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Narratives on the present and the future in the time of COVID-19 pandemic: Uncertainty, subjective feeling and the role of positive anticipatory states

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Background: The aim of the present study was to investigate the relationship between certainty, positive anticipatory states, and positive feelings by analyzing written narratives collected during the COVID-19 pandemic lockdown in April 2020.

Methods: A total of 1,090 Italian participants were asked to write two narratives (one about the present and one about their representation of the future). The corpus was analyzed with the Linguistic Inquiry and Word Count software package.

Results: Results showed that during the acute phase of COVID-19, people felt more certainty about the present than about the future. In particular, the appraisal dimension of certainty influenced the elicitation of positive feelings through the effect of positive anticipatory states. People with high levels of certainty about the future experienced positive feelings more frequently. The results also suggest that people find it easier to focus on the present moment and experience positive feelings rather than try to predict the future and generate positive feelings based on those predictions.

Conclusions: The study is significant, as it is the first to investigate whether certainty may be a strategy for regulating the specific stressor represented by the COVID-19 pandemic. The results highlighted the importance of certainty in coping with environmental threats and stressors.

KEYWORDS

certainty about study choice, positive anticipatory states, positive feelings, COVID-19 pandemic, linguistic inquiry and word count software

1. Introduction

The narrative method is being increasingly used to study the subjective experience of events. As Polkinghorne (1988, p. 11) pointed out, autobiographical narratives are the primary schema through which human existence becomes meaningful. A tale serves to explain to individuals how they got to be who they are and where their life may be going *via* the painstaking reconstruction of the autobiographical past, present, and future (McAdams, 2011; Venuleo et al., 2020).

Thus, narratives are a major sense-making device through which we understand our own experiences; moreover, they play a central role in the construction of identity and provide the opportunity to actively participate in the social practices of a specific culture (Bruner and Bruner, 1990; Fivush et al., 1996, 2012; McLean, 2005; Pasupathi and Mansour, 2006). Social scientists claim that attitudes, ideas, subjective meanings, values, and self-representations, as well as the way individuals look at social situations and at their role in them, may be captured in personal narratives (Baxen, 2008; Hirsh and Peterson, 2009; Iannello et al., 2018; Biassoni et al., 2019; Colombo et al., 2022). Hence, the study of autobiographical narratives offers a window into understanding the perception of the self and of subjective experience (McClean, 2007); furthermore, autobiographical narratives can be a powerful tool to help people reflect on the present and imagine the future. In this study, we examined narratives about the experienced present and imagined future collected during the first COVID-19 lockdown (April 2020) from a sample of Italian people. In the present study, autobiographical narratives were analyzed focusing on two main constructs. The first one is “certainty”, which can be described as the subjective sense of complete confidence without doubt and is shaped by dispositional and situational factors (Wittgenstein et al., 1969; Holmes, 1982). It is connected to how people process information and is often associated with the ability to predict or control future outcomes.

The second one refers to a group of positive states that we have called “positive anticipatory states” which refer to the positive feelings experienced by individuals in anticipation of a future event or outcome, including hope and optimism (Bruininks and Malle, 2005). This study considers hope and optimism as temporary emotional and cognitive states that individuals experience when contemplating a positive future development (Peterson et al., 2006; Carver et al., 2010; Alarcon et al., 2013; Gasper et al., 2020).

1.1. The pandemic: The age of uncertainty

With the outbreak of the global coronavirus pandemic COVID-19, an unprecedented and unique health emergency was declared by the World Health Organization. This pandemic posed not only a public health challenge but also a global mental health and economic crisis. Italy was the first European country to address the first wave of COVID-19. On March 9, 2020, the Italian government decided on the first lockdown to impose the closure of businesses, schools, and public places, as well as movement restrictions and social distancing, to control the rapid spread of infection. The pandemic, therefore, affected our lives in many ways, including our psychological wellbeing. Italian studies have shown that the pandemic has impacted a number of life habits, including eating habits (Di Renzo et al., 2020) and drug/ alcohol misuse (Gili et al., 2021). Also, the COVID-19 epidemic has significantly disrupted the Italian’s emotional, social, and economic life, leading to frequent psychological reactions including fear, loneliness, frustration, irritation, confusion, worry and uncertainty (Ferrucci et al., 2020; Lanciano et al., 2020; Filindassi et al., 2022). The decline in Italian mental health was described by Filindassi et al. (2022) as a form of “psychological COVID-19 syndrome”,

which manifests as higher levels of anxiety, stress, and depression, as well as reduced wellbeing and sleep quality.

Research on the consequences of past epidemics showed that they have a wide range of detrimental effects on mental health. Chew et al. (2020) reported that anxiety, fear, despair, anger, guilt, sorrow, and post-traumatic stress disorder were all frequently observed psychological responses during the 2002–2003 SARS pandemic, the 2009 H1N1 influenza outbreak, and the 2018 Ebola outbreak. Many of the factors often cited as triggers for these reactions also apply to the COVID-19 pandemic and the related lockdown measures, such as the perception of a serious threat to one’s own and loved ones’ health, fear of becoming infected, disruption of daily routines, isolation due to quarantine, uncertainty about the course of treatment for the disease, and one’s financial situation.

Abrupt changes in lifestyle habits, social isolation, fear of contagion, and low access to treatment and care were potential triggers for stress response and increased negative emotions that may have been exacerbated by this pandemic (Esterwood and Saeed, 2020). In particular, a large number of people reported a deterioration in their quality of life, loneliness, stress, and high rates of various mental health issues like depression or anxiety (Di Stefano et al., 2021; Lee et al., 2021).

Indeed, the pandemic was characterized by a general uncertainty in almost all aspects of life, together with a profound uncertainty about the origin, evolution, and possible solution of the COVID-19 crisis. This uncertainty can be attributed to, for example, the disease being new and having an unknown course and lethality, the spread of the phenomena, the amount of time required to create a vaccine, whether there would be additional pandemic waves, the length and effectiveness of social isolation, the pandemic’s short-term economic impact and political responses, the speed of economic recovery after the pandemic has passed, whether “temporary” government initiatives will become long-lasting, the degree to which pandemic-induced changes in consumer behavior, business travel, and whether working from home will endure (Altig et al., 2020; Reizer et al., 2021). Time horizons became highly uncertain. Finally, negationism and disinformation have clearly contributed to considerable uncertainty (Ashokkumar and Pennebaker, 2021). Factors that may have contributed to the occurrence of mental health problems were the lack of any reference points, the high level of uncertainty about many of the situations, and the consequent need to find strategies to increase a sense of control and nurture a sense of certainty about the present and (in particular) about the future.

1.2. Certainty about the future

The notion of certainty may be defined as the subjective sense of being completely confident or having no doubt about something (Wittgenstein et al., 1969; Holmes, 1982). The correct definition must comprise a feeling of subjectivity since certainty is a pragmatic attitude rather than a grammatical trait. It is shaped by both dispositional and situational factors and is strongly associated with the representation of both the present and the future.

Although research has generally examined the concepts of certainty and future thinking independently (Fischhoff et al., 1977; Gross et al., 1995; Atance and O'Neill, 2001; Tiedens and Linton, 2001; Petty and Krosnick, 2014), we believe that these two constructs are strictly related because certainty is often associated with the ability to predict or control future outcomes. Imagining the future is a crucial aspect of daily life as it allows individuals to plan ahead and envision what new experiences might be like in the distant future (Durbin et al., 2019). In recent years, there has been growing interest in exploring how people imagine the future (for reviews and discussion, see Atance and O'Neill, 2001; Schacter et al., 2008; Szpunar et al., 2014; Durbin et al., 2019).

The construct of certainty is also connected to how people process information (specifically through the process of certainty appraisals). Certainty can be influenced by a variety of factors such as past experiences, cognitive biases, and the availability of information. According to the Sufficiency Threshold Theory, humans naturally strive to achieve a certain level of confidence to validate a message (Chaiken, 1989; Eagly and Chaiken, 1993). If the actual level of certainty or confidence is lower than expected, people will put more effort into processing. Moreover, people in a positive outlook achieve a sufficiency threshold more easily than those in a negative mood (Tiedens and Linton, 2001). While attempting to accurately make decisions or judgments, the emotional state may be a cue as to the subjective level of certainty of this information (Hirt et al., 1996; Tiedens and Linton, 2001). Moreover, individuals prone to uncertainty sometimes do not have confidence in their ability to process information (Tiedens and Linton, 2001). Conversely, individuals who have a high degree of certainty may have a sense of self-confidence and self-efficacy in their beliefs and are more likely to experience the illusion of control (Krueger and Dickson, 1994). The illusion of control generates two outcomes: feeling inappropriately confident and underestimating the probability of one encountering negative events, whereas the desirability bias drives people to underestimate undesirable outcomes and overestimate desired ones (Budescu and Bruderman, 1995). Because of these two processes, individuals tend to have a “rosy vision” of the present or the future (Budescu and Bruderman, 1995). These two distinct but interrelated phenomena serve the function of helping individuals to regulate negative emotions and to cope with difficult situations by feeling better than they would do if facing a realistic assessment of the circumstances.

In fact, an event that is imagined as certain is experienced as being more controllable, and, when certainty merges with positive anticipative states, a positive mood may emerge. In this sense, research has shown that future-oriented positive feelings and emotions may prevail in self-controlled people (Winterich and Haws, 2011). If the desire is to avoid negative emotional states, we argue that positive certain thinking (as a control and protective mechanism) may be helpful to perceive the situation or event as less harmful. This is because individuals who have a high level of certainty in their beliefs and predictions having fewer negative emotions such as fear, anxiety, and doubt. Additionally, when individuals feel certain about the future, they may be more likely to engage in proactive problem-solving, which can lead to a sense of mastery and a reduction of negative emotions (Tiedens and Linton, 2001; Gollwitzer and Sheeran, 2006; Lee and Coricelli, 2020).

Different works have analyzed the linguistic markers of certainty and uncertainty in the Italian language (Bongelli et al., 2013, 2018; Zuczkowski et al., 2017; Riccioni et al., 2022). Results showed that almost all morphosyntactic indicators, such as declarative sentences in the present, past, and future indicative, are used to convey certainty instead of lexical evidentiary or epistemic markers. Moreover, some adverbs (e.g., *certainly*, *indeed*, *exactly*, *no doubt*) convey a sense of certainty (Holmes, 1982; Aijmer, 2002). The Linguistic Inquiry and Word Count (LIWC) 2007 dictionary for the concept of “certainty” consists of 83 words comprising nouns, adverbs, adjectives, and verbs. Some examples include *absolutely*, *forever*, *inevitable*, *must*, *perfect*, and *precisely*.

1.3. Positive anticipatory states

Positive anticipatory states refer to the feelings of excitement and positivity that a person experiences in anticipation of a future event or outcome. They are future-directed affective states sharing a pattern of appraisals of the future event as attractive, conducive, and controllable. Positive anticipatory states include primarily hope and optimism, together with want, desire, and wish (Bruininks and Malle, 2005). In the present study, hope and optimism are viewed as patterns of temporary emotional and cognitive states that people experience when they consider the possibility of a positive future development (Peterson et al., 2006; Carver et al., 2010; Alarcon et al., 2013; Gasper et al., 2020). This viewpoint differs from earlier research, which frequently regards optimism and hope as traits instead of states (Alarcon et al., 2013).

Optimism and hope have adaptive functions and play a role in human evolution (Sharot, 2011). An optimistic and hopeful outlook appears to offer numerous healthy and psychological benefits (Scheier and Carver, 1993; Peterson, 2000; Sweeny et al., 2006). After all, having a positive outlook on the future brings a sense of comfort; on the other hand, having a negative view can lead to feelings of anxiety or negativity. The nature of hope is widely discussed. Hope has been seen as a cognitive state that involves two dimensions: one's drive to pursue goal-oriented actions (known as agency) and ability to find ways to achieve those goals (known as pathways) (Snyder et al., 1991, 1997), or as a feeling (Rustoen, 1995; Roth and Hammelstein, 2007).

In this second view, an individual experiences hope when they appraise the likelihood of reaching their goal as achievable; the outcome as personally and socially acceptable and important, and when they see themselves as being ready to take the necessary steps to achieve their objectives (Averill et al., 1990). According to Bruininks and Malle (2005), “hope is a fundamental emotion for understanding basic human responses such as goal setting, investment, coping, and change (p. 329).” Despite hope not being recognized as one of the primary emotions (Averill, 1994), it can still be deemed a significant aspect for human survival (Bruininks and Malle, 2005).

“It is difficult to imagine the survival of a society without hope, especially in light of destruction brought about by wars and natural disasters” (Bruininks and Malle, 2005; p. 328). On the other hand, hope has been defined as “decidedly cognitive” (Snyder et al., 1991)

but it also distinguished by the distinctive emotive component that motivates people to work toward desired results. Again, hope is described as an emotion that is beyond our control (Averill, 1994) but also a state that we intentionally pursue, maintain, abandon, or resume (Hollis et al., 2007).

Optimism is defined as a positive tendency with an expectation that outcomes will generally be positive (Taylor, 1989). According to Taylor, people employ positive illusions to deal with events that involve knowledge that is ambiguous, insufficient, or emotionally difficult (Taylor, 1989; Biassoni et al., 2022). Optimism is distinct from hope in that hope endures even when the future seems bleak (Lazarus, 1999; Gasper et al., 2020). Additionally, individuals desire outcomes that are important and relevant to their priorities, while they may be more positive about a wider range of possibilities (Gasper et al., 2020). This is supported by Averill et al. (1990), who also emphasized that people's aspirations take priority over other wants and needs.

According to Smith et al. (2014) and De Mello et al. (2007), hope is a reflection of a very individualized aim. Moreover, compared to optimism, hope was connected with higher efforts to pursue the goal (Smith and Ellsworth, 1985). Even in the face of extreme adversity, hope should keep a person motivated to pursue their goals (Smith et al., 2014). Conversely, if one is optimistic, a positive outcome is anticipated and effort may not be required. However, recent literature distinguishes between dispositional optimism and unrealistic optimism, which promotes a distorted view of the world and challenges the claim that the idea that having overly optimistic beliefs and forecasts benefits mental health (Gordeeva et al., 2020). However, healthy optimism is adaptive in coping with uncontrollable events and long-term stressors to enhance wellbeing (Scheier and Carver, 1985; Nes, 2016; Biassoni et al., 2022). Furthermore, the link between optimism and the illusion of control is also evidenced (Harris and Middleton, 1994; Rudski, 2004). However, Blackwell et al. (2013) have shown that when people are optimistic about the future, they are able to create more vivid mental pictures of favorable occurrences than pessimists, giving them a stronger sensation of "pre-experiencing" these events.

In line with this study, it is possible to hypothesize that this ability might help optimists to be more certain about the future. Additionally, Gasper et al. (2020) show that optimism seems to be more related to certainty and inversely related to fear of the future. In fact, optimism can help to counteract fear, alleviating feelings of anxiety and worry. Different studies that used linguistic analysis to detect optimism in texts and transcripts of conversations showed how LIWC is promising software to analyze the linguistic expression of optimism (Cheung et al., 2013; Gasper et al., 2020). Gasper et al. (2020), for example, observed that optimism is widely related to less abstract and concrete language. The optimism category in LIWC contains 69 words (nouns, verbs, adverbs, and adjectives) such as *pride and win*.

1.4. The present study

The current study examined the relationship between certainty and positive feelings and investigated whether positive anticipatory

states are a mediator of this relationship in a sample of Italian citizens during the first COVID-19 lockdown (April 2020). By using psycholinguistic analysis of self-narratives, we aimed to compare the representation of the present moment and of the future in relation to the pandemic situation using three specific linguistic categories (linguistic, emotional, and cognitive). In particular, we focused on the role of certainty and positive anticipatory states in the present moment and in the future.

We argue that the appraisal dimension of certainty (for present and future events) may increase the elicitation of positive feelings when a positive perspective is also present. Hence, positive anticipatory states that foster a positive perspective may play a mediating role between the appraisal dimension of certainty and positive feelings. In addition, when a person has a positive perspective and an expectation for positive outcomes, they would perceive future events as more certain (Snyder et al., 1991). This increased sense of certainty leads to experiencing more positive feelings.

Since the future is uncertain by its nature, the mental act of imagining the "not yet" involves an effort to process information. However, in the emergence of COVID-19, the present was also associated with a sense of widespread uncertainty. This uncertainty was accompanied by a sense of meaninglessness, the inability to categorize what was occurring or to know what to do to cope with the moment. In addition, a process of discovering new meanings of life that involve the individual realm and social life is needed to allow one to rethink one's priorities and values (Venuleo et al., 2020). In line with the appraisal hypothesis (Lazarus, 1991), which postulates that exposure to dangerous situations would result in heightened expression of uncertainty because risks lead to fear and the perception of uncertainty, we expect more certainty in the present than in the future. This idea contrasts with some tenets of the Terror Management Theory (Greenberg et al., 1986). TMT proposes that when confronted with death or other frightening events, individuals maintain their set of beliefs with strong conviction and unwavering clarity. As a consequence, are reassured by a sense of "symbolic immortality."

To the best of our knowledge, no prior research has investigated whether certainty may be considered a cognition-oriented strategy that can help regulate cataclysmic stressors such as COVID-19 by avoiding exposure to the feelings generated by the perspective of uncontrollable outcomes.

1.5. Aims and hypothesis

By using psycholinguistic analysis of self-narratives, we aimed to (1) examine the relationship between certainty and positive feelings and investigate whether positive anticipatory states are a mediator of this relationship in the present and the future and (2) compare the representations of the present moment and the future in the collected self-narratives.

More specifically, we aimed at verifying the following hypotheses:

1. The greater use of certainty-related words was higher in the narratives reporting the representation of the future. In the great

- uncertainty of the present moment, we think people will use a cognitive mechanism to imagine a certain future.
- In association with a higher frequency of linguistic markers denoting certainty, more frequent linguistic markers of positive emotions and feelings will emerge in the narratives reporting the representation of the future.
 - Additionally, we assume that the frequency of linguistic markers of positive anticipatory states (as a psychological compensation mechanism) mediates the relationship between certainty and positive feelings. Individuals may respond to uncertainty about the future by utilizing psychological compensation mechanisms aimed at regulating negative emotions and restoring their psychological wellbeing.

2. Methods

2.1. Participants

A total of 1,910 participants were recruited. Those who did not write in Italian text ($n = 4$) or did not provide complete data for both narratives ($n = 816$) were excluded. After applying the exclusion criteria, there were 1,090 remaining participants. Of the respondents, 49.2% were from Lombardy, the region in Italy hardest hit by COVID-19 regarding contagion and death rates. The remaining participants belonged to other Italian regions, equally affected by the virus. In relation to employment, 53.38% were employees, 17.48% were self-employed professionals, 12.20% were university students, 6.64% were homemakers, 5.17% were retired, and 5.12% were unemployed.

The sample was divided into three groups based on age: 18–39 ($n = 476$; males: 12.12%, females: 34.95%), 40–59 ($n = 468$; males: 10.28%, females: 30.08%), and over 60 ($n = 144$, males: 4.59%, females: 6.79%). The convenience sampling method was used in the study. All participants gave their written informed agreement to participate in the research voluntarily and anonymously, as well as to the handling of their personal data, within the scope of the present research, according to Directive 95/46/EC (General Data Protection Regulation), and to the ethical recommendations for research in psychology, in accordance with the Code of Ethics of Italian Psychologists and the WMA Declaration of Helsinki—2013.

2.2. Procedure

The tasks requiring two narratives (one about the present and one about their representation of the future) were part of a wider survey to investigate the experience of the first lockdown in Italy.

The survey was implemented on Qualtrics and distributed online through the main social networks (Facebook, LinkedIn, Instagram).

Participants completed the tasks providing the requested narratives during the sixth week of the first Italian lockdown (April 11–20, 2020). The first task asked the participants to describe their experience of the pandemic in the present and the second task asked them to describe how they imagined their lives in the future in relation to COVID-19. Specifically, participants were asked to complete the following tasks that we reported: “Try to describe your

TABLE 1 Four narratives are reported (two for the present scenario and two for the future scenario) as examples.

Present	Future
I am a flight attendant, so I have never been used to staying at home for too long. However, I must say that after an initial week of “suffering,” I have started to appreciate more and more staying at home, alternating between cooking and watching TV shows and movies, and really enjoying the home life. Now I find it pleasant. I try to stay informed and up-to-date to cope with the prevailing uncertainty of this period. I think that this time is making many people reflect on how they lead their lives, pushing them to enjoy what they have rather than desire what the world offers, and reviving traditions within Italian households and families. However, I try not to think about work because I feel suffocated by the lack of a stable salary, and consequently, I understand the discomfort that those who are even less fortunate than me may feel.	We need to restart, even if gradually, risking a setback. I hope we will make good use of the time we spent in solitude and that we will have more respect for others and the rules. However, I am not very optimistic. Perhaps a different world awaits us? I answer myself that it will be difficult to return to normalcy and it will happen very slowly, but if we all make an effort, it will be much easier and faster! We need collectively.
I feel calm and consider myself fortunate. I’m at home with my family, the people I love and I haven’t lived with for a long time. Every day, I spent little time studying, trying not to lose the habit of studying. I often go out to the terrace, cook, and try to stay fit. However, I also waste a lot of time. I go out very rarely and I only feel safe within the walls of my home. I try to stay updated on what’s happening in the world, and I certainly can’t complain about how I’m doing, given what’s happening outside. Sometimes, I feel discouraged or bored, feeling like I’m wasting time and I could be active, while other times I feel very calm and serene—it depends. It’s a precarious and strange situation for everyone.	I believe that there will still be some rules until a vaccine is developed, so we will maintain social distancing and wear masks for a long time. Certainly, with the vaccine, many things will change, but I do not think we will ever get rid of these masks. I suppose universities will continue with online classes even next year and the entire world of education will change. Perhaps this will allow me to stay with my parents here and not go back to Milan to study.

Texts from a 24-year-old man are displayed at the top and those from a 26-year-old woman are displayed at the bottom.

quarantine experience. How are you spending your time? How are you feeling?” And “How do you imagine the future that awaits you at the end of the quarantine? Try to describe it.”

The narratives, collected through two open-ended questions in the survey, were analyzed using Linguistic Inquiry and Word Count (LIWC), a validated computational text analysis program (Pennebaker et al., 2015). In order to calculate a percentage for each category, LIWC searches the text for these terms and counts the number of times they appear as a percentage of all the words. In Table 1 it is possible to find some examples of narratives for the two-time scenarios.

2.3. Measures

A pool of linguistic features was extracted using the Italian LIWC dictionary (Agosti and Rellini, 2007). We included three categories and 17 markers: (1) Linguistic processes (markers: word

count, first-person singular, first-person plural); (2) emotional processes (markers: affective processes, positive feelings, negative emotions, anxiety, anger, sadness, and optimism); (3) cognitive processes (markers: cognitive processes, causation, introspection, inhibition, discrepancy, certainty, possibility). The affective process label “emotion” comprises the overall amount of words widely connected to both positive and negative affective experiences. The “positive feelings” category is a subcategory comprising the words referring more in detail to the feeling dimension of the affective

experience (for example, joyful, excitement, or love) (for more information see Kahn et al., 2007).

The categories were selected in order to get linguistic indicators to (1) compare the representation of the present moment and of the future and (2) examine the role of the investigated constructs, namely certainty and positive anticipatory states, in the relationship with positive emotions and feelings. Table 2 shows the linguistic markers that have been considered as indicators for the different constructs.

TABLE 2 Investigated constructs and the associated linguistic markers.

Construct	Linguistic categories	Linguistic markers
Certainty	Cognitive processes	Certainty
Positive anticipatory states	Emotional process	Optimism
Positive feelings	Emotional process	Positive feelings

2.4. Study design

The experimental design used in this study is a 2 × 3 × 2 mixed factorial design. The 17 dependent variables (that is the frequency of markers in each LIWC category in the collected narratives) were manipulated both between-subjects (for the independent variables sex, 2 levels, and age, 3 levels) and within subjects (for the independent variable time scenario, 2 levels).

TABLE 3 Descriptive statistics for linguistic features.

Sex	Age	Present	Future	Present	Future	Present	Future
		Word count		Pronoun “I”		Pronoun “we”	
M	18–39	52.8 (40.1)	37.6 (23.8)	3.99 (3.14)	1.40 (2.68)	0.186 (0.603)	0.886 (1.75)
	40–59	37.0 (23.6)	30.5 (17.0)	3.22 (3.23)	1.09 (2.38)	0.137 (0.505)	0.932 (1.93)
	60–75	37.8 (29.3)	29.6 (21.8)	4.29 (3.86)	1.27 (2.35)	0.309 (1.03)	1.11 (2.27)
F	18–39	72.2 (57.8)	39.7 (25.5)	4.67 (3.33)	2.15 (2.78)	0.320 (0.849)	0.989 (1.77)
	40–59	56.6 (49.3)	34.8 (21.8)	4.92 (3.97)	2.00 (2.85)	0.255 (0.754)	1.00 (1.86)
	60–75	48.9 (36.7)	32.8 (15.1)	4.59 (3.69)	1.42 (2.29)	0.332 (1.31)	0.909 (1.65)

TABLE 4 Descriptive statistics for emotional features.

Sex	Age	Present	Future	Present	Future	Present	Future	Present	Future
		Affective process		Positive feelings		Negative emotion			
M	18–39	5.66 (3.68)	5.20 (4.58)	3.64 (3.54)	2.89 (3.74)	1.93 (2.30)	2.27 (2.95)		
	40–59	6.47 (3.97)	5.38 (3.97)	3.97 (3.21)	2.72 (2.99)	2.47 (3.25)	2.55 (3.20)		
	60–75	6.70 (4.83)	4.95 (4.80)	4.72 (3.96)	2.25 (3.63)	1.99 (2.71)	2.63 (3.12)		
F	18–39	6.09 (3.75)	6.09 (4.63)	3.38 (2.94)	3.19 (3.40)	2.61 (2.56)	2.84 (3.56)		
	40–59	6.98 (4.63)	6.09 (4.56)	3.66 (3.11)	2.98 (3.58)	3.25 (3.80)	3.09 (3.72)		
	60–75	6.10 (4.81)	5.13 (4.34)	3.16 (3.51)	2.29 (3.57)	2.83 (3.29)	2.79 (3.42)		
Sex	Age	Present	Future	Present	Future	Present	Future	Present	Future
		Optimism		Anxiety		Anger		Sadness	
M	18–39	1.65 (2.85)	1.24 (1.92)	0.620 (1.37)	0.720 (1.71)	0.263 (1.02)	0.238 (0.89)	0.744 (1.33)	0.366 (1.10)
	40–59	1.35 (2.17)	1.29 (2.06)	1.02 (2.31)	0.612 (1.55)	0.410 (1.38)	0.391 (1.25)	0.760 (1.63)	0.413 (1.21)
	60–75	1.22 (3.23)	0.701 (1.55)	0.777 (1.65)	0.509 (1.32)	0.333 (1.05)	0.365 (1.18)	0.594 (1.42)	0.230 (0.98)
F	18–39	1.59 (2.36)	1.15 (1.60)	0.977 (1.66)	1.16 (2.34)	0.234 (0.68)	0.297 (1.02)	1.10 (1.65)	0.543 (1.48)
	40–59	1.45 (2.28)	1.29 (1.97)	1.28 (2.25)	1.19 (2.26)	0.436 (1.36)	0.427 (1.32)	1.33 (2.14)	0.681 (1.89)
	60–75	1.04 (2.25)	0.878 (1.41)	0.897 (1.80)	0.764 (1.85)	0.566 (1.61)	0.528 (1.32)	1.20 (1.98)	0.414 (1.11)

TABLE 5 Descriptive statistics for cognitive features.

Sex	Age	Present	Future	Present	Future	Present	Future	Present	Future
		Cognitive process		Causation		Introspection		Discrepancy	
M	18–39	4.77 (4.04)	6.91 (4.35)	0.807 (1.47)	1.09 (1.83)	1.50 (1.98)	1.94 (2.27)	1.50 (1.98)	1.94 (2.27)
	40–59	4.14 (3.99)	6.23 (5.22)	0.511 (1.49)	0.957 (1.81)	1.09 (1.79)	1.77 (2.69)	1.09 (1.79)	1.77 (2.69)
	60–75	4.45 (4.49)	6.09 (5.32)	0.650 (1.51)	1.29 (2.19)	1.06 (2.40)	1.53 (2.40)	1.06 (2.40)	1.53 (2.40)
F	18–39	4.93 (3.64)	7.51 (4.70)	0.765 (1.49)	0.947 (1.61)	1.39 (1.87)	2.41 (2.70)	1.39 (1.87)	2.41 (2.70)
	40–59	4.25 (3.84)	6.84 (4.66)	0.682 (1.39)	1.12 (2.04)	1.18 (1.90)	1.97 (2.60)	1.18 (1.90)	1.97 (2.60)
	60–75	5.26 (3.64)	6.96 (4.45)	0.631 (1.46)	1.02 (1.66)	1.19 (1.69)	2.57 (2.52)	1.19 (1.69)	2.57 (2.52)
Sex	Age	Present	Future	Present	Future	Present	Future		
		Inhibition		Possibility		Certainty			
M	18–39	0.237 (0.75)	1.20 (1.99)	2.38 (2.33)	3.44 (3.44)	1.76 (2.40)	0.882 (1.56)		
	40–59	0.465 (1.21)	1.33 (2.30)	2.16 (2.76)	3.26 (3.41)	1.84 (2.84)	1.23 (1.84)		
	60–75	0.415 (1.12)	0.897 (2.24)	2.25 (2.85)	2.09 (3.20)	1.59 (2.71)	0.961 (1.65)		
F	18–39	0.310 (0.77)	0.765 (1.75)	2.42 (2.31)	3.32 (3.27)	1.75 (2.30)	1.30 (1.75)		
	40–59	0.386 (1)	0.806 (1.88)	2.41 (2.78)	2.95 (3.40)	1.63 (2.61)	1.21 (1.83)		
	60–75	0.447 (1.15)	0.637 (1.49)	2.04 (2.52)	3.37 (3.09)	1.69 (2.16)	1.13 (1.73)		

TABLE 6 Mediation estimates for the present moment.

Effect	Label	Estimate	SE	95% confidence interval		Z	p
				Lower	Upper		
Indirect	a × b	0.28	0.04	0.19	0.36	6.73	<0.001
Direct	c	0.17	0.06	0.07	0.28	3.10	0.002
Total	c + a × b	0.45	0.07	0.31	0.57	6.71	<0.001

2.5. Data analysis

For each of the LIWC categories used in this study, a 2 (sex) × 3 (age groups) × 2 (narrative time scenario: present vs. future) repeated-measures analysis of ANOVA test was conducted, with sex and age groups as “between-subjects” factors and narrative time scenario as “within-subjects” factors. Tukey HSD comparisons were performed when significant interaction effects occurred to determine if there were differences among categories. A Muchly test was performed to test the assumption of sphericity. No violation of sphericity was found ($p > 0.05$). The significance level was set at $p < 0.01$.

Two mediation models (one for the time scenario “present” and one for the time scenario “future”) were also run with bootstrapping analysis based on 1,000 replicates to increase the precision of the estimate. Three dependent variables, extracted through the psycholinguistic analysis of the narratives performed with LIWC, were considered in these mediation models: certainty (as a predictive variable), positive anticipatory states (as a mediating variable), and positive feelings (as an independent variable).

3. Results

3.1. Linguistic processes

There was a statistically significant difference in word count between the two time scenarios [$F_{(1,1,082)} = 107.60, p < 0.001, \eta^2 = 0.01$]. Significant interaction effects between word count and sex [$F_{(1,1,082)} = 18.64, p < 0.001, \eta^2 = 0.002$] and word count and age [$F_{(2,1,082)} = 6.82, p < 0.001, \eta^2 = 0.004$] emerged, while there was no interaction effect between sex and age considered together ($p > 0.05$). The Tukey test showed that the word count was higher in the narratives about the present ($M = 50.88; SD = 39.46$) than in the future ($M = 34.16; SD = 20.83$) (especially for females).

With regard to the pronoun “I,” there was a main effect across the two time scenarios [$F_{(1,1,082)} = 262.02, p < 0.001, \eta^2 = 0.05$], with no interaction effects of sex and age variables.

A significant main effect was also found for the pronoun “we” [$F_{(1,1,082)} = 87.09, p < 0.001, \eta^2 = 0.02$], without any effect of sex and age. Essentially, the pronoun “I” was used more frequently when talking about the present, whereas the pronoun “we” was used more frequently when depicting the future. Descriptive statistics for all these variables are shown in Table 3.

TABLE 7 Mediation estimates for the future moment.

Effect	Label	Estimate	SE	95% Confidence Interval		Z	p
				Lower	Upper		
Indirect	$a \times b$	0.17	0.04	0.10	0.24	4.47	<0.001
Direct	c	0.31	0.05	0.21	0.41	6.33	<0.001
Total	$c + a \times b$	0.48	0.06	0.37	0.59	8.63	<0.001

3.2. Positive feelings

The overall category of “affect” proved more frequent in the narratives about the present [$F_{(1,1,082)} = 12.927, p < 0.001, \eta^2 = 0.0003$], without any significant effect of sex and age.

There was a statistically significant difference in positive feelings between the two time scenarios [$F_{(1,1,082)} = 32.62, p < 0.001, \eta^2 = 0.007$], with positive feelings more frequent in the present than in the future. Moreover, two significant interaction effects emerged between positive feelings and sex [$F_{(1,1,082)} = 6.27, p = 0.001, \eta^2 = 0.001$] and positive feelings and age [$F_{(2,1,082)} = 3.34, p = 0.04, \eta^2 = 0.001$], but there was no interaction effect between sex and age. The Tukey test showed that older males (age over 60) in the present condition ($M = 4.72; SD = 3.96$) differ significantly from all the other groups, since they seem to have more positive feelings (see Table 4).

There were no main effects nor interaction effects in relation to negative emotions ($p > 0.05$). Optimism, on the other hand, presented a main effect [$F_{(1,1,082)} = 6.15, p = 0.01, \eta^2 = 0.001$], without any interaction effects. There were no main effects nor interaction effects in relation to anxiety and anger ($p > 0.05$). There was a statistically significant difference between the two-time scenarios for the frequency of linguistic elements expressing sadness, more frequent in the present than in the future [$F_{(1,1,082)} = 32.43, p < 0.001, \eta^2 = 0.007$], without interaction effects. Descriptive statistics for all these variables are shown in Table 4.

3.3. Cognitive processes

Main effects were also registered for the variables: cognitive process [$F_{(1,1,082)} = 84.89, p < 0.001, \eta^2 = 0.002$], causation [$F_{(1,1,082)} = 18.484, p < 0.001, \eta^2 = 0.004$], discrepancy [$F_{(1,1,082)} = 27.84, p < 0.001, \eta^2 = 0.006$], possibility [$F_{(1,1,082)} = 23.87, p < 0.001, \eta^2 = 0.005$], and certainty [$F_{(1,1,082)} = 24.24, p < 0.001, \eta^2 = 0.006$]. In relation to introspection, the analysis revealed a main effect [$F_{(1,1,082)} = 43.36, p < 0.001, \eta^2 = 0.009$] and a significant interaction effect between the time scenario and sex [$F_{(1,1,082)} = 22.74, p = 0.03, \eta^2 = 0.001$].

Specifically, for the future time scenario, females exhibited stronger introspection narratives ($M = 2.31; SD = 2.60$) compared to males ($M = 1.74; SD = 2.45$).

The main effect of inhibition was significant as well [$F_{(1,1,082)} = 47.50, p < 0.001, \eta^2 = 0.001$], since indicators of inhibition were more frequent in narratives about the future; similarly, a significant interaction effect between inhibition and sex emerged [$F_{(1,1,082)} = 6.44, p = 0.01, \eta^2 = 0.001$]. Specifically, males exhibited a stronger

effect of inhibition on their future narratives ($M = 1.14; SD = 2.17$) compared to females ($M = 1.06; SD = 1.70$).

Descriptive statistics for all these cognitive variables are shown in Table 5.

3.4. Mediation models

Two mediation models were run for the two time scenarios to examine whether positive anticipatory states mediated the relation between a higher frequency of expressions of certainty and positive feelings. The effect of certainty on positive feelings was partially mediated *via* the positive anticipation states (Tables 6, 7).

For the present scenario, the indirect effect of certainty on positive feelings *via* positive anticipatory states [$B = 0.15, SE = 0.003, 95\% CI = (0.20; 0.35)$] was significant ($p < 0.01$). In addition, the direct effect of certainty on positive feelings [$B = 0.09, SE = 0.05, 95\% CI = (0.05; 0.28)$], was significant ($p < 0.01$). At the same time, in the future time scenario, the mediation effect of positive anticipatory states was significant [$\beta = 0.12, SE = 0.04, 95\% CI (0.00, 0.24), p < 0.01$].

4. Discussion

The present study aimed to conceptualize a psychological model describing the relationship between certainty, positive anticipatory states, and positive feelings by analyzing written autobiographical narratives collected during the first lockdown (April 2020) due to the COVID-19 pandemic. Two time scenarios were considered: the experience of the present and expectations about the future. We aimed to compare the present and future representations in relation to the experience of coping with the pandemic situation, using the psycholinguistic analysis of self-narratives. In more detail, we focused on the influence of certainty and positive anticipatory states on the subjective emotional experience elicited by the representations of the present and the future. Our hypothesis was that during the acute phases of COVID-19 emergence, which were characterized by a general sense of uncertainty, individuals did not experience greater certainty for the present.

This hypothesis was confirmed, in accordance with previous research results that showed how expressions of certainty decreased during the pandemic (Dewi and Wulandari, 2021), although no research had compared the two time scenarios of present and future. The COVID-19 pandemic disrupted daily routines, with social distancing policies, economic downturn, and a lack of consistent and reliable information contributing to rising

levels of uncertainty (Altig et al., 2020; Reizer et al., 2021). If such observation may be largely expected, we believe that the fact that linguistic markers of certainty were significantly less frequent in narratives telling the present experience compared to narratives representing expectations about the future may denote that thinking of the future as more certain helps to cope with stressful times. Moreover, thinking that an event will certainly occur fills the individual with a sense of predictability and control, which may help to deal with difficult situations in the present (such as the COVID-19 pandemic) (Gollwitzer and Sheeran, 2006; Lee and Coricelli, 2020).

A possible explanation for these results is that people cope with threats using a compensation mechanism based on thinking in terms of certainty (Taylor and Brown, 1988). When people feel uncertain or out of control, they may engage in cognitive processes that help them to make sense of the situation and regain a sense of predictability. By thinking in terms of certainty, people may reduce the feeling of uncertainty and anxiety associated with a threat, which can help them manage stressful situations more effectively (Lerner et al., 2015). Additionally, certainty can provide a sense of safety and security, which is essential for wellbeing and can help to maintain a positive mood (Lerner et al., 2015).

However, no prior study has examined whether thinking in terms of certainty may be considered a cognition-oriented emotion regulation strategy, functional in coping with catastrophic stressors like COVID-19. Moreover, all the cognitive processes and operations, except thinking in terms of certainty, are more intense when representing the future condition, suggesting that higher cognitive sophistication and stronger cognitive efforts are needed in future studies (e.g., to take into account various possibilities and contingencies, which requires cognitive flexibility and the ability to consider multiple perspectives).

Furthermore, as we noted, the results did not confirm our hypothesis that positive feelings were more related to the future scenario than to the present one. Indeed, we found that linguistic markers of positive feelings were more frequent in narratives about the present than about the imagined future. Moreover, positive anticipatory states were more frequent in the narratives about the present than in narratives about the future. Positive feelings in the present moment may be more easily experienced and savored, whereas positive feelings about the future are often based on predictions or assumptions that may or may not come true. Therefore, people tend to find it easier to focus on the present moment and experience positive feelings, rather than to try to predict the future and generate positive feelings based on those predictions.

People may be motivated to work toward preventing and preparing for future bad occurrences because of their anticipation of negative emotional experiences due to the general propensity to overestimate distress following future events, which is frequently observed in affective forecasting research (Wilson et al., 2000). However, results of the present study highlighted that in narratives reporting projection of the future, higher frequency of markers of certainty is related to a subsequent increase in markers of positive feelings.

With our third hypothesis, we argued that the appraisal dimension of certainty (for present and future events) triggers positive emotion, thanks to the mediation of positive anticipatory

states. This hypothesis was confirmed. The mediation models indicated that the frequency of markers of positive anticipatory states significantly mediated the relationship between the frequency of markers of certainty and of positive feelings, both in narratives about the present and the future. In this respect, we assume that positive anticipatory states serve the aim of boosting wellbeing only if associated with an appraisal of certainty and controllability of the future scenario. Accordingly, the presence of positive anticipatory states would result in an increase in positive feelings in individuals endowed with high levels of confidence and inclined to future thinking rich in certainty, since such a combination may be protective against anxiety caused by environmental threats and stressors.

In summary, people who have a high degree of certainty about the future are able to experience positive anticipatory states that allow them to fully engage in positive emotions and ultimately increase wellbeing.

This study has some limitations. First, the sample distribution was unequal in terms of area and education level. Second, we did not differentiate between the narratives collected from specific categories of individuals, such as individuals in quarantine, frontline medical workers, and those serving the community in various roles.

Despite past studies on how the epidemic has affected people's lives and also its influence on the language used (Biester et al., 2020; Boon-Itt and Skunkan, 2020; Mozes et al., 2021), this is the first study that focuses on the linguistic markers of the sense of certainty, comparing narratives about the present and the projected future. Finally, the influence of positive anticipatory states was also considered, stressing their function as compensation mechanisms in coping with the projection of the future during the COVID-19 pandemic. Future studies may fruitfully investigate the benefits of using a language conveying certainty and confidence in the future when imagining a world without the pandemic.

Data availability statement

The datasets presented in this study can be found in the Zenodo repository *via* the following link: <https://zenodo.org/record/7633261#.ZABh0HbP1dg>.

Ethics statement

Ethical approval was not provided for this study on human participants because no ethical approval was obtained for this study as it was conducted during the lockdown when the activities of the local Ethical Committee were disrupted. Though we recognize the importance of obtaining ethical approval, we chose to proceed since there was an urgent need to gather information to understand the effects of the lockdown experience on psychological wellbeing. Additionally, the subjects were not exposed to any harm and informed consent was obtained in all cases. Specifically, all participants gave their written informed agreement to participate in the research voluntarily and anonymously, as well as to the handling of their personal data, within the scope of the present research, according to Directive 95/46/EC (General Data Protection

Regulation), and to the ethical recommendations for research in psychology, in accordance with the Code of Ethics of Italian Psychologists and the WMA Declaration of Helsinki—2013. The patients/participants provided their written informed consent to participate in this study.

Author contributions

FB designed the study. FB, DA, and AS collected the data. FB and MG implemented the study methodology, performed data analysis and statistical analysis, interpretation of the results, and writing. SB reviewed the manuscript and provided feedback prior to submission. 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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