Applied Cognitive Psychology

WILEY

RESEARCH ARTICLE OPEN ACCESS

Spatial Optimism in Individuals' Future Thinking About the COVID-19 Pandemic

Sezin Öner[1] | Karl Szpunar[2] | Lynn Ann Watson[3] | Scott Cole[4]

[1]Kadir Has University, İstanbul, Turkey | [2]Toronto Metropolitan University, Toronto, Canada | [3]Center on Autobiographical Memory Research, Department of Psychology and Behavioural Science, Aarhus University, Aarhus, Denmark | [4]York St John University, York, UK

Correspondence: Sezin Öner (sezin.oner@khas.edu.tr)

Received: 19 October 2023 | **Revised:** 15 May 2025 | **Accepted:** 27 May 2025

Funding: The authors received no specific funding for this work.

Keywords: collective future thinking | COVID-19 | pandemic severity | spatial optimism

ABSTRACT

Spatial optimism is the tendency to underestimate the severity of environmental threats in local relative to global contexts. We investigated whether spatial optimism was evident in people's beliefs about the estimated duration and severity of the COVID-19 pandemic. Participants from 15 countries provided estimates of (i) when the pandemic would be brought under control and (ii) infection rates for their country and globally. Overall, individuals estimated that the pandemic would end sooner and with a lower infection rate in their own country relative to the rest of the world. This spatial optimism bias was moderated by the severity of COVID-19 at the country level, such that the bias was greatest in countries with lower levels of pandemic severity. Findings parallel those observed for environmental threats and provide evidence for a spatial optimism bias in a distinct domain of collective thought. Implications for public-health messaging are discussed.

1 | Introduction

The COVID-19 pandemic altered the course of daily life. Globally, people were forced to grapple with the illness and loss of loved ones, threats to their own personal health, and marked changes to daily life. During this time, psychologists collected an unprecedented amount of data demonstrating the negative impact of the pandemic on mental health (e.g., Galea et al. 2020; Vindegaard and Benros 2020; Xiong et al. 2020), yet also highlighted the importance of factors such as social connection in helping people remain resilient in the face of a global existential threat (Tunçgenç et al. 2023).

Over 4 years removed from its onset, there is growing sentiment that the pandemic has taken on the status of an endemic. Indeed, many people have returned to work, school, leisure activities, and socializing on a more regular basis (e.g., Li and Giabbanelli 2021). Nonetheless, due to lagging booster vaccination rates and new subvariants of concern, public health officials have continued to warn that people should remain vigilant against the virus (Gorsky and Arnold-Forster 2023). This raises an important question: What are people's estimates as to the duration and severity of the COVID-19 pandemic? While it may not be possible to definitively answer this question, what people believe may determine the long-lasting impact of the virus.

Here we consider whether cognitive biases identified in other domains of collective future thinking, namely spatial optimism, also arise in the beliefs people hold about the impact and outcome of the COVID-19 pandemic.

1.1 | Spatial Optimism

When people are asked to think about the current and future impact of various environmental threats, such as pollution (Fleury-Bahi 2008), overpopulation (Musson 1974), and coastal flooding (Coquet et al. 2019), they tend to estimate that these risks increase as a function of the size of the group under consideration. This pattern of cognitive bias refers to spatial optimism by which individuals perceive environmental threats (such as climate change, natural disasters, or pandemics) as less severe or less likely to affect their immediate or local surroundings compared to more distant, national, or global contexts (Uzzell 2000). This bias often emerges from psychological distancing mechanisms, wherein threats that are geographically or socially remote are construed in more abstract terms and perceived as more serious, while those that are close to one's own environment are downplayed or seen as more manageable. This phenomenon is closely related to optimism bias (e.g., Spence et al. 2012) and construal level theory (e.g., Brügger et al. 2016), which suggest that people tend to view threats as less personally relevant or urgent when they feel more control or familiarity with the local setting, or when they engage in motivated reasoning to protect themselves from anxiety. For instance, Fleury-Bahi (2008) showed that the perceived susceptibility to 15 different environmental risks was typically higher for: the world relative to one's country; one's country relative to one's local community; and one's local community relative to oneself (see also, Dunlap et al. 1993; Schultz et al. 2005, 2014; Uzzell 2000). Of course, larger groups necessarily encompass more people and landmass than smaller groups, and hence it may be logical to assume that these various threats should be larger for larger groups. However, spatial optimism may also result in inaction on the part of individuals in addressing such threats in their local communities and countries. For example, if people think that global warming is more of a threat to the world (generally) than to their country (specifically), they may be less likely to do something about its impact (Baldassare and Katz 1992). Hence, identifying when spatial optimism arises is an important step in understanding barriers to overcoming threats to humanity.

While spatial optimism has been reported in relation to environmental threats, there is no data indicating whether people believed that the threat of the COVID-19 pandemic was lesser for their own communities or countries than for the world. Nonetheless, a similar bias exists on a more personal level. Next, we provide a brief overview of literature demonstrating unrealistic optimism about the personal risks of contracting COVID-19, and then make predictions about how a similar bias might emerge on a larger scale.

1.2 | Unrealistic Optimism During COVID-19

One of the more striking aspects of the brain's capacity to simulate the future is that the personal future, more so than the non-personal future, tends to be viewed in a positive light (e.g., Liu and Szpunar 2023). Research on unrealistic optimism shows that people tend to think that they are less likely than others to be susceptible to various health risks, such as heart attacks, alcoholism, the negative impact of smoking, and cancer (e.g., Clarke et al. 2000; Weinstein 1983; Weinstein et al. 2005; for a recent review see Jefferson et al. 2017). While holding an unrealistically optimistic view of the future can support mental well-being (e.g., Taylor and Brown 1988), it also introduces the possibility that people may not be as vigilant against risks to which they do not consider themselves susceptible.

Unrealistic optimism about the perceived risk that people live with in relation to COVID-19, how that risk impacts their behavior, and the impact of these perceptions and behaviors on the time course of the pandemic is well documented (e.g., Dolinski et al. 2020; Salgado and Berntsen 2021). Often, participants are asked to indicate how likely it is for them and other people who are like them to contract COVID-19. The data overwhelmingly demonstrate that people in many parts of the world tend to feel less susceptible to the negative impact of COVID-19 relative to others (e.g., Dolinski et al. 2022; Gassen et al. 2021; Kuper-Smith et al. 2021). Spatial optimism bias at a collective level is highly relevant to the context of the COVID-19 pandemic. As individuals believe that their country will be more immune to the effects of the pandemic compared to the world, they may be less likely to comply with stringency measures (i.e., social distancing, using masks), which may further contribute to the spread of the virus. While such a bias could have less impact in countries where pandemic severity is low, the prevalence of spatial optimism in high severity countries may lead to significant challenges; fostering an unrealistic hope when thinking about the collective future could reduce the tendency for individuals to engage in preventive action.

Despite the widespread evidence for unrealistic optimism in relation to COVID-19 (e.g., Burnett et al. 2023), no study has yet examined whether people are optimistic about the fate of their country relative to the rest of the world—that is, whether they possess a spatial bias about the COVID-19 pandemic. To address this, we measured spatial optimism bias during the first peak of the COVID-19 pandemic when there was still much ambiguity about the spread and course of the pandemic. We hypothesized that situational ambiguity may make individuals more likely to make biased interpretations for the future of the pandemic that favor their local context. This bias may further help them deal with the emotions associated with negative future scenarios closer to them (Buehler et al. 1994). Notably, rather than using hypothetical scenarios as in previous research (e.g., Morton et al. 2011; Wang et al. 2019), measurement during the COVID-19 pandemic ensured high ecological validity of spatial optimism biases in the context of current and ongoing threat. For example, the global nature of the pandemic and the data obtained during this time permitted access to objective threat information for the local context at the time of the measurement in countries throughout the world. This allowed for a direct comparison of subjective threat perceptions for the future of one's own country compared to global threats while controlling for actual ongoing threat at the country level.

1.3 | The Present Study

We asked participants in 15 countries to indicate when they believed that the pandemic would be brought under control in their country and globally. A simple contrast of these estimates allowed us to calculate whether people were more optimistic

about the end of the pandemic in their home country relative to the rest of the world. We predicted that people would show spatial optimism such that they would believe that the pandemic would be over sooner in their country than the rest of the world (Fleury-Bahi 2008).

We also wanted to know whether the severity of COVID-19 within a participant's home country would impact the magnitude of their spatial optimism. We expected severity to moderate predictions, such that people living in countries with a higher severity index would predict that the pandemic would take longer to come to an end than people living in countries with a low severity index. Nonetheless, we expected that people in all countries, irrespective of the level of severity index, would expect the pandemic to be over sooner in their country than in the world.

Finally, to ensure that our findings were not specific to one criterion, participants were also asked to estimate the impact of COVID-19, in terms of the *number of expected cases*, in their country and across the world.

2 | Method

2.1 | General Procedure

This research is a part of an international project focusing on different aspects of past and future thinking related to the COVID-19 pandemic (see Cole et al. 2022; Öner et al. 2022; Lanciano et al. 2024). The data were collected from 15 countries (Canada, China, Denmark, France, Germany, Greece, Italy, Malaysia, New Zealand, Poland, Russia, Spain, Turkey, United Kingdom, and the United States). The survey was initially developed in English and subsequently translated into the primary language of each participating country. More detailed information about the surveys and the procedure of data collection has been provided in previous work (Öner et al. 2022) and all the study materials can be accessed on the project's Open Science Framework page (https://osf.io/m46nq/).

Each country obtained ethical approval in accordance with local ethics regulations before data collection. The survey was distributed primarily using Qualtrics. The data were collected during the first peak of the COVID-19 pandemic (April 1, 2020—June 15, 2020) using convenience sampling, mostly through social media and undergraduate subject pools. Also, some countries used online platforms for data collection, such as Amazon's Mechanical Turk in the United States and Wix in China.

2.2 | Participants

The initial sample consisted of 4406 individuals from 15 countries. For the current study, any individual who did not complete the variables under investigation was excluded, leaving a total of 3356 individuals in the final sample. While the demographic profile of participants varied across countries due to differences in participant recruitment (e.g., online survey platforms, undergraduate samples), participants' ages across the entire sample ranged between 18 and 84 years ($M = 28.26$, $SD = 13.70$) and 69.5% of the sample were female. Table 1 presents demographic information for participants in each country.

2.3 | Measures

2.3.1 | Estimated Duration of the Pandemic

We asked individuals how long they thought that the pandemic would last, from both a global and a national perspective. More specifically, individuals indicated when they thought the pandemic would be under control across the world ("When do you think COVID-19 will be under control [i.e., schools and shops reopened] around the world?") and in their own country ("When do you think COVID-19 will be under control [i.e., schools and shops reopened] in your country of residence?"). The order of questions was the same for all participants: they first indicated their judgments for the estimated duration of the pandemic in the world, and then in their own country. Although the order of the questions was not counterbalanced, we note that studies of spatial optimism typically ask such questions in the reverse order, with the questions about smaller groups preceding those about larger groups (for an example from a large multinational study, see Gifford et al. 2009). Moreover, it has recently been demonstrated that asking about broader prior to local impact can reduce the size of the spatial optimism bias (Tvinnereim et al. 2020). Hence, the parameters of our survey represent conditions that should reduce the occurrence of spatial optimism. Individuals reported their responses on a slider ranging from 0 (in a few weeks) to 100 (more than a year). Similar measures have been implemented in previous research when measuring subjective temporal distance

TABLE 1 | Demographic information for study variables.

	N	Age	Female (%)	Higher Edu (%)	Severity
Canada	187	26.5	38.5	75.4	Medium
China	419	18.6	75.4	84.3	Low
Denmark	107	37.3	78.1	76.2	Medium
France	610	38.5	70.2	88.5	Medium
Germany	103	20.2	84.5	24.5	Medium
Greece	151	37.1	75.0	75.8	Low
Italy	563	25.5	75.1	62.6	High
Malaysia	119	22.9	82.2	70.1	Low
New Zealand	227	21.7	88.2	50.0	Low
Poland	192	26.6	82.4	80.3	Low
Russia	425	34.3	72.1	87.8	High
Spain	147	32.6	63.4	77.2	High
Turkey	197	32.1	72.8	67.9	Medium
UK	622	24.4	86.6	80.5	High
USA	337	33.2	47.3	71.9	High

Note: Higher edu indicates the percentage of individuals having a bachelor's degree and above.

judgments by which individuals reported how distant an event is perceived from the present (De Bruin and Bennett 2020; Guo et al. 2019; Rogers et al. 2019). Hereby, we specifically used a similar 0–100 response range because duration estimation would be provided considering an extended future and we expected such a large response range would allow them to flexibly place their estimations relying only on the labels on the two ends of the continuum. In those measures, the anchors were set as 0: *very close* to 100: *very distant*, however, as the context of COVID-19 pandemic was highly uncertain and it was difficult to make estimations for the distant future, we used concrete anchors of *after a few weeks* to represent the near future in one end of the continuum and *more than a year* as the distant future in the other end.

2.3.2 | Estimations for the Number of Infections

We also asked participants for their estimations about how many people would be infected by the COVID-19 virus as an indication of the overall impact of the pandemic at a global and national level. Similar to the estimated duration measure, individuals indicated their estimations for the proportion of people infected by the COVID-19 virus at a global ("In your opinion, what will be the percentage of people in the world who will be infected by the coronavirus?") and national level ("In your opinion, what will be the percentage of people in your own country who will be infected by the coronavirus?"). Similar to the measure of estimated duration, individuals first estimated the global number of infections and then provided the estimates for their country. Individuals reported their responses on a slider ranging from 0 to 100, on which higher values indicated more expected impact with a greater percentage of people expected to be infected. Percentage of the population was selected as a simple measure of subjective covid threat which could be understood easily and compared across multiple countries.

2.3.3 | Cross-Country Differences: COVID-19 Severity

There were three country-level variables that we used to differentiate countries in terms of the severity of the impact of COVID-19. There were infection rates, mortality rates (both as COVID-19 severity), and a summary stringency index (see Cole et al. 2022). However, in the current study, we particularly focused on the mortality rates as a measure of COVID-19 severity as the mortality and infection rates are highly correlated, $r(4406) = 0.76$, $p < 0.001$.

The pandemic severity index represented the total of confirmed COVID-19 deaths per million. We extracted this data from Our World in Data (2020) database, which has been widely used as a global research and information hub for various fields of study. We calculated the average number of deaths for each country through the time of data collection in the respective country. In the next step, following the approach used in our earlier work (Öner et al. 2022), we categorized countries into low, medium, and high severity groups by applying cutoffs at one standard deviation above and below the mean severity score. This categorization allowed for the examination of differences across varying levels of pandemic impact and ensured consistency and comparability across studies within the broader project.

2.3.4 | Control Variables

We included several control variables. First, we aimed to test how individuals perceive the severity of the pandemic in their own country relative to other countries. Individuals responded to the item, asking "Compared to other countries, where do you place your country of residence considering the effects of COVID-19?" and indicated their responses on a 0 (*Low Pandemic* Impact)–100 (*High Pandemic Impact*) scale. This variable is labeled relative standing of one's own country. We did not specify which other countries should be considered as the ambiguity allows for individual judgments and inter-country differences in comparisons made within a global context.

Second, we asked about the degree of worry individuals were experiencing at the time of the pandemic using a single item, asking whether they currently have health concerns now due to the coronavirus. Individuals indicated their responses on a 1 (*Not at all*) to 5 (*Extremely*) scale, where lower scores represented less worry. We also asked about the degree of media exposure specifically related to COVID-19 pandemic. Individuals responded to the question, asking "On an average day, what percentage of your time do you spend on following the news about COVID-19?" on a 0–100 scale. We did not ask about the source or the content of the news or how much of the content targets the pandemic at the global or local level as the source or the content of the media exposure would show variation throughout the pandemic. However, we believe that media exposure would capture some of the frequency-related variation due to media's impact on future estimations (Szpunar and Szpunar 2025).

3 | Results

We examined whether context and pandemic severity influenced individuals' simulations for the course of the pandemic at a global and national level[1]. We focused on two parameters: estimated duration of the pandemic (i.e., when the pandemic would be under control in the world and in their country) and the impact of the pandemic (i.e., what percentage of people would be infected by the coronavirus).

3.1 | Estimations for the Duration of the Pandemic

A two-way mixed analysis of variance (ANOVA) tested the effect of context (global vs. national) and severity (low, medium, and high) on estimated duration of the pandemic. We found a large effect of context on estimated duration of the pandemic, such that individuals expected the pandemic to be under control sooner in their own country than in the world, $F(2, 3332) = 1404.21$, $MSE = 405{,}550.02$, $p < 0.01$, $\eta_p^2 = 0.30$. A large effect of pandemic severity was also observed, $F(2, 3332) = 296.97$, $MSE = 360{,}149{,}56$, $p < 0.01$, $\eta_p^2 = 0.15$, showing that low-severity countries expected the pandemic to end sooner compared to high-severity countries. Further post hoc comparisons using Bonferroni corrections indicated that individuals from lower-severity countries expected the pandemic to end earlier than individuals from medium- ($M_{diff} = -19.60$, $SE = 1.06$, $p < 0.001$) and higher-severity ($M_{diff} = -24.16$, $SE = 1.04$,[1] $p < 0.001$) countries. A similar pattern was also observed between individuals from

medium- and high-severity countries (M_{diff} = 4.56, SE = 1.03, $p < 0.001$) such that individuals from medium-severity countries expected the pandemic to end earlier than individuals from higher-severity countries.

The interaction effect was large as well, $F(2, 3332) = 219.28$, $MSE = 63{,}330{,}47$, $p < 0.01$, $\eta_p^2 = 0.17$ (see Figure 1). Although differences in estimated duration of the pandemic at the global and national level were significant across low- (M_{diff} = 27.47, SE = 0.74, $p < 0.001$), medium- (M_{diff} = 12.80, SE = 0.72, $p < 0.001$), and high-severity (M_{diff} = 6.56, SE = 0.70, $p < 0.001$) countries, the difference was most pronounced for countries of lower severity. This indicated that, in low-severity countries, individuals expected the pandemic to end sooner in their country compared to the world; however, in countries where pandemic severity was higher, national estimations of pandemic duration were closer to global estimations. Table 2 presents the means and standard deviations across groups.

3.2 | Consistency of Spatial Optimism: Estimations for the Percent of Infections

In the next step, we examined whether the spatial optimism bias also emerged for estimations of another parameter for the course of the pandemic. We tested whether global and national expectations differ for the number of infections across low-, medium-, and high-severity countries. We conducted a two-way mixed ANOVA to examine the effect of context (global vs. national) and severity (low, medium, and high) on estimations for how much of the population will be infected by the coronavirus. A medium effect of context, $F(1, 3347) = 217.91$, $MSE = 48{,}409.42$, $p < 0.01$, $\eta_p^2 = 0.06$, and a medium effect of severity, $F(2, 3347) = 168.98$, $MSE = 229{,}226.62$, $p < 0.01$, $\eta_p^2 = 0.09$, were observed, showing that individuals expected proportionally fewer cases in their own country relative to global estimates and that lower-severity countries expected fewer cases overall compared to medium- (M_{diff} = −17.69, SE = 1.10, $p < 0.001$) and higher-severity countries (M_{diff} = −17.84, SE = 1.12, $p < 0.001$).

We also found a small effect of the interaction between context and severity, $F(2, 3347) = 76.30$, $MSE = 16{,}944.78$, $p < 0.01$, $\eta_p^2 = 0.04$ (see Figure 2). Further post hoc comparisons using Bonferroni corrections indicated that global impact was estimated as higher than national impact for low (M_{diff} = 11.63, SE = 0.65, $p < 0.001$), medium (M_{diff} = 3.50, SE = 0.63, $p = 0.010$), and high (M_{diff} = 2.10, SE = 0.39, $p = 0.042$) levels of pandemic severity; however, this difference was significantly more pronounced in individuals from low-severity countries than medium- or high-severity countries (see Table 2).

3.3 | Consistency of Spatial Optimism Across Countries

In the last step, we investigated whether the spatial optimism bias was observed in each country included in the dataset. A paired samples *t*-test compared individuals' estimations for

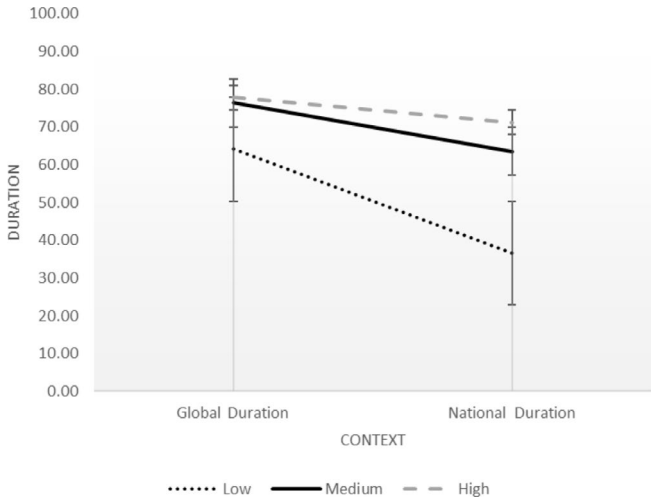

FIGURE 1 | The effect of context and pandemic severity on duration estimations. Participants indicated their estimations for the duration on a 0–100 scale (0: in a few weeks to 100: more than a year).

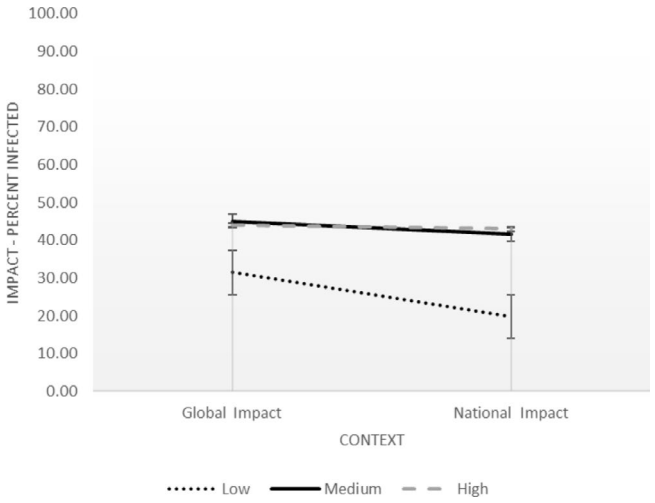

FIGURE 2 | Number of estimated infections across levels of severity. Participants indicated their estimation for the infections on a 0–100 scale.

TABLE 2 | Means and standard deviations for study variables.

	Duration in the world	Duration in own country	Percent Infected in the world	Percent Infected in own country
Low-severity	64.08 (*31.68*)	36.61 (*30.06*)	31.40 (*22.81*)	19.86 (*35.05*)
Medium-severity	76.29 (*24.40*)	63.56 (*27.91*)	45.09 (*26.50*)	41.59 (*28.59*)
High-severity	77.69 (*24.47*)	71.11 (*26.01*)	43.99 (*26.75*)	43.02 (*27.52*)

Note: Estimated duration and infections have been rated on a slider ranging between 0 to100.

TABLE 3 | Means and standard deviations for the estimated duration and impact across countries.

	Duration				Impact			
Country	**Global**	**National**	***t***	η_p^2	**Global**	**National**	***t***	η_p^2
Canada	77.42 (*26.03*)	63.46 (*26.03*)	9.19**	0.31	40.01 (*24.19*)	31.82 (*27.87*)	9.35**	0.32
China	59.13 (*17.92*)	25.20 (*38.92*)	28.67**	0.57	24.62 (*32.51*)	12.58 (*23.65*)	7.48**	0.08
Denmark	80.68 (*20.51*)	44.40 (*19.72*)	16.64**	0.65	27.81 (*23.53*)	19.26 (*29.79*)	8.84**	0.34
France	84.09 (*23.47*)	69.07 (*22.90*)	6.78**	0.31	31.02 (*23.28*)	28.75 (*31.31*)	4.31**	0.05
Germany	89.13 (*25.62*)	68.50 (*27.55*)	10.26**	0.49	48.79 (*19.03*)	43.86 (*27.13*)	4.01**	0.13
Greece	85.65 (*23.67*)	76.82 (*24.07*)	4.66*	0.15	40.10 (*22.68*)	27.65 (*28.22*)	9.67**	0.43
Italy	82.51 (*23.83*)	71.93 (*24.50*)	8.07**	0.20	48.91 (*21.53*)	41.08 (*24.32*)	8.29**	0.21
Malaysia	69.06 (*24.42*)	48.24 (*24.43*)	10.27**	0.50	40.78 (*25.26*)	30.56 (*26.26*)	6.80**	0.30
New Zealand	86.61 (*21.90*)	30.01 (*17.78*)	18.48**	0.82	38.39 (*20.26*)	15.39 (*25.11*)	10.73**	0.61
Poland	50.43 (*28.94*)	44.91 (*29.30*)	2.95*	0.06	42.56 (*28.41*)	38.44 (*24.86*)	4.34*	0.12
Russia	72.88 (*30.65*)	66.03 (*30.71*)	4.57*	0.13	45.39 (26.88)	42.21 (*28.99*)	3.32*	0.07
Spain	89.23 (*25.75*)	77.82 (*26.91*)	9.17**	0.28	49.32 (*16.72*)	47.64 (*24.13*)	2.05*	0.02
Turkey	70.81 (*25.08*)	66.82 (*26.89*)	5.49**	0.05	53.42 (*24.11*)	52.93 (*24.57*)	0.84	0.01
UK	64.52 (*24.33*)	53.37 (*25.52*)	5.41**	0.27	42.76 (*22.13*)	45.37 (*19.55*)	1.64	0.03
USA	73.68 (*26.87*)	72.59 (*28.56*)	1.61	0.01	38.36 (*25.63*)	41.62 (*25.91*)	−5.94**	0.07

Note: *$p < 0.05$, **$p < 0.01$.

the duration and the impact of the pandemic for their country and for the world. For the estimated duration, the differences between global and national estimates were significant for all countries except the United States. For the impact of the pandemic, the differences between global and national estimates were significant for all countries, except for Turkey and the United Kingdom. Means and standard deviations for each country are presented in Table 3.

3.4 | Exploratory Analyses

We tested the consistency of the context and severity effects on future simulations in further exploratory analyses. We used ANCOVA to control for the effects of several theoretically relevant covariates: judgments of the relative standing of one's own country regarding COVID-19 impact, age, worry, and media exposure, while examining national versus global estimations and their interaction. Although ANCOVA assumes independence between covariates and independent variables, this assumption is often difficult to fully meet in applied research. In our case, while some overlap may exist, the covariates are not direct outcomes of the manipulated variables and were selected based on theoretical grounds. For that reason, we prefer to use ANCOVA as this approach allows us to adjust for theoretically grounded covariates without compromising the interpretability of the national and global estimations and their interaction.

Correlations between these variables and estimations of duration and impact, and severity index are provided in Table 4.

3.4.1 | Relative Standing of Own Country as a Control

First, we tested whether pandemic severity influences judgments regarding where individuals place their country relative to other countries in terms of COVID-19 impact. We found that pandemic severity influences where individuals place their country relative to other countries in terms of COVID-19 impact, $F(2, 3334) = 705.41$, $MSE = 44{,}3141.16$, $p < 0.001$, $\eta_p^2 = 0.30$. Further post hoc comparisons indicated that high severity countries perceived higher COVID-19 impact for their own country compared to medium and low severity countries, indicating a realistic judgment regarding how they evaluate the severity of the pandemic in the local context.

Second, we examined whether controlling for the relative standing of one's own country influences the previously observed patterns of spatial optimism bias across l context (national and global) and pandemic severity (low, medium, and high) in estimations of pandemic duration and impact. We found that while the effects of the relative standing judgment by context, $F(2, 3316) = 211.79$, $MSE = 571{,}110.17$, $p < 0.001$, $\eta_p^2 = 0.07$, and severity, $F(1, 3316) = 441.17$, $MSE = 469{,}351.31$, $p < 0.001$, $\eta_p^2 = 0.13$, on estimates of pandemic duration were significant, the pattern of main effects and the interaction remained. The same pattern was observed for the estimated degree of COVID-19 impact, showing that the covariate effects of relative standing were significant by context, $F(2, 3324) = 49.80$, $MSE = 10{,}935.51$, $p < 0.001$, $\eta_p^2 = 0.03$, and severity, $F(2, 3324) = 209.91$, $MSE = 267{,}102.61$, $p < 0.001$, $\eta_p^2 = 0.07$, but that again the pattern of severity and context effects remained.

TABLE 4 | Pearson coefficients for the correlations between variables of interest.

	1	2	3	4	5	6	7	8	9
1. Global impact	1	0.75**	0.21**	0.35**	0.01	0.04*	0.26**	0.08**	0.30**
2. National impact		1	0.17**	0.40**	0.12**	0.08**	0.35**	0.05**	0.26**
3. Global duration			1	0.63**	0.07**	0.14**	0.27**	0.03*	0.05**
4. Control_National				1	0.27**	0.24**	0.54**	0.03*	0.16**
5. Severity index					1	0.16**	0.43**	0.00	0.10**
6. Age						1	0.22**	−0.03	0.08**
7. Relative standing							1	−0.06**	0.18**
8. Worry								1	0.25**
9. Media exposure									1

Note: $^{*}p < 0.05$, $^{**}p < 0.01$.

3.4.2 | Age as a Control

As the mean age of participants varied across countries and aging has been found to influence optimism when thinking about personal (Durbin et al. 2019) and collective futures (Schultz et al. 2014), we tested the consistency of the bias when controlling for age differences. First, we examined whether there is a systematic age difference in terms across low-, medium-, and high-severity countries. We found a significant effect of country-level severity, $F(2, 3324) = 49.80$, $MSE = 10{,}935.51$, $p < 0.001$, $\eta_p^2 = 0.03$, showing that low-severity countries ($M = 22.72$, SD = 10.36) had a younger sample than the medium-severity ($M = 31.36$, SD = 15.62) and high-severity ($M = 30.90$, SD = 13.38) countries.

In the next step, we controlled for age in our analyses of the effects of severity and context on individuals' estimations for the duration of the pandemic. While the covariate effect of age by context was significant, $F(1, 3291) = 8.96$, $MSE = 2590.12$, $p = 0.003$, $\eta_p^2 = 0.06$, the pattern of the main effects and the interaction were maintained. Second, we controlled for the effect of age on the effects of severity and context on individuals' estimations for the impact of the pandemic. The covariate effect of age was not significant, and the pattern of the main effects and the interaction was maintained.

3.4.3 | Worry as a Control

Worry has been found to increase threat perceptions and may lead to more catastrophic threat estimations, especially for local context. For this reason, we examined whether country-level severity influences subjective experiences of worry during the pandemic. We found a small effect of severity on worry levels, $F(2, 4232) = 3.43$, $MSE = 4.05$, $p = 0.032$, $\eta_p^2 = 0.02$. Post hoc comparisons using Bonferroni correction showed that individuals who are in low-severity countries ($M = 3.18$, SD = 1.14) reported higher worry than the medium-severity countries ($M = 3.07$, SD = 1.05) while the differences from high-severity countries ($M = 3.13$, SD = 1.06) were not significant.

In the next step, we controlled for the effect of individuals' worry on how context and severity influence individuals' global and national estimations of the duration and impact of the pandemic. When we examined the effect of worry on the effects of context and pandemic severity on individuals' estimations of the duration of the pandemic, we found that while the covariate effect of worry on severity was significant, $F(1, 3330) = 15.98$, $MSE = 19{,}301.52$, $p < 0.001$, $\eta_p^2 = 0.04$, the pattern of the main effects and the interaction remained. Similarly, for the estimated impact of the pandemic, again the effect of worry by severity was significant, $F(1, 3344) = 32.57$, $MSE = 43{,}704.31$, $p < 0.001$, $\eta_p^2 = 0.10$, but the original main effects and the interaction remained.

3.4.4 | Media as a Control

Considering the potential effects of media on both remembering the past and simulating the future (e.g., Merck et al. 2020; Szpunar and Szpunar 2025), we first compared the degree of media exposure across low-, medium-, and high-severity countries and then controlled for the influence of media exposure on the effects of context and pandemic severity on estimations of pandemic duration and impact. We found a significant effect of country-level severity on media exposure, $F(1, 3100) = 25.88$, $MSE = 14{,}106.94$, $p < 0.001$, $\eta_p^2 = 0.02$, showing that individuals in medium- ($M = 26.03$, SD = 24.67) and high-severity ($M = 27.67$, SD = 20.18) countries reported comparable levels of media exposure; they reported that they spent a greater percent of time following the news than individuals in low-severity countries ($M = 20.73$, SD = 19.80).

Next, we controlled for the effect of media on global and national estimations for the duration and impact of the pandemic. While the covariate effects of media exposure by context, $F(1, 3079) = 31.66$, $MSE = 9196.21$, $p < 0.001$, $\eta_p^2 = 0.11$, and by severity, $F(1, 3079) = 272.39$, $MSE = 20.13$, $p < 0.001$, $\eta_p^2 = 0.02$, were significant on global and national duration estimates, the main effects and interactions related to the spatial optimism bias remained. For the estimated impact of the pandemic, only the covariate effect of media exposure by severity was significant, $F(1, 3088) = 257.58$, $MSE = 317{,}779.61$, $p < 0.001$, $\eta_p^2 = 0.08$, and the main effects and the interaction were maintained.

4 | Discussion

The results are a first indication that optimism biases can occur in the collective domain, not just in the context of environmental threat but also for other global threats such as a pandemic, and that this bias is consistent across different collective (national) groups. During the early phase of the COVID-19 pandemic, our physical health and the health of our loved ones were under threat (Wang et al. 2020), our public health systems were under pressure, and economic and social stability was threatened (Esterwood and Saeed 2020). Under these circumstances, we found that individuals were more optimistic about pandemic-related estimates in their own country relative to global estimates. We demonstrated that individuals estimated that the pandemic would end sooner and with a lower infection rate in their own country relative to global estimates. Additionally, within-country pandemic severity moderated spatial optimism in two ways. First, and in line with our predictions, individuals from countries with low pandemic severity were more optimistic than individuals from countries with high pandemic severity. Second, while moderate-to-large effects of spatial optimism were evident across all levels of pandemic severity, the bias was greatest in individuals from countries with low pandemic severity. Further, these effects remained after controlling for relative national standing, age, worry, and media exposure. Implications and alternative explanations are discussed below.

4.1 | Optimism in the Collective Domain

Recent work examining how people think about the future of groups to which they belong—collective future thinking (Szpunar and Szpunar 2016)—has demonstrated that people are often more readily able to generate events that their country is worried about than excited about in the future (e.g., Shrikanth et al. 2018; for recent reviews, see Topçu and Hirst 2022; Liu and Szpunar 2023). However, this emerging literature has not yet addressed how people evaluate the likely impact of negative collective events. Research on the spatial optimism bias suggests that although people expect negative events to occur in the collective future, the impact may not be as devastating for one's own country relative to the world.

Specifically, the spatial optimism bias has been repeatedly observed in the context of environmental threat (e.g., Gifford et al. 2009; Uzzell 2000). Multinational studies generally find support for the spatial optimism bias, and a recent review and experimental study by Tvinneriem et al. (2020) suggests that the spatial optimism bias is robust and relatively uniform across countries. Our findings extend the reach of the spatial optimism bias to other collective domains, demonstrating that this bias is not limited to the context of environmental threat but is also evident in the context of the pandemic, which at that time was a current and ongoing threat. In future studies, it may well be worth examining whether spatial optimism may also be relevant in the context of additional ongoing collective threats such as other public health issues, political unrest, refugee crises, or issues related to the threat of technological advancement (see Sparkman et al. 2021, for a related review).

Understanding of the mechanisms which underlie this bias is more limited. Schultz et al. (2014) put forward three possible explanations for spatial optimism: place-serving bias, self-serving bias, and knowledge and media exposure. Place and self-serving biases may be a form of identity protection, and there is some preliminary evidence suggesting the bias is greater in younger and happier individuals, as well as individuals with stronger national identity (Bonaiuto et al. 1996; Schultz et al. 2014). At the collective level, environmental biases are moderated by knowledge of local context, potentially mediated by media exposure. In a study of 18 countries, Gifford et al. (2009) found that the bias was not evident in all countries; individuals from India did not show a bias, and a pessimism bias was found in individuals from both Russia and Romania. Additionally, individuals' estimates correlated with expert ratings of the local environment (the Environmental Sustainability Index), suggesting to some extent that reductions in spatial optimism may reflect awareness of the local context relative to global comparisons.

It is also possible to explain the optimistic biases in relation to collective narcissism, which is characterized by an exaggerated belief in the in-group's exceptionalism and entitlement, coupled with hypersensitivity to external validation. It reflects a fragile and defensive form of in-group identification, motivating individuals to uphold their group's superiority in the face of perceived threats. This ego-defensive strategy may also be partially and positively related to overclaiming, which involves exaggerating the in-group's achievements or attributes (Yamashiro and Roediger 2021). Individuals with strong in-group biases are more likely to overstate their group's contributions in various domains, reflecting an attempt to bolster collective self-esteem (Putnam et al. 2018; Yamashiro et al. 2023; Zaromb et al. 2018). Such overclaiming is most commonly observed in contexts where collective identity is threatened, such as during economic or social crises, as a way to preserve positive group evaluations (Yamashiro et al. 2023). In the context of spatial optimism, this interplay between overclaiming and collective narcissism may manifest as a tendency to view one's own country's future more positively compared to others, affirming its superiority and resilience. These defensive cognitive mechanisms support the evidence showing that collective narcissism predicts attitudes such as downplaying external threats or exaggerating in-group resilience, especially when the group's image or future is perceived as being at risk (Cichocka 2016; Golec de Zavala and Lantos 2020). Accordingly, it is possible to argue that, during the pandemic, national-level threats likely increased the need for such psychological defenses, driving optimistic estimations of the country's recovery and ability to manage the crisis.

Our findings that the relative standing of one's own country aligned with objective measures of pandemic severity and that pandemic severity moderated spatial optimism in pandemic-related estimates parallels the moderation effects of local context in environmental threat. As such, knowledge of local context may partially explain differences in spatial optimism across several collective domains. The relationship between individuals' perceptions of their country's relative standing—compared to the world—regarding the duration and impact of COVID-19 may be influenced by the actual severity of the pandemic. This moderation effect suggests that people continuously update and adjust their pandemic-related beliefs based on new information from their national or collective context (Tversky and Koehler 1994). It is also important to note that the COVID-19 pandemic may have

likely disrupted typical patterns of mental time travel, altering the valence and agency attributed to personal and collective futures. Supporting this, Topçu and Hirst (2024) show that during the pandemic, individuals no longer exhibited the usual positivity bias for the personal future or negativity bias for the collective future, but rather an optimistic shift is observed in the collective domain, by which individuals maintain hope by emphasizing their nation's resilience and agency. Such shifts suggest that collective crises blur the boundaries between personal and collective perspectives, reshaping future-oriented cognition to protect psychological well-being during uncertainty (Migueles Seco and Aizpurua Sanz 2024; Topçu and Hirst 2024).

It is also important to note that while we were specifically concerned about the influence of the country-level severity on the estimations of duration and impact of the pandemic, when we looked into the country-specific analyses, we observed that the spatial optimism bias was maintained except in the United States (for duration) and in the United Kingdom and Turkey (for impact). Those countries had high pandemic severity and objective information for the threat of the pandemic may have been so robust as to eliminate biased judgments. Politics also significantly impacts future estimations of a pandemic's duration and impact through trust in government, policy responses, and the media environment. Strong and effective policy responses (e.g., timely lockdowns, vaccination campaigns) can lead to shorter and less severe estimations as people see tangible actions being taken. Similarly, poor or delayed responses can lead to a perception of prolonged and severe impacts due to perceived inadequacy in managing the crisis (Klenert et al. 2020). For example, in the United Kingdom, the initial herd immunity strategy and delayed lockdowns (Colfer 2020) may have undermined public confidence in the government's ability to manage COVID-19 effectively. Similarly, in the United States, inconsistent federal messaging, politicization of public health measures, and visible wealth inequalities exacerbated societal divisions (e.g., *Black Lives Matter* movement), contributing to a pessimistic outlook (Zack 2021). In Turkey, stringent lockdowns and allegations regarding underreporting COVID-19 statistics, coupled with economic downturn and low trust in government transparency (Kemahlıoğlu and Yeğen 2022), likely reduced the optimism about the country's future. Also, public distrust in government might have amplified in these countries due to perceived incompetence and inconsistent policies, and this might have resulted in individuals feeling more skeptical about official information and measures (Borrios and Hochberg 2021). Specifically, in the United Kingdom and United States, polarized media coverage might have further fueled skepticism, while in Turkey, a controlled media landscape might have created an inconsistency between official reports and lived experiences, which could have enhanced public doubt and led to longer and more severe estimations about the future of the pandemic in their own country.

4.2 | Should We Be Optimistic About Working With Optimism?

What is the value of identifying multiple optimism biases within the context of collective thought? First, these parallels open the door for transmission of theoretical models and models for behavior change across domains. As outlined above, theoretical explanations of global climate threat may have explanatory power across multiple contexts (i.e., biological and public health threats). This will allow for the extension and refinement of theories and understanding of collective thought. Similarly, the rapid local and global initiatives put in place in response to the onset of the pandemic demonstrate the importance of scientific, governmental, and social systems in the organization and promotion of behavior change in response to global threats (Riera et al. 2023). Consequently, the vast amount of data collected during the pandemic has great potential for informing social and behavior change, and how the human mind responds to global uncertainty and threat.

In the context of global threat, recognition of the location of the individual within broader social systems and structures is essential (Uzzell 2000). Evidence of optimism biases in both personal (e.g., Dolinski et al. 2020; Salgado and Berntsen 2021) and collective future thought highlights the need to consider reciprocal relations between social systems, structural factors, and individual differences when investigating biases in optimism, pessimism, and realism at the level of the individual and group.

4.3 | Interpreting Spatial Optimism in the Light of Psychological and Contextual Influences

Future-oriented judgments about the pandemic are shaped by multiple contextual and psychological factors that may influence or confound expressions of spatial optimism. One such factor is individuals' perception of their country's relative standing in the pandemic. Those who believe their country was more severely affected might project longer or more intense future impacts, anchoring their estimates on national experience and reducing the appearance of spatial optimism (Schultz et al. 2014).

Age may also play a role, as prior research shows that older adults tend to exhibit greater optimism about personal and collective futures (Burnett et al. 2023). Given the age differences across severity groups in our sample, this factor could modulate future projections, even when statistically controlled. Worry, in turn, may amplify perceived threats, especially for local contexts, making predictions more pessimistic and weakening spatial optimism (Baumeister et al. 2016). However, worry is context-sensitive and is influenced by factors such as media exposure, complicating its interpretation.

Media exposure further shapes how individuals imagine the future, often emphasizing threat and uncertainty (Szpunar and Szpunar 2025). Frequent exposure to emotionally charged or threat-related information may bias attention toward worst-case scenarios or elevate perceptions of prolonged crisis, especially when media consumption is more prevalent in higher severity contexts. While controlling for media exposure in our models did not alter the main findings, its influence on the salience, vividness, and emotional tone of pandemic-related simulations should not be underestimated as media can act as a powerful contextual cue, both triggering future-oriented thoughts and shaping their content.

Overall, although the observed pattern of spatial optimism remained robust after adjusting for these variables, we believe

these factors have the potential to shape, amplify, or suppress future estimations. We believe future research should more systematically explore the interactions between these variables and temporal predictions, which better capture the dynamic interplay between contextual and individual differences with cognitive predictions over time.

4.4 | Strengths and Limitations

The study provides the first evidence of spatial optimism in the context of the pandemic across local and global contexts (in 15 different countries). However, one alternative interpretation of this data must be considered. The fact that lower severity countries consistently estimated their own country to be "under control" versus the global populace, may be interpreted as a rational process. In other words, the moderating effect of severity in both analyses (speed of pandemic control and number of cases) could show a reasoned estimation by people based on the base rates of cases in their country. Furthermore, it could be argued that the comparisons between country and worldwide are asymmetrical and, at least partly, responsible for the observed national biases. Although both biases were highly consistent suggesting that people tend to believe that things will generally be better off in their country than in the rest of the world, as is often reported in the spatial bias literature (e.g., Fleury-Bahi 2008), it will nonetheless be important for future studies to adopt designs with "control"/*other* countries to compare against one's own nation.

A second limitation of this study is that the nations sampled were largely Western, Educated, Industrialized, Rich and Democratic (WEIRD) or newly industrialized countries, and such a bias towards developed nations may have increased the likelihood of identifying spatial optimism biases relative to global estimates (i.e., developed countries have a higher probability of managing national emergencies faster than non-developed nations). Additional work including a broader sampling of the world's population that more closely addresses the extent to which the perceived impact on various global threats reflects optimism, realism, and/or pessimism will be valuable.

5 | Conclusions

In conclusion, our study found that people tend to be optimistic when estimating the duration and impact of the COVID-19 pandemic in their own country compared to the world. The bias was moderated by local pandemic severity yet remained present to some degree across all severity levels even when controlling for the relative standing of pandemic impact, age, worry, and media exposure. Our results are theoretically relevant in understanding psychological biases relating to social cognition and extend recent work on collective future thought (e.g., Shikanth et al. 2018). This study may also have implications for designing effective interventions and public messaging for global and national issues. When policymakers are promoting certain causes or policy changes, they should consider the spatial optimism bias in messaging to build more realistic expectations among the public. This could be particularly important when individuals hold strong emotional connections to the spatial context they are living in as this may lead to overly optimistic estimations regarding the security of their context. Accordingly, policymakers should encourage a more holistic assessment that integrates both emotional connections to the context and objective data. In the meantime, further research is needed to understand the dynamics that moderate this bias and inform policy-making for societal change.

Author Contributions

Sezin Öner: formal analysis, project administration, visualization, writing – review and editing, investigation, conceptualization, writing – original draft, methodology, data curation. **Karl Szpunar:** conceptualization, investigation, writing – original draft, methodology, writing – review and editing. **Lynn Ann Watson:** writing – review and editing, writing – original draft, methodology, project administration, data curation, conceptualization. **Scott Cole:** writing – review and editing, conceptualization.

Ethics Statement

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Consent

Informed consent was obtained from all individual participants who participated in the study.

Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

The preregistration, materials, and further information about the study are available at the project's main Open Science Framework page (https://osf.io/m46nq/). Data for the variables used in the current study are part of the larger dataset of the main project (https://osf.io/jv6uc). The file will be publicly accessible on the same OSF webpage following an embargo period.

Endnotes

[1] We have run the analyses using the continuous variable of severity index as a covariate to assess the robustness of our findings. The pattern of difference was maintained showing that individuals perceived that, compared to the world, fewer people will be affected from the virus and the pandemic will end earlier in their own country.

References

Baldassare, M., and C. Katz. 1992. "The Personal Threat of Environmental Problems as Predictor of Environmental Practices." *Environment and Behavior* 24, no. 5: 602–616. https://doi.org/10.1177/0013916592245002.

Baumeister, R. F., K. D. Vohs, and G. Oettingen. 2016. "Pragmatic Prospection: How and Why People Think About the Future." *Review of General Psychology* 20, no. 1: 3–16. https://doi.org/10.1037/gpr00000.

Bonaiuto, M., G. M. Breakwell, and I. Cano. 1996. "Identity Processes and Environmental Threat: The Effects of Nationalism and Local Identity Upon Perception of Beach Pollution." *Journal of Community*

& Applied Social Psychology 6, no. 3: 157–175. https://doi.org/10.1002/(SICI)1099-1298(199608)6:3<157::AID-CASP367>3.0.CO;2-W.

Brügger, A., T. A. Morton, and S. Dessai. 2016. ""Proximising" Climate Change Reconsidered: A Construal Level Theory Perspective." *Journal of Environmental Psychology* 46: 125–142. https://doi.org/10.1016/j.jenvp.2016.04.004.

Buehler, R., D. Griffin, and M. Ross. 1994. "Exploring the 'Planning Fallacy': Why People Underestimate Their Task Completion Times." *Journal of Personality and Social Psychology* 67, no. 3: 366–381. https://doi.org/10.1037/0022-3514.67.3.366.

Burnett, L. K., T. Peña, S. Rajaram, and L. L. Richmond. 2023. "Personal and Collective Mental Time Travel Across the Adult Lifespan During COVID-19." *Psychology and Aging* 38, no. 5: 374–388. https://doi.org/10.1037/pag0000758.

Cichocka, A. 2016. "Understanding Defensive and Secure In-Group Positivity: The Role of Collective Narcissism." *European Review of Social Psychology* 27, no. 1: 283–317. https://doi.org/10.1080/10463283.2016.1252530.

Clarke, V. A., H. Lovegrove, A. Williams, and M. Machperson. 2000. "Unrealistic Optimism and the Health Belief Model." *Journal of Behavioral Medicine* 23: 367–376. https://doi.org/10.1023/A:1005500917875.

Cole, S. N., I. Markostamou, L. A. Watson, et al. 2022. "Spontaneous Past and Future Thinking About the COVID-19 Pandemic Across 14 Countries: Effects of Individual and Country-Level COVID-19 Impact Indicators." *Journal of Applied Research in Memory and Cognition* 12, no. 4: 502–512. https://doi.org/10.1037/mac0000071.

Colfer, B. 2020. "Herd-Immunity Across Intangible Borders: Public Policy Responses to COVID-19 in Ireland and the UK." *European Policy Analysis* 6, no. 2: 203–225. https://doi.org/10.1002/epa2.1096.

Coquet, M., D. Mercier, and G. Fleury-Bahi. 2019. "Assessment of the Exposure to Coastal Flood Risk by Inhabitants of French Coasts: The Effect of Spatial Optimism and Temporal Pessimism." *Ocean and Coastal Management* 177: 139–147. https://doi.org/10.1016/j.ocecoaman.2019.05.004.

De Bruin, W. B., and D. Bennett. 2020. "Relationships Between Initial COVID-19 Risk Perceptions and Protective Health Behaviors: A National Survey." *American Journal of Preventive Medicine* 59, no. 2: 157–167. https://doi.org/10.1016/j.amepre.2020.05.001.

Dolinski, D., B. Dolinska, B. Zmaczynska-Witek, M. Banach, and W. Kulesza. 2020. "Unrealistic Optimism in the Time of Coronavirus Pandemic: May It Help to Kill, if So-Whom: Disease or the Person?" *Journal of Clinical Medicine* 9, no. 5: 1464. https://doi.org/10.3390/jcm9051464.

Dolinski, D., W. Kulesza, P. Muniak, B. Dolinska, R. Węgrzyn, and K. Izydorczak. 2022. "Media Intervention Program for Reducing Unrealistic Optimism Bias: The Link Between Unrealistic Optimism, Well-Being, and Health." *Applied Psychology: Health and Well-Being* 14, no. 2: 499–518. https://doi.org/10.1111/aphw.12316.

Dunlap, R., G. Gallup, and A. Gallup. 1993. "Of Global Concern: Results of the Health of the Planet Survey." *Environment* 35, no. 7–15: 33–39. https://doi.org/10.1080/00139157.1993.9929122.

Durbin, K. A., S. J. Barber, M. Brown, and M. Mather. 2019. "Optimism for the Future in Younger and Older Adults." *Journals of Gerontology: Series B* 74, no. 4: 565–574. https://doi.org/10.1093/geronb/gbx171.

Esterwood, E., and S. A. Saeed. 2020. "Past Epidemics, Natural Disasters, COVID19, and Mental Health: Learning From History as We Deal With the Present and Prepare for the Future." *Psychiatric Quarterly* 91: 1121–1133. https://doi.org/10.1007/s11126-020-09808-4.

Fleury-Bahi, G. 2008. "Environmental Risk: Perception and Target With Local Versus Global Evaluation." *Psychological Reports* 102: 185–193. https://doi.org/10.2466/pr0.102.1.185-193.

Galea, S., R. M. Merchant, and N. Lurie. 2020. "The Mental Health Consequences of COVID-19 and Physical Distancing: The Need for Prevention and Early Intervention." *JAMA Internal Medicine* 180, no. 6: 817–818. https://doi.org/10.1001/jamainternmed.2020.1562.

Gassen, J., T. J. Nowak, A. D. Henderson, S. P. Weaver, E. J. Baker, and M. P. Muehlenbein. 2021. "Unrealistic Optimism and Risk for COVID-19 Disease." *Frontiers in Psychology* 12: 647461. https://doi.org/10.3389/fpsyg.2021.647461.

Gifford, R., L. Scannell, C. Kormos, et al. 2009. "Temporal Pessimism and Spatial Optimism in Environmental Assessments: An 18-Nation Study." *Journal of Environmental Psychology* 29, no. 1: 1–12. https://doi.org/10.1016/j.jenvp.2008.06.001.

Golec de Zavala, A., and D. Lantos. 2020. "Collective Narcissism and Its Social Consequences: The Bad and the Ugly." *Current Directions in Psychological Science* 29, no. 3: 273–278. https://doi.org/10.1177/0963721420917703.

Gorsky, M., and A. Arnold-Forster. 2023. "The Lancet 1823–2023: The Best Science for Better Lives." *Lancet* 402, no. 10409: 1284–1293.

Guo, J., Y. Ge, and W. Pang. 2019. "The Underlying Cognitive Mechanisms of the Rater Effect in Creativity Assessment: The Mediating Role of Perceived Semantic Distance." *Thinking Skills and Creativity* 33: 100572. https://doi.org/10.1016/j.tsc.2019.100572.

Jefferson, A., L. Bortolotti, and B. Kuzmanovic. 2017. "What Is Unrealistic Optimism?" *Consciousness and Cognition* 50: 3–11. https://doi.org/10.1016/j.concog.2016.10.005.

Kemahlıoğlu, Ö., and O. Yeğen. 2022. "Surviving the COVID-19 Pandemic Under Right-Wing Populist Rule: Turkey in the First Phase." *South European Society and Politics* 27, no. 4: 577–606. https://doi.org/10.1080/13608746.2021.1985497.

Klenert, D., F. Funke, L. Mattauch, and B. O'Callaghan. 2020. "Five Lessons From COVID-19 for Advancing Climate Change Mitigation." *Environmental and Resource Economics* 76: 751–778. https://doi.org/10.1007/s10640-020-00453-w.

Kuper-Smith, B. J., L. M. Doppelhofer, Y. Oganian, G. Rosenblau, and C. W. Korn. 2021. "Risk Perception and Optimism During the Early Stages of the COVID-19 Pandemic." *Royal Society Open Science* 8: 210904. https://doi.org/10.1098/rsos.210904.

Lanciano, T., F. Alfeo, A. Curci, et al. 2024. "The Flashbulb-Like Nature of Memory for the First COVID-19 Case and the Impact of the Emergency. A Cross-National Survey." *Memory* 32: 1–19. https://doi.org/10.1080/09658211.2024.2310554.

Li, J., and P. Giabbanelli. 2021. "Returning to a Normal Life via COVID-19 Vaccines in the United States: A Large-Scale Agent-Based Simulation Study." *JMIR Medical Informatics* 9, no. 4: e27419. https://doi.org/10.2196/27419.

Liu, J. H., and K. K. Szpunar. 2023. "Structure and Dynamics of Personal and National Event Cognition." *Journal of Applied Research in Memory and Cognition* 12: 1–15. https://doi.org/10.1037/mac0000094.

Merck, C., J. K. Yamashiro, and W. Hirst. 2020. "Remembering the Big Game: Social Identity and Memory for Media Events." *Memory* 28, no. 6: 795–814. https://doi.org/10.1080/09658211.2020.1784232.

Migueles Seco, M., and A. Aizpurua Sanz. 2024. "Mental Journey to the Future and Memory for Future Thoughts During the COVID-19 Pandemic Lockdown." *Applied Cognitive Psychology* 38, no. 1: e4152. https://doi.org/10.1002/acp.4152.

Morton, T. A., A. Rabinovich, D. Marshall, and P. Bretschneider. 2011. "The Future That May (Or May Not) Come: How Framing Changes Responses to Uncertainty in Climate Change Communications." *Global Environmental Change* 21, no. 1: 103–109. https://doi.org/10.1016/j.gloenvcha.2010.09.013.

Musson, C. 1974. "Local Attitudes to Population Growth in South Buckinghamshire." In *Population and Its Problems: A Plain Man's Guide*, edited by H. B. Perry, 392–393. Clarendon Press.

Öner, S., L. A. Watson, Z. Adıgüzel, et al. 2022. "Collective Remembering and Future Forecasting During the COVID-19 Pandemic: How the Impact of COVID-19 Affected the Themes and Phenomenology of Global and National Memories Across 15 Countries." *Memory & Cognition* 51, no. 3: 1–23. https://doi.org/10.3758/s13421-022-01329-8.

Putnam, A. L., M. Q. Ross, L. K. Soter, and H. L. Roediger. 2018. "Collective Narcissism: Americans Exaggerate the Role of Their Home State in Appraising U.S. History." *Psychological Science* 29, no. 9: 1414–1422. https://doi.org/10.1177/0956797618772504.

Riera, R., C. de Oliveira Cruz Latorraca, R. C. M. Padovez, et al. 2023. "Strategies for Communicating Scientific Evidence on Healthcare to Managers and the Population: A Scoping Review." *Health Research Policy and Systems* 21, no. 1: 71. https://doi.org/10.1186/s12961-023-01017-2.

Rogers, M. L., M. A. Hom, I. H. Stanley, and T. E. Joiner. 2019. "Brief Measures of Physical and Psychological Distance to Suicide Methods as Correlates and Predictors of Suicide Risk: A Multi-Study Prospective Investigation." *Behaviour Research and Therapy* 120. https://doi.org/10.1016/j.brat.2018.11.001.

Salgado, S., and D. Berntsen. 2021. "'It Won't Happen to us': Unrealistic Optimism Affects COVID-19 Risk Assessments and Attitudes Regarding Protective Behaviour." *Journal of Applied Research in Memory and Cognition* 10, no. 3: 368–380. https://doi.org/10.1016/j.jarmac.2021.07.006.

Schultz, P. W., V. Gouveia, L. Cameron, G. Tankha, P. Schmuck, and M. Franek. 2005. "Values and Their Relationship to Environmental Concern and Conservation Behavior." *Journal of Cross-Cultural Psychology* 36: 457–475. https://doi.org/10.1177/0022022105275962.

Schultz, P. W., T. L. Milfont, R. C. Chance, et al. 2014. "Cross-Cultural Evidence for Spatial Bias in Beliefs About the Severity of Environmental Problems." *Environment and Behavior* 46, no. 3: 267–302. https://doi.org/10.1177/0013916512458579.

Shrikanth, S., P. M. Szpunar, and K. K. Szpunar. 2018. "Staying Positive in a Dystopian Future: A Novel Dissociation Between Personal and Collective Cognition." *Journal of Experimental Psychology: General* 147: 1200–1210. https://doi.org/10.1037/xge0000421.

Sparkman, G., N. R. Lee, and B. N. Macdonald. 2021. "Discounting Environmental Policy: The Effects of Psychological Distance Over Time and Space." *Journal of Environmental Psychology* 73: 101529. https://doi.org/10.1016/j.jenvp.2020.101529.

Spence, A., W. Poortinga, and N. Pidgeon. 2012. "The Psychological Distance of Climate Change." *Risk Analysis* 32, no. 6: 957–972. https://doi.org/10.1111/j.1539-6924.2011.01695.x.

Szpunar, P. M., and K. K. Szpunar. 2016. "Collective Future Thought: Concept, Function, and Implications for Collective Memory Studies." *Memory Studies* 9: 376–389. https://doi.org/10.1177/1750698015615660.

Szpunar, P. M., and K. K. Szpunar. 2025. "Media and Future Thinking." In *Breaking Down the Silos: Memory Between Cognition, Culture, and Political Momentum*, edited by A. Erll and W. Hirst. Oxford University Press.

Taylor, S. E., and J. D. Brown. 1988. "Illusion and Well-Being: A Social Psychological Perspective on Mental Health." *Psychological Bulletin* 103, no. 2: 193–210. https://doi.org/10.1037/0033-2909.103.2.193.

Topçu, M. N., and W. Hirst. 2022. "Collective Mental Time Travel: Current Research and Future Directions." *Progress in Brain Research* 274: 71–91. https://doi.org/10.1016/bs.pbr.2022.06.002.

Topçu, M. N., and W. Hirst. 2024. "When the Personal and the Collective Intersects: Memory, Future Thinking, and Perceived Agency During the COVID-19 Pandemic." *Journal of Experimental Psychology: General* 153, no. 9: 2258–2278. https://doi.org/10.1037/xge0001624.

Tunçgenç, B., V. van Mulukom, and M. Newson. 2023. "Social Bonds Are Related to Health Behaviors and Positive Well-Being Globally." *Science Advances* 9, no. 2: eadd3715. https://doi.org/10.1126/sciadv.add3715.

Tversky, A., and D. J. Koehler. 1994. "Support Theory: A Nonextensional Representation of Subjective Probability." *Psychological Review* 101: 547–567. https://doi.org/10.1037/0033-295X.101.5.547.

Tvinnereim, E., O. M. Lægreid, X. Liu, D. Shaw, C. Borick, and E. Lachapelle. 2020. "Climate Change Risk Perceptions and the Problem of Scale: Evidence from Cross-National Survey Experiments." *Environmental Politics* 29, no. 7: 1178–1198. https://doi.org/10.1080/09644016.2019.1708538.

Uzzell, D. L. 2000. "The Psycho-Spatial Dimension of Global Environmental Problems." *Journal of Environmental Psychology* 20: 307–318. https://doi.org/10.1006/jevp.2000.0175.

Vindegaard, N., and M. E. Benros. 2020. "COVID-19 Pandemic and Mental Health Consequences: Systematic Review of the Current Evidence." *Brain, Behavior, and Immunity* 89: 531–542. https://doi.org/10.1016/j.bbi.2020.05.048.

Wang, C., R. Pan, X. Wan, et al. 2020. "Immediate Psychological Responses and Associated Factors During the Initial Stage of the 2019 Coronavirus Disease (COVID-19) Epidemic Among the General Population in China." *International Journal of Environmental Research and Public Health* 17, no. 5: 1729. https://doi.org/10.3390/ijerph17051729.

Wang, S., M. J. Hurlstone, Z. Leviston, I. Walker, and C. Lawrence. 2019. "Climate Change From a Distance: An Analysis of Construal Level and Psychological Distance From Climate Change." *Frontiers in Psychology* 10: 230. https://doi.org/10.3389/fpsyg.2019.00230.

Weinstein, N. D. 1983. "Reducing Unrealistic Optimism About Illness Susceptibility." *Health Psychology* 2, no. 1: 11–20. https://doi.org/10.1037/0278-6133.2.1.11.

Weinstein, N. D., S. E. Marcus, and R. P. Moser. 2005. "Smokers' Unrealistic Optimism About Their Risk." *Tobacco Control* 14, no. 1: 55–59. https://doi.org/10.1136/tc.2004.008375.

Xiong, J., O. Lipsitz, F. Nasri, et al. 2020. "Impact of COVID-19 Pandemic on Mental Health in the General Population: A Systematic Review." *Journal of Affective Disorders* 277: 55–64. https://doi.org/10.1016/j.jad.2020.08.001.

Yamashiro, J. K., J. H. Liu, and R. J. Zhang. 2023. "Implicit Intertemporal Trajectories in Cognitive Representations of the Self and Nation." *Memory & Cognition* 51: 1027–1040. https://doi.org/10.3758/s13421-022-01366-3.

Yamashiro, J. K., and H. L. Roediger. 2021. "Biased Collective Memories and Historical Overclaiming: An Availability Heuristic Account." *Memory & Cognition* 49, no. 2: 311–322. https://doi.org/10.3758/s13421-020-01090-w.

Zack, N. 2021. *The American Tragedy of COVID-19: Social and Political Crises of 2020*. Rowman & Littlefield Publishers. https://doi.org/10.10076/978-3-031-049-64-4.

Zaromb, F. M., J. H. Liu, D. Paez, K. Hanke, A. L. Putnam, and H. L. Roediger. 2018. "We Made History: Citizens of 35 Countries Overestimate Their Nation's Role in World History." *Journal of Applied Research in Memory and Cognition* 7, no. 4: 521–528. https://doi.org/10.1016/j.jarmac.2018.05.006.