

# The Conspiratorial Mind: A Meta-Analytic Review of Motivational and Personological Correlates

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A tidal wave of research has tried to uncover the motivational and personological correlates of conspiratorial ideation, often studying these two classes of correlates in parallel. Here, we synthesize this vast and piecemeal literature through a multilevel meta-analytic review that spanned 170 studies, 257 samples, 52 variables, 1,429 effect sizes, and 158,473 participants. Overall, we found that the strongest correlates of conspiratorial ideation pertained to (a) perceiving danger and threat, (b) relying on intuition and having odd beliefs and experiences, and (c) being antagonistic and acting superior. Considerable heterogeneity was found within these relations—especially when individual variables were lumped together under a single domain—and we identified potential boundary conditions in these relations (e.g., type of conspiracy). Given that the psychological correlates of conspiratorial ideation have often been classified as belonging to one of two broad domains—motivation or personality—we aim to understand the implications of such heterogeneity for frameworks of conspiratorial ideation. We conclude with directions for future research that can lead to a unified account of conspiratorial ideation.

## Public Significance Statement

This empirical “one-stop-shop” provides a comprehensive overview of the motivational and personological correlates of conspiratorial ideation. We find that most motivational and personological variables reported in the literature were significantly related to conspiratorial ideation, but effect sizes varied considerably. We discuss the implications of our findings for future research that can leverage our quantitative review to bridge motivation and personality and, ultimately, arrive at a unified account of conspiratorial ideation.

**Keywords:** conspiratorial ideation, motivation, personality, psychopathology, individual differences

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Conspiratorial ideation is everywhere. Indeed, most surveyed participants all over the world endorse at least one conspiracy theory (CT; e.g., Atari et al., 2019; Goertzel, 1994; Kowalski et al., 2020; Oliver & Wood, 2014; Swami, 2012; van Prooijen & Douglas, 2018). A growing number of psychologists have become interested in illuminating conspiratorial ideation by looking at two key questions: (a) What are the motivational correlates of conspiratorial ideation? (b) What are the personological correlates of conspiratorial ideation?

Although motivation and personality are deeply intertwined (e.g., Dweck, 2017; Grapsas et al., 2020; Strus & Ciecuch, 2017),

research in the domain of conspiratorial ideation has largely pursued these two lines of work in parallel. As a result, there is considerable heterogeneity across frameworks of conspiratorial ideation and often little overlap between these frameworks. Some frameworks emphasize the centrality of personological constructs (e.g., general personality traits, see Goreis & Voracek, 2019), whereas others do not mention personological constructs whatsoever (e.g., van Prooijen & Douglas, 2018). Moreover, both personality and motivation span scores of discrete constructs that have been examined, for the most part, in a piecemeal fashion in relation to conspiratorial ideation. Here, we provide what is, to our knowledge, the most comprehensive meta-analysis to date on this exploding phenomenological workspace.

## What Is Conspiratorial Ideation?

Although scholars continue to debate how best to distinguish conspiracy theories from truth (and whether all conspiracy theories are psychologically equivalent; see Brotherton, 2015; van Prooijen, 2018), there is considerable consensus surrounding the core features of conspiracy theories. Broadly, conspiracy theories refer to causal explanations of events that ascribe blame to a group of powerful

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individuals (the conspirators) who operate in secret to form hidden plans that benefit themselves and harm the common good (e.g., Uscinski, 2019). Thus, the definitional recipe of conspiracy theories involves three primary ingredients: (a) conspirators, (b) hidden plans, and (c) malintent against others or society; this definitional recipe holds whether conspiracy theories turn out to be true or not (see Brotherton, 2015; van Prooijen, 2018). Conspiratorial ideation, therefore, refers to a tendency to endorse conspiracy theories.

## An Exploding (and Piecemeal) Phenomenological Workspace

Conspiratorial ideation is a rapidly expanding area of investigation. From January 2020 to February 2023, for example, over 16,000 results on Google Scholar appeared when searching for “conspiratorial ideation” or “conspiracy belief” or “conspiracy theory.” Similarly, in a recent narrative review on the psychology of conspiratorial ideation, the number of studies on conspiracy beliefs increased by more than 150% in just 1 year alone (i.e., from 2020 to 2021; see Pilch et al., 2023). Perhaps it may come as no surprise that a handful of meta-analyses have already provided deep dives into the relations between conspiratorial ideation and certain psychological variables (e.g., *paranoia*, see Imhoff & Lamberty, 2018; *control*, see Stojanov & Halberstadt, 2020) and domains (e.g., broadband personality traits; Goreis & Voracek, 2019). Two meta-analyses—one peer-reviewed (Stasielowicz, 2022) and the other posted as a preprint (Biddlestone et al., 2022)—have become available since the initial submission of our article and provide broad characterizations of the personological and the motivational correlates of conspiratorial ideation.

The published meta-analysis examined the most common variables assessed in relation to conspiratorial ideation (Stasielowicz, 2022; see Table 1) and were typically personality traits or personological phenomena. Broadly, their findings revealed that indices of psychopathology (e.g., *paranoia*) were stronger correlates of conspiratorial ideation than normal-range personality traits (e.g., *extraversion*). Although informative, this meta-analysis does not shed light on a theoretical framework of conspiratorial ideation, rendering it challenging to leverage their findings and revise theory in the service of inspiring future research. Moreover, and as previously noted, research on conspiratorial ideation is exploding.

**Table 1**  
*Previous Meta-Analytic Findings in Stasielowicz (2022)*

Variable	<i>k</i>	<i>r</i>	Credibility interval limits (95%)
Agreeableness	32	<b>-.07</b>	[-.11, -.02]
Cognitive ability	15	<b>-.13</b>	[-.18, -.07]
Conscientiousness	35	-.03	[-.06, .00]
Extraversion	35	.02	[-.00, .04]
Narcissism	19	<b>.28</b>	[.20, .36]
Neuroticism	36	<b>.04</b>	[.01, .07]
Openness	38	.02	[-.03, .07]
Paranoia	20	<b>.34</b>	[.28, .39]
Pseudoscientific beliefs	11	<b>.46</b>	[.32, .57]
Religiosity	51	<b>.14</b>	[.10, .18]
Schizotypy	13	<b>.30</b>	[.18, .41]
Self-esteem	22	<b>-.06</b>	[-.11, -.00]

*Note.* Bold indicates that the correlation is statistically significant per the credibility interval limits.

Because the landscape surrounding conspiratorial ideation is ever shifting, there may very well be 12 different popular constructs now<sup>1</sup> than at the time this previous meta-analysis was conducted.

Focusing on commonly studied variables also does not reflect the vast universe of personality dimensions (e.g., Möttus et al., 2020). Moreover, in trying to understand *how* people differ from one another in their personality traits (and how these differences might map onto conspiratorial ideation), it is important to consider *why* people think, feel, and act the way they do. Thus, it would be useful to also consider motivational constructs in the context of conspiratorial ideation. After all, personality may be born out of motivation (for more on this issue, see Dweck, 2017).

Drawing on a popular theory suggesting that a deprivation of three motivational needs (epistemic, existential, and social) may lead people to endorse conspiracy theories (see Douglas et al., 2017), a recent preprint examined said motivational domains in relation to conspiratorial ideation (Biddlestone et al., 2022; see Table 2). Broad support for this tripartite motivational model was found in this meta-analytic work. Yet, several findings at the variable-level provided “uncertain evidence” in support of the tripartite model per Bayesian analyses, making it difficult to draw firm conclusions about the validity of this theory. There was also considerable heterogeneity within the selected domains. For instance, the relation between the domain of collective social motives and conspiratorial ideation was small and positive, but the individual correlations within this domain ranged from small and negative (e.g., low ingroup identification) to large and positive (e.g., perceived ingroup victimhood).

When considering the limitations of and heterogeneity present in previous meta-analytic reviews, it becomes apparent that there are several reasons why a comprehensive replication and extension of prior findings is important in the space of conspiratorial ideation. Chief among these reasons is that no meta-analysis to date has applied the same set of search strategies, coding schemes, and analytic approaches to both motivational and personological correlates of conspiratorial ideation (or even examined them simultaneously). Although useful, currently available meta-analyses are neither sufficiently comprehensive nor sufficiently precise to sustain meaningful conclusions about the specificity, generalizability, magnitude, and heterogeneity of relations between conspiratorial ideation and motivation and personality. Given the considerable researcher degrees of freedom present in meta-analytic reviews (see de Vrieze, 2018), comparing across meta-analyses is fraught with opacity. This opacity makes it important to adopt a unified approach, as presented here.

## Bridging Motivation and Personality

To broaden beyond the aims of previous meta-analyses, the current investigation seeks to bridge motivation and personality. While we do not claim that our individual meta-analytic estimates are necessarily more accurate than other reviews (e.g., Biddlestone et al., 2022; Stasielowicz, 2022), our estimates of the relative explanatory power of each variable, relative to other variables included in our

<sup>1</sup> In our meta-analysis, we also identified that normal-range traits, intelligence, and paranoia are commonly examined correlates of conspiratorial ideation. That said, we additionally identified trust, self-reported intuition, self-reported rationality, cognitive reflection, anxiety, and social dominance orientation as commonly assessed variables (see Results section). These differences across meta-analyses reveal that the terrain surrounding conspiratorial ideation is vast—and ever-changing.

**Table 2**

*Previous Domain-Level Meta-Analytic Findings in Biddlestone et al. (2022)*

Variable	<i>k</i>	<i>z</i>	95% CIs
Epistemic motives			
Intuitive cognitive styles	108	<b>.16</b>	[.14, .18]
Low general cognitive ability	9	<b>.25</b>	[.13, .36]
Existential motives			
Internal threats	71	<b>.13</b>	[.09, .16]
External threats	66	<b>.20</b>	[.16, .24]
Social motives			
Individual	66	<b>.21</b>	[.18, .24]
Relational	11	<b>.13</b>	[.01, .27]
Collective	32	<b>.10</b>	[.02, .18]

*Note.* CI = confidence interval. Bold indicates that the correlation is statistically significant per the confidence intervals.

meta-analytic “map of the known world,” may be especially accurate. After all, we use the same analytic approach, coding scheme, and statistical decision-making processes for each variable.

It is essential to examine both motivation and personality in relation to conspiratorial ideation, and this view is not just rooted in an aim to be comprehensive for the sake of being comprehensive. Instead, there is a strong theoretical foundation for considering motivation alongside personality. Several lines of research are dedicated to bridging motivation with personality (e.g., Bouchard & Johnson, 2021; Denissen & Penke, 2008; Duckitt & Sibley, 2009; Dweck, 2017; Grapsas et al., 2020; Jayawickreme et al., 2019), pointing to the idea that independently examining motivation and personality prevents critical insights onto important topics. Generally, research shows that imposing strict theoretical boundaries between motivation and personality is less well supported than is commonly supposed (see Corr et al., 2013; Strus & Cieciuch, 2017).

There are multiple theories regarding how to integrate motivational processes most effectively with personality traits, such as integrating them into a circumplex model (e.g., Strus & Cieciuch, 2017) or into a developmental framework (see Dweck, 2017). Nevertheless, these various theories tend to share a distinction between descriptive (or structural) and explanatory (or process-oriented) aspects of traits (e.g., Denissen & Penke, 2008; Jayawickreme et al., 2019; Möttus et al., 2020). Descriptive aspects of a trait broadly refer to the ways that personality traits are measured (see Möttus et al., 2020) and the aggregation of individual, state-level behaviors (see Fleeson & Jayawickreme, 2015). In essence, this level of a trait is the “what” of a trait. The explanatory aspect of a trait, in turn, refers to the specific cause of a specific behavior (see Möttus et al., 2020) and the cognitive, motivational, and affective processes that shape momentary information processing (see Jayawickreme et al., 2019). In essence, this level of a trait is the “how” of a trait. Explanatory aspects of a trait emphasize how the descriptive elements of a trait arise. Per this distinction, motivations cause (e.g., Dweck, 2017) or are even part-and-parcel (e.g., Fleeson & Jayawickreme, 2015) of traits.

By bringing together motivation and personality, it will be possible to clarify what causes conspiratorial ideation and gain a deeper understanding of how and why conspiratorial ideation predicts a host of relevant outcomes (especially behaviors; see Dweck, 2017). With this approach, we might be one step closer at designing effective interventions for reducing conspiratorial ideation, as both the “what”

(descriptive/structural) and the “how” (explanatory/process-oriented) will be considered by targeting broad areas of liability.

Further, by including motivational and personological variables under the same meta-analytic roof, our review facilitates comparisons of the relative explanatory power of individual psychological variables for conspiratorial ideation. Consistent with the classic debate of lumping versus splitting in psychological science (see Fiske, 2006), the domains of epistemic, existential, and social motives represent lumping—a plethora of motives are joined together under one heading. Through lumping these motives, we can understand how shared processes bear on conspiratorial ideation. Nevertheless, lumping variables together can wash out meaningful signals at lower levels of analysis, including facet-level analyses and even item-level analyses (see Möttus et al., 2020). Thus, by accounting for individual variables in addition to their broad domains, it will be possible to gain actionable insights into the relations between conspiratorial ideation and motives and traits. In other words, we will be probing into individual variables for both motivations (explanatory) and traits (descriptive). These comparisons across variables, rather than just domains, provide a rich opportunity to replicate (and extend upon) previous research.

All in all, we suspect that an extension of previous meta-analytic relations is needed to (a) clarify the relations between motivational and personological variables and conspiratorial ideation and to (b) illuminate sources of heterogeneity. We begin by describing motivational and personological correlates of conspiratorial ideation, and then provide the findings from our meta-analysis, which spanned 170 studies, 257 samples, 52 variables, 1,429 effect sizes, and 158,473 participants. We conclude by outlining promising directions for future research as we look forward to the possibility of developing a unified theory of conspiratorial ideation.

### Motivational Correlates of Conspiratorial Ideation

According to one popular perspective (Douglas et al., 2017), people are drawn to conspiracy theories when they experience a deprivation of the following three motivational needs:

1. To form a reliable, certain, and stable view of the world (*epistemic* motives).
2. To feel safe and in control, particularly in the face of threat (*existential* motives).
3. To reinforce a superior, albeit fragile, image of oneself and one’s ingroup (*social* motives).

In the following sections, we review these three motivational domains and describe constructs that fall within each (e.g., Douglas et al., 2017, 2019; Pierre, 2020; Sternisko et al., 2020; van Mulukom, 2021; van Prooijen, 2019). We also describe the definitions of relevant constructs according to these existing organizational schemes.<sup>2</sup> We sought to test theories surrounding

<sup>2</sup> Of 34 motivational variables we reviewed, only five (15%) were placed under more than one domain (e.g., alienation has been placed under both existential and social motives in different reviews). Of these five constructs, all were placed under one domain more than the others (e.g., alienation is more often classified as social than existential). The remaining variables were consistently placed under the same domain across frameworks of conspiratorial ideation.

the psychology of conspiratorial ideation. As such, we coded motivational variables according to frameworks of conspiratorial ideation rather than frameworks of motivations per se (the latter of which was adopted in a preprint; see Biddlestone et al., 2022). We adopted this coding approach to test the heuristic value of the tripartite motivational model and existing frameworks of conspiratorial ideation.

### *Epistemic Motives*

A drive to understand the everyday world is one reason why people may be drawn to conspiracy theories. Identifying intuitive explanations for ambiguous events, finding meaning in unpredictability and chaos, and maintaining one's beliefs in the face of contradiction correspond to epistemic motives (Douglas et al., 2017). By relying on intuition, people can readily form accessible explanations for uncertain situations and, in turn, generate a quick understanding of the world. These intuitive understandings of the world afford the opportunity for people to find clarity and meaning in their environment. To hold onto this intuitive and meaning-laden understanding of the world, people may additionally strive to uphold their beliefs rather than face additional uncertainty (see Kay et al., 2009).

Conspiratorial ideation is related to reliance on intuition and reduced analytical thinking. More precisely, conspiratorial ideation manifests medium-to-large positive associations with measures of intuitive thinking, including self-report measures of reliance on intuition and quasibehavioral measures of intuition (e.g., susceptibility to pseudoprofound bullshit, susceptibility to the conjunction fallacy; e.g., Brotherton & French, 2014; Čavojská et al., 2019; Dagnall et al., 2017; Hart & Graether, 2018; Moulding et al., 2016; Patel et al., 2019; Pennycook et al., 2015; van der Wal et al., 2018).<sup>3</sup> Dovetailing with these findings, conspiratorial ideation is strongly related to nonclinical delusion-proneness, indicating a propensity to engage in intuitive and irrational thinking (e.g., Brotherton et al., 2013; Dagnall et al., 2015). Regarding analytical thinking, conspiratorial ideation is weakly-to-moderately negatively associated with self-report measures of rationality and cognitive reflection (e.g., Barron et al., 2018; Castanho Silva et al., 2017; Ståhl & van Prooijen, 2018; Swami et al., 2014), although these relations are not always significant (e.g., Ballová Mikušková, 2018; Patel et al., 2019). Moreover, conspiratorial ideation and need for cognition (i.e., preferences for complexity in thought; Cacioppo & Petty, 1982) are weakly-to-moderately negatively associated (e.g., Barron et al., 2018; Ståhl & van Prooijen, 2018; cf. Miller et al., 2016). These results raise the possibility that individuals prone to conspiratorial ideation are motivated to understand the world by engaging in intuitive, effortless thinking as opposed to rational, effortful, and complex thinking.

An overreliance on intuition coupled with a drive to find meaning can contribute to identifying patterns where none exist (i.e., illusory pattern perception; van Elk, 2015; Walker et al., 2019) or identifying agency where none exists (i.e., hypersensitive agency detection; see Douglas et al., 2016; Whitson & Galinsky, 2008). People prone to conspiratorial ideation are presumably also prone to such patternicity; after all, conspiracy theories entail identifying secret plotting by nefarious individuals (e.g., van Prooijen, 2018). Bearing out this possibility, illusory pattern perception tends to manifest large, positive correlations with

conspiratorial ideation (e.g., Moulding et al., 2016; Ståhl & van Prooijen, 2018; van der Tempel & Alcock, 2015; van der Wal et al., 2018; van Prooijen et al., 2018). Similarly, being overly attuned to agency in others and the tendency to anthropomorphize, also known as hypersensitive agency detection (i.e., Brotherton & French, 2015; Douglas et al., 2016; Enders & Smallpage, 2019; Imhoff & Bruder, 2014) and anthropomorphism, respectively, are moderately positively associated with conspiratorial ideation (e.g., Brotherton & French, 2015; Bruder et al., 2013; Douglas et al., 2016).

Since conspiracy theories sometimes have the façade of being evidence-based and can be supported by a variety of misleading arguments (e.g., Dagnall et al., 2017; Goertzel, 1994), they may be particularly appealing to those who are prone to maintain their worldviews in the face of new evidence and tend to not think effortfully. In support of these suppositions, conspiratorial ideation is weakly-to-moderately and positively linked with dogmatism (e.g., Čavojská et al., 2020) and moderately and negatively linked with actively open-minded thinking (e.g., Erceg et al., 2022; Patel et al., 2019; Stanovich & Toplak, 2019; Swami et al., 2014).

Given that conspiracy theories provide seemingly definite explanations for largescale events, it has also been theorized that conspiratorial ideation is related to strong motives for, and the propensity to maintain, certainty (e.g., Douglas et al., 2017; Kossowska & Bukowski, 2015). Desire for certainty entails overlapping motivations, including need for cognitive closure (i.e., the desire for any answer over uncertainty and preference for order and structure; see Webster & Kruglanski, 1994) and intolerance of ambiguity (i.e., the propensity to feel distressed by information that is vague, open-ended, or uncertain; see Grenier et al., 2005). Conspiratorial ideation tends to be positively related with total scores on self-report inventories of need for closure and intolerance of ambiguity; yet, most of these results are not significant and/or the effect sizes are small (e.g., Castanho Silva et al., 2017; Golec de Zavala & Federico, 2018; Leman & Cinnirella, 2013; Marchlewska et al., 2018; Moulding et al., 2016; Swami et al., 2014).

To summarize across all epistemic motives, conspiratorial ideation appears to be related to inflexible cognitive styles, including reliance on intuition, identifying patterns and agency in their absence, and maintaining one's views while being close-minded to alternative views. Still, individuals prone to conspiratorial ideation may also lack the cognitive abilities to evaluate information accurately and critically (see Douglas et al., 2017, 2019).<sup>4</sup> To address this possibility, scholars have directed attention toward the relation between intelligence and conspiratorial ideation. Across studies and measures of intelligence, there appears to be a consistent negative relation between conspiratorial ideation and general cognitive ability, although the magnitude of these relations ranges from small to large (e.g., Adam-Troian et al., 2019; Betsch et al., 2018; Čavojská et al., 2019; Dieckmann & Johnson, 2019; Lantian et al., 2020; Pennycook et al., 2020;

<sup>3</sup> Here and throughout, effect sizes were interpreted according to Gignac and Szodorai's (2016) guidelines for individual differences research:  $r = .10$  is small,  $r = .20$  is medium, and  $r = .30$  is large.

<sup>4</sup> A conspiracy theory is still a theory at the time of initial acceptance. As such, the same psychological variables (e.g., low cognitive ability) that give rise to conspiratorial ideation are theorized to be the same across conspiracy theories, whether they turn out to be true or false (see van Prooijen, 2018).

Stieger et al., 2013; Swami & Furnham, 2012). Thus, it seems that conspiratorial ideation may be related to reduced tendencies and motivations to pursue complexity *and* a reduced ability to make sense of complex information.

### **Existential Motives**

Another reason why people may be drawn to conspiracy theories is to feel safe and in control, especially in the face of existential threat (e.g., Douglas et al., 2017; van Prooijen, 2019). Thus, conspiracy theories may appeal to those scoring high on existential threat, as individuals are deprived of a sense of security and power. For example, if the September 11th attacks were orchestrated by the American government rather than an extremist group, then people can spread the word and prevent such an attack from happening again by voting for the “right” politicians.

Research reveals that conspiratorial ideation is moderately to strongly and positively related to perceptions of existential threat (e.g., Federico et al., 2018), such as perceiving that one’s nation faces great threat (e.g., Cichocka, Marchlewska, & Golec de Zavala, 2016) and that one experiences more threat than others (e.g., Imhoff et al., 2018). Existential threats can manifest in several ways, and they often pertain to losing a sense of personal meaning and confronting information that challenges one’s cherished beliefs (e.g., van den Bos, 2009; van Prooijen, 2019). In addition to perceiving more threat, conspiratorial ideation is moderately to strongly and positively related to believing that the world is inherently dangerous and unstable (e.g., Leone et al., 2019; Moulding et al., 2016), perceiving one’s world with cynicism rather than optimism (e.g., Bensley et al., 2020; Enders et al., 2020; Swami, 2012; Swami et al., 2011; Vitriol & Marsh, 2018), and feeling powerless (e.g., Biddlestone et al., 2020; Bruder et al., 2013; Imhoff & Bruder, 2014; Jolley & Douglas, 2014; Moulding et al., 2016; van Prooijen et al., 2018).

If people detect more threats in their environment and regard the world as inherently dangerous, they are likely to (a) feel more anxious, (b) perceive that they have less control, and (c) feel less efficacious. Research has examined how conspiratorial ideation is related to all three of these possibilities. First, conspiratorial ideation is related to experiencing more anxiety, including general anxiety (e.g., Erceg et al., 2022; Grzesiak-Feldman, 2013; Šrol et al., 2021) and death anxiety (e.g., Bruder et al., 2013; Stojanov & Halberstadt, 2019), although these relations tend to be small. Despite relatively consistent cross-sectional links between anxiety and existential threat sensitivity and conspiratorial ideation, some research shows that anxiety and existential threat sensitivity do not seem to temporally precede conspiratorial ideation; such results raise questions about whether and to what extent anxiety and existential threat sensitivity are causes of conspiratorial ideation (Liekiefett et al., 2023).

When people experience threat and anxiety, they are likely to perceive that they possess little to no control over their environments. In line with this possibility, conspiratorial ideation tends to manifest small-to-medium negative correlations with perceptions of control (e.g., Bruder et al., 2013; Šrol et al., 2021; Stone et al., 2018). Moreover, experimentally increasing a perceived loss of control gives rise to greater conspiratorial ideation (e.g., Whitson et al., 2019; Whitson & Galinsky, 2008). Still, a recent meta-analysis on the associations between experimentally induced

control and conspiratorial ideation indicated that the relationship was small and not significant ( $d = -.05$ , 95% CI  $[-.11, .02]$ ,  $k = 15$ ,  $N = 8,618$ ; Stojanov & Halberstadt, 2020). This meta-analysis raises the possibility that results from individual studies are exaggerated and/or that there are potentially key, albeit overlooked, moderators of the relations between conspiratorial ideation and control.

Finally, although conspiratorial ideation appears to be only weakly related to feeling that one possesses less control, research indicates that conspiratorial ideation is related to feeling that one possesses less efficacy, or an ability to make changes in one’s environment. Research demonstrates that conspiratorial ideation is negatively related to multiple manifestations of efficacy, such as self-efficacy (e.g., Ardèvol-Abreu et al., 2020; Lamberty & Leiser, 2019), external-efficacy (e.g., Ardèvol-Abreu et al., 2020; Oliver & Wood, 2014), and political-efficacy (e.g., Lamberty & Leiser, 2019; Molz & Stiller, 2021).

### **Social Motives**

A third reason why people may be drawn to conspiracy theories is that they afford opportunities to defend a positive image of themselves and their ingroup (e.g., Douglas et al., 2019; Sternisko et al., 2020). By endorsing a conspiracy theory that places blame on others (often members of another group), people can retain a sense of superiority, both at the individual and group levels (e.g., Cichocka, Marchlewska, & Golec de Zavala, 2016). Ascribing blame to an outgroup for societal ills may reinforce notions that one’s ingroup is blameless and superior. Thus, conspiracy theories should be particularly compelling to those with a fragile sense-of-self and/or those who perceive outgroup threat.

Consistent with these ideas, conspiratorial ideation is moderately and positively related to perceiving a largescale moral breakdown in society (i.e., anomie; Brotherton et al., 2013; Bruder et al., 2013; Imhoff & Bruder, 2014; Imhoff et al., 2018; Jolley et al., 2019; Majima & Nakamura, 2020; Moulding et al., 2016) and feeling alienated from others (e.g., Lamberty & Leiser, 2019; Leman & Cinnirella, 2013; Swami et al., 2013). Conspiratorial ideation is also weakly negatively related to healthy self-esteem, as a stable, balanced, positive self-regard likely allays social threats to one’s ego and buffers against feelings of alienation (e.g., Cichocka, Marchlewska, & Golec de Zavala, 2016; Stieger et al., 2013; Swami, 2012; van Prooijen et al., 2018).

Because conspiratorial ideation is related to a fragile sense-of-self, it should not only be related to less self-esteem but also to more narcissism (i.e., nonclinical manifestations of the more pernicious constellation of traits comprising narcissistic personality disorder; see Pincus et al., 2009). Narcissism comprises a complex blend of overconfidence and vulnerability, meaning that narcissistic individuals tend to boast while also needing validation from others (e.g., Miller & Campbell, 2010). In line with expectations, conspiratorial ideation is weakly-to-moderately and positively related to narcissism (e.g., Bowes et al., 2021; Cichocka, Marchlewska, & Golec de Zavala, 2016).

These results point to the possibility that people who endorse conspiracy theories are motivated to stand out among their peers and feel entitled to special recognition. That is, those who endorse conspiracy theories may feel they possess secret knowledge about “the truth” that others fail to see or are not knowledgeable

enough to possess (e.g., Lantian et al., 2017). Thus, conspiratorial ideation may be related to needs to stand out among one's peers (e.g., boastfulness) in conjunction with a tendency to distrust one's peers (e.g., vulnerable self-esteem). Research aligns with these possibilities: conspiratorial ideation is moderately positively related to a need for uniqueness (e.g., Díaz & Cova, 2020; Imhoff et al., 2018; Imhoff & Lamberty, 2017; Lantian et al., 2017; Lyons et al., 2019) and a general distrust of others (from peers to politicians to institutions; e.g., Brotherton et al., 2013; Jolley & Douglas, 2014; Lantian et al., 2016; Leman & Cinnirella, 2013; Meuer & Imhoff, 2021; Šrol et al., 2021; Stojanov & Halberstadt, 2019). This general mistrust of others may be an important aspect of conspiratorial ideation that turns people away from official narratives and facilitates identifying a clear enemy (see Meuer & Imhoff, 2021; Pierre, 2020). These data converge on an image of conspiratorial ideation being linked to needs to valorize the self, as conspiracy theorists may perceive that they are in possession of special talents and knowledge while simultaneously feeling skeptical of others.

A similar pattern of relations emerges when examining the relations between conspiratorial ideation and perceptions of one's ingroup. If one believes that their group is exceptional, superior, and deserving of greater recognition, then they will likely perceive outgroups as threatening and inferior (e.g., Golec de Zavala & Lantos, 2020). And indeed, people often target outgroup individuals as the conspirators behind threatening events (e.g., Mashuri & Zaduqisti, 2014; van Prooijen & Song, 2021). These conspiracy stereotypes may protect and valorize one's ingroup identity vis-à-vis outsourcing blame to nefarious outgroup saboteurs (e.g., Jolley et al., 2020; van Prooijen & Song, 2021). Thus, conspiratorial ideation should be related to (a) holding a positive view of one's ingroup and (b) holding a negative view of one's outgroup.

Looking at the first point, conspiratorial ideation is positively related both to collective self-esteem (e.g., Cichocka, Marchlewska, Golec de Zavala, & Olechowski, 2016; Crocker et al., 1999; Swami et al., 2018; Uenal et al., 2021) and to collective narcissism (e.g., Cichocka, Marchlewska, & Golec de Zavala, 2016; Cichocka, Marchlewska, Golec de Zavala, & Olechowski, 2016; Kofta et al., 2020; Marchlewska et al., 2019). Preliminary research indicates that when statistically controlling for the overlap between collective self-esteem and collective narcissism, there is a mutual suppressor effect such that the positive relation for collective self-esteem and conspiratorial ideation becomes negative whereas the positive relation for collective narcissism becomes larger (Cichocka, Marchlewska, Golec de Zavala, & Olechowski, 2016). These results suggest that conspiratorial ideation is related to perceiving one's ingroup as inherently better than the outgroup, whereas it is negatively related to healthy pride in one's ingroup. Looking at the first point (i.e., holding a negative view of one's outgroup), conspiratorial ideation is strongly related to enhanced threat perception of outgroup members (e.g., Cichocka, Marchlewska, Golec de Zavala, & Olechowski, 2016; Díaz & Cova, 2020; Mashuri et al., 2016; Uenal et al., 2021; van Prooijen & Song, 2021).

Given that conspiracy theories may help individuals reinforce "legitimate" authorities while denigrating "illegitimate" others, conspiratorial ideation should also be positively related to both right-wing authoritarianism (RWA; see Grzesiak-Feldman, 2015) and social dominance orientation (SDO; see Swami, 2012). RWA

reflects obsequious submission to established authority, adherence to socially conservative norms, and aggression towards people who transgress against these norms (e.g., Duckitt et al., 2010); SDO reflects the tendency to prefer social hierarchies that maintain power over lower status groups (e.g., Ho et al., 2015). Several studies indicate that conspiratorial ideation is weakly-to-moderately and positively associated with RWA (e.g., Bruder et al., 2013; Swami, 2012; Wood & Gray, 2019). Conspiratorial ideation also tends to be weakly-to-moderately and positively related to SDO (e.g., Bruder et al., 2013; Green & Douglas, 2018; Imhoff & Bruder, 2014; Imhoff et al., 2018; Kerr, 2020; Lamberty & Leiser, 2019).

## Personological Correlates of Conspiratorial Ideation

Personological constructs are relevant to a host of beliefs, from political ideology (e.g., Fatke, 2017) to religiosity (e.g., Gebauer et al., 2013) to determinism beliefs (e.g., Costello et al., 2020). As such, psychologists have become increasingly interested in illuminating the personological correlates of conspiratorial ideation (e.g., Bowes et al., 2021; Goreis & Voracek, 2019; Stasielowicz, 2022). Below, we provide overviews of two key areas of research on the personological correlates of conspiratorial ideation, one on abnormal-range correlates and the other on normal-range personal-ity correlates.

### Abnormal-Range Correlates

Historically, there has been a focus on the intersection between conspiratorial ideation and abnormal psychological processes. Scholars have largely focused on two separable, albeit highly related, domains of abnormality and their relations to conspiratorial ideation: (a) *personality disorders* (i.e., enduring, inflexible, and stable patterns of thought and behavior that deviate significantly from cultural and normative expectations, leading to marked impairment and distress; see Sleep et al., 2019) and (b) *psychopathology* (i.e., a broad domain comprising a heterogeneous array of emotional, behavioral, and cognitive dysfunctions that collectively give rise to marked impairment and distress; see Kotov et al., 2021).

Looking at personality disorders, scholars posited over 50 years ago that conspiratorial ideation was fundamental to paranoid personality (e.g., Hofstadter, 1964). This line of thinking has carried over into modern frameworks of conspiratorial ideation, as some scholars contend that paranoia is part-and-parcel of the conspiracist worldview, meaning that it may be necessary to score highly on measures of paranoia (e.g., distrust others, perceive malintent in others) to be a conspiracy theorist (e.g., Brotherton & Eser, 2015; Dagnall et al., 2015; van der Linden et al., 2021). As a result, several studies examining the relations between conspiratorial ideation and personality disorder traits have focused on paranoia, a defining characteristic of paranoid personality disorder (American Psychiatric Association [APA], 2013). Results support both historical and contemporary accounts of the centrality of paranoia to conspiratorial ideation, such that those who score higher on measures of paranoia also report more conspiratorial ideation (e.g., Brotherton & Eser, 2015; Bruder et al., 2013; Cichocka, Marchlewska, & Golec de Zavala, 2016; van Prooijen et al., 2015). Indeed, a recent meta-analysis on the relations between conspiratorial ideation and paranoia (Imhoff & Lamberty, 2018) indicated

that conspiratorial ideation was strongly positively related to paranoia ( $k = 11$ ,  $N = 2,006$ ,  $r = .36$ , 95% CI [.30, .46]).

In addition to paranoia, scholars have examined the relations between conspiratorial ideation and schizotypal personality disorder (schizotypy), as it is closely related to and imbued with paranoia (e.g., Cicero & Kerns, 2010). Schizotypy is characterized by odd and bizarre thinking styles, social awkwardness, ideas of reference (e.g., events are nonrandom and personally meaningful), and disorganized communication (e.g., unclear or strange patterns of speech; see Raine, 1991). Schizotypal traits contribute to holding anomalous beliefs (e.g., paranormal beliefs; see Hergovich et al., 2008) and exhibiting decision-making biases (e.g., jumping-to-conclusions; see Hua et al., 2020) germane to conspiratorial ideation (e.g., Bronstein et al., 2019; Bruder et al., 2013). As such, some maintain that schizotypal features are fundamental to the conspiracist worldview (e.g., Dagnall et al., 2015). In line with this thinking, conspiratorial ideation manifests medium-to-large positive correlations with total scores on schizotypy measures as well as scores on lower order schizotypal facets, such as odd and bizarre thinking styles (e.g., Barron et al., 2014, 2018; Dagnall et al., 2015; Hart & Graether, 2018) and ideas of reference (e.g., Barron et al., 2018). Finally, conspiratorial ideation is not only related to schizotypy specifically but also to tendencies to have unusual experiences at large and seems reasonable given that schizotypy encompasses broad tendencies to have unusual experiences (e.g., Dagnall et al., 2015; Stone et al., 2018).

It should be noted that conspiratorial ideation is not only related to discrete personality disorders (e.g., schizotypy), but also to a broad personality disorder liability. In the *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition* (APA, 2013) alternative trait model (alternative model of personality disorders), personality disorder traits are organized into five domains reflecting the maladaptive extremes of the Big Five (e.g., John & Srivastava, 1999): negative affectivity (e.g., anxiousness, emotional lability), detachment (e.g., intimacy avoidance, suspiciousness), antagonism (e.g., callousness, manipulativeness), disinhibition (e.g., impulsivity, irresponsibility), and psychoticism (e.g., eccentricity, perceptual dysregulation; e.g., Krueger et al., 2012). Preliminary studies suggest that all five personality disorder dimensions manifest medium-to-large positive associations with conspiratorial ideation (e.g., Bowes et al., 2021; Swami et al., 2016).

Based on the findings described thus far, it may seem that conspiratorial ideation is uniquely related to personality disorder traits. Yet, there is a high degree of overlap between personality disorder traits and psychopathological features (e.g., bipolar disorder and borderline personality disorder; see Deltito et al., 2001; Kotov et al., 2021). Moreover, personality dysfunction is as strongly linked to indices of psychopathology as indices of personality disorders (e.g., Sleep et al., 2019). Thus, conspiratorial ideation may not be uniquely related to personality disorder traits but, instead, to broad psychopathology liability. Clarifying the extent that conspiratorial ideation bears on psychopathological characteristics more generally presents many open and interesting questions.

Psychopathological symptoms are often organized along two higher order dimensions: internalizing (e.g., distress, fear, anxiety, depression, low mood) and externalizing (e.g., antagonism, substance abuse, antisociality, impulsivity, irresponsibility; see Kotov et al., 2021) psychopathology.<sup>5</sup> Consistent with the relations

between conspiratorial ideation and general personality disorder dimensions (i.e., alternative model of personality disorders traits), conspiratorial ideation is related to a range of internalizing and externalizing features. Regarding internalizing features, conspiratorial ideation tends to manifest small positive associations with total scores on depression symptom inventories (e.g., Bogart et al., 2010; Grebe & Natrass, 2012; Leone et al., 2018; Rose, 2017) and allied negative mood states, including anger and hostility (e.g., Jolley & Paterson, 2020; Marchlewska et al., 2019). Although no research has examined symptoms of externalizing disorders per se, some research has examined externalizing features in relation to conspiratorial ideation; these studies indicate that conspiratorial ideation is weakly-to-moderately and positively linked with self-reported physical aggression and a willingness to use violence against others (e.g., Lamberty & Leiser, 2019) in addition to justifications of the use of violence (e.g., burning 5th generation mobile network towers to prevent spread of COVID-19; see Jolley & Paterson, 2020).

Taken together, conspiratorial ideation appears to be related to multiple manifestations of psychopathology. Even still, abnormal-range correlates do not sufficiently account for the fact that conspiratorial ideation is pervasive and perhaps even universal (e.g., van Prooijen & Douglas, 2018). Thus, it is also important to consider normal-range personality in the context of conspiratorial ideation.

### *Normal-Range Personality Correlates*

Studies examining the associations between conspiratorial ideation and normal-range personality are mixed (e.g., Bowes et al., 2021; Brotherton et al., 2013; Imhoff & Bruder, 2014; Stojanov & Halberstadt, 2019; Swami & Furnham, 2012). Research suggests that the relations between Big Five traits and conspiratorial ideation are highly heterogeneous in both magnitude and direction (e.g., the published relations between agreeableness and conspiratorial ideation range from  $-.28$ , Swami et al. to  $.11$ , Orosz et al., 2016). Recent meta-analytic examinations of the associations between the Big Five traits and conspiratorial ideation reported correlations that were either weak or not significant (Goreis & Voracek, 2019; Stasielowicz, 2022).

Beyond the Big Five, there is a model of general personality (Honesty-Humility, Emotionality, Extraversion, Agreeableness, Conscientiousness, Openness to Experience; HEXACO) that includes variants of the standard Big Five dimensions as well as a sixth honesty-humility dimension (e.g., greed avoidance, sincerity; see Lee & Ashton, 2018). The HEXACO model of personality is widely used given that it more comprehensively captures personality adjectives cross-culturally than does the Big Five model (e.g., Ashton & Lee, 2008). To our knowledge, only two published studies have examined the associations between the HEXACO domains and conspiratorial ideation (Bowes et al., 2021; Jolley et al., 2019). Whereas relations between honesty-humility and conspiratorial ideation were negative and small-to-moderate in magnitude, relations for the other HEXACO domains, which largely align with the Big Five dimensions, were inconsistent both in terms of their significance and direction.

<sup>5</sup> Features of psychosis (e.g., detachment, thought disorder) are separable from internalizing and externalizing dimensions and tend to load on their own dimension (see Kotov et al., 2021).

Additional work has burrowed into the relations between humility and conspiratorial ideation by examining intellectual humility—which is a manifestation of broad humility referring to humility surrounding one’s beliefs, attitudes, and knowledge (e.g., Van Tongeren et al., 2019)—and its relations with conspiratorial ideation (Bowes et al., 2021; Bowes & Tasimi, 2022). In these studies, intellectual humility was weakly-to-moderately negatively related to conspiratorial ideation. In aggregate, it seems that humility is a consistent, negative correlate of conspiratorial ideation.

## Present Investigation

Here, we sought to meta-analytically examine the full body of currently available literature (including peer-reviewed journal articles, dissertations and theses, and unpublished data) on the motivational and personological correlates of conspiratorial ideation. We aggregated and analyzed 52 variables in relation to conspiratorial ideation. Not only did we want to provide a snapshot of the magnitude of the relations between these motivational and personological variables and conspiratorial ideation, but we also wanted to quantify and examine sources of heterogeneity in these relations.

Meta-analysis allows for the identification of the boundary conditions driving heterogeneity, a necessary step in validating theories of interest. For example, a substantial degree of heterogeneity in the relation between threat and conspiratorial ideation may suggest that only certain kinds of threats pertain to conspiracy beliefs or that the effect does not generalize to certain populations. Thus, by estimating the degree and sources of substantive heterogeneity in the literature, we can offer new insights concerning both variables that have been meta-analytically examined in previous research and constructs that have been understudied. What is more, there may be greater variation in conspiratorial ideation relations *within* motivational domains than there is *across* motivational domains; to our knowledge, our meta-analysis is the first to address this issue.

To examine sources of heterogeneity, we included a theoretically informed moderator (conspiracy theory type), and we also examined the potential for publication bias. Looking at conspiracy theory type, there are two common ways of assessing people’s beliefs in conspiracy theories within the literature: through measures of *specific* or *general* conspiratorial ideation (e.g., Imhoff et al., 2022). Whereas measures of specific conspiratorial ideation present a series of concrete, event-based conspiracy theories (e.g., the U.S. government planned the 9/11 attacks to retain power), measures of general conspiratorial ideation present a series of abstract, decontextualized conspiracy theories (e.g., governments plan to harm their citizens to retain power). Although measures of specific and general conspiratorial ideation are theoretically similar and tend to be strongly positively interrelated (e.g., Brotherton et al., 2013), there are important differences between these measures. For example, belief in specific conspiracy theories may be more skewed than belief in general conspiracy theories (see Imhoff et al., 2022). Thus, the magnitude of the relations between conspiratorial ideation and motivational and personological constructs may vary across measures of conspiratorial ideation (e.g., Goreis & Voracek, 2019; Stasielowicz, 2022; Stojanov & Halberstadt, 2020).

## Method

### Inclusion Criteria and Literature Search

To identify candidate studies, we started by searching references from previous meta-analyses on conspiratorial ideation (e.g., Goreis & Voracek, 2019; Imhoff & Lamberty, 2018; Stojanov & Halberstadt, 2020). We next broadened our search through electronic databases, specifically Google Scholar and APA PsycInfo,<sup>6</sup> using a series of Boolean phrases (e.g., (“conspir\* theor\* OR conspir\* belie\* OR conspir\* idea\*”) AND open\*). For the complete list of search terms we used, see Supplemental Table S1. Definitions of and references for motivational and personological constructs included in the meta-analysis are provided in Supplemental Tables S2 and S3. See Figure 1 for an overview of the screening process.

We included studies that contained the words “conspiracy,” “conspiratorial,” or “epistemically unwarranted beliefs” and allied constructs (e.g., scientifically unsubstantiated beliefs) in the title or abstract. We broadened our initial search to include studies referencing epistemically unwarranted beliefs and allied constructs, as conspiracy theories are often discussed and measured in the larger context of epistemically unwarranted/questionable beliefs (e.g., Lobato et al., 2014). Our inclusion criteria also included the following: studies that (a) report an effect size (e.g., Pearson’s *r*) and (b) measure a motivational or personological construct via self-report or experimental paradigm (e.g., lab measures of illusory pattern perception). Both published and unpublished (i.e., preprints, theses, data sets) articles were eligible for inclusion. No exclusions were made based on study population. Articles not written in English were excluded. For studies that used multiple waves, we included the correlations within waves (e.g., Wave 1 conspiratorial ideation with Wave 1 variable of interest; Wave 2 conspiratorial ideation with Wave 2 variable of interest; see Golec de Zavala & Federico, 2018). In studies using pre–post designs (e.g., Orosz et al., 2016), we included the correlations between baseline levels of conspiratorial ideation and variables of interest at baseline, and we did not include the correlations between experimentally induced (post) levels of conspiratorial ideation and variables of interest.

The final search was conducted in February 2022, yielding a total of 3,721 unique results (after repeat titles were removed). The methods sections of relevant studies were then screened for inclusion to ascertain that both conspiratorial ideation and a relevant motivational and/or personological construct were directly measured (see Figure 1). We solicited the authors of 80 studies for additional data concerning (a) observations that had not been reported in the article (i.e., authors reported measuring relevant constructs but did not report effect sizes in the article or Supplemental Materials) or (b) additional information that was needed to calculate zero-order correlations (e.g., only semipartial correlations were reported in the article). If authors did not respond, two additional emails were sent. We received 60 email responses (75%), yielding 28 data sets that met our inclusion criteria (47%).

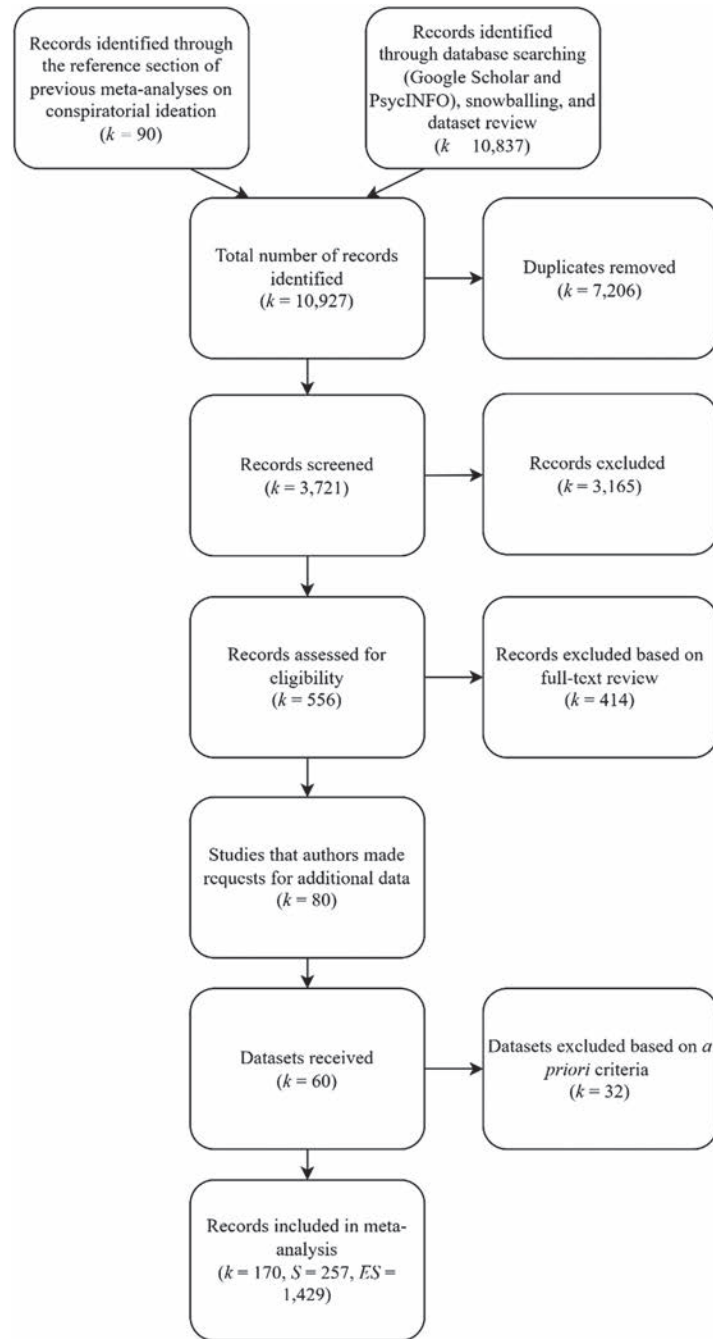
### Data Coding

After removing duplicates and studies that were ineligible for the meta-analysis, we ended up with a total of 170 studies

<sup>6</sup> We searched for studies on COVID-19 conspiracy theories in PsyArXiv and Google Scholar from May 2020 to early 2022.



**Figure 1**  
Flowchart of Screening Process



Note.  $k$  = number of studies;  $S$  = number of samples;  $ES$  = number of effect sizes.

(257 samples, 1,429 effect sizes) that met inclusion criteria. An overview of all included articles, study characteristics, and effect sizes can be found at <https://osf.io/jxyfn/>. Pearson's  $r$  coefficients were coded from each study by the first author and research assistants.

For a variable to be included in the meta-analysis, there must have been at least two effect sizes present across studies for said variable

(e.g., Goh et al., 2016). Based on inclusion criteria, we coded 52 motivational and personological variables from the eligible studies. In addition to coding these variables, we coded for motivational domain (i.e., epistemic, existential, social) and personological domain (i.e., psychopathology, general/normal-range personality) based on existing frameworks of conspiratorial ideation (e.g., Douglas et al., 2017, 2019; Goreis & Voracek, 2019).

## Moderators

We coded for potential moderators and examined whether these moderators imposed boundary conditions on the relations between conspiratorial ideation and motivational and personological constructs.<sup>7</sup>

**Conspiracy Theory Type.** As previously noted, endorsement of conspiracy theories is often assessed in two ways: through general conspiracy theories or specific conspiracy theories. In addition to these approaches, some measures of conspiratorial ideation assess conspiracy stereotypes, meaning that outgroup members are perceived as conspirators behind an event, usually due to pervasive stereotypes about said outgroup (e.g., Jewish individuals seek world domination and subvert others to obtain international power; see Swami, 2012). Moreover, measures of conspiratorial ideation have assessed fictitious conspiracy theories, meaning they are not circulated in public life (e.g., that Red Bull drinks are carcinogenic and this information is being hidden from the public; see Swami et al., 2011), and conspiracy scenarios, meaning individuals read about a conspiracy situation (e.g., death of Princess Diana; see Jolley et al., 2019).

Thus, the following categories were coded: general (effect size [ES] = 631,  $k = 96$ ), specific (ES = 700,  $k = 103$ ), fictitious (ES = 16,  $k = 4$ ), scenario-based (ES = 18,  $k = 8$ ), stereotype (ES = 51,  $k = 11$ ), and mixed (e.g., measure contained both general and specific conspiracies or study authors collapsed across measures of general and specific conspiracy theories; ES = 13,  $k = 3$ ). After the outbreak of the COVID-19 pandemic, we also coded for whether a measure assessed COVID-19 conspiracy theories specifically (ES = 80,  $k = 19$ ).

**Post Hoc Moderators.** After reviewing the literature, we coded for four additional moderators: type of measure for general personality, intelligence, efficacy, and trust used in each study. There is substantial variability across self-report measures of broadband personality traits in terms of content coverage of each of the five dimensions of the Big Five. For instance, the Ten-Item Personality Inventory (TIPI; see Gosling et al., 2003) assesses each personality dimension with a mere two items, whereas the Neuroticism, Extraversion, Openness Personality Inventory–Revised (see Costa & McCrae, 2008) assesses each dimension with 48 items. The HEXACO Personality Inventory–Revised (HEXACO PI-R; see Lee & Ashton, 2018) assesses six overarching dimensions of personality rather than five, including modified versions of the Big Five traits in addition to honesty–humility. The following measures were coded as categorical variables: the HEXACO PI-R (ES = 65,  $k = 6$ ), TIPI (ES = 116,  $k = 12$ ), Neuroticism, Extraversion, Openness Personality Inventory–Revised (Costa & McCrae, 2008; ES = 4,  $k = 1$ ), Big Five Aspects Scale (DeYoung et al., 2007; ES = 4,  $k = 1$ ), International Personality Item Pool–NEO Short-Form (Johnson, 2014; ES = 45,  $k = 6$ ), Five-Factor Model Rating Form (Samuel et al., 2013; ES = 5,  $k = 1$ ), the Big Five Inventory (BFI; John et al., 1991; ES = 76,  $k = 6$ ), the BFI-10 (Rammstedt & John, 2007; ES = 5,  $k = 1$ ), the Comprehensive Intellectual Humility Scale (CIHS; Krumeri-Mancuso & Rouse, 2016; ES = 10,  $k = 2$ ), and the General Intellectual Humility Scale (GIHS; Leary et al., 2017; ES = 10,  $k = 2$ ).

There was also significant cross-study variation in measures used to assess intelligence. Dimensions or types of intelligence can yield

differing correlations with various individual difference constructs, including general personality traits (e.g., Reeve et al., 2006) and personality disorder traits (e.g., psychopathy; Watts et al., 2016). In post hoc analyses, we examined the dimension and type of intelligence measured as a moderator in the relationship between conspiratorial ideation and intelligence. We coded for the following: general intelligence (i.e., total scores on performance-based measures of intelligence; ES = 9,  $k = 5$ ), matrix reasoning (ES = 4,  $k = 3$ ), numeracy (ES = 9,  $k = 7$ ), verbal reasoning (ES = 7,  $k = 3$ ), base-rate neglect (ES = 1,  $k = 1$ ), and self-reported intelligence (i.e., self-placement on a distribution of percentiles, ES = 8,  $k = 4$ ).

In addition, we coded for the domain of efficacy assessed, given that there could be important variability across these domains in their relations with conspiratorial ideation. We coded the following domains: self-efficacy ( $k = 6$ ; ES = 11), external-efficacy ( $k = 2$ ; ES = 6), and political-efficacy ( $k = 4$ ; ES = 9). Similarly, we coded for the domain of trust assessed to examine whether there are differences across domains of trust in relation to conspiratorial ideation. We coded the following domains of trust: authority ( $k = 1$ , ES = 2), combined (i.e., multiple forms of trust were combined into a single score;  $k = 2$ , ES = 5), cultural ( $k = 1$ , ES = 1), government/politics ( $k = 11$ , ES = 29), institutional ( $k = 9$ , ES = 21), interpersonal ( $k = 17$ , ES = 36), medicine ( $k = 3$ , ES = 3), and science ( $k = 2$ , ES = 2). All post hoc moderation results are in Supplemental Tables S10–S13.

## Data Analytic Plan

All analyses were conducted using the *metafor* package in R (Viechtbauer, 2010).

## Outliers

We generated data sets, wherein data were removed at the 95th and 99th percentiles of the distribution of the standardized residuals for each meta-analytic model. All models were then run using data sets with outliers removed. We note if the results changed (in terms of statistical significance and/or direction of the effect) when excluding outliers. If the results did not change appreciably after removing outliers, then we retained the full data set for our analyses (the models with outliers removed are available at <https://osf.io/jxyfn/>).

## Main Effects

Correlations were transformed using Fisher's  $r$ -to- $z$  transformation to normalize the sampling distribution of the Pearson's  $r$  coefficients (Silver & Dunlap, 1987). Effect sizes were also weighted according to the inverse of their variance (i.e., sampling error) as it is the standard approach in meta-analysis (Marin-Martinez & Sánchez-Meca, 2010).

<sup>7</sup> We additionally coded for the predominate nation in each study (e.g., >50% of the sample comprised participants from said nation), the average age and gender in each sample, the sample composition of each sample, political affiliation, the WEIRDness of each sample, and predominate education in each sample. We also coded for the U.S. region of each sample when such data were available. The descriptive statistics for these constructs are reported in Supplemental Tables S4 and S5. Moderation results for these variables are available in Supplemental Materials 1, 2, Tables S6, S7, and S16–S21.

We used a three-level random-effects model with restricted maximum likelihood estimation (Assink & Wibbelink, 2016), modeling the sampling variance for each effect size (Level 1), within-sample variation across outcomes (Level 2), and between-sample variation (Level 3). By accounting for systematic variance across outcomes from the same sample, we were better able to account for correlated sampling errors (e.g., because of multiple effect sizes drawn from the same sample; Van den Noortgate et al., 2013) than previous meta-analyses (e.g., Goreis & Voracek, 2019; Stasielowicz, 2022). In total, we calculated 52 meta-analytic models (one for each variable of interest), with  $k$ s (studies) ranging from 3 to 40 and  $N$ s (sample size) from 578 to 67,236.

### Heterogeneity

We quantified heterogeneity using several approaches. First, Cochran's  $Q$  statistic is derived from the  $Q$  test and approximates a  $\chi^2$  distribution with  $k - 1$  degrees of freedom. Interpretation of the  $Q$  statistic represents the presence or absence of significant between-study heterogeneity. Although the  $Q$  statistic is a useful metric of heterogeneity, it has poor power to detect heterogeneity when the  $k$  is small and can be statistically significant in the absence of true heterogeneity when the  $k$  is large (Huedo-Medina et al., 2006). The  $I^2$  statistic overcomes some of the  $Q$  statistic's limitations, as it is a metric of the proportion of total variation in the observed effect that is due to between-study heterogeneity in the "true" effect (Higgins & Thompson, 2002). We calculated  $I^2$  in Level 2 ( $I^2_{(2)}$ ) and Level 3 ( $I^2_{(3)}$ ) of the model, to ascertain variation across outcomes within sample and across samples, respectively, relative to the total variance. In addition, we calculated  $H^2$  (Higgins & Thompson, 2002), which reflects the difference between  $Q$  and its expected value when heterogeneity is absent. Importantly,  $H^2$  is not impacted by the number of studies, affording comparisons of heterogeneity across meta-analytic models. We interpreted  $H^2$  values according to Higgins and Thompson's (2002) benchmarks:  $H^2 = 1$  suggests that the population of studies is homogeneous, whereas  $H^2 > 1.5$  suggests that heterogeneity is present. We also calculated  $\tau_1^2$  and  $\tau_2^2$ , which describe the within-sample and between-sample variances of the true effect sizes in our data set. Alongside our reporting of these variances, we computed the standard deviation of the true effect sizes,  $\tau$ , which is calculated as  $\sqrt{\tau_1^2 + \tau_2^2}$ .

### Moderator Analyses

For categorical moderators, we only included levels of a given moderator variable if there were three or more effect sizes. A single three-level random-effects model was fitted to the data with the categorical factor included to model the differences between the subgroups (Viechtbauer, 2010). The intercept was removed to model the effect size for each group. We examined significant moderation models based on an omnibus  $F$ -test. For models with a significant omnibus  $F$ -test, we next adjudicated whether effect sizes were significantly different based on  $t$  tests comparing each level of the moderator.

### Publication Bias

We also investigated publication bias (i.e., factors that may limit the representativeness of a set of published studies, such as the

statistical significance of the results or the accessibility of the article; see McShane et al., 2016) using several analytic strategies. First, we added the standard error or variance for each effect size as a predictor in each meta-analytic model. This analytic approach is closely linked to the PET-PEESE method used in two-level meta-analyses (Stanley & Doucouliagos, 2014). The precision-effect test (PET; Stanley & Doucouliagos, 2014) is a meta-regression technique in which the effect sizes are predicted from their standard errors and weighted according to their precision estimates (see Carter et al., 2019). If PET is significant, then it is recommended to follow-up with the precision-effect estimate with standard error test (PEESE; see Carter et al., 2019). PEESE is the same as PET except that the effect sizes are predicted from the squared standard errors. The intercept of the regression in the PEESE model is the estimated total effect controlling for publication bias (Stanley & Doucouliagos, 2014). Although the performance of PET-PEESE in multilevel meta-analytic models has not yet been adjudicated, some consider it to be one of the best available methods to correct for publication bias in meta-analysis (e.g., Lehtonen et al., 2018).

Nevertheless, PET-PEESE can yield unstable estimates if the  $k$ s are low and/or if between-study heterogeneity is high (Carter et al., 2019; Stanley, 2017). Given these limitations, we also examined whether effect sizes were significantly different between published and unpublished results. We created a dichotomous variable (1 = published; 2 = unpublished) and conducted subgroup analyses using the method described earlier for categorical moderators (published ES = 1,065,  $k = 146$ ; unpublished ES = 364,  $k = 24$ ).<sup>8</sup>

### Transparency and Openness

We followed the Meta-Analysis Reporting Standards guidelines for reporting our meta-analytic results (Appelbaum et al., 2018). Our data files, code, and output files are available at <https://osf.io/jxyfn/>. This study was not preregistered.

### Results

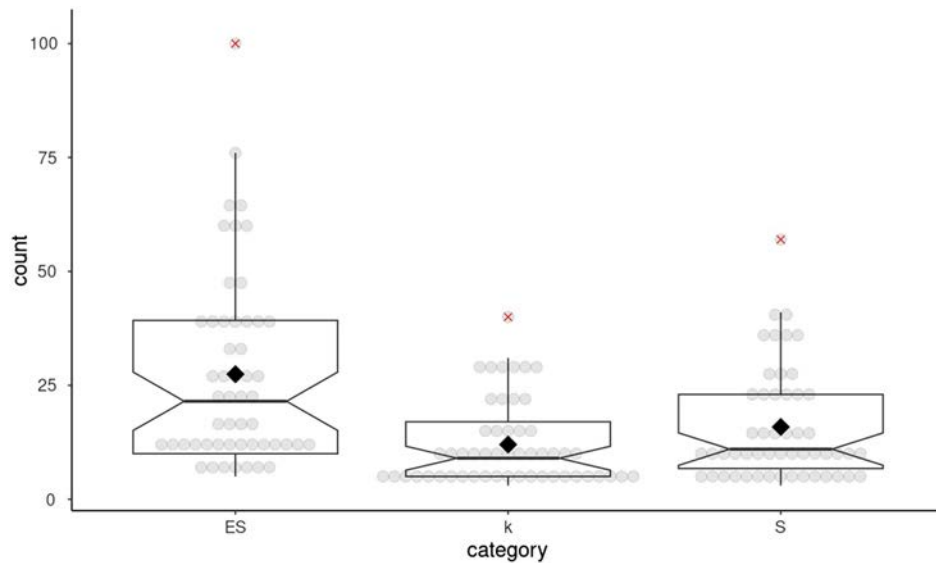
The full output of the results for each construct (e.g., heterogeneity, forest plots, moderator results) can be found at <https://osf.io/jxyfn/>. Results and forest plots for each construct can also be viewed through the following Shiny app at <https://8cz637-thc.shinyapps.io/ConspiracyMetaAnalysis/>.

### Study Characteristics

There were 170 studies, 257 samples, and 1,429 effect sizes included in the present meta-analysis. On average, there were 12 studies, 16 samples, and 27 effect sizes per construct (Figure 2), although it is evident there was considerable heterogeneity in terms of the studies, samples, and effect sizes per construct. The lone

<sup>8</sup> We also created funnel plots depicting the distribution of the effect sizes by their precision ( $1/SE$ ). The 95th and 99th percentile confidence intervals are included in the funnel plots to facilitate identification of potential outliers (these are available at <https://osf.io/jxyfn/>). Interpreting the magnitude of publication bias from a funnel plot based upon visual inspection alone is subjective and susceptible to error, however, and scholars caution against interpreting funnel plots when effect sizes are significantly heterogeneous (Vevea & Woods, 2005). Thus, we do not describe these results but refer readers to online materials at <https://osf.io/jxyfn/>.

**Figure 2**  
*Boxplot of the Number of Studies, Samples, and Effect Sizes in the Meta-Analysis*



*Note.*  $k$  = number of studies;  $S$  = number of samples; ES = number of effect sizes. The only outlier across all three categories was “trust,” and it is denoted with a red X. Each point represents a variable assessed in the meta-analysis. See the online article for the color version of this figure.

outlier for number of studies, samples, and effect sizes was trust ( $k = 40$ ,  $S = 57$ , ES = 100).

Studies were conducted between 1994 and 2022 ( $M = 2017$ ,  $SD = 3.82$ ). Across constructs, there were 158,473 participants. Of 170 studies, 146 ( $S = 231$ ) were published and 24 ( $S = 32$ ) were unpublished. Most studies included American participants ( $k = 77$ ,  $S = 103$ ), followed by participants from the United Kingdom ( $k = 23$ ,  $S = 33$ ) and Poland ( $k = 12$ ,  $S = 19$ ). For studies that reported their recruitment location within the United States, most reported sampling from the Northeast ( $k = 5$ ,  $S = 6$ ) or West ( $k = 4$ ,  $S = 5$ ). Most studies recruited from community samples ( $k = 117$ ,  $S = 170$ ) followed by student samples ( $k = 48$ ,  $S = 63$ ). The average age across samples was 32.29 years ( $SD = 9.82$ ), and the average percentage of females across samples was 56.4% ( $SD = 15.66$ ). Most studies included participants who identified as politically Democratic ( $k = 9$ ,  $S = 12$ ), and most participants were college educated ( $k = 86$ ,  $S = 124$ ). Most studies assessed specific conspiracy theories ( $k = 103$ ,  $S = 141$ ) or general conspiracy theories ( $k = 96$ ,  $S = 141$ ); the remaining studies assessed fictitious conspiracy theories ( $k = 4$ ,  $S = 7$ ), endorsement of conspiracy scenarios ( $k = 8$ ,  $S = 11$ ), conspiracy stereotypes ( $k = 11$ ,  $S = 19$ ), or a mixture of both specific and general conspiracy theories ( $k = 3$ ,  $S = 5$ ). In addition, 158 studies assessed non-COVID-19 conspiracy theories ( $S = 242$ ) and 19 assessed COVID-19 conspiracy theories ( $S = 21$ ).

Regarding motivational and personological domains assessed across studies, social motives were most frequently assessed ( $k = 88$ ,  $S = 126$ ), followed by epistemic motives ( $k = 77$ ,  $S = 115$ ), existential motives ( $k = 60$ ,  $S = 81$ ), psychopathology ( $k = 47$ ,  $S = 63$ ), and general personality traits ( $k = 33$ ,  $S = 44$ ). Regarding constructs assessed across studies, the most commonly assessed

construct was trust ( $k = 40$ ,  $S = 57$ ), followed by Big Five traits ( $k$ s ranged from 28 [conscientiousness, agreeableness, neuroticism] to 31 [openness];  $S$ s range from 35 [agreeableness] to 41 [openness]), RWA ( $k = 27$ ,  $S = 40$ ), self-reported intuition and cognitive reflection ( $k$ s were 23,  $S$ s were 29 and 27), intelligence ( $k = 22$ ,  $S = 26$ ), and anxiety, paranoia, and SDO ( $k$ s were 17,  $S$ s ranged from 22 [SDO] to 25 [anxiety]).

### Outliers

None of the results appreciably changed in terms of statistical significance or effect size after removing outliers at either the 95th or 99th percentiles of the distribution of effect sizes (mean change in Pearson’s  $r$  after removing outliers was  $<.01$  for both data sets). Hence, we used the full data set for all subsequent analyses. Results from data sets with outliers removed are available at <https://osf.io/jxyfn/>.

### Main Effects and Heterogeneity

The main effects, 95% confidence intervals, and heterogeneity statistics are presented in Tables 3 and 4.<sup>9</sup> Descriptive statistics are presented in Tables 5 and 6. For a rank-ordered presentation of the results, see Figure 3. The meta-analytic estimates for motivational constructs are depicted in Figure 4, and the meta-analytic estimates for personological constructs are depicted in

<sup>9</sup> The statistical significance of the main effects was unchanged after employing a Benjamini and Hochberg (1995) correction for multiple comparisons.

**Table 3**  
*Study Characteristics, Meta-Analytic Estimates, and Heterogeneity Statistics for the Motivational Constructs*

Construct	<i>k</i>	<i>S</i>	ES	<i>N</i>	<i>r</i>	95% CI	<i>H</i> <sup>2</sup>	<i>Q</i>	<i>I</i> <sup>2</sup> ( <sub>2</sub> )	<i>I</i> <sup>2</sup> ( <sub>3</sub> )	τ <sub>1</sub> <sup>2</sup>	τ <sub>2</sub> <sup>2</sup>	τ
<b>Epistemic</b>													
Self-reported rationality	21	25	37	9,717	<b>-.15</b>	[-.20, -.09]	6.19	<b>265.93</b>	15.2%	73.1%	.003	.015	.13
Cognitive reflection	23	27	39	16,387	<b>-.17</b>	[-.23, -.11]	5.88	<b>268.51</b>	5.9%	87.2%	.001	.020	.14
Need for cognition	10	11	13	12,477	<i>-.14</i>	[-.24, -.04]	42.36	<b>563.62</b>	25.0%	70.4%	.006	.016	.15
Self-reported intuition	23	29	41	13,238	<b>.21</b>	[.18, .25]	3.47	<b>183.29</b>	61.6%	19.3%	.007	.002	.09
Bullshit receptivity	8	9	12	5,076	<b>.26</b>	[.18, .34]	7.26	<b>99.10</b>	14.1%	69.6%	.001	.007	.09
Conjunction fallacy	7	9	28	3,423	<i>.14*</i>	[.02, .25]	5.30	<b>176.44</b>	<1.0%	88.0%	.000	.025	.16
Delusion-proneness	5	5	14	1,851	<b>.42</b>	[.32, .51]	2.72	<b>52.10</b>	15.6%	60.0%	.002	.007	.09
Illusory pattern perception	12	23	47	6,019	<b>.24</b>	[.17, .30]	5.40	<b>300.83</b>	50.4%	36.2%	.015	.010	.16
Illusory agency detection	5	8	9	4,363	<i>.18</i>	[.09, .27]	5.34	<b>57.02</b>	<1.0%	78.5%	.000	.008	.09
Anthropomorphism	4	6	7	1,255	<b>.40</b>	[.33, .46]	.41	9.84	<1%	<1%	.000	.000	.00
Dogmatism	9	9	18	8,510	<i>.14</i>	[.04, .24]	20.71	<b>390.76</b>	35.4%	58.8%	.008	.013	.15
AOT	6	11	14	5,645	<b>-.25</b>	[-.35, -.15]	10.85	<b>165.88</b>	6.5%	85.6%	.002	.020	.15
Intelligence	22	26	39	12,276	<b>-.16</b>	[-.21, -.11]	3.93	<b>192.34</b>	2.0%	83.2%	.000	.011	.10
Need for closure	13	15	24	11,583	<b>.10</b>	[.05, .15]	3.62	<b>110.88</b>	<1.0%	79.8%	.000	.007	.08
Intolerance of ambiguity	5	6	10	1,818	<i>.25</i>	[.09, .40]	4.40	<b>54.03</b>	<1.0%	85.5%	.000	.027	.16
<b>Existential</b>													
Existential threat	4	6	11	4,700	<b>.34</b>	[.26, .43]	24.93	<b>285.20</b>	94.4%	<1%	.014	.000	.12
Belief in a dangerous world	5	9	15	3,613	<b>.39</b>	[.27, .50]	6.44	<b>111.54</b>	15.8%	70.9%	.004	.019	.15
Cynicism	11	12	21	8,461	<b>.31</b>	[.21, .41]	31.74	<b>687.60</b>	96.8%	<1%	.046	.000	.21
Powerlessness	9	11	17	6,910	<b>.28</b>	[.18, .38]	3.37	<b>74.33</b>	10.7%	78.5%	.003	.020	.15
Anxiety	17	25	40	26,348	<b>.19</b>	[.10, .28]	20.12	<b>844.76</b>	<1.0%	96.6%	.000	.045	.21
Death anxiety	6	6	8	1,691	<i>.12</i>	[.05, .19]	.24	9.95	32.9%	<1%	.002	.000	.05
Control	14	21	48	7,128	<b>-.17</b>	[-.21, -.12]	3.77	<b>229.15</b>	29.2%	25.2%	.004	.007	.10
Efficacy	9	11	26	11,142	<i>-.07</i>	[-.22, .09]	36.65	<b>972.96</b>	25.4%	73.3%	.018	.051	.26
<b>Social</b>													
Anomie	12	16	27	7,435	<b>.34</b>	[.28, .39]	2.29	<b>88.96</b>	17.3%	64.7%	.002	.008	.10
Alienation	3	3	5	578	<i>.28</i>	[-.12, .67]	2.22	<i>16.12</i>	<1.0%	89.7%	.000	.054	.23
Individual self-esteem	11	15	22	9,630	<i>-.09</i>	[-.14, -.04]	2.81	<b>83.94</b>	<1.0%	76.5%	.000	.006	.08
Individual narcissism	10	13	32	9,373	<b>.22</b>	[.15, .30]	3.35	<b>139.27</b>	7.6%	82.5%	.002	.016	.13
Need for uniqueness	7	10	24	3,690	<b>.16</b>	[.13, .18]	.01	24.16	4.9%	4.3%	.000	.000	.02
Trust	40	57	100	67,236	<b>-.26</b>	[-.30, -.22]	30.35	<b>3135.42</b>	32.2%	65.7%	.008	.016	.13
Collective self-esteem	5	6	6	1,818	<i>.22</i>	[-.02, .46]	17.24	<b>109.44</b>	46.6%	46.6%	.024	.024	.22
Collective narcissism	6	10	18	4,553	<b>.34</b>	[.22, .46]	24.28	<b>455.11</b>	95.8%	<1.0%	.054	.000	.23
Social threat	5	7	13	2,500	<b>.56</b>	[.30, .82]	33.65	<b>450.43</b>	39.4%	58.3%	.048	.071	.35
RWA	27	40	66	27,283	<b>.22</b>	[.17, .26]	12.79	<b>910.15</b>	69.7%	25.3%	.021	.007	.17
SDO	17	22	41	12,579	<b>.20</b>	[.13, .27]	16.56	<b>720.07</b>	63.2%	31.5%	.021	.010	.18

*Note.* Bold indicates  $p < .001$ , italicized indicates  $p < .01$ .  $k$  = number of studies;  $S$  = number of samples; ES = number of effect sizes; CI = confidence intervals; AOT = actively open-minded thinking; RWA = right-wing authoritarianism; SDO = social dominance orientation. Positive correlations indicate that conspiratorial ideation is related to more of a given construct, whereas negative correlations indicate that conspiratorial ideation is related to less of a given construct.

\*  $p < .05$ .

Figure 5. Herein, we provide a narrative overview of our findings; granular details are provided in the main tables.

**Motivational Correlates**

**Epistemic**

Conspiratorial ideation was weakly and significantly related to less analytical thinking and need for cognition ( $r$ s ranged from  $-.14$  [need for cognition] to  $-.17$  [cognitive reflection]). Not only was conspiratorial ideation related to less analytical thinking, but it was also weakly-to-moderately related to more reliance on intuition ( $r$ s ranged from  $.14$  [conjunction fallacy] to  $.26$  [bullshit receptivity]) and was strongly related to more delusion-proneness ( $r = .42$ ). There were also clear links between conspiratorial ideation and patternicity, with effect sizes ranging from small to large ( $r$ s ranged from  $.18$  [illusory agency detection] to  $.40$  [anthropomorphism]).

Consistent with the possibility that conspiratorial ideation may align with motives to maintain one’s views, conspiratorial ideation

was weakly related to more dogmatism ( $r = .14$ ) and moderately related to less actively open-minded thinking ( $r = -.25$ ). Conspiratorial ideation was additionally related to motives to identify certainty and avoid complexity (need for closure  $r = .10$ ; intolerance of ambiguity  $r = .25$ ). Results indicated that conspiratorial ideation may also align with low cognitive ability, as conspiratorial ideation was weakly negatively related to intelligence ( $r = -.16$ ). It should be noted that the relationship between intelligence and conspiratorial ideation was significantly larger when assessing (a) verbal reasoning ( $b = -.21$ ) than self-reported level of intelligence,  $b = -.06$ ;  $t(29) = 2.53$ ,  $p < .05$ , and (b) general intelligence ( $b = -.22$ ) than self-reported level of intelligence,  $t(29) = 2.47$ ,  $p < .05$ . Heterogeneity was slightly reduced when accounting for the domain of intelligence assessed ( $\Delta\tau = .01$ ).

The population of studies for each construct tended to be heterogeneous ( $H^2$  ranged from  $2.72$  [delusion-proneness] to  $42.36$  [need for cognition]) apart from anthropomorphism ( $H^2 = .41$ ). Between-sample heterogeneity tended to be large relative to

**Table 4***Study Characteristics, Meta-Analytic Estimates, and Heterogeneity Statistics for the Personological Constructs*

Construct	<i>k</i>	<i>S</i>	ES	<i>N</i>	<i>r</i>	95% CI	$H^2$	<i>Q</i>	$I^2_{(2)}$	$I^2_{(3)}$	$\tau^2_1$	$\tau^2_2$	$\tau$
<b>Psychopathology</b>													
Schizotypy	12	16	26	5,592	<b>.38</b>	[.27, .49]	18.65	<b>510.85</b>	53.9%	40.8%	.029	.022	.23
Paranoia	17	23	40	11,850	<b>.34</b>	[.30, .39]	3.86	<b>194.33</b>	22.8%	60.3%	.003	.007	.10
Unusual experiences	12	13	26	5,331	<b>.35</b>	[.25, .44]	6.68	<b>199.73</b>	36.0%	55.4%	.011	.017	.17
Negative affect	5	9	13	2,666	<b>.19</b>	[.12, .25]	2.35	<b>43.56</b>	75.2%	<1%	.007	.000	.08
Detachment	4	6	10	2,378	<b>.23</b>	[.15, .31]	1.28	22.76	2.9%	71.2%	.000	.005	.07
Antagonism	4	6	10	2,378	<b>.28</b>	[.17, .39]	2.93	<b>39.28</b>	<1%	86.9%	.000	.012	.11
Disinhibition	4	6	10	2,378	<b>.26</b>	[.13, .39]	3.32	<b>43.15</b>	<1%	90.3%	.000	.017	.13
Psychoticism	4	6	10	2,378	<b>.34</b>	[.21, .47]	3.33	<b>43.29</b>	4.2%	86.2%	.001	.016	.13
Physical aggression	3	5	9	2,010	<i>.19</i>	[.09, .29]	2.01	<b>27.13</b>	12.0%	70.1%	.002	.010	.11
Depression	8	9	10	19,108	<i>.16</i>	[.09, .29]	17.76	<b>187.65</b>	<1.0%	93.1%	.000	.010	.10
Anger	6	7	10	8,094	<b>.17</b>	[.11, .23]	5.83	<b>68.28</b>	54.4%	30.5%	.004	.002	.08
Hostility	4	4	6	1,665	<i>.30</i>	[.16, .44]	3.34	<b>26.01</b>	7.4%	81.8%	.001	.016	.13
<b>General personality</b>													
Humility	6	10	34	4,899	<b>-.15</b>	[-.19, -.12]	3.91	<b>166.78</b>	80.5%	<1%	.007	.000	.08
Emotionality/neuroticism	28	37	62	31,145	<b>.05</b>	[.03, .07]	1.13	<b>132.07</b>	5.8%	57.9%	.000	.002	.04
Extraversion	29	37	63	30,614	<i>.03</i>	[.01, .05]	1.92	<b>183.68</b>	8.4%	61.3%	.000	.002	.05
Agreeableness	28	35	58	30,086	<b>-.07</b>	[-.11, -.04]	4.31	<b>308.05</b>	11.6%	78.0%	.001	.008	.10
Conscientiousness	28	36	62	30,436	<b>-.04*</b>	[-.07, -.00]	4.76	<b>356.93</b>	11.3%	77.2%	.001	.008	.09
Openness	31	41	76	31,299	<i>.02</i>	[-.02, .06]	9.36	<b>787.72</b>	23.2%	70.5%	.004	.014	.12

Note. Bold indicates  $p < .001$ , italicized indicates  $p < .01$ .  $k$  = number of studies;  $S$  = number of samples; ES = number of effect sizes; CI = confidence intervals. Positive correlations indicate that conspiratorial ideation is related to more of a given construct, whereas negative correlations indicate that conspiratorial ideation is related to less of a given construct.

\*  $p < .05$ .

within-sample variation ( $I^2_{(3)}$  ranged from 58.8% [dogmatism] to 88.0% [conjunction fallacy]); the exceptions were self-reported rationality, illusory pattern perception, and anthropomorphism. Overall, the standard deviation in true effects between observations was smaller than the magnitude of the effect sizes, with the exceptions of need for cognition ( $\tau = .15$ ), susceptibility to the conjunction fallacy ( $\tau = .16$ ), and dogmatism ( $\tau = .15$ ).

### Existential

Conspiratorial ideation was strongly related to perceiving existential threats ( $r = .34$ ), believing the world is dangerous ( $r = .39$ ), perceiving the world with cynicism ( $r = .31$ ), and feeling powerless ( $r = .28$ ). In line with these findings, conspiratorial ideation was weakly-to-moderately related to more anxiety (anxiety  $r = .19$ ; death anxiety  $r = .12$ ) and was weakly, yet significantly, related to perceiving that one has less control ( $r = -.17$ ). In contrast, conspiratorial ideation was not significantly related to efficacy ( $r = -.07$ ), and the relation between efficacy and conspiratorial ideation did not significantly vary by measure of efficacy after correcting for the false discovery rate (Benjamini & Hochberg, 1995).

The population of studies for each construct tended to be heterogeneous ( $H^2$  ranged from 3.37 [powerlessness] to 36.65 [efficacy]) except for death anxiety ( $H^2 = .24$ ). Between-sample heterogeneity tended to be small relative to within-sample variation ( $I^2_{(3)}$  ranged from <1% [existential threat, belief in a dangerous world, death anxiety] to 25.2% [control]); the exceptions were belief in a dangerous world, powerlessness, anxiety, and control. The standard deviation in true effects between observations tended to be smaller than the magnitude of the effect sizes, with the exceptions of efficacy ( $\tau = .26$ ) and anxiety ( $\tau = .21$ ).

### Social

Conspiratorial ideation was related to constructs pertaining to feeling misunderstood by society and feeling isolated, as it was strongly associated with more anomie ( $r = .34$ ), less trust ( $r = -.26$ ), and more alienation ( $r = .28$ ); nevertheless, the latter relationship was not significant. The relations between trust and conspiratorial ideation did not significantly differ across domains of trust. There was also evidence that conspiratorial ideation is related to a fragile sense-of-self, as it was weakly related to less individual self-esteem ( $r = -.09$ ), moderately related to more individual narcissism ( $r = .22$ ), and weakly related to more need for uniqueness ( $r = .16$ ). A similar pattern of results emerged when looking at perceptions of one's ingroup and outgroup. Specifically, conspiratorial ideation was moderately, albeit not significantly, related to more collective self-esteem ( $r = .22$ ), and it was strongly related to more collective narcissism ( $r = .34$ ). Additionally, conspiratorial ideation was strongly related to perceiving outgroup members as threatening ( $r = .56$ ) and moderately higher levels of RWA ( $r = .22$ ) and SDO ( $r = .20$ ).

The population of studies for each construct tended to be heterogeneous ( $H^2$  ranged from 2.22 [alienation] to 33.65 [social threat]) except for need for uniqueness ( $H^2 = .01$ ). Between-sample heterogeneity tended to be large relative to within-sample variation ( $I^2_{(3)}$  ranged from 58.3% [social threat] to 89.7% [alienation]); the exceptions were need for uniqueness, collective narcissism, RWA, and SDO. The standard deviation in true effects between observations was consistently smaller than the magnitude of the effect sizes.

### Motivational Variables: Interim Summary

In sum, conspiratorial ideation was weakly and significantly related to less analytical thinking, need for cognition, and intelligence, more

**Table 5**  
*Descriptive Statistics for Each Moderator for the Motivational Constructs*

Construct	General				CT type				COVID-19		Measure type moderators		Pub. status	
	General	Specific	Stereotype	Fictitious	Scenario	Mixed	Yes	No	Yes	No	Pub.	Unpub.	Measure type moderators	
													Pub.	Unpub.
Epistemic	151	176	2	11	10	—	18	332	—	—	250	100	—	—
Self-reported rationality	18	18	—	1	—	—	1	36	—	—	24	13	—	—
Cognitive reflection	16	23	—	—	—	—	7	32	—	—	26	13	—	—
Need for cognition	3	10	—	—	—	—	—	13	—	—	11	2	—	—
Self-reported intuition	24	17	—	—	—	—	2	39	—	—	23	18	—	—
Bullshit receptivity	5	7	—	—	—	—	1	10	—	—	5	7	—	—
Conjunction fallacy	17	9	2	—	—	—	—	28	—	—	23	5	—	—
Delusion-proneness	8	9	—	—	—	—	2	15	—	—	10	7	—	—
Illusory pattern perception	12	20	—	5	10	—	—	47	—	—	42	5	—	—
Illusory agency detection	7	2	—	—	—	—	—	9	—	—	9	—	—	—
Agency detection	5	2	—	—	—	—	—	7	—	—	7	—	—	—
Anthropomorphism	8	10	—	—	—	—	—	18	—	—	3	15	—	—
Dogmatism	3	10	—	—	—	—	—	12	—	—	8	5	—	—
AOT	17	20	—	1	—	—	1	37	—	—	22	16	—	—
Intelligence	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Need for closure	10	13	—	1	—	—	1	23	—	—	14	10	—	—
Intolerance of ambiguity	4	3	2	1	—	—	—	10	—	—	9	1	—	—
Existential	87	69	20	3	3	6	175	13	—	—	161	27	—	—
Existential threat	5	5	1	—	—	—	—	11	—	—	10	1	—	—
BDW	8	6	—	1	—	—	—	15	—	—	12	3	—	—
Cynicism	8	11	1	1	—	—	—	21	—	—	18	3	—	—
Powerlessness	6	10	—	1	—	—	1	16	—	—	15	2	—	—
Anxiety	13	9	9	—	2	6	4	35	—	—	26	13	—	—
Death anxiety	5	3	—	—	—	—	—	8	—	—	8	—	—	—
Control	26	12	9	—	1	—	1	47	—	—	39	9	—	—
Efficacy	21	5	—	—	—	—	—	26	—	—	22	4	—	—
Social	172	153	24	1	4	—	19	335	—	—	290	64	—	—
Anomie	14	11	—	—	1	—	—	26	—	—	17	9	—	—
Alienation	—	3	1	—	1	—	—	5	—	—	4	1	—	—
Individual self-esteem	4	16	1	1	—	—	—	20	—	—	20	2	—	—
Individual narcissism	18	14	—	—	—	—	5	27	—	—	11	21	—	—
Need for uniqueness	13	9	—	—	2	—	1	23	—	—	19	5	—	—
Trust	45	53	—	—	—	—	2	95	—	—	74	24	—	—
Collective self-esteem	2	1	3	—	—	—	—	6	—	—	5	1	—	—
Collective narcissism	6	5	7	—	—	—	—	18	—	—	14	4	—	—
Social threat	6	3	4	—	—	—	—	13	—	—	13	—	—	—
RWA	41	21	5	—	—	—	4	63	—	—	45	22	—	—
SDO	26	12	3	—	—	—	5	36	—	—	24	17	—	—

*Note.* CT = conspiracy theory; Pub. status = publication status; Pub. = published; unpub. = unpublished; AOT = actively open-minded thinking; BDW = Belief in a Dangerous World; auth = authority; comb = combined; govt = government; inst = institutions; inter = interpersonal; med = medical; RWA = right-wing authoritarianism; SDO = social dominance orientation. The number of effect sizes is displayed for each level of the moderator.

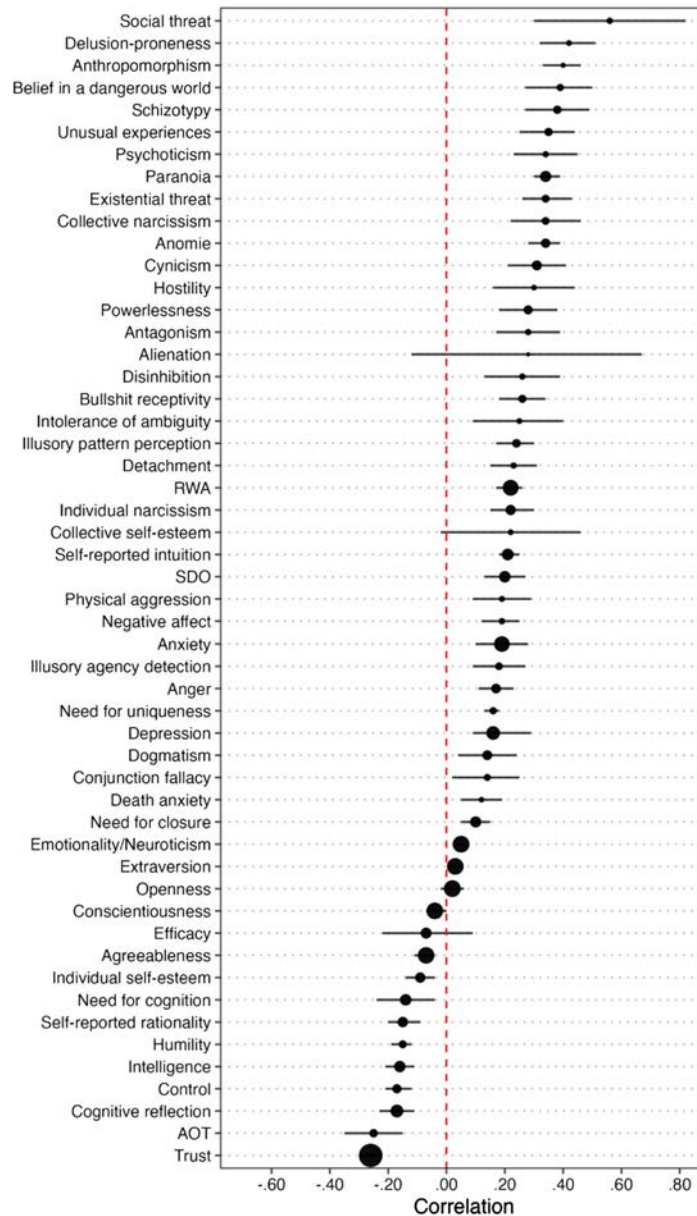
**Table 6**  
*Descriptive Statistics for Each Moderator for the Personological Constructs*

Construct	General	Specific	CT type			COVID-19		General personality measure		Pub. status	
			Stereotype	Fictitious	Scenario	Mixed	Yes	No	Pub.	Unpub.	
Psychopathology	73	100	5	1	1	1				121	60
Schizotypy	14	12	—	—	—	—	2	24	—	18	8
Paranoia	20	15	4	1	—	—	5	35	—	35	5
Unusual experiences	11	15	—	—	—	—	2	24	—	22	4
Negative affect	5	8	—	—	—	—	—	13	—	8	5
Detachment	2	8	—	—	—	—	—	10	—	5	5
Antagonism	2	8	—	—	—	—	—	10	—	5	5
Disinhibition	2	8	—	—	—	—	—	10	—	5	5
Psychoticism	2	8	—	—	—	—	—	10	—	5	5
Physical aggression	6	2	—	—	1	—	—	9	—	2	7
Depression	5	4	—	—	—	1	—	10	—	7	3
Anger	5	5	—	—	—	—	1	9	—	7	3
Hostility	4	1	1	—	—	—	—	6	—	3	3
General personality											
Humility	8	25	—	—	—	1	—	34	HEX = 14; CIHS = 10, GIHS = 10	26	8
Neuroticism	27	34	—	—	—	1	4	57	HEX = 10, BFI = 14, BFI-10 = 1, IPIP = 8, TIPI = 24, FFMRF = 1, BFI-10 = 1	41	21
Extraversion	28	34	—	—	—	1	4	58	HEX = 10, BFI = 14, BFI-10 = 1, IPIP = 8, TIPI = 24, FFMRF = 1	42	21
Agreeableness	25	32	—	—	—	1	4	54	HEX = 10, BFI = 14, BFI-10 = 1, IPIP = 8, TIPI = 20; FFMRF = 1	41	17
Conscientiousness	27	34	—	—	—	1	4	58	HEX = 10, BFI = 14, BFI-10 = 1, IPIP = 8, TIPI = 24; FFMRF = 1	41	21
Openness	33	42	—	—	—	1	4	72	HEX = 11, BFI = 14, BFI-10 = 1, IPIP = 13, TIPI = 24, BFAS = 4, FFMRF = 1, NEO = 4	50	26

*Note.* CT = conspiracy theory; General personality measure: HEXACO PIR = HEXACO Personality Inventory-Revised; HEX = HEXACO PIR; CIHS = Comprehensive Intellectual Humility Scale; GIHS = General Intellectual Humility Scale; BFI = Big Five Inventory; IPIP = International Personality Item Pool-NEO Short-Form; TIPI = Ten-Item Personality Inventory; FFMRF = Five-factor Model Rating Form; BFI-10 = Big Five Inventory 10-item Version; BFAS = Big Five Aspects Scale; NEO = Neuroticism, Extraversion, Openness Personality Inventory-Revised; Pub. status = publication status; Pub. = published; Unpub. = unpublished; HEXACO = Honesty-Humility, Emotionality, Extraversion, Agreeableness, Conscientiousness, Openness to Experience. The number of effect sizes is displayed for each level of the moderator.



**Figure 3**  
*Rank-Ordered Distribution of Meta-Analytic Correlations*

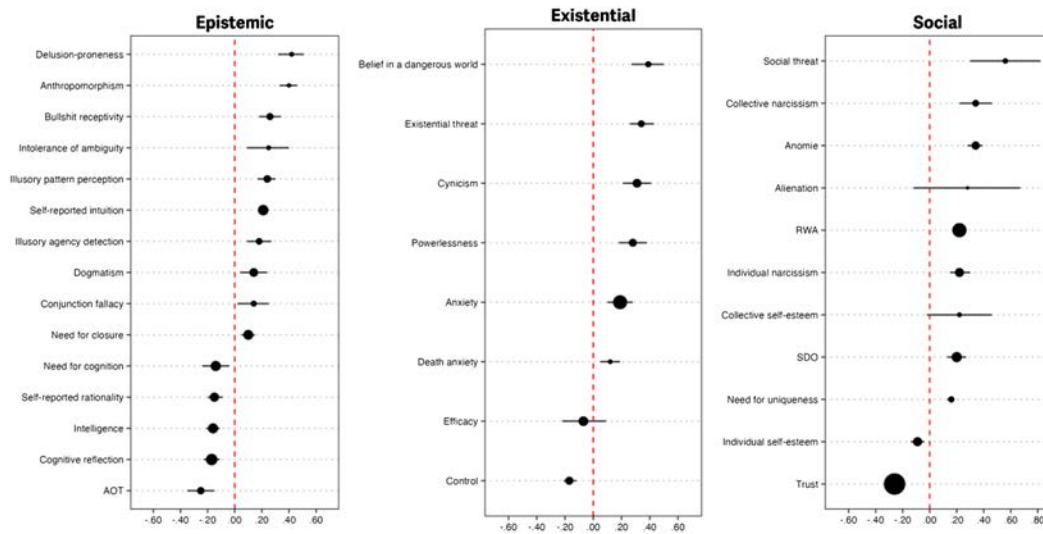


*Note.* The size of the circles in the figure corresponds to the number of studies included for that construct (i.e., larger circles reflect more studies). A negative correlation indicates that the variable is related to less conspiratorial ideation, whereas a positive correlation indicates that the variable is related to more conspiratorial ideation. RWA = right-wing authoritarianism; SDO = social dominance orientation; AOT = actively open-minded thinking. See the online article for the color version of this figure.

dogmatism and need for certainty, more anxiety and less perceived control, and less individual self-esteem. Conspiratorial ideation was moderately and significantly related to less open-minded thinking, more reliance on intuition, more illusory pattern perception, less trust, and more individual narcissism, RWA, and SDO. Finally, conspiratorial ideation was strongly related to more delusion-proneness

and anthropomorphism, more existential threat sensitivity, belief in a dangerous world, cynicism, and powerlessness, more anomie, and more collective narcissism and social threat perception. The population of studies for each construct tended to be heterogeneous, and between-sample heterogeneity tended to be large relative to within-sample variation for assessed motivational variables.

**Figure 4**  
*Meta-Analytic Effects Weighted by Sample Size for Motivational Constructs*



*Note.* The size of the circles in the figure correspond to the number of studies included for that construct (i.e., larger circles reflect more studies). A negative correlation indicates that the variable is related to less conspiratorial ideation, whereas a positive correlation indicates that the variable is related to more conspiratorial ideation. AOT = actively open-minded thinking; RWA = right-wing authoritarianism; SDO = social dominance orientation. See the online article for the color version of this figure.

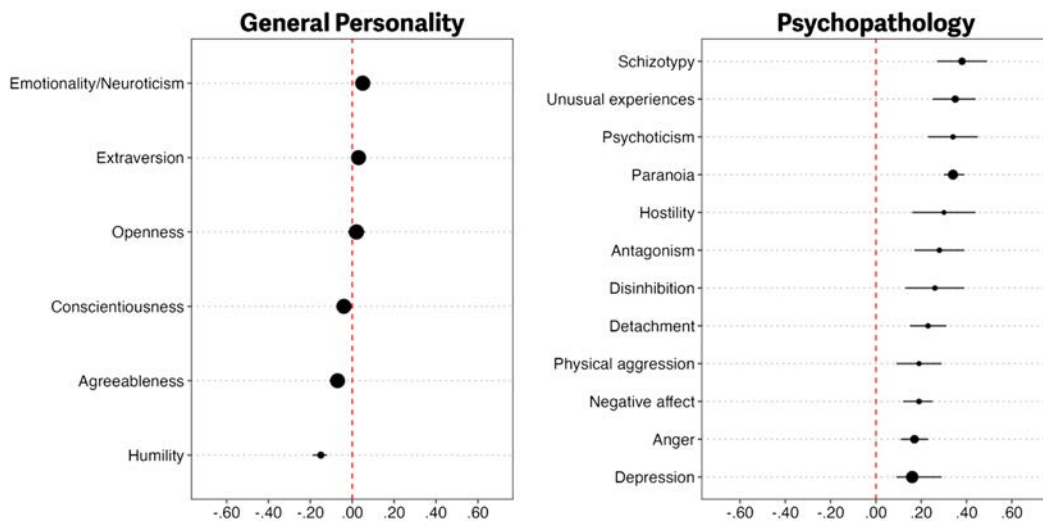
**Personological Correlates**

**Psychopathology**

Conspiratorial ideation was significantly and positively related to all indices of psychopathology; effect sizes ranged from small

to large. Regarding paranoia and allied constructs, conspiratorial ideation manifested large correlations with more paranoia ( $r = .34$ ), schizotypy ( $r = .38$ ), and tendencies to have unusual experiences ( $r = .35$ ). Moreover, conspiratorial ideation was related to broad personality disorder liability, as it manifested medium-to-large

**Figure 5**  
*Meta-Analytic Effects Weighted by Sample Size for Personological Constructs*



*Note.* The size of the circles in the figure correspond to the number of studies included for that construct (i.e., larger circles reflect more studies). A negative correlation indicates that the variable is related to less conspiratorial ideation, whereas a positive correlation indicates that the variable is related to more conspiratorial ideation. See the online article for the color version of this figure.

correlations with all general personality disorder dimensions ( $r$ s ranged from .19 [negative affect] to .34 [psychoticism]). Conspiratorial ideation was also related to indices of externalizing and internalizing. Specifically, conspiratorial ideation was weakly associated with more physical aggression ( $r = .19$ ), depression ( $r = .16$ ), and anger ( $r = .17$ ), and it was strongly related to hostility ( $r = .30$ ).

The population of studies for each construct tended to be heterogeneous ( $H^2$  ranged from 1.28 [detachment] to 18.65 [schizotypy]). Between-sample heterogeneity tended to be small relative to within-sample variation ( $I^2_{(3)}$  ranged from <1% [detachment, antagonism, depression] to 36.0% [unusual experiences]) with the exceptions of schizotypy, negative affect, and anger. The standard deviation in true effects between observations was consistently smaller than the magnitude of the effect sizes.

### General/Normal-Range Personality

Big Five personality traits, including openness ( $r = .02$ ), conscientiousness ( $r = -.04$ ), extraversion ( $r = .03$ ), agreeableness ( $r = -.07$ ), and neuroticism ( $r = .05$ ), were weak correlates of conspiratorial ideation; all relations, except for openness, were significant. The population of studies for each construct tended to be heterogeneous ( $H^2$  ranged from 1.13 [neuroticism] to 9.36 [openness]). Between-sample heterogeneity was large relative to within-sample variation ( $I^2_{(3)}$  ranged from 57.9% [neuroticism] to 78.0% [agreeableness]). The standard deviation in true effects between observations mostly exceeded the magnitude of the effect sizes, except for neuroticism ( $\tau = .04$ ).

The general personality measure variable significantly moderated the relations between conspiratorial ideation and neuroticism and conscientiousness. Regarding neuroticism, its relationship with conspiratorial ideation was significantly larger when neuroticism was assessed with (a) the IPIP ( $b = .10$ ) than the HEXACO PI-R,  $b = .01$ ;  $t(52) = 2.59$ ,  $p < .05$ , and (b) the IPIP than the TIPI,  $b = .04$ ;  $t(52) = 2.21$ ,  $p < .05$ . Heterogeneity largely did not change when accounting for personality measure ( $\Delta\tau = .00$ ). Regarding conscientiousness, its relationship with conspiratorial ideation was significantly larger when conscientiousness was assessed with the (a) HEXACO PI-R ( $b = -.14$ ) than with the BFI,  $b = -.04$ ;  $t(52) = 2.30$ ,  $p < .05$ , (b) the HEXACO PI-R than the IPIP,  $b = .01$ ;  $t(52) = 2.92$ ,  $p < .01$ , and (c) the HEXACO PI-R than the TIPI,  $b = .01$ ;  $t(51) = 3.80$ ,  $p < .001$ . Heterogeneity was slightly reduced when accounting for personality measure ( $\Delta\tau = .01$ ).

Humility was a significant, albeit small, negative correlate of conspiratorial ideation, meaning conspiratorial ideation was related to less humility ( $r = -.15$ ). The population of studies for humility was heterogeneous ( $H^2 = 3.91$ ). Between-sample heterogeneity was small relative to within-sample variation ( $I^2_{(3)} < 1\%$ ), and the standard deviation in true effects between observations did not exceed the magnitude of the effect size ( $\tau = .05$ ). Personality measure significantly moderated the relationship between humility and conspiratorial ideation such that the relationship was significantly larger when using the (a) HEXACO PI-R ( $b = -.18$ ) than the GIHS,  $b = -.06$ ;  $t(31) = 3.66$ ,  $p < .001$ ; only assesses the intrapersonal features of intellectual humility, and (b) the CIHS ( $b = -.22$ ; assesses emotional, interpersonal, and intrapersonal features of intellectual humility) than the GIHS,  $t(31) = 5.42$ ,

$p < .001$ . Heterogeneity was slightly reduced when accounting for personality measure ( $\Delta\tau = .02$ ).

### Personological Variables: Interim Summary

In sum, conspiratorial ideation was strongly related to all indices of psychopathology, spanning internalizing, externalizing, and personality disorder traits. In contrast, the correlations between conspiratorial ideation and general personality traits were less-than-small ( $r$ s  $< .10$ ). The exception was humility, including both honesty-humility and intellectual humility, as it was a small-to-moderate and negative correlate of conspiratorial ideation. The population of studies for each construct tended to be heterogeneous, and between-sample heterogeneity tended to be large relative to within-sample variation for assessed personological variables.

### Moderators and Publication Bias

The descriptive statistics for each moderator for the motivational and personological constructs are reported in Tables 5 and 6. The conspiracy theory type moderation results and COVID-19 moderation results (Supplemental Tables S8 and S9) and the publication bias results (Supplemental Tables S14 and S15) can be found in the Supplemental Materials. Below, we discuss results from models with both a significant omnibus  $F$  value and a significant follow-up  $t$  test.<sup>10</sup> The full moderation results are available at <https://osf.io/jxyfn/>.

#### Motivational

##### Epistemic

**Conspiracy Theory Type.** Conspiracy theory type significantly moderated the relations between conspiratorial ideation and (a) cognitive reflection, (b) illusory pattern perception, (c) actively open-minded thinking, and (d) need for closure. Cognitive reflection was a stronger correlate of belief in specific conspiracy theories ( $b = -.19$ ) than general conspiracy theories,  $b = -.14$ ;  $t(37) = 2.37$ ,  $p < .05$ . Similarly, actively open-minded thinking was a stronger correlate of belief in specific conspiracy theories ( $b = -.27$ ) than general conspiracy theories,  $b = -.17$ ;  $t(12) = 3.02$ ,  $p < .05$ . Turning to illusory pattern perception, the relationship between conspiratorial ideation and illusory pattern perception was significantly stronger when assessing fictitious ( $b = .35$ ) conspiracy theories than general ( $b = .17$ ) conspiracy theories,  $t(43) = 2.05$ ,  $p < .05$ . The relationship between conspiratorial ideation and need for closure, however, was stronger for general ( $b = .16$ ) than specific ( $b = .05$ ) conspiracy theories,  $t(21) = 3.36$ ,  $p < .01$ . Heterogeneity was largely unchanged when accounting for conspiracy theory type in the relations between cognitive reflection and illusory pattern perception and conspiratorial ideation ( $\Delta\tau$ s were .00 and .01, respectively). In contrast, heterogeneity was modestly reduced when accounting for conspiracy theory type in the relations between actively open-minded thinking and need for closure and conspiratorial ideation ( $\Delta\tau$ s were .03 and .02, respectively).

<sup>10</sup> The statistical significance of the omnibus  $F$  statistics was unchanged after employing a Benjamini and Hochberg (1995) correction for multiple comparisons.

The COVID-19 variable also significantly moderated the relationship between conspiratorial ideation and cognitive reflection, such that the relationship was stronger when assessing COVID-19 ( $b = -.25$ ) than non-COVID-19 ( $b = -.15$ ) conspiracy theories,  $t(37) = 2.33, p < .05$ . Yet, heterogeneity was largely unchanged when accounting for conspiracy theory type in this relation ( $\Delta\tau = .00$ ).

**Publication Bias.** There was no evidence for publication bias in the relations between epistemic motives and conspiratorial ideation when examining the publication status variable. Still, regarding PET-PEESE, there was evidence for publication bias. The PET test was significant for cognitive reflection ( $p < .05$ ), but the follow-up PEESE test indicated that the relationship between cognitive reflection and conspiratorial ideation was still large, negative, and significant (intercept =  $-.26$ ). The PET test was also significant for susceptibility to the conjunction fallacy ( $p < .01$ ); the follow-up PEESE test indicated that the relationship between conspiratorial ideation and susceptibility to the conjunction fallacy was not significant and was negative (intercept =  $-.02$ ).

### Existential

**Conspiracy Theory Type.** Conspiracy theory type significantly moderated the relations between conspiratorial ideation and belief in a dangerous world and control. First, the relation between conspiratorial ideation and belief in a dangerous world was larger for general ( $b = .45$ ) than specific ( $b = .33$ ) conspiracy theories,  $t(12) = 7.91, p < .05$ . Regarding control, the relation was significantly larger when assessing (a) conspiracy stereotypes ( $b = -.26$ ) than general conspiracy theories,  $b = -.13; t(44) = 2.28, p < .05$ , and (b) conspiracy stereotypes than specific conspiracy theories,  $b = -.15; t(44) = 2.38, p < .05$ . Heterogeneity was slightly reduced when accounting for conspiracy theory type in these relations ( $\Delta\tau$ s were  $.01$ ).

**Publication Bias.** There was no evidence for publication bias in the relations between existential motives and conspiratorial ideation when examining the publication status variable. Instead, the relationship between conspiratorial ideation and efficacy was significantly larger in unpublished ( $b = -.49$ ) than published ( $b = -.01$ ) studies,  $t(24) = 2.39, p < .05$ . Heterogeneity was modestly reduced when accounting for publication status in this relation ( $\Delta\tau = .04$ ). No PET tests were significant.

### Social

**Conspiracy Theory Type.** Conspiracy theory type significantly moderated the relations between conspiratorial ideation and (a) anomie, (b) individual narcissism, (c) collective narcissism, (d) social threat perception, (e) RWA, and (f) SDO. The conspiracy theory type variable moderated the relations between conspiratorial ideation and (a) anomie, (b) collective narcissism, (c) social threat perception, (d) RWA, and (e) SDO such that the relations were stronger when using measures of specific ( $bs$  ranged from  $.25$  [SDO] to  $.67$  [social threat]) than general ( $bs$  ranged from  $.14$  [SDO] to  $.29$  [anomie]) conspiracy theories ( $ts$  ranged from  $1.94$  [RWA] to  $5.68$  [social threat],  $dfs$  ranged from  $15$  [collective narcissism] to  $63$  [RWA],  $ps < .05$ ). In contrast, the relation between individual narcissism and conspiratorial ideation was significantly larger

when using measures of general ( $b = .24$ ) than specific ( $b = .19$ ) conspiracy theories,  $t(30) = 2.23, p < .05$ .

Moreover, the relations between conspiratorial ideation and collective narcissism and social threat perception were significantly larger when using measures of conspiracy stereotypes ( $bs$  were  $.37$  and  $.96$ ) than general ( $bs$  were  $.16$  and  $.21$ ) conspiracy theories ( $ts$  were  $2.34$  and  $3.38$ ,  $dfs$  were  $15$  and  $10$ ,  $ps < .01$ ). Similarly, the relationship between conspiratorial ideation and SDO was significantly stronger when using measures of conspiracy stereotypes ( $b = .53$ ) than measures of general ( $b = .14$ ) and specific ( $b = .25$ ) conspiracy theories ( $ts$  were  $4.94$  and  $3.38$ ,  $dfs$  were  $38$ ,  $ps < .01$ ). The COVID-19 variable also moderated the relation between conspiratorial ideation and SDO, such that the relation was stronger when using measures of COVID-19 ( $b = .42$ ) conspiracy theories than non-COVID-19 ( $b = .18$ ) conspiracy theories,  $t(39) = 2.78, p < .01$ .

By and large, heterogeneity was slightly reduced when accounting for conspiracy theory type in the aforementioned relationships ( $\Delta\tau$  ranged from  $.00$  [individual narcissism, RWA] to  $.02$  [anomie]). Heterogeneity was moderately reduced for collective narcissism and social threat perception when accounting for conspiracy theory type ( $\Delta\tau$ s were  $.06$  and  $.09$ ). Nevertheless, for SDO, heterogeneity was largely unchanged when accounting for the COVID-19 variable ( $\Delta\tau = .00$ ).

**Publication Bias.** There was little evidence for publication bias when examining publication status as a moderator. In fact, publication status significantly moderated the relation between conspiratorial ideation and RWA such that the relation was stronger in unpublished ( $b = .30$ ) than in published ( $b = .19$ ) studies,  $t(64) = 2.03, p < .05$ . Heterogeneity was slightly reduced when accounting for publication status in these relations ( $\Delta\tau = .01$ ). Nonetheless, the PET test was significant for alienation and SDO ( $ps < .05$ ). The follow-up PEESE test indicated that the relation for alienation was small, positive, and not significant (intercept =  $.07$ ) and the relation for SDO was similarly, small, positive, and not statistically significant (intercept =  $.07$ ).

### Personological

#### Psychopathology

**Conspiracy Theory Type.** Conspiracy theory type significantly moderated the relationship between conspiratorial ideation and paranoia such that the relation was significantly larger when assessing (a) conspiracy stereotypes ( $b = .61$ ) than specific conspiracy theories,  $b = .29; t(36) = 3.13, p < .01$ , or (b) general conspiracy theories ( $b = .36$ ) than specific conspiracy theories,  $t(36) = 3.17, p < .01$ ; the relation between conspiratorial ideation and paranoia was also significantly larger when assessing conspiracy stereotypes than general conspiracy theories,  $t(36) = 2.41, p < .05$ . Heterogeneity was slightly reduced when accounting for conspiracy theory type ( $\Delta\tau = .02$ ).

**Publication Bias.** There was also evidence for publication bias in the relation between paranoia and conspiratorial ideation such that the relation was significantly larger in published ( $b = .36$ ) than unpublished ( $b = .21$ ) studies,  $t(38) = 2.91, p < .01$ . The PET test was also significant for paranoia ( $p < .01$ ); the follow-up PEESE test indicated that the relationship between paranoia and

conspiratorial ideation was still positive, large, and statistically significant (intercept = .28).

### General/Normal-Range Personality

**Conspiracy Theory Type.** Conspiracy theory type significantly moderated the relation between conspiratorial ideation and extraversion, such that the relation was larger when using measures of specific conspiracy theories ( $b = .05$ ) than general conspiracy theories,  $b = .01$ ,  $t(60) = 2.34$ ,  $p < .05$ . In addition, the COVID-19 variable significantly moderated the relationship between conspiratorial ideation and openness. The relationship between openness and conspiratorial ideation was significantly larger when using measures of COVID-19 conspiracy theories ( $b = -.16$ ) compared with non-COVID-19 ( $b = .03$ ) conspiracy theories,  $t(74) = 2.94$ ,  $p < .01$ . Even still, heterogeneity was largely unchanged when accounting for the conspiracy theory type and COVID-19 variables in these relations ( $\Delta\tau = .00$ ).

**Publication Bias.** There were no significant results for the publication bias analyses.

### Domain-Level Analyses

#### Meta-Analytic Correlations and Heterogeneity

To clarify whether relations were consistent across variables within domain, we also conducted domain-level analyses. To do so, we treated the individual variables, samples, and their interaction (variable-by-sample) as random effects within the broader domain; effect sizes were modeled as fixed effects. This modeling allowed us to calculate the average meta-analytic correlation within domains. We did not examine general personality at the domain-level, given that there is no interpretable “general personality factor” in the literature. All variables within each domain were coded in the same direction. For instance, in the epistemic domain, measures of rational thinking, intelligence, and open-minded thinking were recoded to reflect *low* rational thinking, intelligence, and open-minded thinking. Across domains, the correlations were medium, positive, and significant (Table 7, Figure 6). Thus, epistemic, existential, social, and psychopathology domains were moderately related to more conspiratorial ideation. Heterogeneity within each of the domains was large ( $H^2$  ranged from 9.06 [epistemic] to 22.22 [existential]).<sup>11</sup>

#### Moderation Results

First, turning to motivations, conspiracy theory type significantly moderated the relations between (a) the existential domain and conspiratorial ideation and (b) the social domain and conspiratorial ideation. Regarding the existential domain, the relations between conspiratorial ideation and the existential domain were significantly smaller for measures that assessed a mix of conspiracy theories ( $b = .08$ ) than for measures of conspiracy stereotypes,  $b = .30$ ;  $t(182) = 2.22$ ,  $p < .05$ . Regarding the social domain, the relations between conspiratorial ideation and the social domain were significantly larger for conspiracy stereotypes ( $b = .46$ ) than for other measures of conspiratorial ideation ( $bs$  ranged from .14 [scenario] to .25 [general];  $ts$  ranged from 3.28 [scenario] to 6.12 [general],  $dfs$  were 349,  $ps < .01$ ). Moreover, the relations between conspiratorial ideation and the social domain were larger for

specific conspiracy theories ( $b = .25$ ) than for general conspiracy theories,  $b = .20$ ;  $t(349) = 2.92$ ,  $p < .01$ . Neither the publication status moderation results nor the PET-PEESE results were significant for the motivational domains.

Regarding the psychopathology domain, conspiracy theory type and publication status significantly moderated the relations between the psychopathology domain and conspiratorial ideation. Turning to conspiracy theory type, the relations between conspiratorial ideation and the psychopathology domain were significantly stronger for conspiracy stereotypes ( $b = .55$ ) than other conspiracy theory measures ( $bs$  were .32 [general] and .26 [specific];  $ts$  were 1.98 [general] and 2.47 [specific],  $dfs$  were 172,  $ps < .05$ ). Also, the relations between conspiratorial ideation and the psychopathology domain were stronger for general ( $b = .32$ ) than specific ( $b = .26$ ) conspiracy theories,  $t(172) = 3.38$ ,  $p < .001$ . There was also some evidence for publication bias, as conspiratorial ideation was more strongly related to the psychopathology domain in published ( $b = .32$ ) than in unpublished ( $b = .21$ ) studies,  $t(179) = 2.29$ ,  $p < .05$ .

### Discussion

The present investigation, which spanned 170 studies, 257 samples, 52 variables, 1,429 effect sizes, and 158,473 participants, clarifies the motivational and personological correlates of conspiratorial ideation (and their magnitude), quantifies the degree of substantive differences across these constructs, and sheds light on moderators that may account for said differences. Overall, this work holds the potential to inform our understanding of conspiratorial ideation and chart useful paths forward for future research, especially when it comes to bridging motivation with personality. Below, we summarize our findings and adopt a forward-looking perspective concerning the remarkably vast and rich pattern of psychological phenomena associated with conspiratorial ideation.

#### Motivational Correlates: Considering Epistemic, Existential, and Social Motives

Our meta-analytic results largely support the tripartite motivational model of conspiratorial ideation (see Douglas et al., 2017). Of 34 epistemic, existential, and social variables, 31 (91%) were significantly related to conspiratorial ideation (see Table 3 and Figure 4). Moreover, at the domain-level of analysis, the epistemic, existential, and social motivational domains were all medium correlates of more conspiratorial ideation. These findings suggest that a deprivation of these motivational domains—*broadly construed*—is related to more conspiratorial ideation. Overall, the results corroborate the tripartite model’s core hypothesis that (a) a need to understand one’s environment, (b) a need to feel secure and safe in one’s environment, and (c) a need to maintain a superior, but fragile, image of oneself and one’s ingroup predict conspiratorial ideation when these needs are deprived. Consistent with other research (Biddlestone et al., 2022), our findings reveal that motivations at large are important, perhaps even essential, pieces of the conspiratorial ideation puzzle.

<sup>11</sup> The statistical significance of the main effects and moderation results for the domain-level analyses were unchanged after employing a Benjamini and Hochberg (1995) correction for multiple comparisons.

**Table 7***Study Characteristics, Meta-Analytic Estimates, and Heterogeneity Statistics for Motivation and Psychopathology at the Domain-Level*

Domain	<i>k</i>	<i>S</i>	ES	<i>N</i>	<i>r</i>	95% CI	<i>H</i> <sup>2</sup>	<i>Q</i>	<i>I</i> <sup>2</sup> <sub>(2)</sub>	<i>I</i> <sup>2</sup> <sub>(3)</sub>	$\tau_1^2$	$\tau_2^2$	$\tau_3^2$	$\tau_4^2$
Epistemic	77	115	350	59,935	<b>.21</b>	[.17, .26]	9.06	<b>3520.36</b>	45.2%	40.8%	.007	.006	.005	.004
Existential	60	81	188	62,331	<b>.23</b>	[.15, .30]	22.22	<b>4364.59</b>	35.2%	56.4%	.006	.010	.009	.016
Social	88	126	354	101,401	<b>.25</b>	[.18, .31]	20.46	<b>7595.69</b>	55.5%	39.1%	.014	.010	.000	.014
Psychopathology	47	63	181	44,766	<b>.29</b>	[.24, .34]	12.78	<b>2494.43</b>	80.7%	11.8%	.019	.003	.000	.005

Note. Bold indicates  $p < .001$ . *k* = number of studies; *S* = number of samples; ES = number of effect sizes; CI = confidence intervals. Correlations were coded to be in the same direction within each domain.  $\tau_1^2$  = sample;  $\tau_2^2$  = outcome;  $\tau_3^2$  = Sample  $\times$  Outcome;  $\tau_4^2$  = effect size.

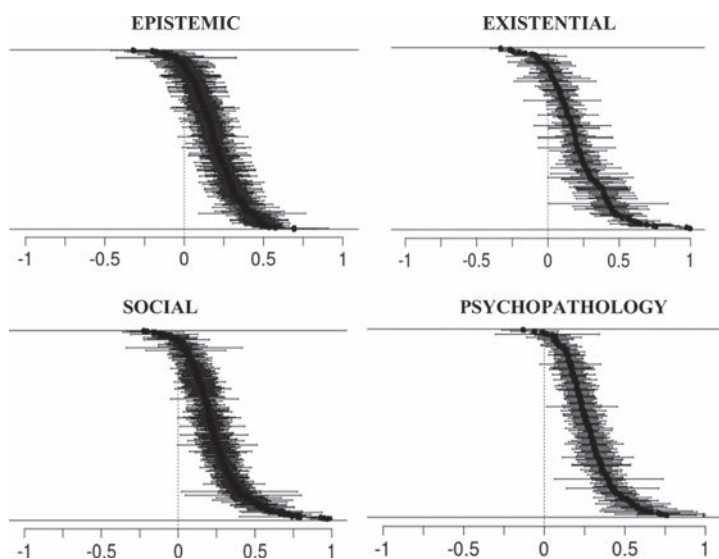
Yet, results from our meta-analysis and a previous preprint (Biddlestone et al., 2022) indicate that there is considerable heterogeneity (and perhaps even statistical uncertainty; see Biddlestone et al., 2022) in effect sizes within these motivational domains. At the domain-level, heterogeneity statistics were exceedingly large, and, at the variable-level, effect sizes within domain often ranged from small and not significant to large and significant. Hence, by lumping these constructs together, we may lose important information about these granular relations. Results from this meta-analysis suggest that getting an overall “quick-and-dirty” snapshot of the domain-level relations is less informative than a granular and more complex portrait of the variable-level relations. Similarly, considering Meehl’s (1990) observation that nearly all psychological constructs are interrelated to some degree even in the absence of a meaningful connection (i.e., a “crud factor”), statistical significance does not shed light on the meaning or substance of relations in adequately powered meta-analyses. Hence, burrowing into the details, as we do below, may be necessary to glean actionable insights concerning the network and strength of interrelations between conspiratorial ideation and motivation.

Of the three motivational domains delineated in the tripartite motivational framework, the social domain was the best supported in terms of the magnitude of effect sizes across variables. The

relations between social motives and conspiratorial ideation tended to be medium-to-large, except for individual self-esteem, which was a small, negative correlate of conspiratorial ideation. These results collectively indicate that conspiratorial ideation is linked to perceiving that one’s group is superior to outgroups and that outgroups are threatening or immoral. It also seems that conspiratorial ideation is uniquely related to viewing one’s ingroup in an *overly* positive light rather than viewing one’s ingroup in a positive light—after all, conspiratorial ideation was not significantly related to collective self-esteem. The relationship between conspiratorial ideation and collective self-esteem, however, was moderate, so additional research should disentangle feeling positively toward one’s ingroup from feeling that one’s ingroup is superior in the context of conspiratorial ideation.

What is more, the two largest correlations between conspiratorial ideation and any of the motivational constructs assessed in our meta-analysis were in the social domain. Trust was the largest negative correlate of conspiratorial ideation and social threat perception was the largest positive correlate. These two constructs have not yet been directly meta-analytically investigated, and our results illuminate their importance in the context of conspiratorial ideation. The correlation between social threat perception and conspiratorial ideation was greater than the relation between existential threat perception and conspiratorial ideation by  $>.20$ .

**Figure 6**  
*Forest Plots for the Domain-Level Analyses*



Moreover, the relationship between conspiratorial ideation and trust was consistent across different manifestations of trust, which speaks to the robustness of this relationship. What trust (or lack thereof) and social threat perception share is a decreased likelihood to view others as having good intentions. Based on these results, it may be worthwhile to directly target these constructs in future research using experiments manipulating trust and social threat perception to investigate their causal influence on conspiratorial ideation. Studies employing intensive longitudinal designs should also be used to identify mechanisms and extend experimental findings to everyday, naturalistic settings (e.g., Diener et al., 2022).

In contrast with the social motivational domain, there was mixed support for the epistemic and existential motivational domains, as most of the effect sizes in these domains were small in the present study ( $r_s < .20$ ; 53% of epistemic results and 50% of existential results) and in a recent preprint (Biddlestone et al., 2022). Given the centrality of epistemic and existential motives to scholarly and popular explanations for conspiratorial individuals (e.g., need for closure: “people desire certainty”; need for control: “people desire personal control”), the fact that most effect sizes for epistemic and existential motives were small is surprising. One interpretation of our findings is that epistemic and existential motives are less explanatorily unique than previous theorizing suggests; this interpretation raises the possibility that such motives do not necessarily drive most conspiracy theorists. Idiographic-longitudinal approaches, such as experience sampling methods (e.g., Beck & Jackson, 2021) in addition to intensive longitudinal approaches (e.g., Diener et al., 2022), may be well-suited to address this possibility in future research. These approaches can shine a light on the moment-to-moment and long-term relations between motives and conspiratorial ideation.

Among the smallest epistemic correlations was illusory or hypersensitive agency detection; hypersensitive agency detection accounted for roughly 3.5% of the variance in conspiratorial ideation across studies. Conspiracy theories entail unsupported attributions of purpose, agency, and intentionality *by definition* (Douglas et al., 2016). Notwithstanding the possibility that this weak result may be due to inconsistent measurement practices (Brotherton & French, 2015; Douglas et al., 2016; Hart & Graether, 2018), this is a surprisingly small effect. Understanding the mismatch between theory and evidence found for agency detection (and epistemic and existential motives, more broadly) is a key avenue for future research.

A similar pattern emerged for analytic thinking, need for closure, need for control, and anxiety. These variables are often theorized to be foundational to conspiratorial ideation and erroneous beliefs at large (e.g., Denovan et al., 2020; Douglas et al., 2017; Marchlewska et al., 2018; Swami et al., 2014). Yet, analytic thinking, need for closure, need for control, and anxiety were all small correlates of conspiratorial ideation; these relations were smaller than expected given the hypothesized theoretical import of these variables. Small effect sizes, however, should not be equated with a lack of predictive utility. To ascertain whether these small effect sizes are causally connected to conspiratorial ideation and its consequences, future research should continue to probe boundary conditions, contextual factors, and statistical interactions among variables that may contribute to stronger effects (see Götz et al., 2022). For example, lower levels of rational thinking coupled with higher levels of need

for closure may be a stronger predictor of more conspiratorial ideation compared with either low levels of rational thinking or low levels of need for closure in isolation.

Along these lines, it is also worth observing that complex and uncertain situations appear to breed conspiratorial thinking (see Marchlewska et al., 2017). Although some individuals faced with uncertainty may turn to conspiracies to slake their need for closure, others may *seek out* conspiracies and even find them to have an inherent entertainment value (e.g., van Prooijen et al., 2022). Perhaps there may be a paradox in these relations, such that conspiracy theorists may not be as motivated to find closure but, instead, are more motivated to find the secret “truth” (e.g., as can be reflected in the narratives of individuals who subscribe to Qanon; see Roose, 2021). By the same token, conspiracy theories may *foster* loss of control and anxiety, rather than assuaging them, ultimately forming a self-reinforcing system that crystallizes into a conspiracy mindset or worldview (van Prooijen, 2018). Were this the case, the relationship between both control and anxiety and conspiratorial ideation may (a) initially be small but grow stronger over time and (b) scale nonlinearly, such that the most extreme conspiracists will disproportionately score high in perceived loss of control and anxiety.

Longitudinal research provides some evidence that intolerance of uncertainty both precedes and follows conspiratorial ideation (e.g., endorsement of COVID-19 conspiracy theories), suggesting that conspiracy theories do not satisfy this epistemic motive, and, if anything, increase it; there was also some evidence that conspiratorial ideation predicted increases in existential motives, namely anxiety and existential threat sensitivity (e.g., Liekefett et al., 2023). In this study, however, anxiety and existential threat sensitivity did not precede conspiratorial ideation. Additional research is needed to examine the longitudinal relations between conspiratorial ideation and epistemic, existential, and social motives to tease apart what first draws individuals to conspiracy theories (e.g., people turn to conspiracy theories to lessen anxiety) and what is left unsatisfied by conspiracy theories (e.g., people feel more anxious when turning to conspiracy theories). Such research can ultimately shed light on the psychological factors that cause conspiratorial ideation.

Given that most epistemic and existential motives were small correlates of conspiratorial ideation, it is worth highlighting the motives within these domains that were strong correlates. Epistemic motives pertaining to more reliance on intuition, having odd beliefs and seeing patterns in their absence, anthropomorphizing, low open-mindedness, and more intolerance of ambiguity were medium-to-large correlates of conspiratorial ideation. Existential motives pertaining to believing the world is dangerous, perceiving existential threat, viewing the world with cynicism, and feeling powerless were medium-to-large correlates of conspiratorial ideation. These results were also found to be relatively strong in a preprint (Biddlestone et al., 2022). Given that these results replicated, they may be especially robust and important to investigate in future research.

All in all, our variable-level findings and the heterogeneity in these findings demonstrate the importance of developing a better understanding of whether and how these motivational variables hang together. To evaluate meaningful domain-level relations, it will be necessary to parse the broad tripartite domains into subdomains using factor analytic methods or person-centered

approaches. Such approaches would allow for testable predictions to be generated about the causal influence of motives on conspiratorial ideation and will inform the extent that these individual variables belong together.

### Personological Correlates: Considering Abnormal-Range and Normal-Range Traits

Broadly, we found that conspiratorial ideation was strongly related to abnormal-range traits, whereas it was weakly or not significantly related to normal-range traits.

Conspiratorial ideation has long been thought to be abnormal in nature, that is, as reflecting a belief system of the paranoid, unusual, and extreme members of society (e.g., Hofstadter, 1964). Research over the last two decades supports these longstanding conjectures, as several studies indicate that conspiratorial ideation is linked to personality disorder traits in addition to broad psychopathology liability (e.g., Bowes et al., 2021; Georgiou et al., 2019). Results from our meta-analysis were consistent with results from these individual studies and previous meta-analyses (e.g., Stasielowicz, 2022) and further corroborated historical accounts of conspiratorial ideation. Personality disorder traits and indices of psychopathology, including internalizing and externalizing features, were robust and powerful predictors of conspiratorial ideation, and effect sizes tended to be medium-to-large (see Table 4 and Figure 5). Given the number of pathological traits and features that bear on conspiratorial ideation, individuals prone to conspiratorial ideation are more likely to be insecure, emotionally labile, suspicious of others, withdrawn, manipulative, callous, irresponsible, impulsive, egocentric, and eccentric. Supporting this possibility, at the domain-level, psychopathology was a strong correlate of more conspiratorial ideation. Yet, as with the motivational domains, there was considerable heterogeneity in the domain-level relation between psychopathology and conspiratorial ideation, indicating that a more fine-grained discussion of our findings is warranted.

The strongest abnormal-range correlates of conspiratorial ideation were schizotypy, paranoia, tendencies to have unusual experiences, trait psychoticism, and hostility. These constructs collectively pertain to perceiving that other people harbor malintent toward oneself, having odd perceptual and cognitive experiences, and perceiving that events have a special meaning for oneself. Previous research has found that there is considerable overlap between paranoia and conspiratorial ideation regarding their psychological correlates (e.g., authoritarianism, need for uniqueness), but there are also points of divergence; specifically, conspiratorial ideation is a stronger predictor of distrusting *powerful people* than paranoia whereas paranoia is a stronger predictor of distrusting *everyone* than conspiratorial ideation (Imhoff & Lamberty, 2018). Moreover, conspiratorial ideation pertains to perceiving threat against oneself *and* everyone else whereas paranoia pertains to perceiving threat against oneself largely *in isolation* (Imhoff & Lamberty, 2018). Given the strong meta-analytic relations between conspiratorial ideation and paranoia and related variables, future research is needed to identify what mechanisms contribute to their overlap and what mechanisms contribute to their points of divergence.

In broad strokes, the smallest abnormal-range correlates of conspiratorial ideation were physical aggression and features of

internalizing, including depression and anger. As with anxiety, it is possible that people susceptible to internalizing features turn to conspiracy theories to mitigate their negative and uncomfortable emotions; long-term, however, conspiracy theories are unlikely to lessen internalizing features and, instead, they may potentiate them and contribute to people feeling more depressed and angrier toward others (e.g., Douglas et al., 2017; Liekefett et al., 2023). Considering these possibilities, it is apparent that there is overlap between motivational and personological variables in terms of unresolved questions regarding the antecedents and consequences of conspiratorial ideation.

Although abnormal-range constructs tended to be robust correlates of conspiratorial ideation, we found little evidence that normal-range personality constructs were significantly related to conspiratorial ideation (see Table 4 and Figure 5). Instead, conspiratorial ideation appears to be a somewhat specific marker of psychopathology rather than normal-range functioning. While most normal-range personality traits were significantly related to conspiratorial ideation (5 of 6 traits, 83%), effect sizes tended to be very small ( $r_s < .10$ ). Our results concerning normal personality broadly aligned with results from previous meta-analyses of the relations between Big Five traits and conspiratorial ideation (Goreis & Voracek, 2019; Stasielowicz, 2022).

The relations between normal-range personality and conspiratorial ideation may be surprising given the strong overlap between Big Five traits and Personality Inventory for DSM-5 traits (e.g., Griffin & Samuel, 2014). Yet, Personality Inventory for DSM-5 traits better capture the extremes of normal-range traits and are more closely linked to impaired functioning than Big Five traits (e.g., Simms & Calabrese, 2016); thus, what distinguishes normal-range personality from abnormal-range personality is the extent that people are impaired in their functioning, perceive or have poor quality of life, and feel dissatisfied with their lot in life. It follows that the modal conspiracy theorist may be impaired in their functioning, feel dissatisfied with life, and experience more interpersonal distress.

Whereas Big Five traits were weak correlates of conspiratorial ideation, both general humility and intellectual humility were small-to-medium, negative, and significant correlates of conspiratorial ideation. These results were particularly strong when measuring honesty-humility and measuring comprehensive features of intellectual humility. Previous research had not meta-analytically examined humility in relation to conspiratorial ideation, and our findings suggest that it has been an overlooked correlate. It seems that, in the general personality space, less humility may be the strongest correlate of more conspiratorial ideation. These results also align with other findings in the abnormal-range and motivational domains—personality disorder traits and narcissism (which are characterized by low humility) were medium-to-large correlates of more conspiratorial ideation. Thus, low humility at large may be a marker of conspiratorial ideation.

Although domain-general traits were generally small correlates of conspiratorial ideation, it is important to clarify that is not possible to definitively conclude that general personality traits are irrelevant to the psychology of conspiratorial ideation based on this meta-analysis. Only general personality *domains* have been meta-analytically examined in relation to conspiratorial ideation (e.g., Goreis & Voracek, 2019; Stasielowicz, 2022). Just as with the motivational domains, general personality domains reflect lumping. When splitting these domains into facets there are



stronger relations between certain facets of general personality (e.g., prudence—conscientiousness) and conspiratorial ideation than general personality domains (e.g., conscientiousness) and conspiratorial ideation (Bowes et al., 2021). There are even important differences across items within personality measures in relation to outcomes of interest (see Möttus et al., 2020). As such, it will be essential for future research to consider general personality from different levels of analysis. Through this approach, it will be possible to conclude the predictive strength of general personality more definitively in relation to conspiratorial ideation.

## Moderation Results

As described earlier, the relations between conspiratorial ideation and motivational and personological constructs tended to be highly heterogeneous. Below, we summarize the broad pattern of moderation results.

### *Conspiracy Theory Type*

Of 44 analyses, there were 14 results (32%) indicating that there were significant differences between the types of conspiracy theories assessed (see Supplemental Tables S8 and S9). In general, these moderation results indicated that belief in specific conspiracy theories and conspiracy stereotypes were stronger correlates of motivational and personological constructs than belief in general conspiracy theories, which is broadly consistent with previous work (e.g., Stojanov & Halberstadt, 2020).

The following constructs were stronger correlates of belief in specific conspiracy theories than general conspiracy theories: cognitive reflection, actively open-minded thinking, anomie, collective narcissism, social threat perception, RWA, SDO, extraversion, and the social motivational domain. Yet, heterogeneity was largely unchanged when accounting for conspiracy theory type in most of these relations, so we are hesitant to overly interpret these findings. The exceptions were for actively open-minded thinking, collective narcissism, and social threat perception, as heterogeneity was modestly to moderately reduced when accounting for conspiracy theory type for these variables. These latter findings raise the possibility that close-mindedness and certain social motives may contribute to individuals latching on to specific conspiracy theories, perhaps those that are relevant to ingroup–outgroup discord, rather than abstract conspiratorial ideas.

Nevertheless, the relations between need for closure, belief in a dangerous world, individual narcissism, paranoia, and the psychopathology domain and conspiratorial ideation were significantly larger when using measures of general than specific conspiracy theories. Heterogeneity was largely unchanged when accounting for conspiracy theory type for narcissism, but it was slightly to moderately reduced for other variables. Overall, these results raise the possibility that desiring certainty, perceiving the world is dangerous, and scoring higher on psychopathology at large, especially paranoia, contribute to a general conspiracy mindset; in contrast, group-level social motives may contribute to endorsement of specific conspiracy theories (as described earlier). These interpretations broadly map onto a recent theoretical framework advancing that social identity motives give rise to endorsement of specific conspiracy theories, whereas desiring to be unique may give rise to a general conspiracy mindset; in other words, social identity

motives may give rise to being drawn to the *content* of a conspiracy theory, whereas more general uniqueness motives may give rise to being drawn to the *quality* of a conspiracy theory (see Sternisko et al., 2020).

Turning to conspiracy stereotypes, the following constructs were stronger correlates of belief in conspiracy stereotypes than other conspiracy theory measures: control, collective narcissism, SDO, paranoia, the social motivational domain, and the psychopathology domain. Heterogeneity tended to be slightly to moderately reduced in these relations when accounting for conspiracy theory type. These results suggest that lower perceived control, higher levels of a range of social motives, and higher levels of paranoia and psychopathology writ large are especially strong correlates of endorsing conspiracy stereotypes. Regarding control, a previous meta-analysis also found significant differences between measures of conspiratorial ideation for control, with relations being larger for specific than general conspiracy theories (Stojanov & Halberstadt, 2020). Although we found evidence that belief in specific conspiracy theories was the weakest correlate of control, belief in conspiracy stereotypes, which is a manifestation of belief in specific conspiracy theories, was the strongest correlate of control, thus aligning with previous research (Stojanov & Halberstadt, 2020).

There was additionally some evidence that motivational and personological variables, specifically cognitive reflection, SDO, and openness, were stronger correlates of belief in COVID-19 conspiracy theories than non-COVID-19 conspiracy theories (Supplemental Tables S8 and S9). Cognitive reflection and openness were small-to-medium negative correlates of belief in COVID-19 conspiracy theories, whereas SDO was a strong positive correlate of belief in COVID-19 conspiracy theories. That said, heterogeneity was largely unchanged when accounting for the COVID-19 variable in these relations, indicating that the differences across levels of the variable may not be theoretically important. Future research should clarify whether there are specific COVID-19 conspiracy theories, such as those that ascribe blame to outgroup members (e.g., Chinese government, immigrants), that may be strongly related to motivational and personological variables in a theoretically and empirically important manner.

## Publication Bias

In general, there was limited evidence for publication bias (Supplemental Tables S14 and S15). Regarding PET-PEESE analyses, just six PET tests were significant. Of the six significant PET tests, only three PEESE tests were significant (cognitive reflection, paranoia, and the psychopathology domain). The remaining three results were not statistically significant in the PEESE test (susceptibility to the conjunction fallacy, alienation, and SDO). There was also scant evidence for publication bias when examining publication status as a moderator in the relations between conspiratorial ideation and motivational and personological constructs. In fact, only the relations between paranoia and the psychopathology domain and conspiratorial ideation were significantly larger in published than in unpublished studies.

## Limitations

Although our meta-analysis represents the most comprehensive quantitative review on the psychology of conspiratorial ideation to

date, there are several limitations that should be considered when evaluating our findings. First, statistical power was a limiting factor in the current investigation. Certain variables were assessed in just a few studies with a limited number of effect sizes compared with other constructs (e.g., alienation was assessed in just three studies, whereas trust was assessed in 40 studies). Thus, the power to detect a main effect let alone a statistical interaction with a moderator or meaningful subgroup differences was low for several variables. Similarly, given that we assessed 52 individual differences variables, we did not have sufficient power to examine interactions among moderators or variables in the statistical prediction of conspiratorial ideation. Because of how many variables were included, we also encourage readers to be mindful of effect sizes rather than significance. As already noted, it is likely that most constructs will be significantly related to some degree to conspiratorial ideation, à la Meehl's (1990) "crud factor," so effect size is an arguably more important marker of robustness than statistical significance here.

Second, a problem characteristic of most (if not all) meta-analyses is the limitation of correlated error variance across studies. In essence, error may not be independent across studies, and the sources of heterogeneity may be correlated across studies. Conspiratorial ideation is nearly invariably assessed via self-report, and most motivational and personological correlates are also assessed via self-report. Thus, significant correlations may arise due to mono-method bias: correlating self-report with self-report. Similarly, response styles on self-report measures, poor reliability or validity of self-report measures, and other sources of measurement error may systematically influence the results (see Wiernik & Dahlke, 2020).

In addition to measurement error, sampling error can influence meta-analytic results. Restriction of range in various samples, meaning individuals not particularly prone to conspiratorial ideation were represented, will attenuate the meta-analytic relations, skew results, and perhaps not generalize to samples with passionate conspiracy theorists (see Wiernik & Dahlke, 2020). In subsidiary analyses, we probed into this possibility of restriction of range by examining sample type and education level as moderators (with restriction of range potentially being higher in college samples and more educated samples); overall, there was some, albeit limited, evidence that the relations were stronger in community samples than in college samples (see Supplemental Tables S16 and S17), and there were essentially no differences between education levels in the examined relations (see Supplemental Tables S20 and S21). Research is needed to replicate these findings and consider other methods of examining range restriction at the measurement level within samples.

Our results may also be susceptible to mono-language bias. Our literature search was, by necessity, limited to studies published in the English language. As such, our results are only representative of research conducted by or published by those who speak English, limiting the generalizability of the findings. Similarly, most studies recruited participants in WEIRD populations (29 times more effect sizes for WEIRD than non-WEIRD samples); this acronym refers to the extent that a culture is Westernized, Educated, Industrialized, Rich, and Democratic (Klein et al., 2018). More specifically, most studies included American participants ( $k = 78$ ), so it remains unclear whether and to what extent the current

findings generalize to non-WEIRD populations and even non-American participants (see also Pilch et al., 2023).

Research is just beginning to scratch the surface on the relations between cultural variables and conspiratorial ideation. Although there is little evidence to suggest that conspiratorial ideation varies meaningfully across *specific nations* (Goreis & Voracek, 2019; Stasielowicz, 2022), research points to the possibility that conspiratorial ideation may systematically vary across *cultural characteristics* (e.g., Adam-Troian et al., 2021; Biddlestone et al., 2020; van Prooijen & Song, 2021). Certain values, such as power distance values (i.e., the extent that people value/accept power distributions), are positively related to conspiratorial ideation across nations (e.g., Adam-Troian et al., 2021; van Prooijen & Song, 2021). WEIRDness has been found to statistically moderate the relations between personological variables and political beliefs (e.g., Alper & Yilmaz, 2019), raising the possibility that WEIRDness influences the ways that psychological variables predict beliefs at large, including conspiracy beliefs. Thus, research is needed to study conspiratorial ideation in non-WEIRD populations in addition to measuring cultural characteristics in relation to conspiratorial ideation.

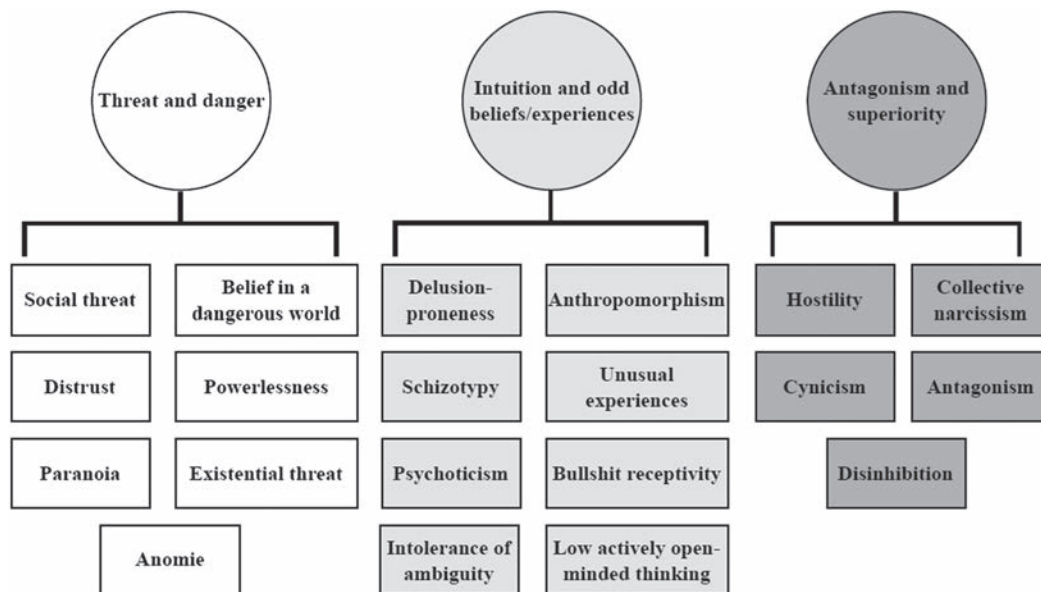
Finally, our results do not shed light on causality or temporal precedence in these relations. Instead, our results illustrate the strength of the cross-sectional relations between conspiratorial ideation and motivational and personological constructs. It remains unclear whether motivational and personological constructs precede conspiratorial ideation or whether they are cooccurring phenomena. Preliminary work indicates that anxiety and existential threat sensitivity do not predict increases in conspiratorial ideation over time, although there was some evidence that intolerance of uncertainty predicted increases in conspiratorial ideation (Liekfett et al., 2023). Additional longitudinal research is warranted to ascertain whether and how certain motivational needs and traits precede conspiratorial ideation. If there is a paucity of robust longitudinal relations, then theory surrounding the onset of conspiratorial ideation will need to be revised. Similarly, additional experimental research that manipulates motivations, specifically research that inculcates a short-term deprivation of certain motivational needs, is needed to clarify whether the tripartite motivational model bears causal implications for conspiratorial ideation.

## Toward a Unified Account of Conspiratorial Ideation

We see our meta-analysis as providing an empirical "one-stop-shop" that will, hopefully, motivate additional research on the conspiratorial mind. Results from our meta-analysis point to a general takeaway: many motivational and personological variables are germane to conspiratorial ideation, yet some motivational and personological variables are much more germane to it than others. Despite the heterogeneity in our findings, there were some consistent and noteworthy patterns in the results. Because we included both motivational and personological correlates, we were able to distill our findings to broad themes that cut across domains.

The strongest correlates of conspiratorial ideation across the motivational and personological domains pertained to the following tendencies: (a) to perceive threat and danger, (b) to rely on intuition and have odd beliefs and experiences, and (c) to be antagonistic and feel superior (see Figure 7). We view these findings as providing

**Figure 7**  
*Strongest Correlates of Conspiratorial Ideation Across Motivational and Personological Domains*



*Note.* Individual constructs were selected based on correlations of  $|r| > .25$ .

a strong foundation for future research. Indeed, these results provide a roadmap for asking more integrative and targeted questions in the service of understanding the psychology of conspiratorial ideation. As of now, scant research has investigated these constructs simultaneously to assess whether and how they may come together to give rise to conspiratorial ideation. Below, we describe some promising ways that scholars can leverage our results to answer pressing questions about the psychology of conspiratorial ideation.

First, we hope that our findings will inspire research that would link motivation and personality within the context of conspiratorial ideation. To illustrate this point, consider one model that maintains that personality may be born out of motivation (Dweck, 2017). Under this model, people come into the world with fundamental needs to predict their environment, feel accepted, and build competence. Over time and with different experiences, people develop different mental models for pursuing goals, form different goals, and then pursue these goals in unique ways (see also Tasimi, 2020). Personality traits, then, represent recurrent, stable individual differences in the development and pursuit of goal-relevant experiences. To make persuasive claims about the origins of conspiratorial ideation, it will be important to move beyond a single construct of interest, and, instead, draw from such rich developmental models to understand the broader psychology of conspiratorial ideation.

As an example, consider how needs for safety may unfold (and ultimately give rise to) conspiratorial ideation (see also Duckitt & Sibley, 2009). Deprived needs for safety (e.g., growing up in an unstable home environment) may lead people to pursue sets of goals related to preserving safety and watching out for others; this may lead them to notice dangers in their environment and come to believe that the world is dangerous (falling under “threat and danger” in Figure 7). These beliefs and goals may interact with

each other and coalesce into trait-level psychopathological processes, such as paranoia. Over time, the feedback loops among these motives and traits may beget conspiratorial ideation, particularly when considering certain social contexts (e.g., peers also share similar motives and traits), life experiences (e.g., experiences that reinforce that people are dangerous), information sources, and deprived or thwarted motives (e.g., societal events that have devastating consequences). Future research along these lines is needed to understand how different developmental trajectories give rise to conspiratorial ideation.

Such research will not only clarify how conspiratorial ideation develops but also whether conspiratorial ideation satisfies the needs that draw people to conspiracy theories in the first place. It is possible (if not likely) that conspiracy theories are less satisfying than they are appealing (see van Prooijen, 2019). Consider anxiety as an example. As already noted, anxiety may spur people to turn to conspiracy theories, as conspiracy theories may, at first blush, provide certainty that people crave. Yet, conspiracy theories are inherently uncertain (after all, they are unproven), and they are, in many ways, anxiety-provoking. If a small group of nefarious individuals has the power to bring down buildings, governments, and societies, then how can people rest until everyone sees the light? Over time, conspiracy theories may increase the discomfort people were originally trying to mitigate (e.g., Liekefett et al., 2023) and even contribute to behaviors that increase a sense of discomfort (e.g., reluctance to engage in preventative medicine; see Bierwaczzonek et al., 2022), potentially yielding a vicious cycle of anxiety and conspiratorial ideation.

It will also be important to ascertain when and how motives give rise to abnormality. Certain motives may shape interactions with one’s environment to form maladaptive traits and consequently beliefs, including conspiracy belief (e.g., Grapsas et al., 2020; Zeigler-Hill & Hobbs, 2017). For instance, a recent framework

maintains that status motivations, either to achieve admiration or derogate rivals, underly narcissism (Grapsas et al., 2020). These status motivations contribute to people selecting status-relevant situations early in life, such as those with hierarchical social environments, which affords opportunities to behave in ways that promote the self or put down others. Per this framework, status motivations can become pathological in the right environments and with strong reinforcement contingences over time. Such a model can and should be applied to conspiratorial ideation, and by examining motivations and personality side-by-side, it will be possible to gain insight on potential models. For example, when do universal needs, such as epistemic needs to understand one's environment, take a pathological course and contribute to people seeking out environments rife with misinformation? Or how does cynicism transition from a normal-range self-protection motive to hostility or antagonism (perhaps vis-à-vis a series of transactions with social environments, e.g., Bouchard & Johnson, 2021; Grapsas et al., 2020)? Theoretical frameworks of conspiratorial ideation can be strengthened in these ways by incorporating motivational and personological variables.

In combining motivation with personality, it will also be critical to consider different levels of analysis. As demonstrated in our quantitative review, more information is gained by looking at variable-level than domain-level correlations. By examining the variable-level findings, it was possible to derive a new set of conclusions to stimulate future research (see Figure 7). These different levels of analyses provide different pieces of the conspiratorial ideation puzzle—from the item level to the metatrait level, different levels of analysis offer different perspectives that, in turn, provide a complete picture when combined. Similarly, research across different levels of explanation is needed, as integrating findings from across these different levels of explanation will provide the strongest evidence as to how conspiratorial ideation arises and how to change it. These efforts to elucidate different levels of explanation for conspiratorial ideation can be most effectively achieved via collaboration across research teams. If researchers can work together to intentionally slice different pieces of the pie, then it will be possible to get a comprehensive understanding of the descriptive and explanatory processes giving rise to conspiratorial ideation (see Möttus et al., 2020).

Not only does future research need to identify *how* conspiratorial ideation arises and *whether* it satisfies psychological needs, but also *who* conspiracy theorists are in the real world. Most existing research on conspiratorial ideation has focused on college and online participants. There is clearly evidence for conspiratorial ideation in these populations, and conspiratorial ideation may very well be continuous in the sense that most individuals are likely to endorse at least one conspiracy theory (e.g., Goertzel, 1994; Oliver & Wood, 2014). Still, the averages on conspiratorial ideation measures are typically far below the maximum scores in college and online participants. As a result, it remains an open question as to whether our meta-analytic results generalize to those who are enmeshed in a conspiratorial worldview—those who protest outside of research centers, attend flat earth conferences, or spend their days posting about “Big Pharma” online. Future research should aim to include these kinds of people.

Perhaps it is these individuals who are simultaneously the most motivated to uphold their conspiratorial worldview *and* distressed by their conspiratorial worldview. Our results indicate that

conspiratorial ideation is closely linked with psychopathology, and hence, distress. Yet, there is scant evidence for taxa in the domain of personality and psychopathology (e.g., Haslam et al., 2020). As such, we cannot conclude that conspiracy theorists are qualitatively different from others. To clarify these ambiguities, person-centered and/or taxometric analyses are needed to investigate whether those who strongly believe in conspiracy theories are typologically different from those who weakly or even moderately believe in conspiracy theories (e.g., Ruscio et al., 2007). If these two groups are not typologically distinct, then perhaps the same psychological framework could sufficiently account for conspiratorial ideation. But if these two groups are indeed qualitatively distinct, then it is possible that scholars would need to identify and establish a separate psychological framework for those most committed to a conspiratorial worldview. Because those who are most committed to a conspiratorial worldview are the most likely to act on it in detrimental ways (e.g., the January 2021 storming of the U.S. Capitol), it is essential to identify whether our results hold for these individuals.

To effectively intervene on conspiratorial ideation in conspiracy theorists, it will be necessary to identify how and why certain motives and traits intersect to increase risk for conspiratorial ideation. There is a rich literature on interventions for misinformation susceptibility (see Ecker et al., 2022). For instance, interventions that enhance accuracy motives and analytical thinking seem to be effective at reducing susceptibility to misinformation (e.g., Fazio, 2020; Pennycook et al., 2020). Research also indicates that providing fact-checks after people process news headlines can be an effective way to correct endorsement of misinformation (e.g., Brashier et al., 2021). Nevertheless, these misinformation interventions have largely focused on *intrapersonal* processes, such as reminding people to attend to accuracy (e.g., Pennycook et al., 2020). Thus, reminders to be accurate will likely not steer people away from conspiracy beliefs, as those committed to misinformation may believe they are attending to logic and accuracy.

Research is therefore needed to leverage results from our meta-analysis to design novel interventions for conspiratorial ideation that go beyond reminders to be accurate or check the facts. In essence, effective interventions for conspiratorial ideation will likely need to address a combination of epistemic, existential, and social motives. For example, reducing outgroup threat perception, perhaps by drawing from social contact theory and providing opportunities for collaborative and effective ingroup-outgroup contact (e.g., Pettigrew & Tropp, 2006), may be a worthwhile intervention for conspiratorial ideation. That said, we are hesitant to put the proverbial cart before the horse and recommend interventions for conspiratorial ideation before a clearer (and more unified) picture of conspiratorial ideation emerges.

Finally, research should specify whether motivational and personological domains interact to give rise to conspiratorial ideation (e.g., Hart & Graether, 2018). There may also be intriguing interactions within motivational and personological domains. In a recent existential threat model of conspiratorial ideation, it is theorized that epistemic, existential, and social motives collectively give rise to conspiratorial ideation (van Prooijen, 2019). Specifically, when individuals experience an existential threat, they engage in epistemic sense-making processes. These sense-making processes give rise to conspiratorial ideation when there is a salient outgroup that is perceived as antagonistic and

hostile. These models are useful for understanding the psychology of conspiratorial ideation because they provide a template for making testable hypotheses about the specific ways that conspiratorial ideation arises.

## Conclusion

This meta-analysis identified the motivational and personological variables that were strong and consistent correlates of conspiratorial ideation and whether there were notable boundaries in these relations. To continue advancing research on conspiratorial ideation, scholars should work to bridge the motivational and the personological in hypothesis-driven frameworks, strive to move beyond cross-sectional data collection, include those who are most wedded to conspiracy narratives, and identify interventions that target broad susceptibility to conspiratorial ideation. We hope that this meta-analysis can serve as a foundation for such research so that we can better understand and illuminate the conspiratorial mind.

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All references for the studies and data sets that were included in the analyses are available in the publicly available data set. References marked with an asterisk indicate studies included in the meta-analyses.

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