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RECEIVED 11 June 2024

ACCEPTED 16 December 2024

PUBLISHED 22 January 2025

CITATION

Jedinger A and Masch L (2025) Need for cognitive closure, political trust, and belief in conspiracy theories during the COVID-19 pandemic. *Front. Soc. Psychol.* 2:1447313. doi: 10.3389/frsps.2024.1447313

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Need for cognitive closure, political trust, and belief in conspiracy theories during the COVID-19 pandemic

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Introduction: This research examines the effect of individual differences in the need for cognitive closure and political trust on the endorsement of COVID-19 conspiracy theories. We hypothesize that individuals high in cognitive closure and low in political trust will seize on conspiracy accounts of the pandemic. In contrast, we expect that individuals high in cognitive closure and political trust are more likely to disregard conspiracies surrounding the COVID-19 pandemic.

Method: To test our preregistered hypotheses, we rely on data from multiple waves of a representative survey among the German population ($N = 2,883$). The need for cognitive closure and general political trust was assessed before the beginning of the COVID-19 pandemic, while belief in COVID-19 conspiracy theories and specific trust in handling the crisis was fielded during the second wave of the pandemic.

Results: We find that individuals with a high need for cognitive closure are more likely to accept conspiracy narratives, but the effect size is small. At the same time, pre-pandemic trust and concurrent trust in political and medical institutions are strongly negatively related to conspiracy beliefs. We find no support for a moderating effect of political trust.

Conclusion: This study finds only small effects for individual differences in the need for cognitive closure but strong effects for political trust in explaining conspiracy beliefs. It underlines the importance of a lack of trust in political institutions for democratic societies in the age of misinformation and post-truth politics.

KEYWORDS

need for cognitive closure, cognitive style, conspiracy beliefs, COVID-19, coronavirus, political trust

1 Introduction

The COVID-19 pandemic coincided with the proliferation of conspiracy theories regarding the origins and spread of the coronavirus (Butter and Knight, 2023), which have been shown to negatively affect public compliance with government initiatives intended to combat the coronavirus (Biddlestone et al., 2020; Bierwaczzonek et al., 2022; Imhoff and Lamberty, 2020; Oleksy et al., 2021; Pummerer et al., 2022; Ripp and Röer, 2022). Among these were popular claims that the coronavirus was engineered in a bioweapons laboratory or intentionally released by governments to thwart civil rights. Conspiracy theories are beliefs that major political and economic developments are manipulated by secret coalitions of powerful actors pursuing evil goals (Douglas and Sutton, 2023). This does not mean that conspiracy theories can never be true but are based on unsubstantiated evidence (see van Prooijen, 2018).

What makes people believe in COVID-19 conspiracy theories? Past research suggests that—among other psychological motives—individual differences in epistemic needs for

certainty and knowledge are key to understanding conspiratorial thinking (Douglas and Sutton, 2023; Douglas et al., 2019). That is, threatening or ambiguous situations trigger a search for meaning, and if this epistemic need is not satisfied, people turn to conspiracy theories that offer simple explanations for complex events. In line with this reasoning, there is ample evidence that preferences for an intuitive vs. analytical thinking style increase susceptibility to COVID-19 conspiracy theories (e.g., Alper et al., 2021; Kantorowicz-Reznichenko et al., 2022; Lazarević et al., 2021; Stanley et al., 2021).

In the present study, we focus on the *need for cognitive closure* (NCC; Kruglanski, 2004; Kruglanski and Fishman, 2009) to operationalize epistemic motives associated with endorsing conspiracy theories. In contrast to personality traits such as intolerance of ambiguity (Frenkel-Brunswick, 1949) or dogmatism (Rokeach, 1960), NCC explicitly captures the cognitive-motivational dynamic underlying epistemic needs for certainty. In addition, NCC exhibits distinct relations to outcome variables such as right-wing ideology and prejudice (e.g., Cornelis and Van Hiel, 2006; Onraet et al., 2011; Roets and Van Hiel, 2011).

Initially grounded in the theory of lay epistemics (Kruglanski, 2004), NCC is defined as a desire to be certain about an issue and avoid ambiguity (Kruglanski and Webster, 1996; Webster and Kruglanski, 1994). According to Kruglanski and Webster (1996) individuals high in NCC are characterized by a tendency to accept need-satisfying information more quickly (“seizing”) and to maintain a judgment that has been reached to preserve cognitive closure (“freezing”). Therefore, conspiracy theories should be particularly attractive for individuals high in NCC because they reduce levels of uncertainty and ambiguity by providing simple and structured explanations for societal events (Kossowska and Bukowski, 2015; Marchlewska et al., 2018).

Psychological motives related to heightened cognitive closure are also directly relevant to explain the rise of conspiracy theories surrounding the COVID-19 pandemic. Perceived health threats due to a global pandemic cause uncertainty and can result in increased anxiety, which has been shown to stipulate sense-making processes to restore clarity and predictability (see van Prooijen, 2020). By attempting to make sense of the perceived threat, beliefs in conspiracies are likely to increase for those who struggle with cognitive closure and already hold negative attitudes toward established epistemic authorities such as political or scientific elites (van Prooijen, 2020).

However, past findings on the relationship between dispositional NCC and the endorsement of conspiracy theories are mixed. Two studies found no significant associations (Imhoff and Bruder, 2014; Leman and Cinnirella, 2013), while another study (Jones et al., 2023) reported a small but significant negative association. A third group of studies (dos Reis et al., 2024; Swami et al., 2014) reported small but significant positive correlations. In a recent study, dos Reis et al. (2024) found that the relationship between the need for closure and conspiracy beliefs was nonsignificant after adjusting for demographic covariates and political orientation. Marchlewska et al. (2018) provided experimental evidence that NCC is related to beliefs in conspiracies if a conspiratorial explanation is readily accessible and an official account of the events is lacking. More recently, Gligorić et al. (2021) reported that NCC correlates positively with conspiracy mentality and belief in specific conspiracy theories but is unrelated

to endorsing COVID-19 conspiracies. While these studies offer us important insights into the role of NCC in conspiracy thinking, they are based on small convenience samples that might suffer from selection bias and low statistical power.

In the present study, we use a large-scale cross-sectional survey to examine how individual differences in NCC predict belief in COVID-19 conspiracy theories in Germany. Conspiracy theories related to COVID-19 shared features with existing conspiracy theories, but what sets them apart is the context of a global health threat that was accompanied by declining trust in established institutions (Delhey et al., 2023). This makes them an ideal test to examine the relationship between epistemic motives, public trust, and endorsement of conspiracy theories. Past research suggests that people with a heightened level of NCC will seize on *any* information that matches their need to reduce uncertainty, regardless of whether they are conspiracy narratives or official explanations of events. For instance, people with high levels of NCC are more open to persuasive messages if they lack information about an attitude object and their initial confidence in the informational basis of their attitudes is low (Kruglanski et al., 1991, 1993).

In line with the findings of Marchlewska et al. (2018), we also propose that the relationship between NCC and conspiracy beliefs should depend on what information is more readily available and what attitudes exist toward the source of the information. During the beginning of the pandemic in Germany, it is plausible to assume that people had access to both conspiratorial and scientific explanations for COVID-19 and that there was a great deal of uncertainty about the new disease. More specifically, we hypothesize that trust in the political system moderates the link between aversion to uncertainty and the acceptance of conspiracy narratives surrounding COVID-19. Some scholars also proposed that NCC is positively related to political trust. For example, Wang et al. (2023) found positive correlations between NCC and governmental trust in China but not in the US. However, we contend that a high need for cognitive closure can be satisfied by various sources of information, i.e., official governmental sources and alternative sources. We, therefore, view political trust as an attitude toward a particular source of information and conceptually independent of individual differences in NCC.

The objective of the present study is to test to what extent the association between cognitive closure and COVID-19 conspiracy beliefs depends on the degree of political trust. More precisely, we expect a disordinal interaction with opposing effects of NCC under conditions of low vs. high political trust: People with high levels of dispositional NCC should be more likely to rely on conspiratorial explanations if their trust in political elites and institutions is already undermined (Hypothesis 1). Conversely, people with high levels of dispositional NCC should be more likely to reject conspiracy theories if they have a high level of trust in the political system compared to those with low levels of trust in the political system (Hypothesis 2). People with lower dispositional NCC are supposed to reject conspiracy accounts of the COVID-19 pandemic, irrespective of their level of political trust (Hypothesis 3).

Finally, we will test two exploratory hypotheses regarding main effects of NCC and trust. Although our main hypotheses propose that the association between NCC and conspiracy beliefs depends on an individual's political trust, an alternative causal mechanism could be that NCC and trust are individual differences whose effects

are independent of each other. Thus, as alternative hypotheses, we first hypothesize that people with a high epistemic need for closure are more likely to approve conspiracy accounts of the COVID-19 pandemic (Hypothesis 4). Second, we expect that people with higher levels of political trust will disapprove of conspiracy theories related to the COVID-19 pandemic (Hypothesis 5).

2 Material and methods

2.1 Preregistration

The design and hypotheses were preregistered on the Open Science Framework (OSF) at https://osf.io/39ht4?view_only=bc7cae84e6d6427bb8b2861fcc71b193. Hypotheses 1–3 were formally preregistered, while Hypotheses 4 and 5 are considered exploratory.

2.2 Participants

To test our preregistered hypotheses, we used data from multiple waves of the representative GESIS Panel (Bosnjak et al., 2018; GESIS, 2021). Participants in the GESIS Panel were recruited by drawing a probability sample of the adult population in Germany. Participants were interviewed bimonthly starting in 2014. Since then, two refreshment samples were drawn in 2016 and 2018 to compensate for panel attrition. Panelists were interviewed using online and paper-and-pencil questionnaires. The wave containing our dependent variable, namely, questions about COVID-19 conspiracy theories, was fielded at the onset of the pandemic in Germany from August 26 to October 13, 2020. Note that our main independent variables, namely, the need for cognitive closure and political trust, were assessed before the beginning of the COVID-19 pandemic from December 12, 2018 to February 13, 2019, and from June 13 to August 14, 2018, and that our key variables are measured only in the pre-pandemic panel waves and not in subsequent waves. After the listwise deletion of missing values, our analytical sample includes 2,883 respondents who provided complete answers in the respective survey waves. The mean age was 55.6 years, 51% of the participants were male, and 49% were female. To control for data quality, we created a “speeder index” for the fastest 10% of the online participants. The following analyses were also conducted while excluding the fastest 10%. However, this approach did not alter the findings in terms of their significance or substantiveness, and we report results without excluding “speeders.” All data and materials are available for registered users via GESIS—Leibniz Institute for the Social Sciences and can be accessed at <https://doi.org/10.4232/1.13969>.

2.3 Measures

2.3.1 Belief in coronavirus conspiracies (wave August–October 2020)

Beliefs in conspiracies related to the coronavirus were measured with three items (“The coronavirus is a biological weapon, which has been developed in secret governmental laboratories,” “The

coronavirus is used to restrict civil rights and to start an ongoing surveillance of citizens,” and “The danger and numbers regarding the spread of the coronavirus are purposely exaggerated.”). Participants were asked to rate how likely or unlikely each statement is on a seven-point scale (1 = *extremely unlikely*; 7 = *extremely likely*), and the responses were averaged to create a conspiracy belief score (Cronbach’s alpha = 0.84).

2.3.2 Need for cognitive closure (wave December 2018–February 2019)

Participants completed a five-item short form of the original need for closure scale (Webster and Kruglanski, 1994) proposed by Rinke (2014). This short form (NFCS-5) proved to be reliable, valid, and efficient to administer in general population surveys (Rinke, 2014). All items were rated on a five-point scale (1 = *strongly disagree*; 5 = *strongly agree*) and averaged to produce a composite score (Cronbach’s alpha = 0.67).

2.3.3 Political trust (wave June–August 2018)

Participants were asked to rate various political institutions on trust scales that ranged from 1 (*don’t trust at all*) to 7 (*trust completely*), and an average score of these items was computed (Cronbach’s alpha = 0.88). The institutions include the justice system, television, newspaper, the government, political parties, and the European commission. Importantly, general political trust was measured well before the start of the COVID-19 pandemic.

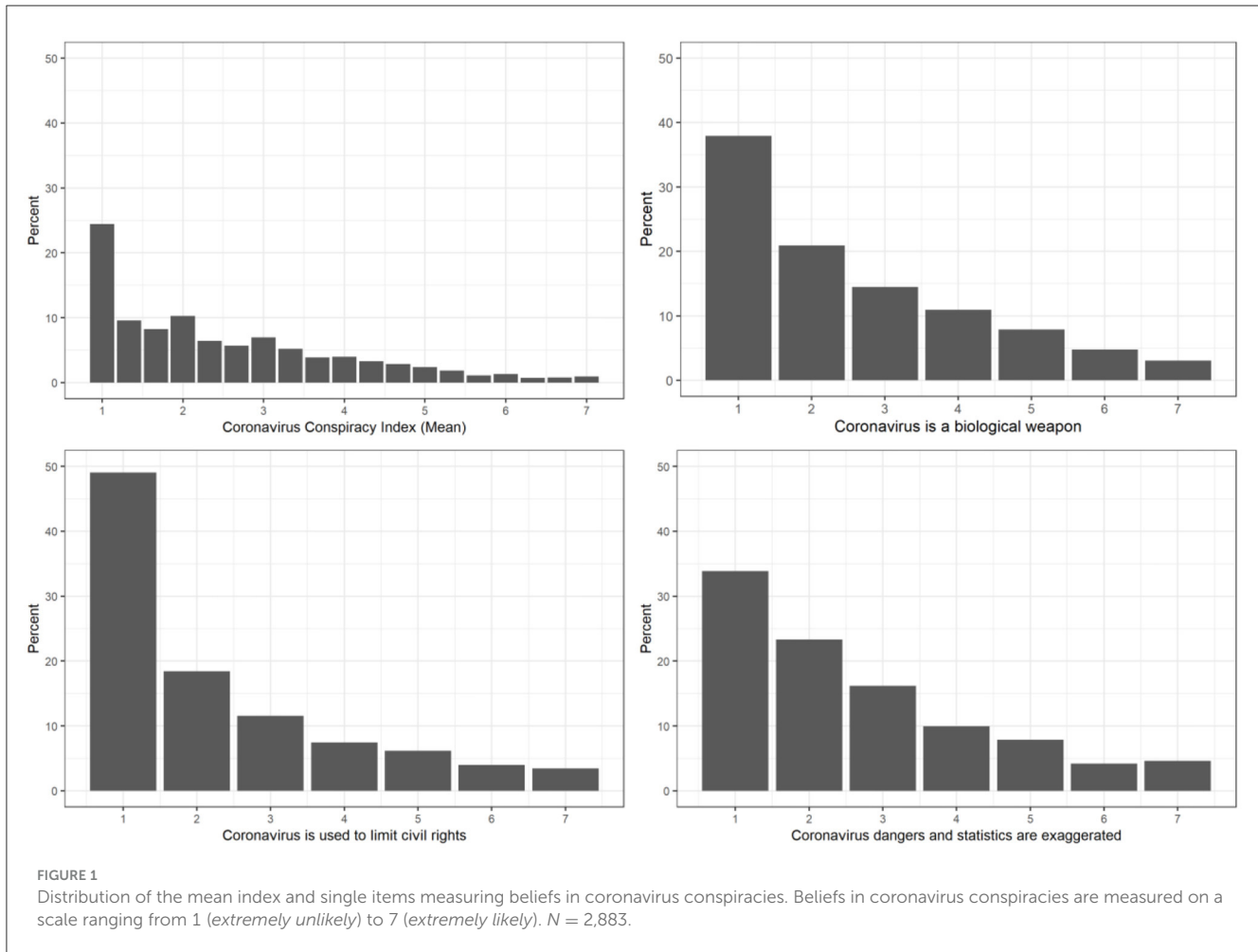
2.3.4 Crisis trust (wave August–October 2020)

To test the robustness of our results, we included a second measure of specific trust that pertains to confidence in various institutions to handle the COVID-19 crisis, which was measured in the same survey wave as conspiracy beliefs. This measure was not specified in the original preregistration since its inclusion in the questionnaire was not public at the time of preregistration. However, there is reason to believe that specific trust in handling the crisis might be a more powerful moderator of the relationship between NCC and conspiracy beliefs because it is more directly related to the pandemic and might be considered more informative for people high in NCC. Since we did not anticipate the availability of the variable in the preregistration, the analyses remain exploratory.

Participants were asked to rate various persons and institutions in dealing with the coronavirus on a scale ranging from 1 (*don’t trust at all*) to 5 (*trust completely*). An average score of these items was computed (Cronbach’s alpha = 0.91). This index includes the following persons and institutions: their general practitioner, the local health authority, the Robert Koch Institute, the government, the chancellor, the Ministry of Health, the World Health Organization (WHO), and scientists.

2.3.5 Demographics

We control for several sociodemographic variables that have been shown to be correlates of conspiracy beliefs (Enders et al., 2024), such as age (*in years*), gender (0 = *male*; 1 = *female*),



educational attainment in Germany’s tripartite school system (1 = *low, 9 years of schooling or less*; 2 = *medium, 10 years of schooling*; 3 = *high, 12 or 13 years of schooling with technical college or university entrance permission*), personal income (measured with 15 income categories), and region of residence (0 = *West Germany*; 1 = *East Germany*). Deviating from the preregistration, we have also included left-right self-placement on a 10-point Likert scale (1 = *left*; 10 = *right*) and immigration background (0 = *no immigration background*; 1 = *immigration background*). Participants with immigration background are defined as having been born outside of Germany or having one of their parents born outside of Germany.

3 Results

The distribution of beliefs in conspiracy theories regarding COVID-19 is presented in **Figure 1**. As seen, most citizens were not susceptible to coronavirus-related conspiracy theories at the time of the survey. Only 7.8% thought that it is very likely that the virus is a biological weapon, while 7.4% believed that the coronavirus is a means by which to limit civil rights and implement mass surveillance. Beliefs that the dangers and spread of the virus are exaggerated were seen as slightly more likely by the

TABLE 1 Descriptive statistics and correlations for main study variables.

Variable	Range	M	SD	1.	2.	3.
1. Conspiracy beliefs	1–7	2.50	1.49	–		
2. Need for cognitive Closure	1–5	3.25	0.62	0.12***	–	
3. Political trust	1–7	3.72	1.14	–0.37***	–0.05*	–
4. Crisis trust	1–5	3.61	0.79	–0.55***	–0.03	0.53***

* $p < 0.05$, *** $p < 0.001$. $N = 2,883$.

public (8.8%). When focusing on the index of the three items, the mean value for conspiracy beliefs was 2.50 ($SD = 1.49$) on a seven-point scale. When divided into categories, 52.5% think that the conspiracy theories were very unlikely to be true (index scores 1–2), 6.7% believe that they were very likely to be true (index scores 6–7), and 40.7% were placed in between (index scores 3–5).

Table 1 shows the descriptive statistics and bivariate correlations between beliefs in conspiracy theories and NCC,

TABLE 2 Regression analysis predicting beliefs in coronavirus conspiracies.

	Coronavirus conspiracy beliefs (mean index)			
	Model (1) B (SE)	Model (2) B (SE)	Model (3) B (SE)	Model (4) B (SE)
Age	-0.16***	-0.16***	-0.11***	-0.11***
	(0.02)	(0.02)	(0.02)	(0.02)
	[-0.20, -0.12]	[-0.20, -0.12]	[-0.14, -0.08]	[-0.14, -0.08]
Gender: female vs. male	0.02	0.02	0.01	0.01
	(0.02)	(0.02)	(0.02)	(0.02)
	[-0.02, 0.06]	[-0.02, 0.06]	[-0.03, 0.05]	[-0.03, 0.05]
Education: medium vs. low	-0.08**	-0.08**	-0.06**	-0.06**
	(0.03)	(0.03)	(0.02)	(0.02)
	[-0.14, -0.03]	[-0.14, -0.03]	[-0.11, -0.02]	[-0.11, -0.01]
Education: high vs. low	-0.22***	-0.22***	-0.20***	-0.20***
	(0.03)	(0.03)	(0.02)	(0.02)
	[-0.28, -0.17]	[-0.28, -0.17]	[-0.25, -0.15]	[-0.25, -0.15]
Region: east vs. west	0.10***	0.10***	0.09***	0.09***
	(0.02)	(0.02)	(0.02)	(0.02)
	[0.06, 0.14]	[0.06, 0.14]	[0.06, 0.13]	[0.06, 0.13]
Income	-0.05*	-0.05*	-0.06**	-0.06**
	(0.02)	(0.02)	(0.02)	(0.02)
	[-0.10, -0.01]	[-0.10, -0.01]	[-0.10, -0.02]	[-0.10, -0.02]
Left-right orientation	0.07***	0.07***	0.05**	0.05**
	(0.02)	(0.02)	(0.02)	(0.02)
	[0.03, 0.11]	[0.03, 0.11]	[0.02, 0.09]	[0.02, 0.09]
Immigration background	0.05**	0.05**	0.05**	0.05**
	(0.02)	(0.02)	(0.02)	(0.02)
	[0.01, 0.09]	[0.01, 0.09]	[0.01, 0.08]	[0.01, 0.08]
Need for cognitive closure	0.08***	0.08***	0.08***	0.08***
	(0.02)	(0.02)	(0.02)	(0.02)
	[0.04, 0.11]	[0.04, 0.11]	[0.04, 0.11]	[0.04, 0.11]
Pre-pandemic political trust	-0.33***	-0.33***		
	(0.02)	(0.02)		
	[-0.37, -0.29]	[-0.37, -0.29]		
Pre-pandemic political trust × need for cognitive closure		0.00		
		(0.02)		
		[-0.03, 0.04]		
Concurrent crisis trust			-0.51***	-0.51***
			(0.02)	(0.02)
			[-0.55, -0.47]	[-0.55, -0.47]
Concurrent crisis trust × need for cognitive closure				0.00
				(0.02)
				[-0.03, 0.04]
Constant	-0.01	-0.01	-0.01	-0.01
	(0.02)	(0.02)	(0.02)	(0.02)
	[-0.04, 0.03]	[-0.04, 0.03]	[-0.04, 0.02]	[-0.04, 0.02]
Adjusted R ²	0.22	0.22	0.37	0.37
F-Statistic	60.67***	55.84***	118.65***	108.34***

Cells display z-standardized OLS coefficients, standard errors, and 95% confidence intervals. Design weights were applied.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. $N = 2,491$.

as well as both types of trust (political and crisis-specific; a full correlation matrix with all covariates can be found in the [Supplementary material](#)). At the bivariate level, NCC shows a weak positive association with belief in conspiracy theories, which aligns with Hypothesis 4. As expected, both measures of trust are negatively linked to beliefs in COVID-19 conspiracies, supporting Hypothesis 5.

We next conducted linear regression analyses of COVID-19 conspiracy beliefs on NCC and both types of trust adjusting for several covariates (see [Table 2](#)). The first two models in [Table 2](#) focus on the effects of pre-pandemic political trust, whereas the third and fourth models highlight the effects of specific trust during the pandemic. In both instances, the analysis tests for main effects first (Models 1 and 3) and interactions between NCC and trust second (Models 2 and 4).

The regression models predicting the endorsement of COVID-19 conspiracies account for between 20.7% and 36.8% of the variance. The need for closure is positively related to conspiracy beliefs. However, compared to the other predictors in the models, the effect size of NCC is relatively small. Supporting Hypothesis 5, both forms of trust are strongly negatively related to conspiracy beliefs (Models 1 and 3).

In fact, political trust and specific crisis trust are the most influential factors in predicting beliefs in conspiracy theories. In terms of their substantial effects, the effect size of both kinds of trust is followed by the effects of education and age. Higher education and an increase in age are associated with lower levels of conspiratorial thinking. Regarding the other predictors, living in the eastern part of Germany, having a right-wing ideological orientation, having an immigration background, and having a lower income are positively related to COVID-19 conspiracy beliefs. Contrary to the focal Hypotheses 1–3, the relationship between NCC and acceptance of COVID-19 conspiracy narratives was not moderated by the levels of political or crisis-specific trust in institutions (Models 2 and 4). To check the robustness of our results, we also rerun the models with 95% bootstrapped confidence intervals. The results remain substantially the same (see [Supplementary material](#)).

4 Discussion

Conspiracy theories provide orientation and a sense of predictability for societal events, which makes them attractive to people with heightened psychological needs for epistemic certainty. The present study examined NCC as a possible explanation for susceptibility to COVID-19 conspiracy theories. We found a weak positive association between the need for cognitive closure and COVID-19 conspiracy beliefs at the bivariate level and adjusting for demographic and political covariates. We further found negative associations between conspiracy beliefs and pre-pandemic political trust and concurrent trust in politicians, officials, and institutions in dealing with the COVID-19 crisis. However, the results do not support our central hypotheses that the effect of NCC is contingent on prior trust in the political system or concurrent trust in officials and institutions.

These results have several implications for theory and practical measures to combat adverse beliefs surrounding the COVID-19 pandemic. Following [Kruglanski \(2004\)](#), we reasoned that NCC prompts individuals to seize on any kind of information to reach a state of certainty. This does not necessarily imply a preference for conspiratorial accounts of public events but rather opens the door to the possibility that individuals with high levels of NCC will adopt information from trusted official sources. The present findings do not lend support to this assumption and are more in line with [Douglas et al. \(2019\)](#) who argued that conspiracy beliefs are more appealing to those with an epistemic need to reduce uncertainty. In other words, the desire to reach a state of certainty as quickly as possible (seizing) may be better served by simple explanations. While our results suggest that NCC is positively related to conspiratorial explanations, considering the small effect sizes, the role of NCC in endorsing conspiracy narratives seems rather marginal.

Taken together, this study relativizes the importance of individual differences in epistemic needs in explaining conspiracy beliefs and underlines the importance of a lack of trust in political institutions for democratic societies in the age of misinformation and post-truth politics. The findings suggest that maintaining trust in political institutions, official reports, and traditional media outlets is of utmost importance for modern democracies regarding preventing the disruptive consequences of misinformation and alternative narratives. Hence, politicians should not treat trust in political institutions lightly and should carefully communicate information on vaccines and crisis management. Political scandals in dealing with the pandemic should be addressed openly and dealt with accordingly to display trustworthy leadership and maintain trust in institutions and officials.

The current study contributes to the current debate about the role of psychological and political factors in understanding COVID-19-related conspiracy beliefs in several ways. First, to the best of our knowledge, our study is among the few that have examined the role of the need for cognitive closure for COVID-19 conspiracy beliefs. Second, our study is based on a highly powered probability sample of the German population that allows us to generalize the associations beyond the immediate study context. Germany has a diverse media landscape, with a government-funded public broadcasting system committed to journalistic quality. Germany also has so-called alternative media outlets that routinely spark conspiracy theories, but these are quite marginalized. Albeit weak in the present case, the relationship between NCC and conspiracy beliefs could be stronger in countries with a more commercialized and polarized media landscape.

Third, while we used a correlational design, our independent variables (need for cognitive closure and political trust) were measured before the beginning of the COVID-19 pandemic and clearly showed the effect of preexisting dispositions on developing subsequent conspiracy beliefs. Certainly, the implications of our results are limited by the fact that we opted for a correlational design, and further studies should experimentally investigate the role of NCC in conspiracy beliefs. In particular, we could not determine what kind of information was available to participants during the time

period studied. Future experimental designs could manipulate access to conspiratorial and scientific information about fictional issues and examine how people high in NCC react to different information environments. However, the different measurement occasions in the present survey design help us to test the predictive validity of NCC and trust and thus aid our understanding of long-term predispositions that foster and prevent conspiracy narratives in times of high uncertainty. Future studies should further investigate the psychological and social determinants of political trust, given its important role in mitigating conspiratorial thinking.

Data availability statement

Publicly available datasets were analyzed in this study. This data can be found at: <https://doi.org/10.4232/1.13798>.

Ethics statement

The study complies with all ethical standards of the GESIS Panel conducted by GESIS - Leibniz Institute for the Social Sciences. The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study.

Author contributions

AJ: Conceptualization, Methodology, Writing – original draft, Writing – review & editing. LM: Conceptualization, Formal analysis, Methodology, Writing – original draft, Writing – review & editing.

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Funding

The author(s) declare that no financial support was received for the research, authorship, and/or publication of this article.

Acknowledgments

The authors would like to thank the GESIS Panel team for the opportunity to include the questionnaire module on COVID-19 conspiracies as part of the GESIS panel.

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/frsps.2024.1447313/full#supplementary-material>

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