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SHORT PAPER

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Unfounded beliefs among teachers: The interactive role of rationality priming and cognitive ability

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SUMMARY

Previous research suggests that unfounded beliefs (UB)—such as conspiracist beliefs and beliefs in the supernatural—stem from similar cognitive and motivational mechanisms. More specifically, it has been demonstrated that cognitive ability is negatively associated with UB but only among individuals who value epistemic rationality. The present study goes beyond previous correlational studies by examining whether the negative association between cognitive ability and UB can be strengthened through a subtle rationality prime. In a large scale online experiment (N = 762 French teachers), we demonstrate that priming rationality (vs. control) does enhance the negative relationship between cognitive ability and adherence to supernatural beliefs, as well as conspiracy mentality (d = 0.2). This effect was not obtained for illusory pattern perception. This study's usefulness as a "proof of concept" for future interventions aimed at reducing UB prevalence among the general public is discussed.

KEYWORDS

cognitive ability, conspiracy mentality, epistemic rationality, pattern perception, supernatural beliefs

1 | INTRODUCTION

Individuals adhere to all sorts of unfounded beliefs (UB, i.e., beliefs that are not warranted based on the available evidence). For instance, polls conducted in both America and Europe have found that 37% of U.S. citizens believe in haunted houses, as do 40% of U.K. citizens and 28% of Canadians (Gallup, 2005). In that same poll, 21% of Americans and 13% of Canadians/Britons declared they believed in witches. A more recent survey of beliefs in the U.S. found that at least half of the population believed in the existence of ancient civilizations like Atlantis, and a quarter of them believed either that certain individuals have the ability to move objects with their mind or that aliens visited Earth in ancient times (Chapman University, 2017). Likewise, many reports point at the existence of a substantial prevalence of conspiracist beliefs in both the United States and Europe (see Ståhl & van Prooijen, 2018). In France for instance, 22% of a nationally representative sample completely agreed with the statement that "the government does not really govern and that we do not know who really pulls the strings" (Gombin, 2013).

Far from being innocuous beliefs about the world we live in, UB can have negative consequences. Exposure to conspiracist beliefs has been shown to decrease voting intentions and the will to reduce one's carbon footprint (Jolley & Douglas, 2014a), as well as willingness to vaccinate one's children (Jolley & Douglas, 2014b). Seemingly harmless paranormal beliefs are linked to a preference for alternative medicine (Van den Bulck & Custers, 2009), which in turn is predictive of increased mortality rates among cancer patients (Johnson, Park, Gross, & Yu, 2018). Notably, different forms of UB, such as supernatural beliefs and belief in various conspiracies are highly correlated (e.g., Darwin, Neave, & Holmes, 2011) and associated with lower acceptance of scientific knowledge (Lewandowsky, Gignac, & Oberauer, 2013). UB can therefore be conceived of as a cluster of self-reinforcing beliefs that have various harmful physical and social consequences. Consequently, there is currently a surge in research

investigating the psychological underpinnings of UB and how such beliefs are best prevented from spreading in society.

Research has identified three main classes of common antecedents of UB: motivational, personality related, and cognitive (Ståhl & van Prooijen, 2018). For instance, three types of motivations underlie adherence to conspiracist beliefs, namely, (a) epistemic, (b) existential (the need to feel safe and in control), and (c) social (the need to belong with a group, see Douglas, Sutton, & Cichocka, 2017 for an overview). Empirical findings support this classification because adherence to UB is positively associated with uncertainty reduction (Marchlewska, Cichocka, & Kossowska, 2018), loss of control (Whitson & Galinsky, 2008), death anxiety (Newheiser, Farias, & Tausch, 2011), and social exclusion threats (Graeupner & Coman, 2017). Conspiracist beliefs have also been found to decrease when individuals are primed to resist persuasion (Bonetto, Troïan, Varet, Lo Monaco, & Girandola, 2018). Personality traits such as low agreeableness (Swami et al., 2011), high schizotypy (Holm, 2009), and high paranoid ideation (Fenigstein & Vanable, 1992) are all associated with conspiracist beliefs.

Additionally, various forms of UB stem from similar basic cognitive mechanisms, such as the tendency to perceive patterns in random noise (see Van Prooijen, Douglas, & De Inocencio, 2017). UB are also negatively associated with analytical reasoning (Pennycook, Cheyne, Seli, Koehler, & Fugelsang, 2012; Swami, Voracek, Stieger, Tran, & Furnham, 2014). Analytical reasoning negatively predicts adherence to UB (e.g., Hergovich & Arendasy, 2005) and mediates the negative relationship between education level and UB (Van Prooijen, 2017), whereas intuitive reasoning seems to be positively linked with UB (Svedholm & Lindeman, 2013). However, more recent developments in the literature have shown that motivational factors play an important role in determining the relationship between analytical reasoning and UB, to the point where high analytical capabilities can backfire and produce even higher rates of UB if individuals are motivated to defend their worldviews (Kahan, Peters, Dawson, & Slovic, 2017). This is presumably because motivation shapes information processing. Although cognitive ability will determine the quality of information processing, motivation determines the goal of information processing (e.g., accuracy vs. belief confirmation), as well as what information is selected for processing in the first place (Kruglanski, 2013).

Building on this line of reasoning, Ståhl and van Prooijen (2018) recently argued that, in order to protect the individual from UB, a high cognitive ability needs to be complemented with motivation to rely on logic and evidence when forming and evaluating one's beliefs (i.e., motivation to be epistemically rational). In the absence of motivation to be epistemically rational, one's cognitive abilities are likely to serve other information processing goals (e.g., belief confirmation) or to remain disengaged altogether. To test this hypothesis, these researchers measured stable individual differences in motivation to be epistemically rational, using the validated importance of rationality scale (Ståhl, Zaal, & Skitka, 2016). In the first study, they demonstrated that cognitive reflection test scores were negatively associated with UB but only among individuals who scored high (vs. low) on the importance of rationality scale (Ståhl & van Prooijen, 2018). It is unclear whether this effect was driven by cognitive style or cognitive ability. Thus, a second study showed that cognitive ability was negatively associated with UB among people who scored high (vs. low) on the importance of rationality scale. Moreover, when controlling for cognitive ability, cognitive reflection test scores were no longer associated with UB. Taken together, these results suggest that cognitive ability, rather than analytic cognitive style, interacts with motivation to be epistemically rational to predict UB.

Although these studies provided important new insights regarding the psychology of UB, they are not without their limitations. First, the studies were correlational. As a consequence, it is unclear whether motivation to be epistemically rational has a causal effect on UB. Moreover, because these studies relied on stable individual differences in motivation to be epistemically rational, it remains unknown whether UB can be reduced through interventions that target people's current motivational state. The present investigation therefore aimed at experimentally replicating the results obtained by Ståhl and van Prooijen (2018) by testing the hypothesis that a subtle manipulation of rationality motives salience—that is, the simple motivation to use logical reasoning—moderate the effects of general cognitive ability upon adherence to UB, by using an experimental design and a prime pertaining to rationality (i.e., not necessarily framed as a motivation to be rational). More specifically, we hypothesized that general cognitive ability should be negatively associated with UB (conspiracist, supernatural, and illusory pattern perception) but that this association would become substantially stronger under rationality priming. If this hypothesis received support, it would provide further corroboration for the motivated cognition approach to UB and a "proof-of-concept" mechanism that could be subsequently used to design interventions and training programs aiming to reduce the prevalence of UB among targeted populations. In fact, should the results corroborate our hypothesis, they would point at the need to integrate a motivational component in training sessions to be worked upon with participants (i.e., interventions should provide both analytical skills and incite participants to use them in daily life).

The study was conducted in accordance with the 1964 Helsinki declaration (WMO, 1997) and its later amendments, the ethical principles of the French Code of Ethics for Psychologists (CNCDP, 2012), and the 2016 APA Ethical Principles of Psychologists and Code of Conduct (APA, 2017). Data underlying these findings are openly available at (OSF link masked for anonymous peer review).

2 | METHODS

2.1 | Design

The experiment was based on a simple two conditions between-subjects design (control vs. rationality prime). To prime rationality, we decided to use a modified version of Bonetto et al.'s (2018) paradigm, in which the concept of interest is primed by asking participants to answer some scale items. This technique has been shown to yield replicable effects on motivation as well as self-perception (Bonetto et al., 2018; Ford, O'Hare, & Henderson, 2013; Uhlmann & Cohen,

2007). Participants in the experimental condition were thus asked to answer a single 7-point Likert item designed to prime rationality at the beginning of the questionnaire ("To what extent do you feel rational"), with response options ranging from 1 (not rational at all) to 5 (very rational). Participants in the control condition were not presented with any prime item prior to filling out the questionnaire.

Prior to data collection, we conducted a power analysis with GPower (Faul, Erdfelder, Buchner, & Lang, 2009) to determine the appropriate sample size. Given the minimal nature of our prime, we decided to set the expected interaction effect size to $d = 0.2$ or $r^2 = 0.01$ (the smallest effect size of interest according to Cohen's, 1988 classification). It revealed that 550 subjects (275 per cell) were needed to detect an increase of $r^2 = 0.01$ with 80% power at $\alpha = .05$ with three predictors (general cognitive ability, priming condition, and their interaction) in a regression model. Because of concerns regarding potential missing data, we aimed to recruit at least 300 participants in each condition ($N = 600$). This sample size would also allow for generating stable estimates of the link between cognitive ability and UB in both conditions (see Schönbrodt & Perugini, 2013).

2.2 | Participants and recruitment procedure

Our target population was French secondary school (including vocational) teachers from the Provence-Alpes-Côtes-d'Azur (PACA) area, for two main reasons. First, this study was part of a larger research program aiming to assess prevalence of UB among teachers and pupils, as well as to test the efficacy of critical thinking training programs in reducing UB among these two populations. Second, French teachers need a masters' degree level qualification from the same public institution (ESPE) in order to work. That means error variance should be reduced in our experiment because education level was held constant in the present sample. Computerized questionnaires were sent through the PACA National Education internal computer system, disseminated via electronic mail to all teachers in the area ($N = 13{,}488$). Our final sample consisted of 762 teachers (30.7% male, 8.7% unspecified, $M_{age} = 43.53$, $SD = 9.34$, $M_{years\text{-}experience} = 16.84$, $SD = 9.49$), randomly assigned to one of the two experimental conditions.

2.3 | Materials

The study was introduced as a study on personality, cognitive abilities, and personal worldviews. After a brief introduction section (which included the prime item in the experimental condition), participants were invited to complete a series of tasks and measures as listed below. Descriptive statistics for each measure can be found in Table 1.

2.3.1 | Illusory pattern perception task

Illusory pattern perception has been found to predict UB (Van Prooijen et al., 2017). We decided to include illusory pattern perception as a dependent variable in this study to examine whether it could be a process through which rationality priming and cognitive ability interactively affect UB (cf. Ståhl & van Prooijen, 2018). We developed a measure of pattern perception similar to that from Van Prooijen et al. (2017) by using the website https://www.random.org. The only difference is that we used series of dices instead of coin tosses. The task consisted in rating, for each of 10 series of 10 consecutive dice throws, the extent to which those were completely random or completely determined. An 11th measure was added to those by telling participants that those 10 series were in fact 100 throws with the same dice and asking them to rate the extent to which the results were random or determined (7-point Likert, from 1 "completely random" to 7 "completely determined," $M = 2.33$, $SD = 1.27$, $\alpha = .92$).

TABLE 1 Summary table of the descriptive statistics for illusory pattern perception, cognitive ability, conspiracist mentality and supernatural beliefs across experimental conditions ($N = 762$)

Characteristic	Control ($N = 385$)	Priming ($N = 377$)
Illusory pattern perception	2.42 (1.27)	2.38 (1.33)
Cognitive ability	0.70 (.24)	0.66 (.26)
Conspiracy mentality	56.98 (19.03)	57.29 (18.44)
Supernatural beliefs	1.91 (1.01)	1.88 (1.03)

Note. Numbers between brackets represent *SD*s.

2.3.2 | General cognitive ability

General cognitive ability was measured with the same numeracy test (Schwartz, Woloshin, Black, & Welch, 1997) and similar cognitive reflection items (CRT; Primi, Morsanyi, Chiesi, Donati, & Hamilton, 2016) as the ones used by Ståhl and van Prooijen (2018, Study 2). Notably, because we were unable to find a validated French version of the verbal ability test used by Ståhl and van Prooijen (2018), we decided not to include this measure. There is evidence showing that analytic cognitive style is strongly positively related to general cognitive ability and that they both tap into one's information processing capacities (e.g., Pennycook et al., 2012; Thomson & Oppenheimer, 2016). Accordingly, Ståhl and van Prooijen (2018) observed that CRT and CA scores were highly correlated (Study 2, $r = 0.58$), that CA was a stronger predictor of UB and that ACS no longer predicted UB when we controlled for CA. CA and CRT scores were highly correlated in the present study as well ($r = 0.49$, $p < .001$). To strengthen our measure of cognitive ability, we therefore created a general cognitive ability scale by combining analytic cognitive style as measured by the CRT and cognitive ability as captured by the numeracy subtest of the cognitive ability task from Schwartz et al. (1997). Accordingly, participants answered nine cognitive ability items, of which three were taken from the numeracy test, and six were CRT items ($\%_{correct} = 65.89$, $SD = 25.42$, $\alpha = .76$).

2.3.3 | Conspiracist mentality

We then asked participants to fill out a French version of the conspiracist mentality questionnaire (Lantian, Muller, Nurra, & Douglas, 2016). It consists of a series of five items for which participants have to assess the likelihood of veracity and taps into a general conspiracist mindset (see Bruder, Haffke, Neave, Nouripanah, & Imhoff, 2013; 11-point Likert, from 0% "completely unlikely" to 100% "completely likely," M = 57.14, SD = 18.73, α = .82).

2.3.4 | Beliefs in the supernatural

We finally asked participants to fill out a 7-item scale of supernatural beliefs, which we created by taking one item related to each of the seven dimensions of supernatural beliefs from Bouvet, Djeriouat, Goutaudier, Py, and Chabrol (2014; adapted from Tobacyk, 2004), which included the following: "The soul keeps existing after physical death," "Psychokinesis, i.e. the ability to move objects with one's mental force, is real," "There exist real cases of witchcraft," "The number 13 brings bad luck," "In specific states, such as sleeping or trance, the mind can detach itself from the body," "Astrology is a valid means to tell the future." These items were chosen on the basis of their saturation levels on Bouvet et al. (2014) factor analysis. We also included a modified version of the original item pertaining to UB in the existence of extra terrestrials; from "There exist extraterrestrials on other planets" (which might be statistically likely given the infinite size of our universe) to "Extraterrestrials have already visited planet earth" (which is completely unfounded). Items were answered on a 7-point scale, ranging from 1 "totally disagree" to 7 "totally agree" (M = 1.90, SD = 1.02, α = .79).

2.3.5 | Demographics

Participants were asked to indicate their gender, age, number of years serving as a teacher, type of school (primary, secondary, vocational), and topic of teaching.

3 | RESULTS

3.1 | Randomization checks

There were no substantial between group differences in sample size (N_{prime} = 377; $N_{control}$ = 385); χ^2 (1) = 0.08, p = .77; age, t (695) = 0.40, p = .69; years of teaching experience, t (690) = 1.43, p = .15; topic of teaching, χ^2 (26) = 25.33, p = .50; or type of school χ^2 (5) = 1.78, p = .88. However, groups were slightly unequal in terms of gender ($\%male_{prime}$ = 36.9; $\%male_{control}$ = 24.7), χ^2 (2) = 15.22, p < .001. To rule out that gender is responsible for any effects obtained, we therefore report analyses with and without gender as a covariate.

3.2 | Correlation analyses

Zero-order correlations between all (standardized) variables can be seen in Table 2. Though mostly of small size, the correlations replicate what is typically found in the literature: Cognitive ability was negatively associated with all UB measures and illusory pattern perception, whereas UB and illusory pattern perception measures were all positively correlated (and the association between supernatural beliefs and conspiracy mentality was the strongest).

Also, the priming effect did not seem to operate differently as a function of participants' self-rated rationality. Although rated rationality scores were negatively correlated with our measures of UB and pattern perception (−0.10 < rs < −0.20), these correlations vanish when controlling for cognitive ability (except for supernatural beliefs r = −0.14, p < .001).

3.3 | Hypothesis test

A t test revealed a slight difference in cognitive ability between the experimental conditions, t (760) = 2.15, p = .032, d = 0.16. Given the small size of this effect, the assumption of independence between independent variables in regression analysis was not violated. Consequently, moderation models were computed with the help of PROCESS (Model 1, bootstrap for parameter estimates N_{trials} = 5,000; Hayes, 2012) for each of our three dependent variables. We included priming condition (dummy coded) as a categorical moderator and general cognitive ability as the independent variable. This method relies on bootstrapping to provide for 95% CIs to the regression parameter estimates (see Hayes, 2017). As can be seen in Table 3, the predicted interaction effect was found on conspiracy mentality and supernatural beliefs but not on illusory pattern perception. These effects remained the same when introducing gender as a covariate (for conspiracy mentality, β = −.20, 95% CI [−0.34, −0.05], supernatural beliefs β = −.20, 95% CI [−0.35, −0.06], and illusory pattern perception, β = −.09, 95% CI [−0.23, 0.05]). Thus, gender differences cannot account for the results obtained.

As can be seen in Figure ure 1, cognitive ability only predicted lower conspiracist mentality in the priming (vs. control) condition, β = −.24, 95% CI (−0.34, −0.14) versus β = .04, 95% CI (−0.14, 0.06).

TABLE 2 Summary of correlation analyses across conditions between, cognitive ability, illusory pattern perception, conspiracy mentality and supernatural beliefs (N = 730)

	1	2	3	4
General cognitive ability	-			
Illusory pattern perception	−0.14***	-		
Conspiracy mentality	−0.15***	0.14***	-	
Supernatural beliefs	−0.23***	0.24***	0.36***	-

Note. Numbers represent Pearson correlation coefficients.

***p < .001.

TABLE 3 Moderated regression models (Outcomes: conspiracy mentality, N = 742; supernatural beliefs, N = 730; illusory pattern perception, N = 762)

Predictors	*T*	*F*	*Df*	*β* (s.e.)	95% CI	R^2	*p*
Conspiracy mentality		8.01***	(3, 738)			0.03	<.001
Ability	1.33			.16 (.12)	(−0.07, 0.38)		.18
Priming	0.01			.01 (.07)	(−0.14, 0.14)		.99
Ability × priming	−2.73**			−.20 (.07)	(−0.34, −0.05)	0.01	.007
Supernatural beliefs		18.84***	(3, 726)			0.07	<.001
Ability	0.69			.08 (.12)	(−0.15, 0.31)		.49
Priming	−0.68			−.05 (.07)	(−0.19, 0.09)		.49
Ability × priming	−2.92**			−.21 (.07)	(−0.36, −0.07)	0.01	.004
Pattern perception		6.11***	(3, 758)			0.02	<.001
Ability	0.09			.01 (.11)	(−0.21, 0.22)		.93
Priming	−0.84			−.06 (.07)	(0.19, 0.07)		.40
Ability × priming	−1.40			−.09 (.07)	(−0.23, 0.04)		.16

Note. Priming = rationality priming, ability = general cognitive ability, β = standardized regression coefficients, s.e. = standard error.

**p < .01. ***p < .001.

Furthermore, although cognitive ability was associated with weaker supernatural beliefs in both conditions, this association was stronger in the priming (vs. control) condition, β = −.34, 95% CI (−0.45, −0.25) versus β = −.13, 95% CI (−0.24, −0.03).

4 | DISCUSSION

The present study was inspired by previous research indicating that cognitive ability and motivation to be epistemically rational interactively influence various unfounded beliefs (Ståhl & van Prooijen, 2018). Building on this work, we set out to examine whether a subtle experimental manipulation of motivation to be rational is sufficient to strengthen the negative relationship between cognitive ability and UB. Consistent with this idea, we were able to demonstrate that rationality priming strengthens the negative relationship between cognitive ability and unfounded supernatural beliefs, as well as general conspiracy mentality. As anticipated, the predicted interaction effect was small (r^2 = 0.01 or d = 0.2). This is presumably in part because our priming procedure was minimal, which actually provided for a strong test regarding our moderation hypothesis (Platt, 1964).

Whereas individual differences in cognitive ability and the rationality prime interactively affected both of our measures of UB, we did not obtain the same effect on illusory pattern perception. One possibility is that the priming procedure was simply too subtle to substantially affect this measure. However, we believe a more plausible explanation for this null effect is that illusory pattern perception relies more heavily on bottom-up processing/intuitive thinking than do supernatural beliefs and conspiracy mentality (Tversky & Liberman, 2018). Although such bottom-up processes contribute to UB as well (Van Prooijen et al., 2017), they may be less affected by motivation to be epistemically rational. Consistent with this interpretation, Ståhl and van Prooijen (2018) did not find an interaction between analytic thinking and individual differences in motivation to be epistemically rational on illusory pattern perception.

It is also worth noting that the moderating effect of rationality priming was somewhat different for each of the two measures of UB. Whereas rationality priming completely determined whether cognitive ability was related to conspiracy mentality or not (from β = .04 to β = −.24), it only served to amplify the relationship between cognitive ability and supernatural beliefs (from β = −.13 to β = −.34). We suspect that this may be because, although moderately correlated (r = 0.36), these two types of UB are different in some respects. In particular, supernatural beliefs concern phenomena that violate the laws of nature (see Lindeman & Svedholm, 2012). By contrast, however unlikely they are to be true a priori, conspiracies do not violate any laws of nature, and they occasionally do occur.

These results open up interesting avenues for application. Previous studies have shown that scepticism toward unfounded beliefs can be promoted by providing people with specific counter-arguments. The downside of such interventions is that they only target specific beliefs. By contrast, the present findings suggest that interventions against UB could be targeted more generally at people's motivation to be epistemically rational. Future studies should examine alternative ways to increase motivation to be epistemically rational. For example, rationality priming could be tapped into through personal/social identity processes; interventions could target motivation to see oneself as rational or to identify with a group that values rationality (Hogg & Terry, 2000). This implies that other primes pertaining so self-categorization and social identification may be as efficient (e.g., Van Bavel & Cunningham, 2009; Ford et al., 2013) in triggering rationality motives as our procedure and could be implemented in trainings (see Schultz, Nolan, Cialdini, Goldstein, & Griskevicius, 2007). In addition, it may

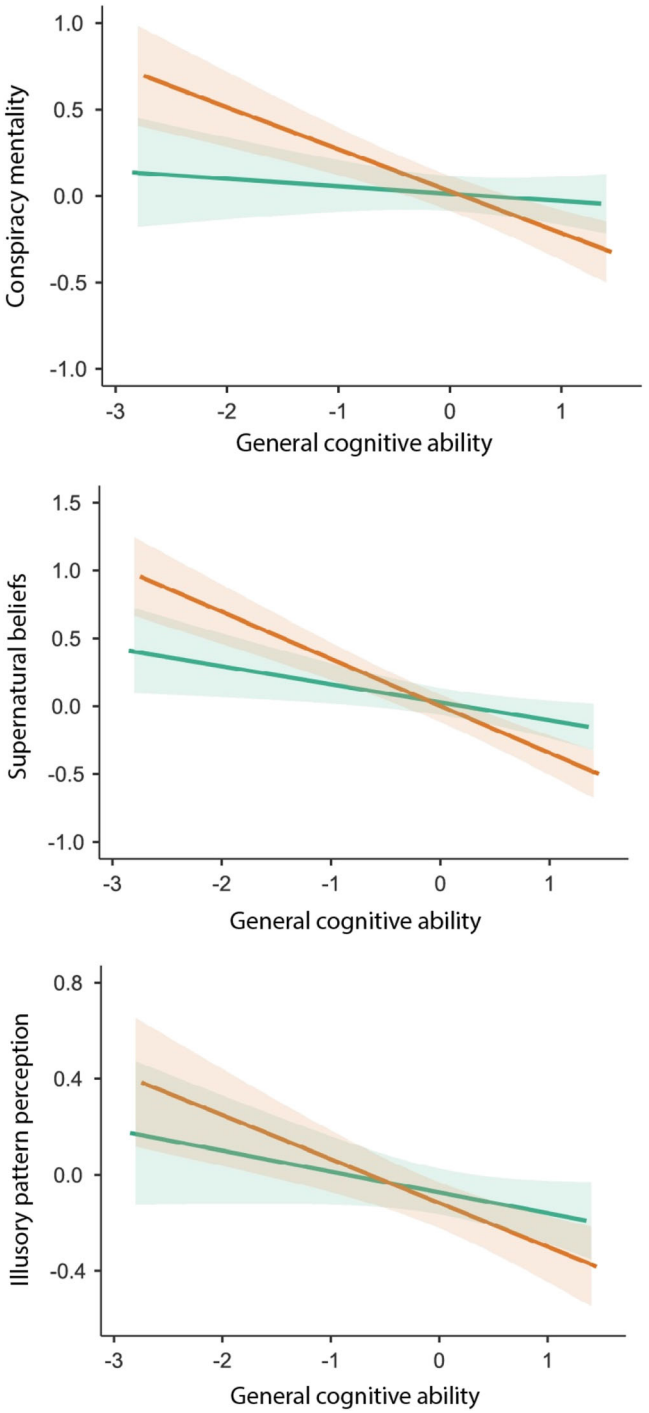

FIGURE 1 Moderation models for each dependent variable. All scores were standardized. Blue lines represent regression slopes in the control condition, red lines in the rationality priming condition; 95% CI bounds were computed for each slope [Colour figure can be viewed at wileyonlinelibrary.com]

also be possible for practitioners to generate a perception of a descriptive norm of rationality among attendees to a training designed to enhance analytical/critical thinking (see Cialdini & Trost, 1998), thus increasing their motivation to use those skills, at least during the training (which could still be efficient to prevent backfire effects).

Before concluding, it should be noted that some caveats remain with our current study. Because the present study relied exclusively on self-reported outcomes, concerns regarding potential effects of demand characteristics are warranted. In particular, it is possible that the rationality prime did not promote more rational beliefs but merely made participants more inclined to report rational beliefs. However, if the prime merely served as a demand characteristic or induced social desirability concerns, then we would argue that we should have expected a main effect of the rationality prime on UB, which was not observed here. Instead, the rationality prime strengthened the negative association between cognitive ability and UB—consistent with what has been observed in previous correlational studies (Ståhl & van Prooijen, 2018). That said, confidence in our interpretation of the present results would be bolstered by future studies using measures of UB that are not based on self-report (e.g., fake news transmission in a paradigm similar to Allport & Postman's, 1947 rumour transmission study) and in which individual differences in socially desirable responding are controlled for.

Another potential limitation is that this experiment was conducted online. Participants in online experiments are sometimes less motivated, more distracted, and more heterogeneous than those in a laboratory setting, which may increase noise in the data. It is possible that our choice to conduct this study online led to smaller effects of our manipulation than would have been obtained in a laboratory setting (although sometimes online and laboratory settings yield similar effect sizes, see Paolacci, Chandler, & Ipeirotis, 2010). Replication studies in more controlled settings are needed to determine whether the online administration used impacted the present results. Also, it should be noted that the present study relied on a measure of individual differences in cognitive ability. To provide conclusive evidence that cognitive ability and rationality motives interactively cause changes in UB, future experiments should not only manipulate rationality motives but also cognitive ability as well (e.g., by using a cognitive disfluency task, see Swami et al., 2014; Studies 2–4).

As is the case with any study that does not rely on a representative sample, the present study also has limited external validity. First and foremost, our sample consisted of educated individuals (i.e., teachers) who were motivated to participate in the study. Future studies should examine whether subtle rationality primes have similar effects on less educated individuals outside of the teaching profession. Our sample was also predominantly female. Even though gender differences in UB are small (e.g., Utinans et al., 2015), this fact nonetheless restrains the generalizability of our findings to some degree. Importantly, however, the results remained the same when we statistically controlled for participant gender.

In closing, our results provide further evidence that cognitive ability and motivation to be rational interactively shape skepticism toward various unfounded beliefs. In particular, the present findings suggest that the link between cognitive ability and scepticism toward UB can be strengthened by providing people with a subtle rationality prime. We believe these findings are not only of theoretical interest but also may have important practical implications as well. In

particular, we believe the present study constitutes a "proof of concept" experiment upon which future field research may draw to design and test more specific interventions aimed at reducing UB among targeted populations such as pupils, students, or members of the general public. Future research should aim to replicate and extend these findings, using motivational primes that could easily be implemented by practitioners.

These findings may also be relevant for addressing so called "backfire" effects in response to interventions tailored to lower adherence to UB. When people are motivated to defend their worldviews, having a high (vs. low) cognitive ability can increase (rather than decrease) bias in reasoning (Kahan et al., 2017). The present results suggest that it may be possible to prevent such effects by targeting individuals' motivation to be rational more generally. Thus, interventions and training programs focused on promoting critical thinking may benefit greatly from going beyond the teaching of reasoning skills, by also targeting the motivation to be epistemically rational. The present findings suggest that such a strategy could increase the likelihood that individuals will recruit their cognitive abilities in the service of seeking the truth, rather than in the service of defending their worldviews.

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