to the Personal account were transferred to the individual at the end of the session in their entirety. That is, their marginal *per capita* return (MPCR) was 1.0. The tokens contributed by the four individuals to the Local account would be doubled by the researcher. The participant would then receive a quarter of such a doubled amount. Contributions to the Local account were characterized by the typical properties of a public goods game. First, each token contributed would beget a benefit to others. The Social Return in this case equaled 2.0, because each token contributed was multiplied by two before being returned to the group members. Second, since each token contributed to the group account would only yield half a token in return—resulting in an MPCR of 1/2—an individual desiring to maximize their payoffs should have contributed nothing to the Local account. On the contrary, individuals willing to maximize the total group payoffs should have contributed all 10 tokens.

Decision 2 was a nested PGG in which each participant could allocate the 10 tokens across three different groups named "Personal," "Local," and "Country." Each token allocated to the Personal account again had an MPCR of 1.0 and yielded no benefits to others. Each token allocated into the Local account had the same returns as in Decision 1, that is, an MPCR of 1/2 and Social Returns equal to 2.0. A total of 12 individuals could contribute to the National account—the

same four individuals comprising the Local group and two other groups of individuals from other localities in the country. Each token contributed to the National account would be multiplied by three by the researchers. A participant would then receive 1/12 of this amount. The MPCR from contributing to the National account was thus 1/4, lower than the MPCR from contributing to the other accounts. Nevertheless, the Social Returns equaled 3.0 and were thus higher than the Social Returns for the Local and Personal accounts. We believe that this return structure adequately represented the incentives and costs of cooperating at a local vs. a more aggregated level.

Finally, Decision 3 was a nested PGG in which individuals could allocate 10 tokens to the "Personal," "Local," and "World" accounts. The World group involved the same four individuals from the Local group and two groups of individuals from other countries. The MPCR and the Social Returns for each account were the same as those for Decision 2 for the corresponding account. Each token allocated to the Personal account again had an MPCR of 1.0 and no Social Returns. Each token allocated into the Local account had an MPCR of 1/2 and Social Returns equal to 2.0. Each token contributed to the World account had an MPCR of ¼ and Social Returns of 3.0. Even in Decisions 2 and 3, an individual desiring to maximize their final payoffs should have contributed nothing. The parameters of the three decisions are reported in Appendix: Table A.3. A summary of the experiment protocol and the whole experiment script are reported in Supplementary Methods: Sections SM.2–3.

The national areas and countries involved in Decision 2 and Decision 3, respectively, were not named. In particular, the participants were informed that these countries might have been in any part of the four continents where the research was conducted. Not naming countries or national areas made choices unaffected by biases or stereotypes about particular nationalities. This is important, because stereotypes can be deeply rooted and widespread worldwide while being simultaneously fundamentally wrong (Dorrough and Glöckner, 2016). This approach is also consistent with a definition of globality as a notion that transcends mere internationalization (Robertson, 1992; Scholte, 2005). Thus, contributing to either the Local or World accounts can be classified as a cooperative act in that the individual sacrifices immediate personal gain for greater gain at the collective level. The participants' identities were not revealed either to other participants or to the experimenter, as the game was played in conditions of anonymity. The participants were told that they were involved in a series of decisions involving people from their own local area, some of whom may or may not have been in the same room, and from other countries around the world.

The structure of incentives resembled a nested PGG similar to that employed by Wit and Kerr (2002) and Blackwell and McKee (2003). The design is displayed schematically in Figure 1. In the MSC, an individual willing to maximize their final payoffs should have allocated all their tokens to the Personal account, because both the Local and World accounts bore a smaller MPCR. If no one contributed, each participant would take home their initial 10 tokens. In our MSC, there was a tension between individual returns, social returns, and the locality of the people benefitting from one's contribution. Individuals allotting their tokens to their Local account could ensure the maximization of the interests of the Local constituency. However, if everyone contributed their endowment to their Local account, the final individual payoffs would be 20 tokens, which is less than if everyone allotted their tokens to the World account, that is, 30 tokens.

2.3. Measurement of social identity and other relevant constructs

Three social identity measures were included in the post-experiment questionnaire. The items were taken from the measure of social identity constructed by Yuki et al. (2004) and adapted to assess social identification at the levels of the local community, the nation, and the world. For example, in Kazan, Russia, the items measuring social identity at the level of the local community read:

1. How strongly do you feel attachment to *your community in Kazan*?
2. How strongly do you define yourself as a member of *your community in Kazan*?
3. How close do you feel to other members *of your community in Kazan*?

Social identities at the national and global levels, respectively, were measured by substituting "your community in Kazan" with following expressions: *"Russia" (or "Russian community")"* and *"the world as a whole."* Responses to each item were made on a rating scale from 1 (not at all) to 4 (very much).

The questionnaire also included some questions to assess awareness of and attitudes toward global processes. Robertson (1992) suggests that a key aspect of globalization is, in addition to participation in global networks, the "consciousness of the world as a whole." It is therefore important to assess how the key constructs in our analysis relate to one's global awareness. We constructed a "Global Awareness Index" based on the answers to four questionnaire items inquiring about a participant's awareness of the following global issues: global warming, the global spread of potentially dangerous diseases, the action of the International Criminal Courts of justice, and the persistent gap between rich and poor people around the world (see Appendix: Supplementary Methods SM.4, Question 4).

We also measured individual participation in global relations. Analogous to the CGI, this measure was designed to capture individual access to globalization within the social, cultural, political, and economic spheres. The resulting Individual Globalization Index (IGI) is a summative scale of 30 questionnaire items. The IGI index measures an individual's usage of various global networks in terms of two dimensions: the frequency with which an individual accesses the networks and the territorial scope. The index identifies several media of global connection and measures the temporal frequency with which the medium of connection is used by the individual and whether such a medium is used to contact people at the local, national, or global level. Although a given medium of connection, such as email, has a potentially global reach, an individual can also decide to use it for contacts at the local or national levels. The IGI, therefore, assigns higher scores to individuals who participate in the global network more frequently and to a wider extent than others. Further details on the IGI and the list of items making up the IGI are reported in Appendix: Section A.1 and Supplementary Methods: SM.5.
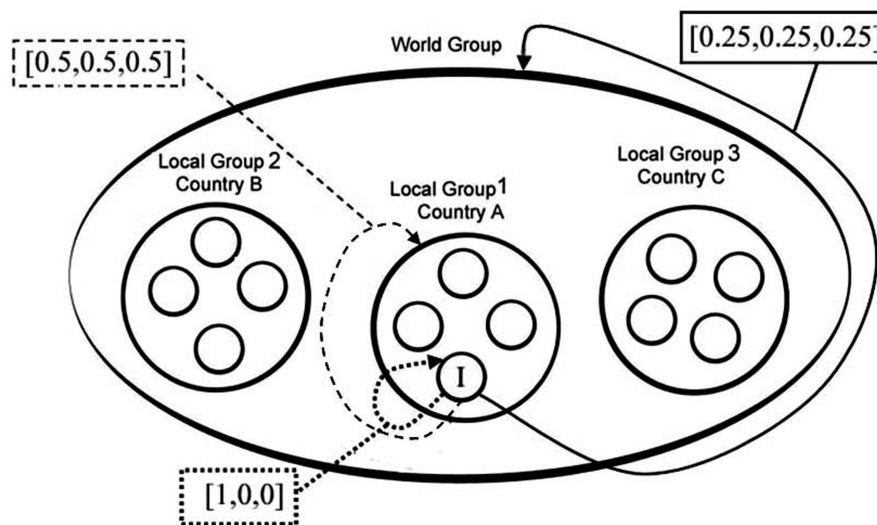
FIGURE 1
Representation of the nested social dilemma for Decision 3. I denotes the "Individual" participant. "Local 1," "Local 2," and "Local 3" represent groups of people residents in the same locality in three different countries. Individuals had three options on how to allocate their endowments of 10 tokens: allocating to a personal account, to their local account, and to the global account, which comprises the three lower-level local accounts. Contributions to the personal account were transferred one-to-one onto an individual's payoff. Contributions to one's local account were multiplied by a factor of two and divided among four local residents. Contributions to the global accounts were multiplied by a factor of three and divided evenly among the 12 participants.

3. Results

Codes to reproduce the analyses and the output of the statistical analyses are available at the project repository: https://osf.io/ytp9s/.

3.1. Descriptive statistics

The social identification scores at each level (local social identity—LSI; national social identity—NSI; and global social identity—GSI) were calculated by summing up the responses to the three items described in section 2.3. The scores, given originally in a 1–4 scale, have been normalized to the 0–1 interval. Thus, individuals scoring one (zero) in, for example, LSI answered that they felt a very strong attachment (no attachment) to their local community, defined themselves very strongly (not at all) as a member of their local community, and felt very close (not close at all) to other members of their local community. Individuals who expressed intermediate levels of attachment/membership/closeness (options 2 and 3 in the original scales) scored in the interior of the (0, 1) interval (see Appendix: SM4 Research Questionnaire, questions 21–23). The Cronbach's alphas for the indexes at the country level and in the aggregate are reported in Appendix: Table A.4. The alphas are always greater than 0.70, suggesting that the indexes are reliable, except for Russia, for which the alphas are around 0.60. A principal component analysis, however, suggests the unidimensionality of the three indexes, even for Russia (see analyses output).

Figure 2 plots the means of the three social identity measures in each country. For all countries, except the Russia, the strongest identification was on average at the national level, followed by the local and then the global levels. In Russia, identification was strongest at the local level, followed by the national and the global levels. The analyses

of the differences in the social identity indexes through non-parametric tests are reported in Appendix: Section A.2.

As mentioned in the introduction, our measure of global social identity is structurally equivalent to the identity items of the McFarland et al. (2012) "Identification with all humanity" (IWAH) measure that evaluates the extent to which an individual "cares for all humanity, not just for their ingroups." In the IWAH, respondents are asked to evaluate their identification with and attitudes toward (a) people in their community, (b) conationals, and (c) "all humans everywhere." Although the phrasing used to identify these three categories differs slightly from the one used here, the two measures appear comparable. In a sample comprising US participants only, the IWAH measure showed the same pattern we found in our study, with identification with the global community being lower than identification with local and national communities, the latter two being approximately equal to each other. Our multi-national analysis enables us to state that this same pattern holds even more pronouncedly in other countries, given that the US was at the lower end of the differences between GSI and the other social identity measures.

The Figure 3 plots mean cooperation according to the decision and country. One can note that cooperation in the first decision (local) is higher than cooperation in the second (national) and third (global) decisions. This is a consequence of the first decision being non-nested, so that individuals only had one public account to give to rather than two public accounts in the second and third decisions. Countries were ranked according to their globalization level, as measured by the CGI (see section 2.1). It is noticeable that mean cooperation tended to increase with the level of globalization of a country. This pattern extends what was already reported in Buchan et al. (2009), though for the third decision only. We report the correlations between social identity measures and cooperation in Appendix: Table A.5.
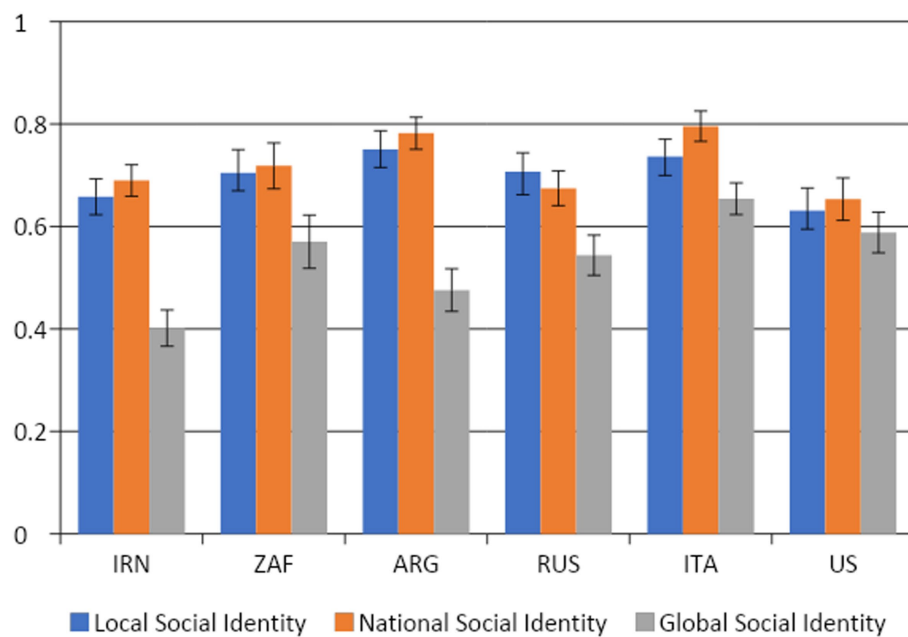
FIGURE 2
Mean of local, national, and global social identity by country. Capped bars plot 95% confidence intervals for the mean.
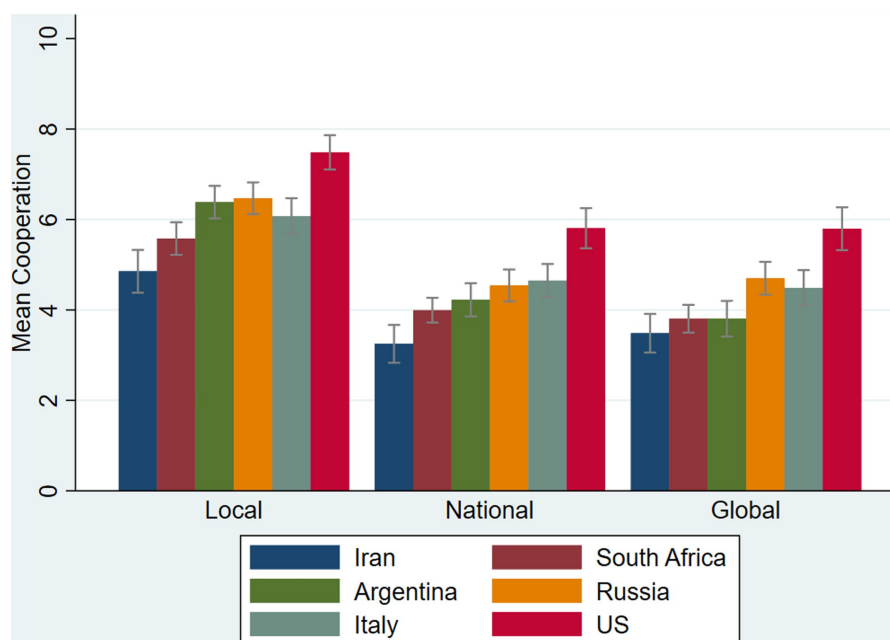

FIGURE 3
Mean cooperation by decision and country. Capped bars denote 95% confidence intervals of the mean.

Figure 4 plots the prediction of cooperation at each of the three levels based on a simple bivariate OLS regression in which the three levels of social identity enter as independent variables. It is evident that GSI tends to have a markedly positive slope in all three decisions, particularly in the national and global decisions. Both LSI and NSI do not appear to be significantly correlated with cooperation at any level.

3.2. Econometric analysis

3.2.1. Analysis of relationship between global social identity and cooperation

We tested the hypotheses of the inclusivity vs. exclusivity of global social identity through Tobit regressions with dependent variables (DVs), those being cooperation at the local level in Decision 1
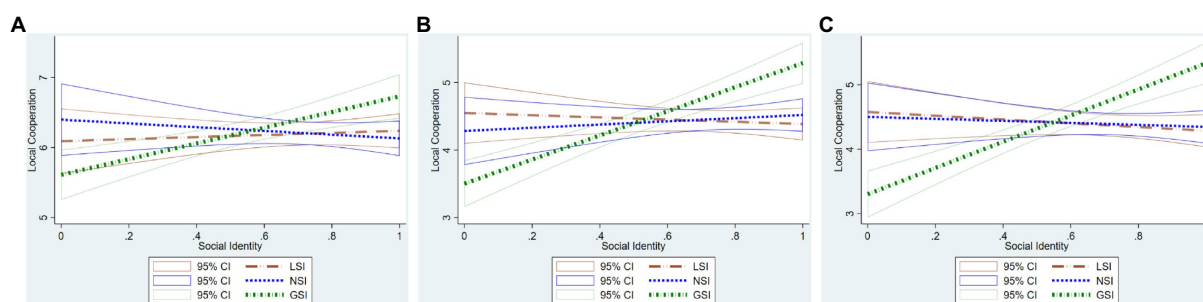
FIGURE 4
Plots of prediction of **(A)** local cooperation, **(B)** national cooperation, and **(C)** global cooperation from linear regressions on local social identity (LSI), national social identity (NSI), and global social identity (GSI). The solid lines plot a 95% confidence interval of the mean.

(Appendix: Table A.6), cooperation at the national level in Decision 2 (Appendix: Table A.7), and cooperation at the world level in Decision 3 (Appendix: Table A.8). We used a Tobit model to account for the truncated nature of the propensity to cooperate in the experimental decision (see Appendix: Section A.3 for a description of the Tobit model). Standard errors are clustered at the session level to avoid heteroschedasticity (White, 1980; Abadie et al., 2017). The econometric models included demographic controls (gender, age, educational attainment, income level, work status, marital status, urban residence, and country of residence) and all three social identity measures. The models for the nested decisions (Decision 2 and 3) also included the contribution to the Local account in Decision 1 as a covariate. In this way, the DV measured the propensity to contribute to national and world cooperation net of basic cooperation to the local level.

The key result emerging from the econometric analysis is that the GSI index was a significant and positive predictor of cooperation at all levels of cooperation, while the LSI index was never significant, and the NSI index was either insignificant or a significant *negative* predictor of local cooperation when other social identity indexes were included in the model. We focus here on the econometric model, including all the three social identity measures together with demographic controls, country dummies, and, for nested decisions, local cooperation in Decision 1. As already reported in Buchan et al. (2011), the GSI index was a significant predictor of cooperation at the world level controlling for both LSI and NSI ($p < 0.001$; Appendix: Table A.8, column 1). The average marginal effect (AME)[1] of GSI was such that a person who maximally identified with global identity contributed to the World account 1.77 tokens (SD = 0.40; 95% CI [0.99, 2.55]) more than a person who minimally identified with global identity (out of 10 available tokens). Conversely, both NSI ($p = 0.67$; AME = −0.36; SD = 0.55; 95% CI [−1.44, 0.73]) and LSI ($p = 0.50$; AME = −0.48; SD = 0.41; 95% CI [−1.29, 0.32]) had insignificant effects on cooperation at the world level, net of the effect of the two other social identity measures [Figure 5C; Appendix: Table A.8, column 1].

Similar results were attained for cooperation at the national level. The GSI index was significantly and positively correlated with national cooperation controlling for both LSI and NSI ($p < 0.001$). A person

who maximally identified with global identity contributed to the National account 1.28 (SD = 0.31; 95% CI [0.67, 1.89]; Appendix: Table A.7, column 1) tokens more than a person who minimally identified with global identity. Conversely, both the NSI index ($p = 0.63$; AME = 0.22; SD = 0.46; 95% CI [−0.68, 1.12]) and the LSI index ($p = 0.15$; AME = −0.57; SD = 0.39; 95% CI [−1.33, 0.20]) had insignificant effects on national cooperation controlling for the two other identity measures (Figure 5B).

Cooperation at the local level was structurally different, because there was only one public good at the local level rather than two nested ones (see section 2.2). However, the results were virtually identical to what was found for national and global cooperation. GSI was significantly and positively associated with local cooperation controlling for both LSI and NSI ($p = 0.001$; Appendix: Table A.6, column 1). A person who maximally identified with global identity contributed to the local public good 1.34 tokens (SD = 0.40; 95% CI [0.56, 2.12]) more than a person who minimally identified with global identity. Conversely, the LSI ($p = 0.38$; AME = 0.34; SD = 0.40; 95% CI [0.56, 2.12]) was insignificant, while the NSI was significant ($p = 0.002$; AME = −1.34; SD = 0.44; 95% CI [−2.20, −0.48]), with a negative sign upon controlling for both LSI and GSI (Figure 5A; Appendix: Table A.6, column 1). These results were robust because of the inclusion of the IGI index and the global awareness index in the model (Appendix: Tables A.6–A.8, column 4), as the coefficient for GSI decreased only marginally after the inclusion of these covariates. This suggests that the correlation between cooperation and GSI was not moderated by either the participation in global networks of interaction or the awareness of global issues.

We examined whether GSI had a different effect on cooperation across the three decisions by pooling the three decisions together and fitting a Tobit panel model, with the participant as the cross-section variable and the level of the decision (local, national, or global) as the "panel" variable of the model. We replicated the previous two models that were used to analyze decisions at a specific level with two modifications: We did not include cooperation at the local level as a control in this case, because this would be collinear with the DV in the first decision. As a consequence, the results from this analysis may not be fully comparable with the results from the previous analyses, and it should also be noted that local cooperation was always a strongly significant predictor of cooperation at the national and global levels ($p < 0.001$, Appendix: Tables A.7, A.8). However, we introduced the level of the decision as a fixed effect in the pooled model. This covariate
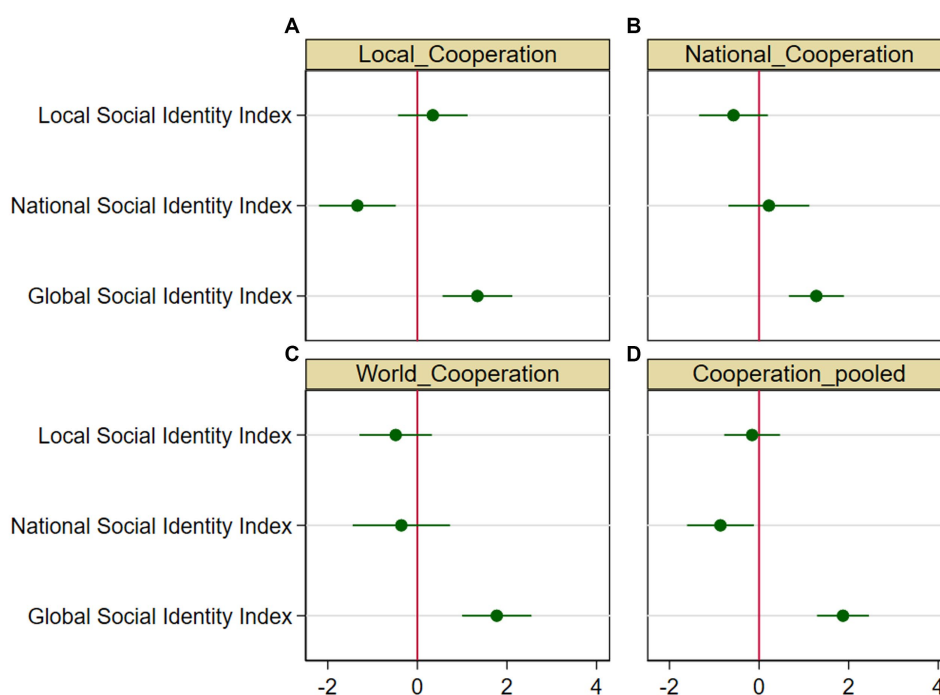
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1   See footnote 5 for definition of the AME.

FIGURE 5
Average marginal effects (AME) and 95% confidence intervals for local, national, and global social identity in regressions. The AME are computed with the delta method as the average of the partial effects on the dependent variable—conditional to lying within the observable range [0, 10]—generated from varying all observations in the regression from a value of 0 to a value of 1 of the independent variable. All other covariates take their actual values. Estimates are taken from the model in column 1 of Appendix: Table A.6 (Local contribution), Appendix: Table A.7 (National contribution), Appendix: Table A.8 (World contribution), and Appendix: Table A.9 (Pooled contributions). See notes to these tables for further details on the econometric models (White, 1980).

should control for the different structure of the decisions at the local level vis-à-vis the national and global levels. The results are reported in Appendix: Table A.16 and Figure 5D. Not surprisingly, the main result from the previous analyses was replicated, with GSI being a strongly significant predictor of cooperation, net of the effects of both LSI and NSI ($p < 0.001$). Individuals who maximally identified with global identity contributed on average 1.87 tokens more (SD $= 0.30$; 95% CI [1.29; 2.45]) than individuals who minimally identified with global identity. Interestingly, we found that national identity had an overall significantly negative coefficient ($p = 0.024$) controlling for both LSI and GSI, with individuals who maximally identified at the national level contributing on average 0.86 tokens (SD $= 0.38$; 95% CI [−1.61; −0.12]) less than individuals who minimally identified with the national community. The LSI coefficient was not significantly different from zero controlling for both NSI and GSI, the sign being negative ($p = 0.63$; AME $= −0.16$; SD $= 0.32$; 95% CI [−0.78; 0.47]).

We then introduced interaction terms between GSI and the level of the decision (Appendix: Table A.16, column 4). Taking GSI at the global level as the omitted category, we found that the coefficient for GSI at the local level was statistically significantly lower than its coefficient at the global level ($p = 0.012$; AME $= −0.98$; SD $= 0.39$; 95% CI [−1.74; 0.22]), while there was no statistically significant difference between the GSI coefficient at the national and global level ($p = 0.61$; AME $= −0.15$; SD $= 0.28$; 95% CI [−0.70; 0.41]). As noted above, however, the coefficient for GSI at the local level of cooperation was significantly greater than zero. These results indicate that while the GSI exerted its maximal statistical effect at the global and local level, it appears that its correlation with cooperation at the local level was weaker but still significant.

From these analyses, we conclude:

Result 1a: Global identification is "inclusive" in character, as the higher the identification with the global collective, the higher the cooperation at any level of interaction—global, national, and local.

Result 1b: The correlation between global social identity and cooperation is highest at the global level, statistically insignificantly lower at the national level, and statistically significantly lower at the local level.

Result 1c: Identification at the national level tends to be overall negatively correlated with cooperation after aggregating the three decisions. This is particularly the case at the local level.

Result 1d: Identification with the local level is overall *in*significantly correlated with cooperation both at the individual level and when pooling the three decisions.

3.2.2. Country-level analysis

Our strategy in selecting countries and the sample size in each country was directed to maximize exposure to globalization across countries rather than identifying significant effects of social identity on cooperation in every single country. All the same, we analyzed the

heterogeneity of the relationship between GSI and cooperation across countries. We reproduced the model of Appendix: Tables A.6–A.8, column 1, separately for each country (see Appendix: Tables A.9–A.11). In general, the GSI index coefficients for country-level regressions had the same order of magnitude as those for the aggregate model. Standard errors were, however, on average, 2.5 times higher for country-level regressions than aggregate regressions due to the lower sample size. Therefore, statistical significance was not as strong for country-level regressions as for the aggregate regression. In particular, the GSI coefficient was statistically significantly greater than 0 in regressions with world cooperation as the DV in all countries except for Russia ($p = 0.79$, $N = 193$). It was statistically significantly greater than zero in regressions predicting national cooperation in four countries and outside the region of significance for South Africa ($p = 0.12$, $N = 121$) and the United States ($p = 0.16$, $N = 163$). The significance of the GSI index was somewhat less uniform in cooperation at the local level, as the coefficient resulted as significantly greater than zero in three countries but was insignificant in Iran ($p = 0.13$, $N = 156$), South Africa ($p = 0.86$, $N = 121$), and the United States ($p = 0.75$, $N = 163$).

In order to better appreciate cross-country differences in the relationship between GSI and cooperation, we re-ran the main regressions of Appendix: Tables A.6–A.8, column 1, interacting the GSI index with country dummies. These regressions are reported in Appendix: Table A.12. In this way, we can estimate whether the GSI had significantly different coefficients across countries. The results of all the Wald tests on the null hypothesis of equality of the GSI coefficients across pairs of countries are reported in Appendix: Tables A.13–A.15. This analysis reveals differential patterns in the similarity of the relationship between GSI and cooperation across countries and decisions. The GSI tended to have similar effects across countries in both the local and the national decision. In the local decision, the null was rejected only for two tests (out of the 15 possible) at $p < 0.05$. That was the case for the GSI coefficient being higher in Iran than in the United States ($p = 0.010$) and for the GSI coefficient being higher in Italy than in the United States ($p = 0.020$; Appendix: Table A.13).[2] Remarkably, no null was rejected in the regression at the national level, denoting uniformity of the relationship between GSI and cooperation at the national level across countries (Appendix: Table A.14). Conversely, the GSI coefficients differed across countries in many instances with respect to global cooperation. It is remarkable that the GSI coefficients were significantly higher in Iran than in any other country. Confirming the lack of a significant relationship between GSI and global cooperation in Russia (see Appendix: Table A.11), the coefficient for Russia was significantly lower than in Argentina ($p = 0.003$) and Italy ($p < 0.001$; see Appendix: Table A.15).

We conclude:

> Result 2: The relationship between global social identity and cooperation demonstrates statistical levels of significance in all countries and all decisions, with the notable exceptions of Russia with respect to global cooperation, South Africa and the United States with respect to national cooperation, and Iran, South Africa, and the United States for local cooperation. While the null of equality of coefficients for the GSI across pairs of

countries cannot be rejected in any case in the national decision and is rejected in four cases for the local decision, we detect significantly higher coefficients for Iran than any other country in the world decision and significantly lower coefficients for Russia.

3.2.3. Analysis of mediating effect of expectations

In order to better understand the reasons why individuals with stronger global social identification are more cooperative, we examined the mediating effect of expectations. The theoretical model we wanted to test assumes that global social identity increases expectations of others' cooperation, which in turn induces higher cooperation. We elicited expectation measures by asking the participants to state the total sum of tokens contributed by the three other participants at the local levels and by the 11 other participants at the national and global levels (see Supplementary Methods: Section SM.3). The highest possible number of tokens available for contribution (30 for the local level, 110 for the national and world levels) was mentioned to the participants in their answer sheets. We asked the total number of tokens rather than the average number of tokens, because we expected the former to be of easier comprehension than the latter for our adult sample. All expectation measures were normalized to the [0,10] interval.

We performed a Sobel–Goodmann (SG) test (Sobel, 1982) on the above hypothesis (see Appendix: Section A.4 for a description of the mediation analysis). In section 3.2.1, we already mentioned that the coefficient for the GSI index was strongly significantly different from zero in all decisions; hence, the total effect was significant (Appendix: Tables A.6–A.8, column 1). Moreover, at all three levels, the coefficient for the GSI index was significantly greater than zero when the DV was the expectation of contribution at the corresponding level. This confirms that global identification was significantly correlated with expectations, while this was not the case for either the LSI or the NSI indexes (Appendix: Tables A.6–A.8, column 2). Moreover, expectations were significant predictors of cooperation at all levels ($p < 0.001$ in all three models; Appendix: Tables A.6–A.8, column 3). Table 1 confirms that the indirect effect of GSI was significant at all three levels and that the proportion of the total effect that is mediated by expectations is considerable (44% for local cooperation, 25% for national cooperation, and 40% for global cooperation), even as the direct effect of global social identity remained strongly significantly different from zero in all cases. We conclude:

> Result 3: Individuals with high global social identity form significantly higher expectations of cooperation at all three levels of their counterparts' cooperation and cooperate more with others. This indirect effect of global social identity on cooperation is sizable and significant at all three levels, but so is its direct effect.

3.2.4. Analysis of optimism of expectations

The foregoing analysis has demonstrated the importance of expectations in affecting cooperation levels, especially for individuals with high levels of global social identity. We now analyze whether such expectations were misplaced (see Introduction). We define the variable *Optimism* (*O*) as the difference between a participant's

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2 Two of such tests were rejected at $p < 0.10$. See Appendix: Table A.13.

TABLE 1 Sobel–Goodman mediation analysis.

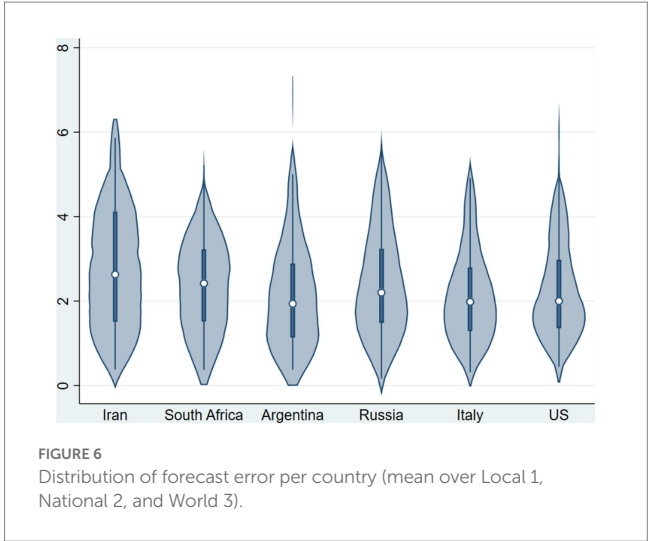| Level	Statistic	Total effect	Indirect effect	Direct effect
Local (Decision 1)	Coefficient	1.33	0.59	0.74
	Bootstrap std. err.	0.38	0.19	0.31
	p value	<0.001	0.002	0.017
	99% confidence interval	[0.35, 2.30]	[0.010,1.07]	[−0.061, 1.54]
	Proportion of total effect that is mediated	0.44		
National (Decision 2)	Coefficient	1.21	0.30	0.91
	Bootstrap std. err.	0.31	0.12	0.28
	p value	<0.001	0.0014	0.001
	99% confidence interval	[0.42, 2.00]	[−0.014,0.61]	[0.18, 1.64]
	Proportion of total effect that is mediated	0.25		
World (Decision 3)	Coefficient	1.57	0.63	0.94
	Bootstrap std. err.	0.36	0.17	0.32
	p value	<0.001	<0.001	0.003
	99% confidence interval	[0.65, 2.49]	[0.19,1.06]	[0.12, 1.76]
	Proportion of total effect that is mediated	0.40		

FIGURE 6
Distribution of forecast error per country (mean over Local 1, National 2, and World 3).

We fitted a series of OLS regressions where the DV was Optimism at the local level (Decision 1), national level (Decision 2), and global level (Decision 3) and the mean over these three levels (Appendix: Table A.17). Individuals with stronger global social identity were significantly more optimistic than individuals with weaker global social identity at the local ($p = 0.005$), national ($p = 0.001$), and world level ($p < 0.001$); thus, they resulted as significantly more optimistic than others across the three decisions ($p < 0.001$). Conversely, Optimism did not covary with either LSI or NSI. Among the demographic characteristics, individuals with intermediate ($p = 0.045$) or high levels of education ($p = 0.046$) tended to be overall more optimistic across the three decisions than individuals with low educational attainment (Appendix: Table A.17, column 4), particularly so at the local and global levels.

3.2.5. Analysis of accuracy of expectations

The fact that individuals with strong global social identity were significantly more optimistic than others does not entail that they were more inaccurate in their predictions. Pessimistic individuals may commit an even larger error than optimistic individuals by underestimating others' contributions more than optimists overestimate others' contributions. In order to analyze the accuracy of the prediction, we need to consider the forecast error (*FE*), namely, the absolute level of the distance between one's expectation and actual level of cooperation.[4]

Since it abstracts away from the sign of the error, the *FE* permits a direct comparison of the error in prediction by optimists and pessimists. The closer the *FE* is to zero, the higher the accuracy of the prediction.

Figure 6 plots the distribution of the mean *FE* over contributions at the local (in decision 1), national, and global level across countries. The forecast error was substantial, as the mean of *FE* was 2.36 tokens (out of 10). The lower bound of a 99% confidence interval with bootstrapped s.e. (5,000 repetitions) for the mean of *FE* is well above zero ([2.27, 2.45]). The null hypothesis that the observations from

expectation of contribution at a certain level and the actual population mean contribution at that level.[3]

For instance, *O* at the local level is the difference between how much an individual expects others to contribute at the local level in Decision 1 and the actual mean contribution at the local level in Decision 1. Clearly, $O > 0$ denotes people tending to be optimistic of others' contributions, while $O < 0$ denotes pessimism. Over the whole sample, pessimism had a slight predominance, with 52.4% of participants having on average a negative *O*. A Wilcoxon sign-rank test failed to reject the hypothesis that the distribution of *O* was symmetrically distributed around zero ($z = −0.81$, $p = 0.42$, $N = 1,108$). Cross-country differences in optimism are analyzed in the Appendix: Section A.5 (see also Appendix: Figures A.2–A.3).

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3   In formulas, $O_i^{L_j} = E_i\left(C^{L_j}\right) - \overline{C^{L_j}}$ where $E_i\left(C^{L_j}\right)$ is the expectation of individual *i* over contribution at level *L* in decision *j*, where L={local, national, global}, and j={1, 2, 3}; $\overline{C^{L_j}}$ is the population mean contribution at level *L* in decision *j*.

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4   In formulas, $FE_i^{L_j} = \left| E_i\left(C^{L_j}\right) - \overline{C^{L_j}} \right|$. See footnote 3.

individual countries come from the same distribution was rejected [chi^2(5) = 29.05, p = 0.0001, N = 1,108]. We report a descriptive analysis of country-level differences in Appendix: Section A.6.

We fitted OLS regressions with the *FE* as the DV and the same set of covariates used above (Appendix: Table A.18). We found that the participants with strong identification at the global level were no more inaccurate than others at both the local (p = 0.70) and national (p = 0.24) levels, while they were significantly more inaccurate than others (p < 0.001) in predicting cooperation at the world level. In this case, an individual with a maximal GSI score would commit an FE 0.80 tokens higher than an individual with a minimal GSI score. Therefore, only in the third decision can we say that individuals with a high GSI were "excessively" optimistic in estimating others' contributions. That was not the case for cooperation at the local and national levels. Considering the mean over the three levels, the coefficient for the GSI index was significantly greater than zero (p = 0.023).

We conclude:

Result 4: Individuals with stronger global social identity were significantly more optimistic than others regarding their counterparts' cooperation at any level of interaction. Nonetheless, their predictions turned out to be significantly more inaccurate than others' only at the world level, but not at the local or national levels. In other words, their optimism was "excessive" only at the global level, but not at the local or national levels.

4. Discussion

As in every study attempting inference from relatively limited samples, our study is subject to a series of limitations both in terms of its internal and external validity. As for its internal validity, some may question whether the participants in our study achieved a full comprehension of the task. We believe we applied best-practice techniques in our study to ensure their full comprehension. The instructions used pictorial illustrations of the interaction that we deemed suitable for adults possibly lacking computational abilities (see Appendix: Supplementary Methods SM.3). We also administered a set of comprehension questions before the first and the second decision. In case of failure in answering such questions correctly, the researchers would explain the interaction again until the questions were answered satisfactorily. Internal validity was also ensured by the standardization of the experimental protocol and by compliance with best-practice techniques to ensure comparability across countries (see Supplementary Methods SM.2). In particular, each lead researcher observed each other before running the experimental sessions or, in the case of Iran, was instructed by one of the lead researchers. Instructions were backtranslated into English to ensure homogeneity in the language being used. The value of the experimental tokens was adjusted to reflect differences in purchasing power across countries.

An aspect of our study that warrants further investigation is the specific language that was used to measure global social identity. The categories used to identify the three levels of social identification—"Your local community" for the local level; "Your country" for the national level; "The world as a whole" for the global level (Appendix: SM4 Research Questionnaire, questions 21–23)—were not, and could

not have been, fully homogenous because of the intrinsic differences between the three entities. The use of the term "world as a whole" was derived from the pioneering work by Robertson (1992), who considered the "consciousness of the world as a whole" as a defining aspect of globalization. We could not verify whether the participants construed this wording in terms of "people all over the world" or "all humanity" or in the even broader sense of encompassing all animal and non-animal species living on planet Earth.[5] Although these concerns about the robustness of the construct are legitimate, we believe it is reassuring to observe strong similarities in research using this construct and the IWAH construct (see Introduction).

Another issue concerns the external validity. Experimental techniques have been criticized for the possibility that behavior in the lab is driven by experimenter demand effects and social desirability bias. That is, participants would bias their behavior in the direction of what they perceived as being the behavior desired by the researcher or the socially approved behavior (Levitt and List, 2007; Zizzo, 2010). Even if the evidence supports the idea that experimenter demand effects are sizable and that individuals tend to behave more prosocially when under the researcher's scrutiny (Levitt and List, 2007), this bias normally only affects the baseline level of cooperation and not the treatment effects. The systematic study conducted by Snowberg and Yariv (2021) supports the idea that treatment effects tend to be of the same magnitude across different samples even if the baseline levels may differ. They reached this conclusion by running the same experimental games with university students—either self-selected or not—and with nationally representative adult samples of the US population. One may argue that if social desirability does not apply uniformly across treatments, the treatment effects may be distorted. Nevertheless, this concern does not seem to be the case in our setting. Even assuming that the participants increased their cooperation levels due to an experimenter demand effect, it is not clear why they should have done so differently across the different levels of cooperation objects of our experiment.

The issue of the external validity of social preference games has also been analyzed by Galizzi and Navarro-Martinez (2019). Their meta-analysis of existing experimental studies on prosocial behavior reveals that "*39.7% of the reported lab-field correlations and 37.5% of the reported lab-field regressions find a statistically significant association between games and field behaviors. The overall average lab-field correlation reported is 0.14, and the overall correlation in the papers that report significant correlations is 0.27.*" Field behaviors include (mostly) self-reported prosocial behavior elicited through surveys and real-life prosocial behavior observed by researchers. For instance, Rustagi et al. (2010) find that experimental measures of conditional cooperation among 49 forest user groups (n = 679) in Ethiopia significantly correlate with more successful forest commons management. Fehr and Leibbrandt (2011) find that laboratory measures of cooperation are significant predictors of exploitation of fisheries—a typical common pool resources interaction—among rural fishing communities in Brazil (n = 121). Grimalda et al. (2018) find that individuals who cooperated in a collective risk social dilemma experiment were more likely to undertake environmentally sustainable

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5   See Carmona et al. (2020) for an inquiry into differences in construals of various labels identifying all-inclusive identities.

behavior in real life, such as buying environmentally friendly goods, saving water, participating in ecological movements, and recycling ($n = 678$).

This evidence suggests that prosocial behavior measured in experiments is, overall, a significant predictor of prosocial behavior in real life, although the correlation is not always strong or significant (see also the experiment by Galizzi and Navarro-Martinez, 2019). Failure to observe a stronger and more consistent correlation between experimental behavior and real-life behavior may be partly due to the intrinsic inconsistency of human behavior over time. It has been observed that the same individual may behave differently in similar situations, possibly for moral licensing—that is, the tendency to indulge in more opportunistic behavior after having performed moral deeds (Merritt et al., 2010)—or because of the phenomenon of preference reversal in dynamic choices involving social preferences under uncertainty (Andreoni et al., 2020).

Although our design was not meant to identify statistically significant relationships at the country level (see section 3.2.2), the country-level analysis revealed interesting insights into the extent to which GSI correlated with cooperation differently across countries. While the country-level specification reveals the lack of significance of GSI in some countries (see section 3.2.2), the analysis of the interaction between GSI and country dummies reveals that GSI tended to have uniform effects across countries in the national decision. In the local decision, we found limited evidence for differential effects of GSI across countries, with Iran and Italy recording significant larger effects than the United States. As for the global decision, it is noteworthy that the GSI coefficient is significantly higher in Iran than in any other country, while it is low and not significantly different from zero in Russia. This suggests that the effect of global social identification on global cooperation tends to be overall higher in countries with *lower* levels of globalization, as also investigated in Grimalda (2015). Finally, we point out that these cross-country comparisons (Appendix: Section A.2) should be treated with caution, since we did not test measurement invariance, which is recommended before concluding such differences (e.g., Hamer et al., 2021).

5. Conclusion

The results from the present study demonstrate that global social identity is inclusive in character. Not only do globally identifying individuals cooperate more than others at the global level, but they also cooperate more than others when involved in local and national group interactions. The effect of global identification on cooperation at all levels is distinct from both participation in global networks and awareness of global humanitarian concerns, as demonstrated in Buchan et al. (2011) for global cooperation. Furthermore, when we contrasted the effect of global identity with social identity that is primarily local and national in nature, the latter failed to demonstrate any significant independent effect on cooperation at any level of interaction. In other words, global social identification appears to be the only form of social identity that is significantly associated with cooperation at all levels. Even if the strength of the relationship between GSI and cooperation is higher at the global level than at the local level, it remains strongly significant and sizable at the local level too.

In their review of research on global human identity, McFarland et al. (2019) state that for those with strong global identity, "group behavior ascends from parochial interests (e.g., 'American first') to

solidarity and care for all humans" (p. 144). The results from this study complement this view and provide evidence that concern for global welfare *does not* come at the expense of more parochial (local or national) interests. On the contrary, individuals with strong identification with the global collective cooperate more than others at both the local and national level. This is the case in non-nested social dilemmas at the local level and in nested social dilemmas at the national level.

The inclusive nature of global social identity, therefore, entails that those who score high on identification with the global community are also willing to benefit collectives at other levels. This result is in contrast with the view generally held in political science that global and national identities are substitutes of each other (see section 1). It is also consistent with the view that prosociality is universal rather than parochial (see section 1), although this is the case specifically for individuals with high GSI. On this point, we also note that we did not find strong evidence for an ingroup bias, which is measured by the difference in contributions to the national vis-à-vis the global account. A sign-rank Mann–Whitney–Wilcoxon test failed to reject the hypothesis of an ingroup bias in the aggregate of our data ($p = 0.54$; $N = 1,112$) and only rejected the null for Argentina ($z = 2.66$, $p = 0.0079$; $N = 201$) and South Africa ($z = 1.92$, $p = 0.055$; $N = 159$) for individual countries.[6]

However, it is surprising that their level of prosociality toward local and national groups *exceeds* that of those who identify strongly only at the more local levels, net of the identification at the other levels. National social identity does not predict contributions to the national pot as strongly as does global social identity (and similarly for local identity). This suggests that those high in global social identification are not only more inclusive in their social ingroup identity but also more concerned about collective (vs. individual) welfare in general.

We also investigated whether these patterns of cooperation are due to misperceptions of others' cooperation, as suggested in the literature on prosociality. We found that individuals with stronger global social identity are more optimistic about others' cooperation at all levels of interaction. When we analyzed the accuracy of their prediction, though, we found that they are "excessively" optimistic only at the global level. When individuals with strong identification with the global collective interact at the local and national levels, they are no more inaccurate than others with weak identification with the global collective. This result suggests that individuals with high global social identity may be spurred by partially different motivations when interacting at the global level as opposed to lower levels of inclusiveness. Interaction at the local and national levels for them appears closer to a model of reciprocity (Fischbacher et al., 2001), where an individual contributes in line with the cooperation expected from others. Interaction at the global level seems, instead, to demonstrate a revealed preference for the idea of solidarity and care for all humans. Overall, these results point to distinctively different

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6   The other tests failed to reject the null of absence of ingroup bias in Iran ($z = -1.64$, $p = 0.1006$; $N = 169$), Russia ($z = -1.41$, $p = 0.16$, $n = 207$), Italy ($z = 0.50$, $p = 0.61$, $n = 205$), and the United States ($z = -0.55$, $p = 0.58$, $n = 171$). It is worth nothing that in Iran and Russia, participants gave on average more at the world than the national level.

patterns of behavior by individuals with a stronger identification with global collectives than others.

Given the converging evidence on the clearly beneficial patterns of behavior displayed by individuals with a high global social identity, we believe that a promising avenue of research is to understand whether higher identification with the global community may be somehow instilled into individuals, possibly through appropriate educational programs, or whether the personality traits referring to global identity are non-malleable to external intervention. The research of our research group suggests that simple "nudging" to the global dimension in the context of COVID-19 does not induce greater donations to the local, national, or global levels (Grimalda et al., 2021), a result echoing that of Sparkman et al. (2022). This does not necessarily mean that this endeavor is bound to fail, but rather, as argued by Ostrom (2000) in the context of programs to increase social capital, that one has to try harder and for a protracted period of time.

Data availability statement

Publicly available datasets were analyzed in this study. This data can be found at: https://osf.io/8trzj/.

Ethics statement

The studies involving human participants were reviewed and approved by Ethics committee at Darla Moore School of Business, Sonoco International Business Department, University of South Carolina, 1,014 Greene Street, 461G, Columbia, SC 29208. Written informed consent for participation was not required for this study in accordance with the national legislation and the institutional requirements.

Author contributions

GG, NB, and MB designed research, conducted fieldwork, and wrote the paper. GG conducted statistical analyses. All authors contributed to the article and approved the submitted version.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Publisher's note

Supplementary material

The Supplementary material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fpsyg.2023.1008567/full#supplementary-material

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