



# Conspiracy Theories and Extremism:

## Meta-Analysis of Psychological, Cognitive and Personality Correlates of Conspiracy Beliefs



“ **Conspiracy beliefs are defined as beliefs in secretive, intentional, and malevolent behaviours of one or more actors.** ”

### INTRODUCTION

Conspiracy theories (CTs) constitute explanations for important events that involve secret plots by powerful and malevolent groups (e.g., Goertzel, 1994). Correspondingly, conspiracy beliefs are defined as beliefs in secretive, intentional, and malevolent behaviours of one or more actors (Bierwaczek et al., 2021). This analysis sets out the state-of-the-art knowledge on risk and protective factors for adopting conspiracy beliefs. In particular, we ask five questions:

1. What are the psychological, cognitive and personality risk and protective factors for conspiracy beliefs?
2. Are there any differences in risk and protective factors when examining specific types of conspiracy theories?

3. Are there any differences in risk and protective factors when it comes to COVID-19 vs non-COVID-19 conspiracy theories?
4. Are there any differences in effect sizes when examining different types of risk or protective factors on conspiracy theory beliefs?
5. What are the strongest risk and protective factors which might be targeted in prevention and intervention programs?

We answer these questions via a meta-analysis<sup>1</sup>. Different types of conspiracy theories were included in our analysis, e.g., conspiracy beliefs pertaining to a conspiracy mentality or conspiratorial mindsets as well as specific conspiracy theories such as COVID-19 conspiracy theories, different intergroup conspiracy theories

and other conspiracy theories, such as alien CTs, moon landing CT etc.

To present our results, we grouped risk and protective factors into different domains.

1. Individual and Group Psychological Factors
2. Cognitive and Epistemic Factors
3. Personality and Personality Disorder Factors

Previous research has demonstrated differential effect sizes of risk and protective factors depending on the types of conspiracy theories that are assessed. Therefore, we examined a range of potential moderators which may affect the pattern and strength of associations. This allows us to examine whether some risk and protective factors have a particular strong effect on certain conspiracy theory beliefs.

First, we tested whether the effect sizes for risk and protective factors would significantly differ depending on whether a so-called conspiracy mentality or specific conspiracy theories were assessed.

Next, we tested for potential differential effects on COVID-19 vs all other conspiracy beliefs not related to COVID-19.

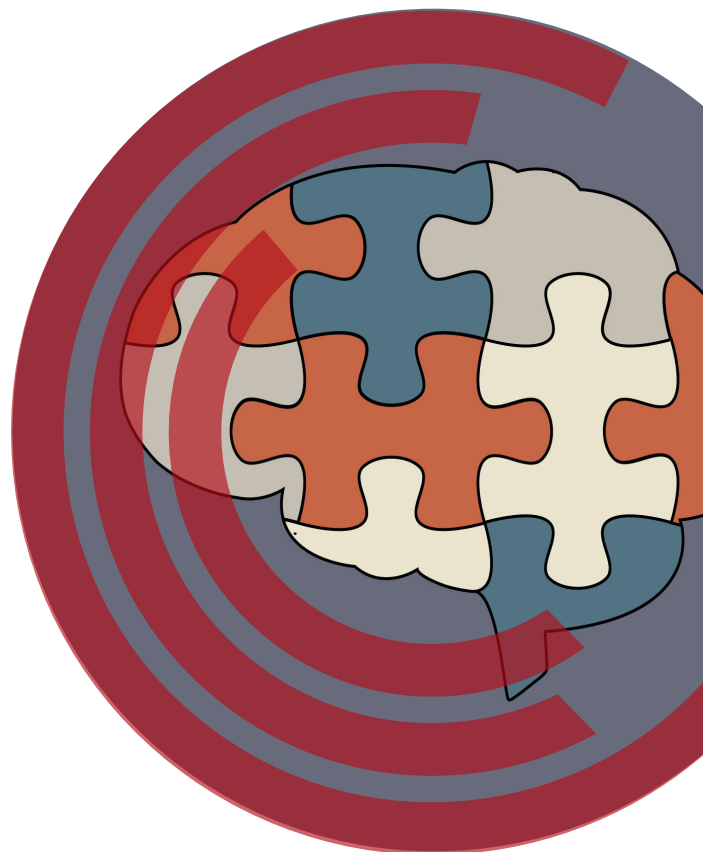
Third, we tested whether certain risk or protective factors might have a particularly strong effect on intergroup conspiracy theories<sup>2</sup> vs conspiracy theories attributing secretive malevolent intentions to unspecified powerful 'others' who try to control 'us' or 'the people'.

Lastly, we examined whether differences related to the types of the risk or protective factors had a differential impact upon overall conspiracy theory

beliefs. Here, we analysed if self-report measures or cognitive tasks to assess individuals' epistemic and cognitive dispositions, abilities or thinking styles differentially impacted upon conspiracy theory belief.

## INDIVIDUAL AND GROUP PSYCHOLOGICAL RISK AND PROTECTIVE FACTORS

The first domain of risk factors covered 20 different risk and protective factors of which 16 were statistically significant when assessing their overall effect on belief in conspiracy theories. Perceived discrimination showed the strongest relationship with conspiracy theory belief. More specifically, perceived discrimination was the strongest risk factor, i.e., had strongest effect size<sup>3</sup>, not just among the psychological factors but also across all risk factor domains analysed.



Four other risk factors had moderate effect sizes on overall conspiracy theory beliefs: perceived threats, anomie, system identity threats, and collective narcissism. Ten risk factors had small effect sizes: alienation, malevolent world, anger, blame attributions, anxiety, need for control, perceived stress, relative deprivation, perceived COVID-19 threats, and need for uniqueness. Three risk factors had negligible non-significant effects: perceived COVID-19 control, positive emotions, and ingroup identification.

Perceived control was the sole protective factor, albeit with a small effect size. Self-esteem had a negligible non-significant protective effect.

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**Self-reported anxiety had a significantly stronger impact upon COVID-19 conspiracy theories than other forms of conspiracy theories.**

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Our moderation results further showed that the impact of collective narcissism<sup>4</sup> and perceived threats were significantly stronger on specific conspiracy theories than it was for conspiracy mindsets. Similarly, collective narcissism and perceived threats showed significantly stronger effects on intergroup conspiracy theories (e.g., anti-Semitic conspiracy theories) compared to conspiracy theories which were not related to specific outgroups. Additionally, the effects of self-reported anxiety were significantly stronger upon specific conspiracy theories compared to conspiracy mentality. However, we did not find evidence that perceived discrimination, which is the strongest risk factor across all domains,

yielded significantly stronger or weaker effects on any type of conspiracies theories.

Furthermore, self-reported anxiety had a significantly stronger impact upon COVID-19 conspiracy theories than on other forms of conspiracy theories. The same was true for the effects for perceived COVID-19 threats. The opposite was true for perceived discrimination.

## COGNITIVE AND EPISTEMIC RISK AND PROTECTIVE FACTORS

The second domain of factors covered epistemic/cognitive influences and covered 9 risk and protective factors. One risk factor, epistemically suspect beliefs<sup>5</sup>, had a moderate effect size. The other four risk factors had small effect sizes: intuitive thinking styles, intolerance of uncertainty, bullshit receptivity<sup>6</sup>, and cognitive biases. All four protective factors also displayed small effect sizes: analytical thinking styles, cognitive abilities, health/scientific literacy and critical thinking.

Our moderation results further showed the importance of considering research designs and their impact on results. For example, the protective effects of analytical thinking capabilities on overall conspiracy theory beliefs were much more prominent when the research design deployed cognitive tasks (e.g., a measure of ability) rather than self-report measures (e.g., a measure of self-reported thinking style). The same was also true for critical thinking, and bullshit receptivity.

## PERSONALITY AND PERSONALITY DISORDER RISK AND PROTECTIVE FACTORS

Here, five risk factors demonstrated moderate effect sizes on overall conspiracy theory beliefs: delusion ideation, schizotypal personality, paranoia, Machiavellianism, and psychoticism. Ten risk factors demonstrated small effect sizes: antagonism, disinhibition, social dominance orientation, detachment, narcissism, authoritarianism, psychopathy, anxious attachment style, depression, and negative affectivity.

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**The protective effects of analytical thinking capabilities were much more prominent when the research design deployed cognitive tasks rather than self-report measures.**

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Four other risk factors displayed negligible non-significant effects: neuroticism, avoidant attachment style, extraversion, and emotionality. Four protective factors displayed small effect sizes: altruism, honesty-humility, agreeableness, and conscientiousness. One protective factor, openness, displayed a negligible non-significant effect.

Moderator analyses showed (a) detachment personality disorder had a significantly stronger effect size for conspiracy mentality than it did for specific conspiracy theories and (b) both neuroticism and paranoia exert significantly stronger risk effects on non-COVID-19 related conspiracies compared to COVID-19 conspiracies.

Summary of research questions posed:

1. Perceived discrimination, epistemically suspect beliefs and delusional ideation emerged as the strongest risk factors for conspiracy beliefs. Conversely, perceived control over one's life, analytical thinking ability as well as honest-humility and altruism emerged as the strongest protective factors.
2. Collective narcissism, perceived threats, and self-reported anxiety had significantly stronger effects on specific conspiracy theories rather than conspiracy mindsets. Conversely, detachment personality disorder had a significantly stronger effect on conspiracy mentality than it did for specific conspiracy theories.  
  
Collective narcissism and perceived threats showed significantly stronger effects on intergroup conspiracy theories compared to conspiracy theories which were not related to specific outgroups.
3. Self-reported anxiety and perceived COVID-19 threats had a significantly stronger impact upon COVID-19 conspiracy theories than other forms of conspiracy theories. The opposite was true for perceived discrimination, neuroticism and paranoia.
4. The protective effects of analytical thinking capabilities, critical thinking and bullshit receptivity on overall conspiracy theory beliefs were much more prominent when the research design deployed cognitive tasks rather than self-report measures (i.e., assessing thinking styles).

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## PRACTICAL IMPLICATIONS

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Belief in conspiracy theories has been associated with a range of adverse and violent outcomes, such as violent extremist intentions (Rottweiler & Gill 2022), support for violence to express disagreement with the government (Uscinski & Parent 2014) as well as actual engagement in violent extremist attacks (e.g., Amarasingam et al., 2022), which collectively point to the functional role of conspiracy theories within violent extremism.

Research has further argued that conspiracy beliefs and violent extremism may share a common psychology (Rottweiler & Gill, 2022), indicating that the co-occurrence of conspiracy beliefs and violent extremist outcomes may be due to common causes or shared vulnerabilities, i.e., overlapping risk and protective factors. When arguing for either a potential functional role of conspiracy theories within violent extremism or a shared common psychology, examining vulnerabilities which render people more susceptible to conspiracy thinking seems to be a crucial step.

### **What are the strongest factors which might be targeted in prevention and intervention programs?**

Overall, perceived discrimination and perceived threats, epistemically suspect beliefs and delusional ideation emerge as the strongest risk factors across the psychological, cognitive and personality domains, demonstrating moderate to large effect sizes (perceived discrimination was the only factor indicating a large effect size) on conspiracy theory beliefs. Thus, those factors might be reasonably targeted in prevention and intervention programs. Primary prevention and intervention efforts should aim to reduce individual experiences of discrimination (real and perceived ones). Particularly, given that perceived discrimination exerted equally

strong effects across all types of conspiracy theories, renders it a pertinent risk factor that should be addressed in broad-based programmes. Tertiary prevention and intervention efforts could tackle threats perception and challenge individuals' epistemically suspect beliefs. While it may be challenging to tackle personality and personality disorder factors, such as delusional ideation, those findings still provide important evidence-based knowledge required within downstream approaches including risk assessment and structured professional judgment tools (SPJ).

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**We found a strong focus upon risk rather than protective factors**

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Across all studies in our analysis, we found a strong focus upon risk rather than protective factors. For instance, our meta-analysis revealed only one significant protective factor across the psychological domain compared to 15 significant risk factors. Similarly, we found four significant protective factors across the personality domain compared to 15 significant risk factors. However, the tendency towards studying risk factors was less severe across the cognitive domain where we found five risk and three significant protective factors. Yet, protective factors are crucial components of different prevention and intervention efforts. For example, strengthening direct protective factors constitutes a key element within early preventative programs, which focus upon the prevention of the onset of risk factors and/or to mitigate against existing risk. Additionally, protective factors

are important among at-risk populations where protective factors might buffer against the effects of risk factors and thus, dampen the overall risk.

For instance, our meta-analysis found individuals' sense of personal control to be the strongest protective factors within the psychological domain. Especially during the COVID-19 pandemic, people's lack of control over their lives and environment may have contributed to the proliferation of conspiracy theories. Increasing transparency across political and public health communications, while at the same time trying to foster people's political and public health education may be crucial for providing individuals with a greater sense of certainty, understanding and ultimately, perceived levels of control over various societal issues.

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**Our meta-analysis suggests that strengthening critical thinking abilities may provide another way to counter conspiracy beliefs**

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Furthermore, our meta-analysis suggests that strengthening critical thinking abilities may provide another way to counter conspiracy beliefs. For example, digital media literacy interventions seem to constitute promising ways to enhance critical thinking and thus, to consume information online more safely and critically. Ideally, strategies to increase political and public health literacy could be incorporated into digital media literacy interventions as individuals increasingly obtain their knowledge from these domains online.

Across the personality domain, altruism and honesty-humility are the strongest protective

factors. While it is challenging to target personality related factors, research has demonstrated successful ways to build and strengthen altruism (Wallmark et al., 2013) and levels of empathy (for an overview see Weisz & Zaki, 2017), which is a closely related factor.

Collectively, our protective factor findings point towards the importance of incorporating protective factors more strongly into prevention and intervention efforts and thus, to shift the focus from a risk-prevailing approach to a comprehensive risk and protective factor approach.

The meta-analysed effects are based on cross-sectional studies and hence, can merely speak to correlational rather than causal relationships. Importantly, we found that the individual effect sizes of risk factors can significantly differ, depending on which specific conspiracy theories or which type of conspiracy beliefs are examined. The effect sizes further differ depending on whether cognitive factors were assessed via a cognitive task or a self-report measure and hence, this affects the way we should interpret the effect sizes and ultimately, try to counter different conspiracy beliefs. Furthermore, while we have only analysed risk and protective factors at the individual-level, it is important to consider the effects of socio-ecological factors, such as community-level (e.g., community values, networks) and systemic-level factors (e.g., countries' political system, economic performance) as well as situational stressors and events taking place, which will collectively influence an individual's risk towards believing in conspiracy theories.

While it is vital to incorporate empirical evidence-based risk factors within intervention programs, most identified risk and protective factors in our meta-analysis show small effects, which suggests there must be a multitude of interacting risk and protective factors present which explain why individuals engage or not engage in conspiracy thinking. Thus, prevention and intervention strategies must take account of the complex constellation of risk and protective factors and should focus on a range of psychological, attitudinal, and cognitive factors which led to the belief in conspiracy theories, and for some individuals to adopt violent extremist ideologies.

Without tackling these underlying vulnerabilities, intervention efforts might not be able to prevent the adoption of conspiratorial beliefs and/ or extremist causes which address the individual's persisting psychological needs (Rottweiler & Gill, 2022).

While early preventative strategies allow for the implementation of broad-based approaches to counter individuals' susceptibility to conspiratorial beliefs, tertiary intervention strategies need to be tailored to the individual's specific patterning of push and pull factors that attracted them to adopt a harmful mindset.

Psychological Individual and Group-level Factors Agreement % Mean Scores	
Risk Factors	<i>r</i> , <i>p</i> & 95% CI
Perceived Discrimination	.54*** [.54, .68]
Perceived Threats	.40*** [.30, .52]
Anomie	.35*** [.33, .41]
System Identity Threats	.35*** [.25, .47]
Collective Narcissism	.30*** [.23, .39]
Alienation	.27*** [.22, .34]
Malevolent World	.25*** [.18, .34]
Anger	.21*** [.12, .29]
Blame Attributions	.19* [.02, .35]
Anxiety	.15*** [.12, .18]
Need for Control	.15*** [.10, .20]
Perceived Stress	.12*** [.05, .19]
Relative Deprivation	.12*** [.09, .15]
Perceived COVID-19 Threats	.12** [.04, .21]
Need for uniqueness	.11*** [.06, .17]
Perceived COVID-19 Control	.05 (n.s.) [-.05, .14]
Positive Emotions	.00 (n.s.) [-.05, .00]
Ingroup Identification	-.01 (n.s.) [-.08, .07]
Protective Factors	
Perceived Control	-.16*** [-.22, -.11]
Self-Esteem	-.04 (n.s.) [-.10, .03]

Note: \**p* < .05; \*\**p* < .01; \*\*\**p* < .001; n.s. = non-significant; *r* = Pearson's correlation coefficient; 95% CI = 95% bias-corrected confidence intervals.

Cognitive and Epistemic Risk and Protective Factor	
Risk Factor	<i>r</i> , <i>p</i> & 95% CI
Epistemically Suspect Beliefs	.42*** [.37, .53]
Intuitive Thinking Styles	.23*** [.18, .28]
Intolerance of Uncertainty	.21*** [.14, .28]
Bullshit Receptivity	.18*** [.11, .25]
Cognitive Biases	.14*** [.09, .19]
Protective Factor	
Analytical Thinking Styles/ Ability	-.18*** [-.22, -.15]
Cognitive Abilities	-.13*** [-.20, -.07]
Health/ Scientific Literacy	-.13* [-.25, -.01]
Critical Thinking	-.10† [-.21, .00]

Note: † =  $p < .10$ , \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ ; n.s. = non-significant; *r* = Pearson's correlation coefficient; 95% CI = 95% bias-corrected confidence intervals

Personality Factors	
Risk Factors	<i>r</i> , <i>p</i> & 95% CI
Delusion Ideation	.44*** [.43, .51]
Schizotypal Personality	.35*** [.28, .44]
Paranoia	.35*** [.31, .40]
Machiavellianism	.34*** [.15, .56]
Psychoticism	.29*** [.23, .27]
Antagonism	.25*** [.14, .35]
Disinhibition	.25*** [.14, .36]
Social Dominance Orientation	.24*** [.16, .31]
Detachment	.23*** [.17, .28]
Narcissism	.23*** [.17, .29]
Authoritarianism	.22*** [.17, .27]
Psychopathy	.22*** [.12, .32]
Anxious Attachment Style	.21*** [.14, .27]
Depression	.18*** [.11, .26]
Negative Affectivity	.18*** [.13, .23]
Neuroticism	.06 (n.s.) [.04, .08]
Avoidant Attachment Style	.06 (n.s.) [-.01, .12]
Extraversion	-.01 (n.s.) [-.05, .03]
Emotionality	-.01 (n.s.) [-.30, .76]
Protective Factors	
Altruism	-.13*** [-.18, -.07]
Honesty-Humility	-.13*** [-.18, -.08]
Agreeableness	-.12*** [-.16, -.07]
Conscientiousness	-.11*** [-.15, -.07]
Openness	-.04 [-.09, .01]

Note: \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ ; n.s. = non-significant; *r* = Pearson's correlation coefficient; 95% CI = 95% bias-corrected confidence intervals.



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### About the project

This guide comes from the full paper manuscript submitted for publication. This resource will be updated when the paper has been published.

Study design, data analysis and findings were completed independently by the research[\*er] [team] and should not be taken as representative of views held by those who fund CREST.

## END NOTES

1. We registered the research topic, research questions, analytical procedure, and coding framework on PROSPERO, here: [https://www.crd.york.ac.uk/prospero/display\\_record.php?RecordID=318891](https://www.crd.york.ac.uk/prospero/display_record.php?RecordID=318891). Details on the databases used, data extraction (selection and coding), risk of bias (quality) assessment, inclusion/exclusion criteria, calculation of effect sizes, and meta-analytical procedures can be found in the supplementary materials published elsewhere.
2. Intergroup conspiracy theories are defined as conspiracy theories attributing secretive malevolent intentions to specific outgroups in specific intergroup contexts (see Golec de Zavala et al., 2022).
3. For the purposes of this small report, effect sizes between .1 and .3 were considered small effect sizes, .3 and .5 moderate effect sizes, and over .5 large effect sizes.
4. Defined as a belief in in-group greatness contingent on external recognition (Cichocka & Cislac, 2020).
5. Includes paranormal beliefs, pseudoscientific beliefs, odd-magical beliefs/ magical thinking, superstitious beliefs.
6. Bullshit receptivity (Pennycook et al., 2015) has been defined as an individual's tendency to perceive nonsense statements (consisting of randomly chosen buzzwords) as profound, that is, as containing some deeper truth (e.g., "Hidden meaning transforms unparalleled abstract beauty").

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