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Truth discernment in conspiracies[☆]

Sinem Yilmaz^{*,} , Tomas Ståhl

Department of Psychology, University of Illinois Chicago, United States

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ABSTRACT

Research on conspiracy beliefs has recently begun to focus on truth discernment – the ability to differentiate verified conspiracies from unverified (and likely false) conspiracy theories. Although this research has mainly compared belief in verified conspiracies vs unverified conspiracy theories rather than assessing discernment directly, initial evidence suggests that individual differences in analytic thinking and (a lack of) overconfidence play important roles in this process. The present research builds on this work by examining whether motivation to be epistemically rational is related to truth discernment in conspiracies. In three studies, we replicate the relationships between analytic thinking, overconfidence, and truth discernment. We also demonstrate that the extent to which people value being epistemically rational is related to truth discernment, while controlling for these factors. Lastly, we find some evidence that the association between analytic thinking and truth discernment is stronger among those who strongly (vs. weakly) value epistemic rationality. The implications of these findings for possible interventions to promote discernment of conspiratorial information are discussed.

1. Introduction

Conspiracy theories - explanations involving a secretive group of perpetrators pursuing their own desired goals (Dentith, 2016; Hattersley et al., 2022) - are widespread, with 55% of US Americans endorsing at least one (Oliver & Wood, 2014). Beliefs in such theories, ranging from the role of the US government in the 9/11 terrorist attacks to suspicions about climate change (e.g., Brotherton & French, 2014; Gardiner & Thompson, 2012; Stempel et al., 2007; Williams, 2013; Wood et al., 2012), have been linked to various societal harms: reducing voting intentions, political engagement, and vaccination rates (e.g., Abad-Santos, 2013; Holpuch, 2013; Jolley & Douglas, 2014).

Because of their detrimental and sometimes deadly consequences, considerable attention has been devoted to identifying the factors that relate to (dis)belief in conspiracy theories. Research has identified a host of cognitive, motivational, and personality factors that contribute to (dis)belief in conspiracy theories (for overviews, see (Douglas et al., 2017, 2019; Pilch et al., 2023)). For example, having a more analytic (vs.

intuitive) cognitive style (Newton et al., 2024; Swami et al., 2014) is associated with stronger disbelief in various conspiracy theories, as is stronger motivation to form beliefs based on logic and evidence (Ståhl & van Prooijen, 2018). By contrast, an inclination to see illusory patterns in random noise (Van Prooijen et al., 2018), a sense of powerlessness (Abalakina-Paap et al., 1999; Pratt, 2003), uncertainty (Van Prooijen et al., 2013), and need for cognitive closure (Marchlewska et al., 2018) are associated with stronger belief in conspiracy theories.

Notably, most of this work has focused on belief in highly unverified or debunked conspiracy theories. Although many conspiracy theories are far-fetched falsehoods (e.g., 9/11 as an inside job), some conspiracies have even been verified as true (e.g., tobacco companies concealing the dangers of smoking). When research exclusively focuses on far-fetched or fringe conspiracy theories, it remains unclear whether those who reject them do so based on a rational evaluation of the available evidence, or based on a general skepticism toward conspiracies, regardless of their evidential status. This distinction is important as factors that influence a general (dis)belief in conspiracy claims may

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^{*} Corresponding author at: University of Illinois Chicago, 1007 W. Harrison St., Chicago, Illinois, 60607, United States.

E-mail address: syilma2@uic.edu (S. Yilmaz).

not necessarily predict discernment (Batailler et al., 2022; Stanovich & Toplak, 2025a, 2025b).

Researchers have therefore begun to study truth discernment in conspiracies: the ability to differentiate verified conspiracies from unverified conspiracy theories.¹ Although research on this topic is still in its infancy, there is evidence that cognitive factors play an important role in truth discernment. Specifically, having a more analytic cognitive style, and being less prone to overconfidence in one's cognitive performance, are both negatively related to belief in unverified conspiracy theories, but seemingly unrelated to belief in verified conspiracies (Frenken et al., 2025; Hattersley et al., 2022; Pennycook et al., 2025). This asymmetry suggests that these cognitive and metacognitive factors relate not simply to generalized skepticism, but to the ability to discriminate between verified and unverified conspiracy claims.

The present research extends this work in two ways. First, we aim to replicate previous studies that have linked an analytic cognitive style and a lack of overconfidence to improved truth discernment in conspiracies. Second, we investigate whether motivation to form beliefs based on logic and evidence relates to truth discernment in conspiracies above and beyond these cognitive and meta-cognitive factors – a question that has not yet been directly tested. To address this question, we examine in three studies whether being motivated to form beliefs based on logic and evidence is associated with truth discernment, while controlling for individual differences in analytic thinking and overconfidence. Before outlining the details of the present research, we shall first review the relevant literature.

1.1. Analytic thinking

According to dual process theories, cognitive processes can be characterized by two systems: type I processes that are automatic and intuitive and type II processes that are deliberative and analytical (De Neys, 2012). Notably, there are individual differences in the inclination to rely on intuitive versus analytic thinking, generally referred to as thinking dispositions or cognitive styles (De Neys, 2018; Evans & Stanovich, 2013). Recent studies indicate that there are at least four related but distinct analytic (vs. intuitive) cognitive styles (Newton et al., 2024): Actively Openminded Thinking (AOT), Preference for Effortful Thinking (PET), Preference for Intuitive Thinking (PIT), and Close-minded Thinking (CMT). Importantly, having a more analytic cognitive style is negatively associated with various forms of epistemically suspect beliefs (i.e., beliefs that are not supported by scientific evidence; Gervais & Norenzayan, 2012; Pennycook et al., 2012; Pennycook et al., 2020; Shenhav et al., 2012). In a similar vein, it has been argued that analytic thinking should protect against beliefs in unverified conspiracy theories by improving one's ability to assess information quality and plausibility (Clifford et al., 2019; Pennycook et al., 2015; Rizeq et al., 2020). Specifically, it has been suggested that people may believe in unverified conspiracy theories because they have difficulty distinguishing low-quality information from high-quality information. Consistent with this line of reasoning, both correlational (Clifford et al., 2019; Newton et al., 2024; Pennycook et al., 2015; Pennycook et al., 2020; Rizeq et al., 2020; Ståhl & van Prooijen, 2018; Swami et al., 2014) and experimental studies (Bago et al., 2022; Swami et al., 2014) show that a stronger inclination to engage in analytic thinking is associated with skepticism toward unverified conspiracy theories (see also Yelbuz et al., 2022, and Biddlestone et al., 2025 for meta-analyses).

¹ We refer to verified conspiracies as conspiracies that have been verified as true based on expert consensus and unverified conspiracy theories as those that remain unverified and are deemed most likely false based on expert consensus (Pennycook et al., 2025). We define truth discernment as the ability to differentiate verified conspiracies from unverified conspiracy theories based on current available evidence and expert consensus, rather than making absolute judgments about truth and falsehood.

More recently, it has been demonstrated that analytic thinking is positively associated with the ability to discern between verified and unverified information (Bago et al., 2020; Newton et al., 2024; Pennycook & Rand, 2019; Ross et al., 2021). For example, analytic thinking is negatively correlated with belief in unverified news headlines, but positively correlated with belief in verified news headlines (Pennycook & Rand, 2019). Most relevant for the present purposes, having a more analytic cognitive style predicts skepticism of unverified conspiracy theories, but not of verified conspiracies (Frenken et al., 2025; Hattersley et al., 2022; Pennycook et al., 2025). Relatedly, AOT is negatively associated with belief in false conspiracy theories, but positively associated with belief in true conspiracies, as well as with the ability to discriminate between the two (Stanovich & Toplak, 2024; Stanovich & Toplak, 2025a, 2025b). Taken together, these findings strongly indicate that analytic thinking is not merely associated with a general skepticism toward conspiracies. Rather, analytic thinking promotes the ability to discriminate between verified and unverified information, including in the domain of conspiracies.

1.2. Overconfidence

It has also been suggested that people adopt unverified conspiracy theories as a result of a general tendency to overestimate their cognitive abilities – a disposition toward overconfidence. Specifically, when people are overconfident in their reasoning skills, or their knowledge, they may be less likely to question their beliefs and carefully evaluate their evidential status, thereby making them more susceptible to adopting unverified beliefs.

Supporting this account, overconfidence has been found to be related to belief in unverified conspiracy theories (Pennycook et al., 2025), including flat-earth belief (Arroyo-Barrigüete et al., 2023), conspiracy beliefs related to COVID-19 (Vranic et al., 2022), as well as endorsement of anti-vaccine policy attitudes (Motta et al., 2018). In a similar vein, the illusion of explanatory depth (e.g., inflated confidence in one's causal understanding of political phenomena) has been shown to predict belief in unverified conspiracy theories (Vitriol & Marsh, 2018). Notably, the association between overconfidence and conspiracy beliefs was recently found to be the strongest for the most fringe conspiracy theories (Pennycook et al., 2025). Taken together, these results suggest that inflated and unwarranted confidence in one's reasoning abilities might impair truth discernment, by increasing belief in unverified conspiracy theories.

1.3. Motivation to be epistemically rational

According to the gullible conspiracy hypothesis (Van Prooijen, 2019), people accept conspiracy theories through System 1 processing, and justify their beliefs by selectively embracing evidence that supports their theory while rejecting evidence that is inconsistent with it. In other words, people believe in conspiracy theories in part because they rely on intuition rather than reflection, but also because they are motivated to justify their beliefs rather than motivated to form beliefs based on logic and evidence. If that is the case, people who are more motivated to be epistemically rational should be less prone to adopt unverified conspiracy theories. Supporting this argument, the extent to which people value their own beliefs being based on logic and evidence is negatively associated with belief in unverified conspiracy theories (Ståhl & van Prooijen, 2018). In addition, it has been proposed that people may need both sufficient cognitive sophistication and motivation to be epistemically rational in order to accurately assess the evidential status of conspiracy claims (cf., Petty et al., 1986). Indeed, the value given to being epistemically rational has been found to moderate the relationship between analytic thinking (and cognitive ability) and belief in unverified conspiracy theories (Ståhl & van Prooijen, 2018). Specifically, analytic thinking was more strongly associated with skepticism of unverified conspiracy theories among those who ascribed high (vs. low) value to

epistemic rationality (see also Adam-Troian et al., 2019; Ståhl et al., 2024).

It is yet unclear whether self-reported motivation to be epistemically rational is related to actual truth discernment in conspiracies, although there is some evidence that it is related to truth discernment in other domains. Specifically, whereas valuing epistemic rationality is positively associated with various beliefs consistent with the best scientific evidence, it is negatively associated with various pseudoscientific beliefs (Yilmaz & Ståhl, 2025). These results suggest that motivation to be epistemically rational may predict one's ability to distinguish between verified conspiracies and unverified conspiracy theories, as well as moderate the association between analytic thinking and truth discernment in the domain of conspiracy claims.

1.4. The present research: truth discernment in conspiracies

In one exploratory study, and two pre-registered replications, we test whether individual differences in analytic thinking, overconfidence, and motivation to be epistemically rational predict truth discernment in conspiracies. Following previous research on misinformation, we operationalize truth discernment as the difference between belief in verified conspiracies and unverified conspiracy theories (Pennycook & Rand, 2021). This measure thereby provides insight into whether people can distinguish between verified conspiracies and unverified conspiracy theories based on the current evidence and expert consensus, rather than simply measuring overall (dis)belief in conspiracies.

We hypothesized that analytic thinking would predict² greater truth discernment in conspiracies (H1); overconfidence would predict worse truth discernment in conspiracies (H2); the value given to epistemic rationality would predict greater truth discernment (H3). Lastly, we expected that the value given to epistemic rationality would moderate the relationship between analytic thinking and truth discernment (H4). Specifically, analytic thinking should be more strongly positively associated with truth discernment among people who strongly (vs. weakly) value epistemic rationality.

2. Overview of the studies

We conducted three identical studies to test these hypotheses. Study 1 provided an initial examination of our predictions. Studies 2 and 3 aimed to replicate our results with a pre-registered research plan. Because all studies used identical designs and measures, we report their methods and results sections together.

3. Studies 1–3

3.1. Methods

3.1.1. Transparency and openness

We report our power analyses, all data exclusions, and all measures included in the study, and we follow JARS (Kazak, 2018). All data, materials, and pre-registrations are available on OSF (link). Data were analyzed using R (R Core Team, 2024).

Studies 2 and 3 were pre-registered (link). Each pre-registration included the study design, inclusion/exclusion criteria, and planned primary analyses. All pre-registered analyses are reported either in the main text or in the Supplementary Materials. We clearly state all deviations from the pre-registered analysis plan in the section Deviations from Pre-registration below. These deviations did not change the results obtained in any substantial way.

² We use the term predict in a strictly statistical sense to describe variance explained in regression models; no causal inference is implied.

3.1.2. Participants and sample size estimation

Participants who reside in the US were recruited from Cloud Research. The present studies were all conducted in combination with studies for a separate research project on political belief bias (Citation hidden for the purpose of blind review). Therefore, a priori power analyses were not conducted for the present analyses. However, we conducted sensitivity analyses for the current studies. A sensitivity analysis based on a sample of 1651 was conducted for the multilevel regression model with four fixed effects (three main effects and one two-way interaction between AT and IRS) and random intercepts by study. Consequently, we determined that the smallest two-way interaction that we can detect was $\beta = 0.066^3$ at a power of 0.8.

Following our pre-registered exclusion criteria, we excluded participants who failed both attention checks or the bot question (16 participants in Study 1, 16 participants in Study 2, and 28 participants in Study 3). Additionally, deviating from the pre-registration, we excluded one participant from each study whose open-ended responses (e.g., the overconfidence question in Studies 1–2, and the Cognitive Reflection Test in Study 3) were irrelevant and possibly generated by AI. Their inclusion or exclusion does not change the results (Table 1).

3.1.3. Procedure

All studies followed the same procedure. Upon completing the informed consent, participants filled out an online survey. Participants were presented with a test of logical reasoning consisting of 16 syllogisms (i.e., performance task for overconfidence). After completing the task, participants were asked how many out of the 16 syllogisms they believed they answered correctly (i.e., estimated performance). Next, participants completed the 3-item Cognitive Reflection Test (CRT; Frederick, 2005), 4-item CRT 2 (Thomson & Oppenheimer, 2016), and the Importance of Rationality Scale (IRS; Ståhl et al., 2016). Then, participants were asked to indicate their beliefs in 31 conspiracies, which included 16 verified conspiracies (Pennycook et al., 2025) and 15 unverified conspiracy theories (Belief in Conspiracy Theory Inventory; Swami et al., 2017). Lastly, demographic questions were asked, and participants were thanked and paid for their participation.

3.1.4. Materials

3.1.4.1. Analytic thinking (AT). Participants completed the Cognitive Reflection Test (CRT; Frederick, 2005) and CRT 2 (Thomson & Oppenheimer, 2016), containing seven problems that cue intuitive but wrong answers (e.g., “A bat and a ball cost \$1.10 in total. The bat costs \$1.00 more than the ball. How much does the ball cost?”). Responses were

Table 1
Demographics across the three studies.

	Study 1 (N = 468)	Study 2 (N = 534)	Study 3 (N = 649)	Overall (N = 1651)
Gender				
Male	260 (55.6%)	239 (44.7%)	265 (40.8%)	764 (46.3%)
Female	206 (44%)	290 (54.3%)	381 (58.7%)	877 (53.1%)
Nonbinary	1 (0.2%)	5 (0.9%)	2 (0.3%)	8 (0.5%)
Other	1 (0.2%)	0 (0%)	1 (0.2%)	2 (0.1%)
Age				
Mean (SD)	40.4 (11.0)	44.0 (17.1)	44.9 (13.8)	43.3 (14.4)
Median [Min, Max]	39.0 [21.0, 76.0]	41.0 [20.0, 79]	43.0 [18.0, 92.0]	41.0 [18.0, 92]

³ This refers to pseudo-standardized beta as this post hoc sensitivity analysis requires z transformations of both predictors and the outcome variable.

scored as correct (1) or incorrect (0), and averaged together to create a reliable analytic thinking scale (AT) on which higher scores represent greater analytic thinking ($\alpha_1 = 0.80$; $\alpha_2 = 0.79$; $\alpha_3 = 0.78$).

3.1.4.2. Importance of Rationality Scale (IRS; Ståhl et al., 2016). The 6-item IRS measures the extent to which people value forming their beliefs based on evidence and logic (e.g., “It is important to me personally to examine traditionally held beliefs using logic and evidence”). Items were rated on a scale from 1 (strongly disagree) to 7 (strongly agree), and averaged together to create a reliable measure of personal importance attached to being rational, with higher scores representing a stronger value given to rationality ($\alpha_1 = 0.83$; $\alpha_2 = 0.86$; $\alpha_3 = 0.82$).

3.1.4.3. Conspiracy beliefs. Participants were shown 15 unverified conspiracy theories (Belief in Conspiracy Theory Inventory, BCTI, Swami et al., 2017) and 16 verified conspiracies (Pennycook et al., 2025) in a random order. Unverified conspiracy theories (BCTI) include conspiracy theories that have been deemed unverified and likely to be false based on expert consensus (e.g., “The Apollo moon landings never happened and were staged in a Hollywood film studio”). Verified conspiracies consist of conspiracies that have been deemed verified and likely to be true based on expert consensus (e.g., “For decades, tobacco companies buried evidence that smoking is deadly”). Participants were asked to rate the extent to which they agreed with the items on a scale ranging from 1 (strongly disagree) to 9 (strongly agree). Responses were recoded such that higher scores indicate stronger conspiracy beliefs. A truth discernment score was computed to measure the participant's ability to differentiate between verified conspiracies and unverified conspiracy theories. Belief in unverified conspiracy theories ($\alpha_1 = 0.96$; $\alpha_2 = 0.93$; $\alpha_3 = 0.92$) was subtracted from belief in verified conspiracies ($\alpha_1 = 0.92$; $\alpha_2 = 0.89$; $\alpha_3 = 0.85$), such that higher scores indicate a better ability to distinguish between verified conspiracies and unverified conspiracy theories.⁴

3.1.4.4. Overconfidence. Participants were presented with a test of logical reasoning consisting of 16 syllogisms (i.e., a performance task adapted by Trippas et al. (2013) in Study 1 and by Calvillo et al. (2020) in Studies 2 and 3). After completing the task, participants were asked how many of the syllogisms they believed they evaluated correctly (i.e., estimated performance). A difference score was calculated by subtracting each participant's actual performance from their estimated performance. Higher scores indicate greater overconfidence, reflecting the extent to which participants overestimated their actual reasoning ability.

3.1.4.5. Additional measures. For the purpose of a separate project, a syllogism test by Trippas et al. (2013) was included in Study 1, and a different syllogism test by Calvillo et al. (2020) was included in Studies 2 and 3. We also included a Numeracy test (Schwartz et al., 1997), and the Moralized Rationality Scale (MRS; Ståhl et al., 2016) in all three studies. Participants were also asked a set of demographic questions, including gender, age, level of education, and political orientation.

3.1.5. Deviations from preregistration

Our analyses deviated slightly from the preregistered plan in that we simplified the analytic strategy. In the preregistration, Hypotheses 1–3 and Hypothesis 4 were to be tested in separate hierarchical regression models (see Supplementary Materials for preregistered analyses and

results). In the reported analyses, we combined all predictors into a single model; this simplification did not affect the results.

3.1.6. Analyses⁵

Hypotheses 1 to 3 were first tested using correlation analyses, examining the zero-order relationships between belief in conspiracy theories (verified and unverified) and our three predictors. This was followed by multilevel regression models. Analytic Thinking (AT), overconfidence, and the Importance of Rationality (IRS) were entered as fixed effects in Step 1. In Step 2, AT by IRS interaction was added as a fixed effect. In all steps, study was entered as a random effect to account for study-level variance (see Curran & Hussong, 2009). Entering participants as a crossed random effect did not change the results and was therefore not included in the analysis. All predictors were standardized. All analyses were completed with R (R Core Team, 2024).

3.2. Results

Table 2 presents all means, standard deviations, and zero-order correlations. Analytic thinking was negatively associated with belief in verified conspiracies as well as unverified conspiracy theories, but the association was stronger with belief in unverified conspiracy theories, $z = 6.09, p < .001$. Overconfidence was positively associated with belief in verified conspiracies and unverified conspiracy theories. As was the case with analytic thinking, the association was stronger with belief in unverified conspiracy theories, $z = -4.11, p < .001$. The importance given to epistemic rationality was positively associated with belief in verified conspiracies, but negatively associated with belief in unverified conspiracy theories, $z = 4.23, p < .001$. Consistent with our hypotheses, analytic thinking and valuing epistemic rationality were positively correlated with truth discernment, whereas overconfidence was negatively correlated with truth discernment.

The results of the mixed-effect analysis are summarized in Table 3. As seen in Fig. 1a, analytic thinking predicted better truth discernment between verified conspiracies and unverified conspiracy theories. As seen in Fig. 1b, the importance given to epistemic rationality also predicted better truth discernment. By contrast, as seen in Fig. 1c, overconfidence predicted worse truth discernment.

In Step 2, we also found the hypothesized interaction. The importance given to epistemic rationality moderated the relationship between analytic thinking and truth discernment. As seen in Fig. 2, the association between analytic thinking and truth discernment was stronger among people who strongly value epistemic rationality ($b = 0.29, SE = 0.03, t(1644) = 10.10, p < .001$) than among those who weakly value epistemic rationality ($b = 0.18, SE = 0.03, t(1644) = 6.11, p < .001$).⁶

In conclusion, we found support for all four hypotheses. Specifically, both analytic thinking and the importance given to epistemic rationality predicted better truth discernment, whereas overconfidence predicted worse truth discernment. Additionally, the importance given to epistemic rationality moderated the relationship between analytic thinking and truth discernment between verified conspiracies and unverified conspiracy theories, such that analytic thinking was a stronger predictor of truth discernment among people who value

⁴ Truth discernment in a misinformation context is defined as the extent to which misinformation is believed relative to accurate content. Discernment calculated as belief in true news minus belief in false news - sensitivity or d' in signal detection theory captures the overall accuracy of one's beliefs - and thus gives insight into failures to distinguish between true and false content (Pennycook & Rand, 2021).

⁵ In the pre-registered analysis for Hypothesis 1, AT was to be entered in Step 1. For Hypotheses 2–3, overconfidence and the IRS were to be entered in Step 2. For Hypothesis 4, AT and the IRS would be entered in Step 1, and their interaction would be added to the model in Step 2. See Supplementary Materials for the unchanged results of the pre-registered analysis.

⁶ We also conducted a signal-detection analysis of the ability to discriminate between verified conspiracies and unverified conspiracy theories, as suggested by Batailler et al. (2022). We calculated a d' discrimination index for each subject, and the results remained the same across all analyses, with $r > 0.8$ correlations with our truth-discernment measure in all three studies. These analyses can be found in the Supplementary Materials.

Table 2

Means, standard deviations, and correlation coefficients with 95% confidence intervals (Studies 1-2-3 combined).

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7
1. Analytic thinking	4.20	2.12							
2. Importance of rationality	5.68	0.91	0.15**						
			[0.10, 0.19]						
3. Overconfidence	0.56	3.91	−0.17**	−0.04					
			[−0.22, −0.12]	[−0.09, 0.00]					
4. Belief in verified conspiracies	5.40	1.41	−0.10**	0.05*	0.10**				
			[−0.15, −0.05]	[0.00, 0.10]	[0.05, 0.15]				
5. Belief in unverified conspiracy theories	4.21	1.83	−0.35**	−0.13**	0.18**	0.63**			
			[−0.39, −0.30]	[−0.18, −0.08]	[0.14, 0.23]	[0.60, 0.66]			
6. Truth discernment	0.00	0.87	0.29**	0.21**	−0.11**	0.42**	−0.42**		
			[0.25, 0.34]	[0.17, 0.26]	[−0.16, −0.06]	[0.38, 0.46]	[−0.46, −0.38]		
7. <i>d'</i>	0.60	0.85	0.28**	0.20**	−0.05*	0.20**	−0.53**	0.81**	
			[0.24, 0.32]	[0.16, 0.25]	[−0.10, −0.00]	[0.16, 0.25]	[−0.57, −0.50]	[0.80, 0.83]	
8. <i>c</i>	−0.11	0.91	0.26**	0.08**	−0.13**	−0.79**	−0.89**	0.10**	0.28**
			[0.22, 0.31]	[0.03, 0.13]	[−0.18, −0.08]	[−0.81, −0.77]	[−0.90, −0.87]	[0.06, 0.15]	[0.24, 0.32]

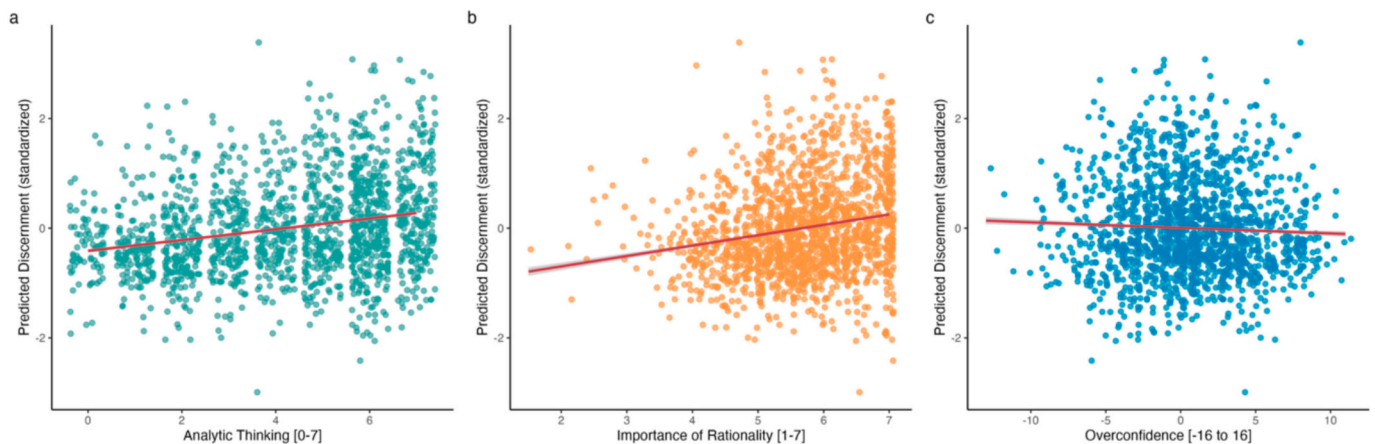
Note. *d'* = discrimination sensitivity index reflecting how well participants differentiate between verified conspiracies and unverified conspiracy theories (higher values indicate greater sensitivity to evidentiary differences, independent of general belief tendency). *c* = response bias index reflecting the overall tendency to judge conspiracy claims as verified/true versus unverified/false (positive values indicate a general tendency toward disbelief; negative values indicate a general tendency toward belief).

* $p < .05$.** $p < .01$.**Table 3**

Results of mixed effect analysis controlling for study-level variance. (Studies 1-2-3 combined). AT = Analytic Thinking. IRS = The Importance of Rationality Scale.

Predictors	Truth discernment					Truth discernment			
	Estimates	Std. error	CI	<i>p</i>		Estimates	Std. error	CI	<i>p</i>
(Intercept)	−0.03	0.17	−0.37–0.30	0.846		−0.04	0.17	−0.38–0.29	0.810
AT	0.21	0.02	0.17–0.25	<0.001		0.21	0.02	0.17–0.25	<0.001
IRS	0.14	0.02	0.10–0.18	<0.001		0.14	0.02	0.10–0.18	<0.001
Overconfidence	−0.05	0.02	−0.09 to −0.01	0.008		−0.05	0.02	−0.09 to −0.01	0.010
AT*IRS						0.05	0.02	0.01–0.09	0.007
Random effects									
σ^2	0.62					0.62			
τ_{00}	0.12	Study				0.12	Study		
ICC	0.16					0.16			
N	3	Study				3	Study		
Observations	1651					1651			
Marginal R^2 /conditional R^2	0.104/0.214					0.107/0.216			

Bold p-values indicate p-values that are less than .05, and thus significant results.

**Fig. 1.** Truth discernment in conspiracies as a function of predictors (Studies 1-2-3 combined).

epistemic rationality strongly (vs. weakly).

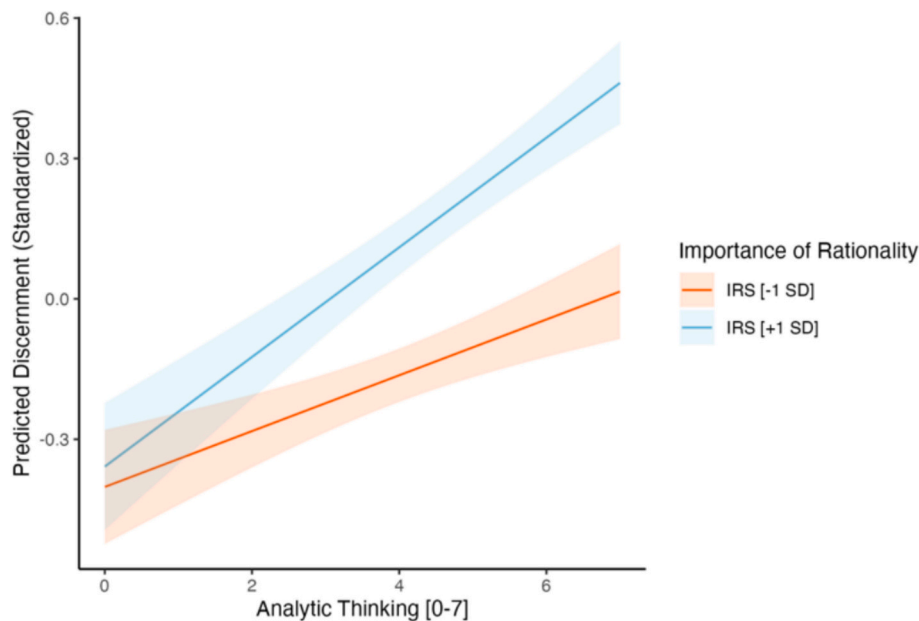


Fig. 2. Truth discernment in conspiracies as a function of analytic thinking and the importance given to rationality (Studies 1-2-3 combined).

4. General discussion

Across three studies, we found consistent evidence that individual differences in analytic thinking, overconfidence, and the importance given to epistemic rationality predict individuals' ability to distinguish between unverified conspiracy theories and verified conspiracies. Analytic thinking and valuing epistemic rationality were associated with better truth discernment, whereas overconfidence was associated with worse truth discernment. Additionally, analytic thinking was more strongly associated with truth discernment among those who strongly (vs. weakly) value epistemic rationality. Notably, although this interaction emerged when we analyzed the three studies simultaneously, it only emerged in Study 2 when analyzing the data from each study separately.

These results align with previous research showing that individuals who engage in more analytic thinking are less likely to believe false or unverified content and are better at discerning between truth and falsehood (Bago et al., 2020; Bronstein et al., 2019; Pennycook & Rand, 2019; Ross et al., 2021). Moreover, our findings provide further support for the overconfidence account of conspiracy beliefs (Pennycook et al., 2025) and the broader idea that individuals who are unaware of their cognitive limitations are more susceptible to reasoning errors and unverified beliefs (Dunning, 2011). Notably, our findings also support Ståhl and Van Prooijen's argument (2018) that analytic thinking is particularly likely to protect against epistemically suspect beliefs when combined with motivation to be epistemically rational (see also Adam-Troian et al., 2019; Ståhl et al., 2024; Yilmaz & Ståhl, 2025).

Our results also suggest that belief in unverified conspiracy theories and verified conspiracies may to some extent be driven by different psychological mechanisms. While lower analytic thinking, less importance given to epistemic rationality, and higher overconfidence predicted belief in unverified conspiracy theories, belief in verified conspiracies was less strongly associated with these three factors. The considerably stronger correlations with belief in unverified conspiracy theories align with previous research (Frenken et al., 2025; Hattersley et al., 2022; Moulding et al., 2016; Pennycook et al., 2025). One possible explanation is that the verified conspiracies are less widely known, providing people with less information to evaluate their evidential status. Consequently, when clear evidence is lacking, analytic thinking and the importance given to epistemic rationality may play a smaller role in

(dis)belief in conspiracies. Future research should explore this possibility to further clarify the relationships between cognitive and motivational factors and truth discernment in the context of conspiracy claims.

Our findings also have practical implications. Interventions aimed at reducing conspiracy beliefs can be ineffective – or even counterproductive. For example, interventions can reduce belief in *verified* conspiracies (Guay et al., 2022; see also O'Mahony et al., 2023, 2024), suggesting that they primarily induce a generalized skepticism of conspiracies. Effective interventions should aim to enhance truth discernment: the ability to distinguish between verified and unverified claims. Our findings highlight the potential benefit of targeting the cognitive and motivational factors that support truth discernment. Specifically, interventions that promote analytic thinking (see Gurcay-Morris, 2016; Isler et al., 2020; Morewedge et al., 2015; Sellier et al., 2019; but also see Večkalov et al., 2024 for a failed replication), increase the salience of the goal to be epistemically rational (Adam-Troian et al., 2019), and reduce overconfidence (Rozenblit & Keil, 2002) may be especially promising. Future research should examine whether such interventions can yield long-term effects on truth discernment in conspiracies. For example, training individuals to rely more on analytic thinking or to increase their awareness of their cognitive limitations may mitigate both indiscriminate skepticism and excessive gullibility regarding conspiracies.

Notably, these interventions focus on improving general reasoning processes rather than on the content of specific conspiracies. Interventions that encourage individuals to critically evaluate claims, pursue evidence-based beliefs, and be aware of their cognitive limitations could thereby be more scalable, generalizable, and less constrained by time and culture compared to other interventions.

4.1. Limitations and suggestions for future research

Several limitations of the present research are worth mentioning. First, our studies relied on correlational data, preventing causal claims about the relationships between our predictors and truth discernment. Even so, our findings identify cognitive and motivational factors that correlate with the ability to distinguish verified conspiracies from unverified conspiracy theories, thereby providing an initial foundation for future experimental studies. Notably, this foundation is further supported by previous research showing that promoting analytic

thinking reduces belief in epistemically suspect beliefs and increases truth discernment in misinformation contexts (Bago et al., 2020; Pennycook & Rand, 2019), suggesting that similar interventions might enhance truth discernment in conspiracies. Future studies should experimentally manipulate analytic thinking, motivation to be epistemically rational, and overconfidence to directly assess their causal effects on truth discernment in the context of conspiracy claims.

Second, we relied on real-world conspiracies, which vary in both familiarity and cultural relevance. This approach, therefore, introduces potential confounds related to participants' prior knowledge. Thus, our results do not clarify whether the observed effects are driven by differences in reasoning about the evidence or by differences in prior knowledge. Future studies should address this by examining evaluations of novel or fictional conspiracy claims with varying quality of evidentiary support.

Third, there is no established set of criteria that distinguishes warranted conspiracies from unwarranted conspiracy theories (Keeley, 2019). Our classification of conspiracy claims as verified conspiracies and unverified conspiracy theories was, therefore, based on current expert consensus, which may ultimately change as new evidence emerges. Thus, the ability to discriminate between verified conspiracies and unverified conspiracy theories does not necessarily indicate better truth discernment in an absolute sense. Notably, we do not assume that individuals can directly perceive or access objective truth when evaluating conspiracies. Rather, truth discernment captures the degree to which individuals' beliefs are calibrated to the quality of the existing evidence as reflected in current expert consensus. Consequently, our results do indicate that people who score high on analytic thinking, ascribe high value to epistemic rationality, and score low on overconfidence are better calibrated in assessing the quality of the *present evidence* for and against these conspiracies.

Fourth, we measured overconfidence as the difference between participants' estimated and actual performance. This method has been criticized because there is usually an association between the two; thus, overconfidence is not only influenced by the tendency to overestimate one's ability, but also by one's actual performance on the task (Clifton & Clifton, 2019; Tennant et al., 2022). Indeed, when we include both actual and estimated performance as separate predictors of truth discernment in a multiple regression, actual performance is the stronger predictor ($b = 0.25$, $SE = 0.02$, $t = 12.29$, $p < .001$ vs. $b = 0.05$, $SE = 0.02$, $t = 2.42$, $p = .015$). Future research should address this issue by using tasks where the actual and estimated performance are uncorrelated (see Binnendyk et al., 2024; Binnendyk & Pennycook, 2024; Pennycook et al., 2025).

Cultural context may also moderate our effects. For example, conspiracy beliefs are more prevalent in countries with higher levels of corruption (Alper, 2023; Alper & Imhoff, 2023), where secrecy and deception in political decision-making make conspiratorial explanations seem more verified. In such contexts, individuals may rely on different cues when evaluating conspiracies, which could weaken the associations between our predictors and truth discernment. Supporting this notion, corruption has been found to moderate the association between educational level and conspiracy beliefs, with this relationship being significant only in low-corruption countries (Alper, 2023). Future research should examine whether our findings generalize to cultural contexts where valid cues of deception are more prevalent.

Finally, other individual differences – such as delusional ideation (Dagnall et al., 2015), schizotypy, paranoia (Dagnall et al., 2015; Darwin et al., 2011), or conspiratorial mindset (Brotherton et al., 2013) – may also affect truth discernment. Future research should explore whether these factors contribute to truth discernment in conspiracies and whether analytic thinking, the importance given to epistemic rationality, and overconfidence remain significant predictors even among people who score high on delusional ideation, schizotypy, and paranoid ideation. Understanding these relationships could ultimately help develop tailored interventions to improve truth discernment,

particularly among the most susceptible populations.

5. Conclusion

The purpose of the present research was to examine whether individual differences in analytic thinking, overconfidence, and the importance given to rationality predict individuals' ability to distinguish between unverified conspiracy theories and verified conspiracies. Our findings replicated previously documented relationships between analytic thinking, overconfidence, and truth discernment. Importantly, we also found that motivation to be epistemically rational predicts truth discernment while controlling for these cognitive and metacognitive factors. Future research should investigate causal mechanisms and interventions that improve truth discernment, particularly among individuals who are less motivated to form epistemically rational beliefs, and more prone to overconfidence and intuitive reasoning.

CRedit authorship contribution statement

Sinem Yilmaz: Writing – review & editing, Writing – original draft, Visualization, Software, Project administration, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Tomas Ståhl:** Writing – review & editing, Supervision, Resources.

Declaration of competing interest

We have no known conflict of interest to disclose.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.paid.2026.113803>.

Data availability

data is available on OSF

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