

# The links among relative financial scarcity, thinking style, fatalism, and well-being

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## Abstract

In the present research, we examined the links among relative financial scarcity, thinking style, fatalism, and well-being and their roles in predicting protective behaviors against COVID-19. Study 1 ( $N = 120$ ) revealed that after an experimental manipulation to induce the perception of relative financial scarcity (versus financial abundance), people who perceived higher relative financial scarcity changed their thinking style to a more concrete mindset. In Study 2 ( $N = 873$ ), the relative financial abundance–scarcity situation was measured, and the results showed that the greater the perceived relative financial scarcity was, the more concrete the mindset and the lower the sense of well-being. Importantly, we found that individuals who felt poorer but maintained an abstract thinking style reported higher well-being. Study 3 ( $N = 501$ ) examined the influence of a concrete thinking style in people who perceived that their economic situation had worsened with the pandemic. The results showed that when this vulnerable population presented a more concrete mindset, they reported lower well-being, higher fatalism, and lower protective behavior against COVID-19. Thus, maintaining an abstract mindset promotes higher well-being, lower fatalism, and greater protective behaviors against COVID-19, even under economic difficulties. Because thinking style can be modified, our results encourage the development of new social intervention programs to promote an abstract mindset when people face important challenges.

## KEYWORDS

abstract mindset, fatalism, protective behaviors, relative financial scarcity, thinking style, well-being

COVID-19 poses enormous health and wealth challenges for people and countries around the world; importantly, as with all crises, COVID-19 does not affect everyone the same way. Recent data (Oxfam, 2020) reveal that economic and social inequality has increased during this pandemic. Focusing on wealth, the COVID-19 outbreak has diminished the incomes of many families, and an increasing number of people are below the poverty line without enough money to maintain “acceptable” living standards. For individuals who were suffering economic scarcity before COVID-19, the pandemic is an almost impossible challenge to overcome. People with better incomes are not free from the negative effects of COVID-19, and economic worries arise when they compare their current situations with their pre-pandemic situations and with those of other wealthier groups.

Any individual can perceive that their economic situation is worse or better depending on the comparison criterion. Social comparison processes go beyond the real economic situation, and the evaluation of resource deprivation is relative (Runciman, 1966). In this vein, the effects of poverty and inequality are frequently examined simultaneously because they co-occur (see Bratanova et al., 2016a). Kraus et al. (2017) studied the effect of macrosocial factors on social inequality and found that people living in the most unequal societies were more affected by status symbols, regardless of their objective socioeconomic status. After a comparative process, people feel more worried about social inequality (De Botton, 2004), perceive their own group as less wealthy (Sánchez-Rodríguez et al., 2019), and feel greater contextual and personal status anxiety (Melita et al., 2021). Perceived rather than objective

differences explain many negative psychosocial effects found in unequal societies (Nishi et al., 2015). Extensive research has shown that people evaluate their economic situations not only based on their objective financial income but also by comparing it with personal and social expectations. Mullainathan and Shafir (2014) have noted that the concept of scarcity is clearly linked to these comparative processes. These authors developed the term *financial scarcity* to refer to the perception of having insufficient resources from the respondents' perspective. Thus, financial scarcity depends not only on real incomes but also on personal and social comparisons. Feeling poor or rich is a relative perception affected by the economic situations of others and personal economic expectations. In this comparative frame, although all groups are affected by income inequality (see Pickett & Wilkinson, 2017; Subramanian & Kawachi, 2006), the greatest negative effects (e.g., health problems, feelings of unhappiness) are suffered by people facing financial scarcity (Sommet et al., 2018).

Previous studies have shown that perceptions of having less elicit a greater focus on immediate problems while neglecting relevant future outcomes; importantly, this short-term perspective increases risk taking (Mani et al., 2013; Payne et al., 2017; Shah et al., 2012). Financial scarcity leads to attentional shifts that (1) explain risk behaviors, such as over-borrowing (Shah et al., 2012); (2) reduce the sense of personal control, making individuals more vulnerable to financial stress (Sommet et al., 2018); (3) increase the anxiety associated with higher calorie intake (Bratanova et al., 2016a); and (4) promote a concrete mindset that motivates more unhealthy habits (Aguilar et al., 2020).

The cognitive consequences associated with financial scarcity also affect the self. Kraus and colleagues found that people from lower social class contexts present a greater interdependent self (Kraus & Stephens, 2012; Stephens et al., 2009), which in turn facilitates empathic accuracy (Kraus et al., 2010) and prosocial behavior (Piff et al., 2010). In contrast, higher social class individuals prioritize independence and freedom and help others less (see Kraus & Stephens, 2012). Lower-class individuals focus on external cues (i.e., contextualism) because they must be more vigilant to the present threats than higher-class people to survive (Kraus et al., 2012). This attention to the immediate context and external information (i.e., situational difficulties) characterizes a concrete thinking style as posited by action identification theory (AIT; Vallacher & Wegner, 1987, 1989) and construal level theory (CLT; Trope & Liberman, 2000, 2003).

AIT and CLT hold that people can mentally represent objects and actions throughout a concrete–abstract bipolar dimension, that is, with a concrete style focused on short-term consequences, contextual details, and difficulties performing behaviors or with an abstract style focused more on final goals, essential traits, and general characteristics. The AIT and the CLT, as theoretical frameworks, afford only comparative or relative conclusions related to the concrete–abstract dimension; for this reason, all predictions must be understood from a comparative perspective (see MacGregor et al., 2017). Recent research has shown that young individuals under severe

economic scarcity in Nicaragua presented a more concrete thinking style than young people in a better economic situation (Aguilar et al., 2020). This relationship between economic scarcity and a concrete mindset is coherent with the social cognitive perspective on social class (see Kraus et al., 2012), where lower-class individuals present higher vigilance to situational external threats (Kraus et al., 2011).

The influence of financial scarcity on cognitive and emotional outcomes is supported by research on various topics. Lower-class individuals present a lower sense of control (Johnson & Krueger, 2005; Johnson & Krueger, 2006; Kraus et al., 2009), lower construal level or concrete mindset (Aguilar et al., 2020), and report lower well-being (Diener & Suh, 1997; Howell & Howell, 2008; Navarro-Carrillo et al., 2020). Moreover, previous research has linked financial scarcity with fatalism (Aguilar et al., 2020; Kraus et al., 2009, 2012) and more risk behaviors (Aguilar et al., 2020). Fatalism has been defined as the perception of having no power to influence one's own actions and as passive feelings of resignation about the future (Díaz et al., 2015), that is, a focus on the present. Building on this previous research, financial scarcity clearly constitutes a threat to people's health.

The COVID-19 pandemic, especially in the absence of a vaccine, demanded new behaviors to protect personal and public health, such as maintaining social distancing, using face masks, avoiding crowded places, and hand-washing. Because compliance with these behaviors affects not only health but also the economic recovery of people and countries, knowing what variables influence it could help design better protocols to promote protective actions. Previous research has shown that numerous cognitive and affective variables have successfully played an important role in behavioral predictions, but now, during this unprecedented current crisis, it is crucial to determine whether they continue to play this role, especially in the most vulnerable people suffering greater financial scarcity and presenting more risk behaviors (Mani et al., 2013; Payne et al., 2017; Shah et al., 2012). Some recent research seems to show that some cognitive factors, such as self-regulatory processes (Miller et al., 2020) and beliefs about the efficacy of adherence to protective behaviors (Shiloh et al., 2021), are good predictors of protective actions against COVID-19. However, because the borders between emotions and cognition are fuzzy (see Kiviniemi et al., 2018; Sheeran et al., 2014), in addition to cognitive variables, such as thinking style (i.e., cognitive mindset or construal level), it is worth exploring factors with greater emotional load, such as the perception of financial threat (i.e., relative financial scarcity), fatalism (i.e., a cognitive schema defined by passive and submissive acceptance of an irremediable destiny and feelings of hopelessness; see Díaz et al., 2015) and well-being (i.e., satisfaction with life, positive feelings; see Diener et al., 1985).

Based on the research described above, we expected that the links among these cognitive and emotional predictors would again be supported in the atypical context of the current pandemic. In the present study, we use the term "relative financial scarcity" to highlight the role of comparative processes in the perception of scarcity. Throughout the studies, the

participants were asked to compare their financial situation with those of other economic groups (Study 1), with their personal expectations (Study 2), and with their economic situation before the pandemic (Study 3).

We expected a negative relationship between relative financial scarcity and thinking style: the greater the relative financial scarcity was, the lesser abstract the mindset (i.e., the more concrete the mindset). Regarding relative financial scarcity and well-being, we also expected a negative relationship: the greater the relative financial scarcity was, the lower the well-being. However, the relationship expected between relative financial scarcity and fatalism was positive: the greater the relative financial scarcity was, the greater the fatalism. In summary, we expected that when people felt relative financial scarcity, they would present a more concrete thinking style, higher fatalism, and lower well-being, and they would take fewer protective actions against COVID-19. These predictions can help professionals and authorities design health promotion campaigns against pandemics.

## PRESENT STUDIES

Study 1 tested whether after an experimental manipulation to induce the perception of relative financial scarcity (versus financial abundance), people who reported higher relative financial scarcity changed their thinking style to a more concrete mindset. Study 2 evaluated, without experimental manipulation, the links among the participants' relative financial situations (scarcity versus abundance), thinking style, and well-being. Finally, in a sample of relatively financially vulnerable people who perceived that their economic situation had worsened with COVID-19, Study 3 focused on the roles played by thinking style, fatalism, and well-being in the prediction of protective actions against the virus.

All measures, manipulations, and exclusions in the studies are disclosed, and we report a sensitivity analysis of the sample size in each study. Informed consent was obtained from all individual participants. The project and the experimental protocols were approved by the Ethical Committee at Universidad Autónoma de Madrid, Spain (CEI-100-1869) prior to data collection.

### Study 1: Relative financial scarcity and thinking style (i.e., construal level or mindset)

In this study, we induced people to compare their financial perceptions of having just enough resources to meet their expenditures (see Sommet et al., 2018) with that of an economically worse or better group, expecting that this social comparison would make people feel an economic advantage or disadvantage, respectively. We expected that the group induced to feel relative financial scarcity, when they perceived this economically disadvantageous situation, would change their thinking style to a more concrete mindset. We also expected that this effect would be mainly explained by the

perception of relative financial scarcity induced by the experimental manipulation but not by other feelings associated with future economic problems anticipated by the participants (i.e., anticipatory emotions when thinking about their personal economic futures).

## Method

### Participants

One hundred and twenty undergraduate students voluntarily participated (110 women), with a mean age of 20.05 years ( $SD = 3.13$  years). There was no stopping rule for data collection because all college psychology students were invited to participate. Students participated in the study in exchange for course credit. Participants were randomly assigned to the relative financial scarcity ( $N = 58$ ) or relative financial abundance ( $N = 62$ ) experimental condition groups. A sensitivity analysis was conducted in G\*Power (Faul et al., 2009), specifying an analysis of variance (ANOVA) of repeated measures ( $r = .70$ ) within-between interaction with an alpha significance criterion of  $\alpha = .05$ . This analysis revealed that this sample allowed a small effect ( $f = 0.10$ ) to be detected with 80% power.

### Procedure and measures

The participants answered an online survey designed with Qualtrics. First, the participants responded to 12 items randomly chosen from the Behavioral Identification Form (BIF; Vallacher & Wegner, 1989) to evaluate their thinking style or construal level. The original version of the BIF (Vallacher & Wegner, 1989) includes 25 items. In this scale, participants are presented with various actions and are asked to choose between two options for each action. One option describes the action in concrete terms, while the other option describes the action in abstract terms. For example, participants must choose whether "locking a door" is best described as "securing the house" (abstract level; scored as 1) or "putting the key in the lock" (concrete level; scored as 0). The number of abstract descriptions selected serves as a measure of abstraction: higher scores indicate higher abstraction.

Based on Bratanova, Loughnan, Klein, and Claassen's 2016a procedure to induce a perception of relative financial scarcity or abundance, the participants read a paragraph describing how the COVID-19 pandemic economically affected many people in their society. To induce the perception of relative financial scarcity, the participants read a paragraph detailing how rich people managed the crisis better than poorer people and how they were even earning more money during the COVID-19 pandemic. In contrast, to induce the perception of relative financial abundance, the participants read a paragraph describing how poor people suffered during the crisis and their terrible difficulties, enhancing how severe poverty was increasing in this population. The paragraphs had the same structure, with only their contents varying. We expected these results because we assumed that the participants recruited at university were from the middle class.

After reading the news, to ensure the social comparison process, the participants were asked to write a few lines

commenting on their thoughts and feelings when comparing themselves with the people who were described in the paragraph. Then, they responded to one manipulation check item to indicate the extent to which they felt poor (“How poor do you feel compared to the group described in the news?”) using a 7-point scale (1 = *Not at all*; 7 = *Very much*). After this control check to measure the perception of relative financial scarcity or abundance, the participants completed the second part of the BIF scale comprising the 12 items that had not been used at the beginning of the survey (only one randomly selected item from the 25-item original scale was not used).

Finally, to test explanations other than the effect caused by the perception of relative financial scarcity, the participants reported their current feelings when thinking about their personal economic future situation after reading the paragraph (i.e., anticipatory emotions). They answered on a 7-point scale (1 = *not at all*; 7 = *very much*): “Considering the information detailed in the paragraph, when you think about your economic future, to what extent do you feel worried [hopeful, relieved, confident, scared, angry, sad] right now?”

Finally, the participants reported their demographic information (age and sex) and their real socioeconomic status, answering one question about their own current perceived social class using a 5-point scale (1 = *Very low*, 2 = *Low*, 3 = *Middle*, 4 = *Middle-high*, 5 = *High*).

## Results

When the participants focused on their real current economic situation at the end of the survey, the results in both experimental condition groups supported our assumption about the medium economic status assumed in the samples ( $M_{\text{scarcity}} = 3.16$ ,  $SD = 0.56$ ;  $M_{\text{abundance}} = 3.11$ ,  $SD = 0.58$ ),  $F(1, 118) = 0.16$ ,  $p = .68$ ,  $\eta_p^2 = .001$ . Thus, we expected that after reading the paragraph about the better situation of rich people, the social comparative process would lead the participants to perceive themselves as relatively poor (relative financial scarcity condition). However, when reading about the terrible problems that poor people were suffering, they would perceive themselves as having relative abundance (relative financial abundance condition). The manipulation check showed that the participants in the relative financial scarcity condition perceived themselves to be poorer than the participants in the relative financial abundance condition ( $M_{\text{scarcity}} = 3.66$ ,  $SD = 0.98$ ;  $M_{\text{abundance}} = 1.47$ ,  $SD = 0.72$ ),  $F(1, 118) = 195.51$ ,  $p < .001$ ,  $\eta_p^2 = .62$ ,  $f = 1.29$ . The experimental manipulation correctly generated the expected subjective perceptions of relative financial scarcity versus abundance.

When testing the effect of the paragraphs on the emotions the participants felt when thinking about their future economic situations (i.e., anticipatory emotions), the results were not significant for any emotion,  $F_s \leq 1.64$ ,  $p \geq .20$ . The experimental manipulation did not change their feelings regarding their financial future; the experimental manipulation varied the perception of relative financial scarcity or abundance only when

they compared their situation with those of people described in the paragraphs.

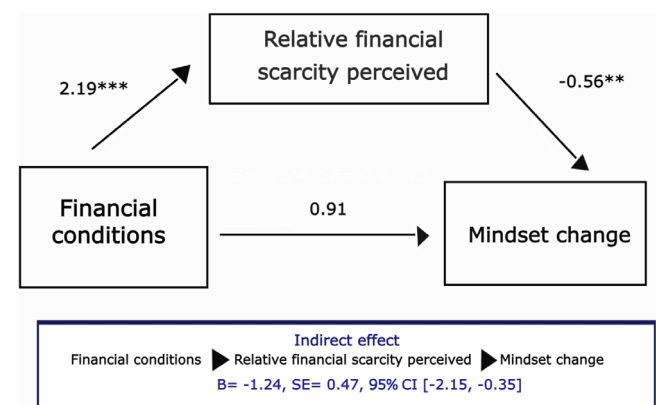
An ANOVA test using pre–post BIF scores as a within-subject factor (BIF-pre vs. BIF-post) and the relative financial scarcity–abundance conditions as a between-subject factor did not reveal clear significant effects. Table 1 shows the pre- and post-BIF scores in both conditions. This result suggested that although the experimental manipulation generated different financial perceptions between the experimental condition groups, its influence on the style of thinking should be explored in greater detail.

Following the recommendations of O’Keefe (2003), who pointed out that the measures used as control checks of experimental manipulations should be included in the analyses because they could act as relevant mediating processes, we repeated the analysis by including the measure of perception of relative financial scarcity reported (i.e., control check item) as a covariable. The results show that the within-subject factor effect was significant,  $F(1, 118) = 8.25$ ,  $p < .01$ ,  $\eta_p^2 = .07$ ,  $f = 0.27$ . Likewise, the interaction between the within-subject factor and the covariable (perception of relative financial scarcity reported in the control check item) was also significant,  $F(1, 118) = 8.07$ ,  $p < .01$ ,  $\eta_p^2 = .065$ ,  $f = 0.26$ . The interaction between the within-subject factor and condition was not significant,  $p = .10$ .

This result suggests the existence of an indirect effect of the relative financial scarcity–abundance conditions on the pre–post change in construal level mediated by the perception of relative financial scarcity reported in the control check item, as shown in Figure 1. To deepen this result, we performed a mediation analysis using the macro-PROCESS for SPSS (Model 4; 10,000 bootstrapping samples to generate 95% confidence intervals; Hayes, 2018). The independent variable was

**TABLE 1** Means (*SDs*) Before and After the Financial Manipulation

Condition	Pre-BIF <i>M</i> ( <i>SD</i> )	Post-BIF <i>M</i> ( <i>SD</i> )
Scarcity	6.91 (2.85)	6.84 (2.53)
Abundance	6.87 (2.32)	7.13 (2.03)



**FIGURE 1** Mediation model: Relative financial scarcity perceived as a mediator. \*\*\* $p < .001$ ; \*\* $p < .01$ .

**TABLE 2** Alternative Mediation Models: Emotions as Mediators Between Financial Conditions and Mindset Change

Indirect effects	Effect	Boot SE	Boot 95% CI
Financial conditions → WORRY → Mindset change	.0374	.0684	[−.0624, .2329]
Financial conditions → HOPE → Mindset change	−.0071	.0483	[−.1391, .0688]
Financial conditions → RELIEF → Mindset change	.0172	.0446	[−.0267, .1758]
Financial conditions → CONFIDENCE → Mindset change	.0194	.0456	[−.0283, .1904]
Financial conditions → SCARE/FEAR → Mindset change	−.0509	.0652	[−.0363, .2396]
Financial conditions → ANGER → Mindset change	.0131	.0457	[−.0318, .1814]
Financial conditions → SADNESS → Mindset change	−.0044	.0525	[−.1322, .0867]

Note: An indirect effect is considered statistically significant if the established confidence interval (95% CI) does not include 0 (Hayes, 2018).

the experimental condition (scarcity–abundance), the mediator was the perception of relative financial scarcity reported in the control check, and the dependent variable was calculated by subtracting the pre-BIF score from the post-BIF score. The results showed, as expected, that the direct effect of the financial manipulation induced on the mindset change was not significant ( $b = 0.91$ ,  $SE = .55$ ,  $p = .102$ ), while the indirect effect, mediated by the perception of relative financial scarcity reported in the control check, was significant ( $b = -1.24$ ,  $SE = .47$ , 95%CI [−2.15, −0.35]). Figure 1 shows the relationships between all the variables in the model.

The results showed that when the participants felt poorer, their thinking style tended to be less abstract (i.e., more concrete).

Following the recommendations of Fiedler et al. (2017), we carried out a set of mediation analyses using alternative mediating variables, such as anticipatory emotions felt by participants when thinking about their personal economic future. Table 2 shows the main results of all the mediation analyses, concluding that none of the emotions can be considered a mediator variable of the effect of the relative financial scarcity–abundance conditions on changes in thinking style. These results suggest that when people perceive themselves to be under relative economic scarcity, they tend to think in a more concrete style; this change in construal level was not explained by any anticipatory emotions regarding future economic situation.

## Discussion

Study 1 showed that when the participants were induced to feel poorer than others (perception of relative financial scarcity), they changed their thinking style to a more concrete mindset. This result supports the findings of previous research revealing that people feeling poorer mostly focus on their immediate problems. These data also suggest that scarcity does not need to be real to change the construal level; feeling poorer (i.e., perception of relative financial scarcity) than others can change the thinking style to a more concrete mindset. Emotions regarding future economic conditions did not vary between the condition groups and did not explain the change in thinking style.

## Study 2: Relative financial situation, thinking style, and well-being

In the second study, we explored how the interaction between thinking style and the relative perception of having or lacking enough money to cover one's own necessities influenced perceived well-being. In this study, the participants' relative financial situations were measured, not manipulated. Because a concrete construal leads people to focus on short-term difficulties, we expected that the participants who presented a more concrete thinking style and who reported lower relative financial abundance (i.e., people feeling poorer) would report lower well-being.

## Method

### Participants

Eight hundred and seventy-three voluntary participants (657 women) with a mean age of 34.23 years ( $SD = 11.58$  years) answered an online questionnaire. There was no stopping rule for data collection because all students enrolled in a social psychology department course were invited to participate. Students participated in the study in exchange for course credit. A sensitivity analysis for ANOVA between four groups with an alpha significance criterion of  $\alpha = .05$  revealed that this sample allowed a small effect ( $f = 0.11$ ) to be detected with 80% power.

### Procedure and measures

The online questionnaire was distributed through a snowball procedure: the link was given to a group of undergraduate students, encouraging them to distribute it among their acquaintances. First, the participants reported their demographic information (age and sex) and then answered the questionnaire to evaluate their thinking style using the original BIF with 25 items (Vallacher & Wegner, 1989),  $\alpha = .81$ . Then, relative financial abundance was evaluated with two items based on Bratanova and colleagues' research (Bratanova et al., 2016a; Bratanova et al., 2016b): "I am relatively advantaged in material wealth/I have enough money to buy things that I want" on a 7-point scale (1 = *strongly disagree*; 7 = *strongly agree*); the

alpha was acceptable ( $\alpha = .59$ ), and we averaged the scores of both items to construct the relative financial abundance index (RFA index). A control check item was added to determine the participants' real income using a 5-point scale (1 = *less than 600 euros*, 2 = *601–1800 euros*, 3 = *1801–3000 euros*, 4 = *3001–5000 euros*, 5 = *more than 5000 euros*). Finally, the participants completed the Satisfaction with Life Scale (SWLS) designed by Diener et al. (1985); its Spanish version was validated by Atienza et al. (2000;  $\alpha = .86$ ), and it includes five items (e.g., "I am satisfied with my life").

## Results

Because the thinking style and the financial situation both imply a comparative perspective, we divided the entire sample into subgroups using the median to maintain the greatest possible similarity on the size of the subgroups formed in each variable. Following MacGregor et al. (2017), we note that the construal level theory as a theoretical framework only affords comparative or relative conclusions, and all predictions must be understood in a comparative perspective. Therefore, our predictions were based on the difference between abstract and concrete styles of thinking as two opposite poles of a continuum ranging from low to high. For this reason, we used the median of the abstractness index to divide the sample into high and low personal construal levels; this analysis was based on previous research where personal factors, such as values (Eyal et al., 2009) or thinking style (Carrera et al., 2019), were subjected to a median split score (dummy-coded) to better determine their effect. Regarding the BIF scores, the participants with scores below the median ( $Md = 19$ ) were considered to have a concrete thinking style ( $n = 433$ ), and the other participants were considered to have an abstract mindset ( $n = 440$ ). A  $t$  test showed significant differences between the two groups in terms of thinking style ( $M_{\text{concrete}} = 14.68$ ,  $SD = 2.92$ ;  $M_{\text{abstract}} = 21.70$ ,  $SD = 1.95$ );  $t(871) = -41.77$ ,  $p < .001$ .

Following the same comparative perspective, the participants with scores at or below the median ( $Md = 4$ ) in the RFA index were categorized into the low relative financial abundance condition (Low RFA condition,  $n = 490$ ), and other participants were categorized into the high relative financial abundance condition (High RFA condition,  $n = 383$ ). A  $t$  test showed that the participants who self-perceived having low RFA reported lower real income ( $M = 2.70$ ,  $SD = .90$ ) than the participants who self-perceived having high RFA ( $M = 3.01$ ,  $SD = .96$ ),  $t(708) = -4.39$ ,  $p < .001$ . We note that 163 participants preferred not to answer this control check about their real income.

A  $t$  test revealed that the participants reporting lower RFA presented a more concrete mindset ( $M = 18$ ,  $SD = 4.46$ ) than the participants reporting higher RFA ( $M = 18.50$ ,  $SD = 4.08$ ); this difference was almost significant,  $t(871) = -1.71$ ,  $p = .08$ . This result partially supported the link between relative financial scarcity and the tendency to think more concretely that was found in Study 1.

An ANOVA on well-being with both dummy dichotomous variables (concrete versus abstract style  $\times$  low–high relative financial abundance) showed significant main effects on thinking style,  $F(1, 869) = 22.55$ ,  $p < .001$ ,  $\eta_p^2 = .025$ , and RFA,  $F(1, 869) = 87.78$ ,  $p < .001$ ,  $\eta_p^2 = .092$ ; the interaction was not significant,  $p = .66$ .

Because people with a more abstract mindset or with high relative financial abundance reported greater well-being, and the interaction was nonsignificant, we decided to test whether an abstract mindset could counteract the effect of low relative financial abundance on well-being. To better explore the combined influence of thinking style and RFA on well-being, we made a new dummy variable with four levels combining both dichotomous variables (i.e., concrete versus abstract style and low versus high RFA index). The result was significant,  $F(3, 869) = 38.40$ ,  $p < .001$ ,  $\eta_p^2 = .11$ . Post hoc Tukey's  $-b$  tests (see Table 3) showed significant differences between all groups ( $ps \leq .05$ ). Those who thought concretely and reported low RFA (i.e., the most concrete people with the lowest RFA) reported the lowest level of perceived well-being ( $M = 4.00$ ,  $SD = 1.33$ ), followed by the participants with an abstract thinking style and low RFA ( $M = 4.43$ ,  $SD = 1.22$ ), those with a concrete thinking style and high RFA ( $M = 4.82$ ,  $SD = 1.18$ ), and finally the participants with an abstract mindset and high RFA (i.e., the most abstract people with the greatest RFA;  $M = 5.18$ ,  $SD = 1.11$ ).

Feelings of having enough money to live comfortably (high RFA) implied the perception of higher well-being. In contrast, the participants who perceived that their economic resources were scarce (low RFA) reported lower well-being, except when they thought abstractly. This abstract mindset promoted higher satisfaction with their lives, even when their economic situation was not good. Importantly, an abstract thinking style improved the perceived well-being in relative financial scarcity and abundance.

### Study 3: Thinking style, well-being and fatalism and their roles in predicting protective behaviors against COVID-19 in people perceiving relative financial scarcity

In Study 3, we were interested in those who perceived that the pandemic had worsened their economic situation, provoking feelings of relative financial scarcity.

**TABLE 3** Means ( $SD$ s) of Well-Being for Each Combination of Style of Thinking and RFA

Conditions	Well-being $M$ ( $SD$ )
Concrete & low RFA	4.00 (1.33) <sup>a</sup>
Abstract & low RFA	4.43 (1.22) <sup>b</sup>
Concrete & high RFA	4.82 (1.18) <sup>c</sup>
Abstract & high RFA	5.18 (1.11) <sup>d</sup>

Note: Means in the same column that do not share the same subscripts differed at a  $p$  value  $< .05$  in the post hoc analysis.

Thus, under this financial threat, even though the thinking style was mainly concrete, we expected some individual differences in thinking style such that the most concrete people, who attend more to immediate difficulties, would report lower well-being and higher fatalism. We note that our predictions were based on the difference between abstract and concrete thinking styles as two opposite poles of a continuum.

We also expected that thinking style, well-being, and fatalism would predict protective behaviors: A more concrete thinking style, lower well-being, and higher fatalism would predict lower protective behaviors in the population who perceived relative financial scarcity when comparing their current economic situation with that before the pandemic.

## Method

### Participants

Five hundred and one voluntary participants (308 women), with a mean age of 25.04 years ( $SD = 9.49$  years), answered the online questionnaire with the scales reported in this study (the questions were included in a wider survey with other measurements not related to our hypothesis). There was no stopping rule for data collection because all students enrolled in a social psychology department course were invited to participate. Students participated in the study in exchange for course credit. A sensitivity analysis for ANOVA between two groups with an alpha significance criterion of  $\alpha = .05$  revealed that this sample enabled a small effect ( $f = 0.12$ ) to be detected with 80% power.

### Procedure and measures

The online questionnaire was distributed through the snowball procedure. The survey included a filter question to select participants who perceived that COVID-19 had negatively affected their financial situation: "Comparing your current income level with your income before COVID-19, how would you say your current income level is?" The participants answered on a 5-point scale (1 = *much worse*; 2 = *worse*; 3 = *equal*; 4 = *better*; 5 = *much better*). Only the participants who perceived that COVID-19 had made their income *much worse* or *worse* (i.e., relative financial scarcity) answered the following scales and questions.

First, the participants responded to the original BIF scale with 25 items (Vallacher & Wegner, 1989); in this scale, higher scores indicate higher abstraction ( $\alpha = .82$ ). Then, they completed the Social Fatalism Scale developed by Díaz et al. (2015;  $\alpha = .87$ ) and the well-being scale (SWLS; Diener et al. (1985); Atienza et al., 2000) used in Study 2 ( $\alpha = .84$ ). Finally, we included four items about their compliance with protective behaviors against COVID-19 (e.g., "How often do you fulfill the norms to prevent the spread of COVID-19, such as avoiding crowded places [washing hands, using face masks, respecting interpersonal distance]?"), which were measured on a 7-point scale (1 = *never*, 7 = *very frequently*). When this survey was completed, there were no COVID-19 vaccines. Finally, the participants reported their demographic information (age and sex).

## Results

We averaged the protective action scores to form a protective action index, and the alpha was low but acceptable ( $\alpha = .58$ ).

Following the same comparative logic used in Study 2, the participants with scores below the median ( $Md = 16$ ) on the BIF scale were categorized as having a concrete thinking style ( $n = 233$ ), and the other participants were categorized as having an abstract thinking style ( $n = 268$ ). We divided the entire sample into two groups maintaining the greatest possible similarity in the size of the subgroups formed. A  $t$  test showed significant differences on thinking style between the two groups ( $M_{concrete} = 11.34$ ,  $SD = 3.06$  vs.  $M_{abstract} = 19.29$ ,  $SD = 2.59$ ),  $t(499) = -31.40$ ,  $p < .001$ .

A  $t$  test revealed that the participants who thought concretely reported lower well-being than those who thought abstractly ( $M_{concrete} = 4.30$ ,  $SD = 1.22$  vs.  $M_{abstract} = 4.58$ ,  $SD = 1.12$ ),  $t(499) = -2.66$ ,  $p < .008$ . This result supported the relationship found in Study 2: The greater the level of concrete thinking was, the lower the perceived well-being (i.e., the greater abstraction, the higher perceived well-being). Two  $t$  tests showed that the participants who perceived themselves to be under relative economic scarcity and thought with a concrete style (versus abstract style) reported higher fatalism ( $M_{concrete} = 2.53$ ,  $SD = 0.86$  vs.  $M_{abstract} = 2.36$ ,  $SD = 0.77$ ),  $t(499) = 2.33$ ,  $p < .02$ , and lower protective behaviors ( $M_{concrete} = 5.55$ ,  $SD = 0.91$  vs.  $M_{abstract} = 5.80$ ,  $SD = 0.82$ ),  $t(499) = -3.23$ ,  $p < .001$ .

The correlations among variables are shown in Table 4.

The results supported that a higher abstract mindset and lower fatalism were associated with greater protective behaviors. Data on well-being did not fit our expectations for protective actions, but they supported the previous relationships found for thinking style and fatalism: the higher the construal level and the lower the fatalism were, the higher the well-being.

To examine the role played by each variable in behavioral predictions, we carried out a hierarchical regression analysis in which thinking style, well-being, and fatalism were entered simultaneously to predict protective actions against COVID-19. The model was significant,  $Rc^2 = .03$ ,  $F(3, 487) = 6.03$ ,  $p < .001$ , thinking style ( $\beta = .14$ ,  $t = 3.07$ ,  $p < .01$ ) and fatalism ( $\beta = -.12$ ,  $t = -2.62$ ,  $p < .01$ ) were significant predictors, and perceived well-being was not a relevant predictor ( $\beta = -.03$ ,  $t = -.66$ ,  $p = .50$ ).

**TABLE 4** Correlations Among Thinking Style, Well-Being, Fatalism, and COVID-19-Protective Actions

	Construal level	Well-being	Fatalism
Well-being	.12**	1	
Fatalism	-.11**	-.12**	1
Protective actions	.15***	.001	-.13**

Note. \*\*\* $p \leq .001$ ; \*\* $p \leq .01$ .

## GENERAL DISCUSSION

COVID-19 negatively affects health and wealth in all countries. The present research explored how this pandemic poses a greater challenge for people who perceive greater relative financial scarcity.

Previous literature has shown that the feeling of financial scarcity influences cognitive and affective variables; when people perceive that their financial resources are too scarce, they attend more to immediate outcomes and feel more anxiety and less self-control; importantly, all these cognitive and emotional changes increase risk behaviors. Thus, numerous studies have shown that people under financial scarcity frequently make behavioral decisions that worsen their already precarious situation.

Following Mullainathan and Shafir's (2014) comparative view focused on individuals' perspectives, in the present research, we examined some consequences of perception of relative financial scarcity, that is, the subjective financial perception of not having enough money when people make intra- and interpersonal comparisons. In a novel approach, we examined these effects in the frame of a pandemic situation using a comparative perspective through three different strategies.

Study 1 manipulated financial news to induce perceptions of relative financial scarcity or abundance. When the participants felt poorer, their thinking style changed to a more concrete mindset. These changes implied that people who felt poorer focused on their immediate difficulties. A more concrete mindset does not benefit individuals who must make behavioral decisions to overcome serious difficulties to improve their present and protect their future. Previous research has revealed how a concrete thinking style reduces self-control, which in turn increases risk behaviors. During the first months of the pandemic before vaccines became available and health and wealth were threatened, adherence to behavioral protective behaviors was crucial. In a vicious cycle, perception of relative financial scarcity promoted a more concrete mindset, and this cognitive style favored risky decisions, such as failing to exhibit protective behaviors, as Study 3 showed.

In Study 2, perception of relative financial abundance and scarcity were measured (not manipulated), and the results showed that the participants who felt greater relative financial abundance presented a more abstract mindset, while those who felt relative financial scarcity presented a more concrete mindset. This second study also showed that the perception of relative scarcity–abundance was related to perceived well-being. Previous research has found lower satisfaction with life in poorer populations (see Díaz et al., 2015); similarly, our results showed that a higher perception of relative financial scarcity (i.e., lower perception of relative financial abundance) reduced well-being, and importantly, thinking style played a significant role in it. Those who felt a higher perception of relative financial scarcity and had a more concrete mindset presented the lowest level of well-being. However, the participants who felt poorer but maintained an abstract thinking style reported more positive views of their lives. These abstract thinkers, despite their perception of financial scarcity, suffered less from their

perceived financial difficulties. Thus, our findings show that both factors, the perception of relative financial scarcity and the thinking style, influence well-being. Abstraction can help people deal with the negative effects of the perception of economic difficulties, promoting higher well-being, which is generally associated with fewer psychological and physical problems.

In the third study, we examined the influence of a concrete thinking style in participants who perceived their economic situation to have worsened with the pandemic. The results showed that when these vulnerable individuals presented a more concrete thinking style, they reported lower well-being, higher fatalism, and lower protective behavior against COVID-19. However, when these vulnerable individuals maintained an abstract style, they reported higher well-being, lower fatalism, and higher protective actions. This study supported the expected negative effects of perceiving oneself in a situation of relative financial scarcity and thinking with a concrete style. Those who felt relative financial scarcity and were more focused on their present difficulties (concrete mindset) had a more negative perception of their general well-being and felt more hopelessness to try to improve their situation. This hopeless or fatalistic vision reduced their motivation to perform protective actions against COVID-19. When individuals are focused on a present threat and believe that the future cannot be changed, they are less motivated to engage in demanding and uncomfortable behaviors, such as protective behaviors to prevent COVID-19. We must point out that these results about protective behaviors should be considered with caution given the low reliability shown by the behavioral index. This low reliability might be explained because these behaviors were new and very unusual at that time for people, which increased their variability. Future studies should explore the relationships found with different protective behaviors and threat situations. In the same vein of limitations, the present research has not explored important variables related to protective behaviors, such as cultural (e.g., collectivism–individualism or uncertainty) and personal (e.g., self-control) differences that should be considered in future research.

Because thinking style or mindset can be modified with various procedures (see Burgoon et al., 2013), our results encourage the development of new social intervention programs to promote an abstract mindset for those facing important challenges. An abstract thinking style allows individuals to focus on long-term outcomes and avoid being overwhelmed by present difficulties; this abstract mindset could improve their mood and motivate them to engage in healthier behaviors. Authorities and researchers who design preventive campaigns should consider the effects of feeling under relative financial scarcity shown above. Social programs to promote an abstract thinking style could help vulnerable people feel better and encourage them to engage in demanding but protective behaviors. In this vein, we note that when mass media and social media show luxury and wealth as the ideal way of life, they could be promoting social comparison processes that facilitate feelings of higher relative financial scarcity, which are associated with a more concrete mindset, lower well-being, greater



fatalism, and fewer protective behaviors. Our results invite serious reflection on these effects.

The present study has some limitations that future research should address. Relative financial scarcity has been measured with relevant but few items, and the perception of financial threat could be evaluated using other scales, such as the Financial Threat Scale (Marjanovic et al., 2013). Future studies should explore the combined influence of relative financial scarcity and objective economic vulnerability to determine how the factors interact and affect people's lives. As mentioned, it would be necessary to design novel social intervention programs to test the benefits of a training program to think with a more abstract style when people feel relative financial scarcity in the ongoing fight against scarcity and its fatal consequences.

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## CONFLICT OF INTEREST

The authors declare there are no conflicts of interest.

## DATA AVAILABILITY STATEMENT

The data are currently deposited on the OSF. To see the data, go here: [https://osf.io/7r9va/?view\\_only=70e27bc7b94249cb8d0ff7fe0f9e034a](https://osf.io/7r9va/?view_only=70e27bc7b94249cb8d0ff7fe0f9e034a).

## ETHICS STATEMENT

The experimental protocol employed in the present study was approved for ethical treatment of human participants by Universidad Autónoma de Madrid (Spain), following the American Psychological Association's *Ethical Principles in the Conduct of Research with Human Participants* (2010). All measures, manipulations, and exclusions in the studies are disclosed, and a sensitivity analysis of the size is reported in each study.

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