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Evil perceptions but not entertainment value appraisals relate to conspiracy beliefs

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The current research examined whether the perception of evil intentions by the conspirators influences conspiracy beliefs about particular narratives. Study 1 manipulated texts describing the death of convicted sex offender Jeffrey Epstein to be either low or high in conspiratorial information. Studies 2 and 3 manipulated texts describing a fictional country's election to be either low or high in antagonism. The studies revealed that the conspiratorial/antagonistic texts increased evil perceptions and conspiracy beliefs. Moreover, they revealed that perceptions of evil mediated the effect of the text condition on conspiracy beliefs. Although the studies found that the conspiratorial/antagonistic texts increased entertainment value appraisals, they did not find evidence of entertainment value mediating the effect of text condition on conspiracy beliefs. These latter results do not replicate those of van Prooijen et al. (2022). The novel results with evil perceptions suggest that perceiving that the conspirators acted with evil intentions may increase conspiracy beliefs.

KEYWORDS

perception of evil, conspiracy theories, conspiracy beliefs, entertainment value, hostile attribution

1 Introduction

We have all sorts of beliefs. Some of these beliefs concern the truthfulness of information, and there are many types of this kind of information. Conspiracy theories are a particular type of information that some individuals believe. "Conspiracy theories refer to causal explanations of events that ascribe blame to a group of powerful individuals (the conspirators) who operate in secret to form hidden plans that benefit themselves and harm the common good" (Bowes et al., 2023, pp. 259–260; see also, Uscinski, 2019). Thus, what sets conspiracy theory information apart from other types of information is that a conspiracy theory usually contains several components: (1) a powerful group of individuals (2) colludes secretly to engage in (3) evil behaviors that harm others. As suggested by Douglas and Sutton (2023), the third component – perceptions of evil intentions – likely varies between conspiracy theories. Individuals may also differ in their tendency to ascribe evil intentions to powerful others who are conspiring to achieve some outcome. We consider this variable of perception of evil intentions to be one that comes from the observer or perceiver, not one that comes from the conspirator, as most folks usually believe what they are doing to be not evil. Our general research question, which to our knowledge is novel, is whether individuals who are more likely to perceive evil intentions in others are more likely to believe conspiracy theories. If an individual is unlikely to

perceive evil intentions in others, then it seems unlikely that such a person would believe conspiracy theories. Because the current research is interested in measuring individuals' perceptions of an action, we worked from the definition of evil that most laypersons know: "morally reprehensible ... arising from actual or imputed bad character or conduct" (Merriam-Webster., 2024).

Conspiracy theories likely vary in how evil their conspirators are perceived to be. In addition, some persons may be more likely to perceive more evil intentions on the part of the conspirators, even when considering the same conspiracy. Persons high in trait anger may be more likely to perceive evil intentions by conspirators. Indeed, angry persons have been found to be more likely to assume hostile intentions when confronted with ambiguous social behaviors (e.g., Dill et al., 1997). Thus, trait anger may be positively related to perceiving evil intentions in conspiracy theories. As a result, trait anger may be positively related to believing these theories, if evil intentions are an important factor in conspiracy beliefs.

Research has supported this idea. Individuals who score higher in trait anger are more likely to believe conspiracy theories (Szymaniak et al., 2023a,b). Other research found that evil perceptions (i.e., perception that others have evil intentions) mediated the relationship between trait anger and generic conspiracy beliefs (Harmon-Jones et al., 2024). In these studies, trait anger was measured with the Aggression Questionnaire (Buss and Perry, 1992); generic conspiracy beliefs were measured with the Generic Conspiracist Beliefs Scale (Brotherton et al., 2013); and perception of evil was measured using new questionnaire items (e.g., rated agreement to statements such as "The government intends to inflict harm on its citizens by their actions"). Across studies, trait anger was positively correlated with generic conspiracy beliefs. Most importantly, evil perception mediated the relationship between trait anger and conspiracy beliefs. The perception of evil is similar to hostile attributions that have been examined in much research (Dodge and Frame, 1982). Given these results, we tested whether the perception of evil would mediate the relationship between conspiratorial/antagonistic texts and belief in them.

Most past research on conspiracy beliefs has examined responses to existing conspiracy theories and has not manipulated the information to test how variables that comprise conspiracy theories influence responses to them. One highly-cited set of studies that has manipulated elements of the information was recently reported by van Prooijen et al. (2022). One of their studies had participants read a text that described how Jeffrey Epstein, a wealthy convicted sex offender, was murdered in his jail cell or a text that described how he committed suicide. The murder version was rated as higher in entertainment value (e.g., captivating, exciting, engaging, entertaining), and the murder version increased conspiracy beliefs compared to the other version. Moreover, appraisals of entertainment value statistically mediated the effect of text condition on conspiracy beliefs. Another study manipulated this putative mediator – entertainment value—by having participants read a text that described a political election in a fictional country using either emotionally intense (antagonistic) or detached language (civil) to describe the election. As van Prooijen et al. (2022, p. 35) described, the study "was designed to provide

evidence of a causal chain by manipulating the mediator" of their previous studies. The more antagonistic election text was rated as more entertaining and led to increased conspiracy beliefs.

The current studies use the texts of the above studies. In those studies (van Prooijen et al., 2022), the antagonistic election text was referred to as entertaining, whereas civil election was referred to as boring. We believe these condition labels are subjective and describe how the researchers expected the participants to perceive these texts. We prefer more objective labels for independent variables, and therefore refer to the conditions in the fictional election as high or low in antagonistic information, because they do not mention any conspiracies. As in van Prooijen et al. (2022), we will refer to the Epstein murder as high in conspiratorial information and the Epstein suicide as low in conspiratorial information.

Is entertainment value the only variable that was manipulated by these texts? Also, does entertainment value mediate the effect of conspiratorial/antagonistic text on conspiracy beliefs? As Hayes (2018) stated, when considering mediation, we need to consider the theoretical explanation rather than just the statistical evidence. The logic for entertainment value as a mediator would be that exposure to the antagonistic (potentially conspiratorial) information evokes appraisals of entertainment value and then these appraisals lead to conspiracy beliefs. Does appraising something as entertaining always increase conspiracy beliefs? Such may occur, but it is likely that other ingredients of conspiracies might also contribute to belief in them. We suggest that exposure to antagonistic (potentially conspiratorial) information may evoke perceptions of evil intentions of the actors and then these perceptions of evil lead to conspiracy beliefs. That is, when exposed to information that powerful folks are doing something together in secret, a perceiver may be more likely to assume that these folks have more evil intentions. Because the conspiratorial/antagonistic texts used in the previous research (van Prooijen et al., 2022) may have also increased perceptions of evil intentions of the actors, it is possible that the increased conspiracy beliefs may have occurred because of these increased perceptions of evil. That is, when presented with information about powerful actors possibly acting in secret, individuals may differ in how much they perceive the actors to be evil, and this perception may increase the belief that a conspiracy may exist. These perceptions of evil may also increase belief in the truth of the conspiracy theory.

The current studies tested the hypothesis that perceptions of evil would mediate the relationship between conspiratorial/antagonistic texts and conspiracy beliefs. To test this hypothesis, we replicated the methods of two studies reported by van Prooijen et al. (2022), and added a measure of perception of evil. We also tested whether the mediational results (for entertainment value) of this previous research would be replicated.

2 Study 1

Study 1 used the death of Jeffrey Epstein to create a manipulation in which one version of the text indicated that Epstein had been murdered at the direction of powerful individuals, whereas the other version indicated that Epstein committed suicide

(as in van Prooijen et al., 2022, Study 2). After participants read one of the two texts, they completed measures of conspiracy beliefs, entertainment value, and evil perceptions. In this study, the "murder" text may be perceived to have conspirators with more evil intentions than the "suicide" text. Consequently, our novel prediction was that the "murder" text would be rated as including more evil intentions, and that these evil perceptions would mediate the effect of condition on conspiracy beliefs. All studies were approved by the human research ethics committee at The University of New South Wales. Studies 1 and 2 were not pre-registered. In Study 3, we pre-registered to test whether the findings would replicate.

2.1. Materials and methods

2.1.1 Participants

Participants were US residents recruited through Prolific and paid \$4.50 USD for completing the study. The study was conducted in August 2022. Initial eligibility for participating in the study involved residing in the USA and not having previously participated in any similar studies conducted by our lab. Participants were excluded for the following reasons: failed attention checks in questionnaires ($N = 12$); outlier in duration ($N = 5$); and failed to accurately describe the article they should have read ($N = 2$). Of these exclusions, 11 were from the conspiratorial condition, and 8 were from the non-conspiratorial condition. This left a total of 133 eligible participants after exclusion. These participants had the following demographic characteristics: age ($M = 32.80$, $SD = 11.70$, range = 18–71), gender (50.4% men, 47.4% women, 2.3% other), ethnicity (66.9% White, 8.3% Black/African American, 15.8% Asian, all other <5%), whether or not English was their first language (91.0% English), and education level (13.5% high school graduate, diploma or the equivalent; 23.3% some college credit, no degree; 32.3% Bachelor's degree; 15.0% Master's degree, with other category levels below 10%).

In Prolific, we set the sample size to 150. Our sample of 133 provides power > 0.80 to detect an effect size of $d = 0.45$ ($p < 0.05$, one-tailed, because it is a directional prediction; this is the effect size van Prooijen et al., 2022, found for conspiracy beliefs). The a-priori power analysis (for t-tests, mean difference between two independent groups) was conducted using G*Power (3.1.9.6; Faul et al., 2007). Data analysis did not begin until data collection was completed. We report all manipulations, measures, and exclusions in these studies.

2.1.2 Procedure

After informed consent was provided, participants completed demographic questions and personality questionnaires. Participants were randomly assigned to condition. Those in the high conspiratorial condition ($N = 64$) read a text that described Epstein's death as a murder, whereas those in the low conspiratorial condition ($N = 69$) read a text that described Epstein's death as a suicide (from van Prooijen et al., 2022, Study 2). After reading one of these texts, participants were asked to briefly summarize the events using at least 50 characters. Then, they completed measures of conspiracy beliefs, entertainment

value, and evil perceptions (in this order). At the end of the study, they were given the option to provide comments on the study and were debriefed.¹

2.1.3 Materials

The high conspiratorial condition text indicated that Epstein was murdered by a secret plot, whereas the low conspiratorial condition text indicated that Epstein hung himself. We used the texts used by van Prooijen et al. (2022), except that we removed one sentence from each condition because we thought they might induce an experimenter demand to believe (Orne, 1962) or psychological reactance to not believe the information (Brehm, 1966). In the low conspiratorial condition, we removed, "There is little reason to question the official reading of this event." In the high conspiratorial condition, we removed, "There is, however, ample reason to question the official reading of this event." In addition, removing these sentences eliminated a confound between the two conditions.

Epstein conspiracy beliefs were measured with three items (as in van Prooijen et al., 2022): Do you believe that Jeffrey Epstein was murdered by powerful people?; Do you believe that a conspiracy assassinated Jeffrey Epstein?; Is there reason to be suspicious about the death of Jeffrey Epstein? Participants indicated the probability that they believed each statement would occur on a 5-point scale that ranged from "not at all" to "very much". This measure had good internal consistency (Cronbach's $\alpha = 0.94$).

Entertainment value was assessed with four items. These were items used by van Prooijen et al. (2022) that had consistently high factor loadings in their factor analysis of their entertainment items used in three studies. Participants responded to items (e.g., "The events in the article were...") by indicating their appraisals on 5-point scales adapted from the previous research (from "not at all captivating" to "captivating"; "not at all exciting" to "exciting"; "not at all engaging" to "engaging"; "not at all entertaining" to "entertaining"). This measure had good internal consistency (Cronbach's $\alpha = 0.94$).

Evil perceptions were assessed with four items. Participants responded to items (The prison guards in charge of Epstein had/wished to/were...) by indicating their responses on 5-point scales ("bad intentions" to "good intentions"; "harm" to "help"; "evil" to "good"; "unethical intentions" to "ethical intentions"). We went back and forth about whether to make the measure about the guards or some "powerful and unknown people." We went with guards because they were likely the ones to enact the actual murder (if one occurred) or they allowed someone to commit the

¹ In Studies 1 and 2, prior to the manipulation, participants completed several questionnaires that are not relevant to the present hypotheses. The following questionnaires were included: the Behavioral Inhibition System/Behavioral Activation System Scales (Carver and White, 1994); the anger subscale from the Buss-Perry Aggression Questionnaire (Buss and Perry, 1992); the fearfulness subscale from the International Personality Item Pool (Ashton et al., 2007); the Attitude Toward Anger subscale from the Attitudes Towards Emotion Scale (Harmon-Jones et al., 2011); the Brief State Humility Scale (Kruse et al., 2017). Responses to these questionnaires did not correlate significantly with the measures used in the present research.

murders. We felt that the “powerful and unknown people” might be too vague for the measure and lead to more error variance. The items on the scale were reverse scored prior to data analysis, so that higher scores indicated more evil perceptions. This measure had good internal consistency (Cronbach's $\alpha = 0.90$).²

2.2 Results

All analyses were conducted in Jamovi (2.3; [The Jamovi Project, 2023](#)). All predicted effects were evaluated with one-tailed tests; other tests are noted as two-tailed in parentheses. For all studies, data and materials are available at: [https://osf.io/gb8mp/?view_only=\\$529bf67704a049f095a0d5d1d998791b](https://osf.io/gb8mp/?view_only=$529bf67704a049f095a0d5d1d998791b).

2.2.1 Entertainment value and evil perceptions

Entertainment ratings of the Epstein text were significantly higher in the high conspiratorial condition ($M = 3.79$, $SD = 0.98$) than in the low conspiratorial condition ($M = 3.43$, $SD = 1.04$), $t_{(131)} = 2.05$, $p = 0.021$, *Cohen's d* = 0.36 (95% CI = 0.01 to 0.70). This suggests that the high conspiratorial text was rated as more entertaining.

Evil perception ratings of the Epstein text were significantly higher in the high conspiratorial condition ($M = 3.76$, $SD = 0.74$) than in the low conspiratorial condition ($M = 3.12$, $SD = 0.72$), $t_{(131)} = 5.09$, $p < 0.001$, *Cohen's d* = 0.88 (95% CI = 0.51 to 1.25). This suggests that the high conspiratorial text was perceived as more evil.

2.2.2 Effect of condition and mediators on conspiracy beliefs

Conspiracy beliefs were significantly higher in the high conspiratorial condition ($M = 4.13$, $SD = 0.90$) than in the low conspiratorial condition ($M = 2.81$, $SD = 1.30$), $t_{(131)} = 6.77$, $p < 0.001$, *Cohen's d* = 1.17 (95% CI = 0.78 to 1.56).

A parallel mediation analysis was conducted to assess whether evil perception and entertainment value mediated the effect of text condition on belief (see [Figure 1](#)). jAAM (from jamovi) was used, and its results converge with PROCESS ([Gallucci, 2021](#)). As shown in [Table 1](#), text condition indirectly influenced conspiracy beliefs through its effect on evil perceptions. However, text condition did not influence conspiracy beliefs through its effect on entertainment value.

When each mediator was entered independently into a separate analysis, similar mediational effects occurred. That is, entering entertainment value alone as a mediator revealed that text condition did not indirectly influence conspiracy beliefs through entertainment value, $B = 0.01$, $SE = 0.02$; 95% CI = $[-0.02; 0.05]$. Evil perception, however, did mediate the effect of condition on conspiracy beliefs, $B = 0.26$, $SE = 0.06$; 95% CI = $[0.14; 0.39]$.

² In the [van Prooijen et al. \(2022\)](#) study, another question was included (Do you agree with the article you just read?) and not analyzed. We followed their method and analysis and did not analyze responses to this question.

2.2.3 Within-condition and overall correlations between variables

Within the low conspiratorial text condition, evil perceptions did not correlate significantly with entertainment value, $r(67) = -0.08$, $p = 0.502$, but correlated positively with conspiracy beliefs [$r(67) = 0.57$, $p < 0.001$]. Entertainment value did not correlate significantly with conspiracy beliefs [$r(67) = 0.08$, $p = 0.502$].

Within the high conspiratorial text condition, evil perceptions did not correlate significantly with entertainment value, $r(62) = 0.24$, $p = 0.057$, but correlated positively with conspiracy beliefs [$r(62) = 0.51$, $p < 0.001$]. Entertainment value was not significantly correlated with conspiracy beliefs [$r(62) = 0.23$, $p = 0.069$].

Across both conditions, evil perceptions correlated significantly with entertainment value, $r(131) = 0.21$, $p = 0.014$, and with conspiracy beliefs [$r(131) = 0.63$, $p < 0.001$]. Entertainment value did not correlate significantly with conspiracy beliefs [$r(131) = 0.15$, $p = 0.084$].

2.2.4 Relationship of evil perceptions with conspiracy beliefs

Some might question whether evil correlated with conspiracy beliefs because two of the three items of the beliefs measure mentioned something evil. To address this issue, we examined the correlation of evil perceptions with each item on the conspiracy beliefs scale. Within the high conspiratorial condition, each belief item correlated significantly with the evil perception measure, $r_s(62) = 0.42, 0.52, 0.43$, $p_s < 0.001$.

Another way to test whether evil perceptions and conspiracy beliefs were identical measures is to conduct a principal component analysis to assess whether one or two components underlie the responses. A principal components analysis with oblimin rotation revealed two components with eigenvalues above 1.0 (4.65 and 1.08). A scree plot also suggested two components. Component 1 was composed of the evil items, and each item loaded > 0.82 onto this component. Component 2 was composed of the belief items, and each item loaded > 0.91 onto this component. Neither component had items with cross loadings (all < 0.13). These results suggest that the measures of evil perceptions and conspiracy beliefs are not assessing the same construct.

2.3 Discussion

As predicted, the high conspiratorial text was perceived as more evil compared to the low conspiratorial text. Moreover, as predicted, these evil perceptions mediated the effect of conspiracy text condition on conspiracy beliefs. Thus, these results suggest that evil perceptions may contribute to conspiracy beliefs. Of course, these results are correlational and should not be regarded as causal.

Study 1 also replicated [van Prooijen et al.'s \(2022\)](#) finding of the high conspiratorial text leading to more entertainment values appraisals (compared to the low conspiratorial text). However, appraisals of entertainment value did not mediate the effect of conspiratorial text on conspiracy beliefs. Thus, the past mediation of entertainment value on conspiracy beliefs failed to replicate.

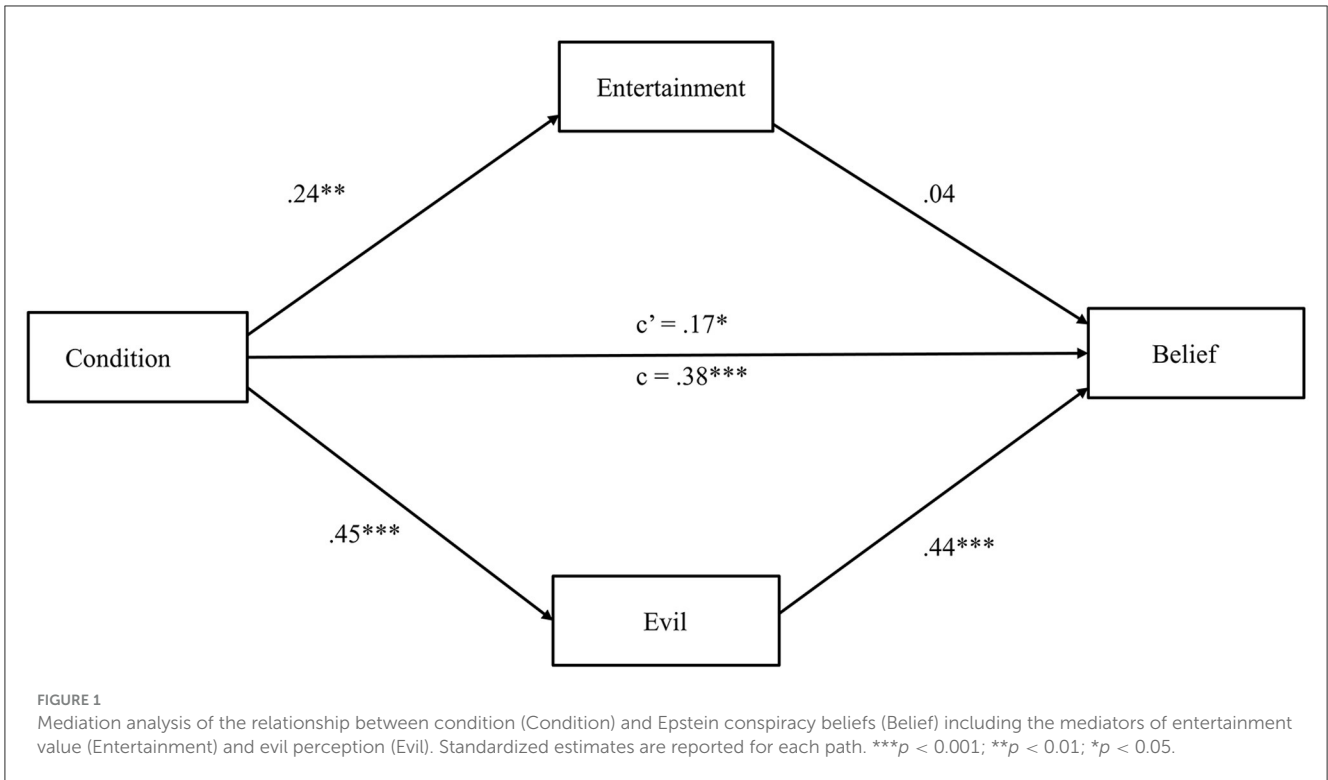


TABLE 1 Indirect and total effects (Study 1).

Type	Effect	Estimate	SE	95% CI Lower	95% CI Upper	β	z	p
Indirect	Cond \Rightarrow Entertain \Rightarrow Belief	-0.00	0.03	-0.06	0.05	-0.00	-0.16	0.438
	Cond \Rightarrow Evil \Rightarrow Belief	0.53	0.13	0.28	0.78	0.20	4.19	< 0.001
Component	Cond \Rightarrow Entertain	0.36	0.17	0.02	0.70	0.18	2.06	0.020
	Entertain \Rightarrow Belief	-0.01	0.08	-0.17	0.15	-0.01	-0.16	0.437
	Cond \Rightarrow Evil	0.64	0.13	0.40	0.89	0.41	5.13	< 0.001
	Evil \Rightarrow Belief	0.82	0.11	0.60	1.05	0.50	7.26	< 0.001
Direct	Cond \Rightarrow Belief	0.79	0.18	0.44	1.15	0.31	4.37	< 0.001
Total	Cond \Rightarrow Belief	1.32	0.19	0.94	1.70	0.51	6.79	< 0.001

Confidence intervals computed with method: Standard (Delta method). Betas are completely standardized effect sizes.

Study 1 used a conspiratorial text based on an actual event, Jeffrey Epstein’s death. These results suggest that perceptions of evil intentions by the conspirators correlate with conspiracy beliefs. However, one might argue that these results with evil perceptions are due to evil intentions being a necessary part of conspiracy beliefs. The murder conspiracy of Epstein was high in evil intentions (i.e., people murdered him), as shown by the results. However, several conspiracy theories exist that appear to be lower in evil intentions on the part of the conspirators; measures of conspiracy mindsets do not always include evil intentions in their items (Bruder et al., 2013); and individuals differ in their perceptions of evil intentions by conspirators (Harmon-Jones and Szymaniak, 2023). Therefore, a question arises: Do evil perceptions contribute to conspiracy beliefs when conspirators’ intentions are not explicitly presented as evil?

To address these issues empirically, we conducted a second study that used a scenario that is lower in evil intentions than the Epstein text (this text was previously created and used by van Prooijen et al., 2022, Study 3). The text described an election in a fictitious country called Contoria, and participants were instructed to “vividly imagine” that they were citizens of the country. One text described the election as containing antagonism, whereas the other text described the election as civil. Thus, we refer to these conditions as high vs. low antagonism. The high antagonism text did not contain any explicit ascriptions of evil intentions; the election was simply described as antagonistic and polarized. However, we suspect that this antagonistic information may evoke perceptions of evil (for some participants), and that these perceptions of evil will then contribute to participants perceiving evil intent on the part of the actors in the election.

3 Study 2

Study 2 assessed conspiracy beliefs after participants read either a high or low antagonistic text about an upcoming election in the fictional country of Contoria (from van Prooijen et al., 2022, Study 3). We predicted that perceiving the conspirators as acting with more evil intentions would mediate the effect of condition on conspiracy beliefs.

3.1. Materials and methods

3.1.1 Participants

Participants US residents recruited through Prolific, as they were in Study 1. The study was conducted in July 2022. Participants were excluded for the following reasons: failed attention checks in questionnaires ($N = 5$); failed to accurately describe the article they should have read ($N = 4$); outlier in duration ($N = 5$). Of these exclusions, 9 were from the high antagonistic condition, and 5 were from the low antagonistic condition. This left a total of 136 eligible participants after exclusion. These participants had the following demographic characteristics: age ($M = 32.80$, $SD = 12.00$, range = 18–72), gender (47.4% men, 52.6% women), ethnicity (70.6% White, 5.1% Black/African American, 9.6% Asian, 8.8% Hispanic or Latino, 5.9% other), whether or not English was their first language (90.4% English), and education level (12.5% high school graduate, diploma or the equivalent; 22.1% some college credit, no degree; 36.8% Bachelor's degree; 10.3% Master's degree, with other category levels below 10%).

In Prolific, we set the sample size to 150. Our sample of 136 provides power > 0.80 to detect an effect size of $d = 0.45$ ($p < 0.05$, one-tailed; this is the effect size van Prooijen et al., 2022, found for conspiracy beliefs). We conducted the same type of power analysis as in Study 1 using G*Power (3.1.9.6; Faul et al., 2007). Data analysis did not begin until data collection was completed.

3.1.2 Procedure

The procedure was the same as Study 1 except for the following. Participants were randomly assigned to the high ($N = 66$) or low antagonistic ($N = 70$) text condition (from van Prooijen et al., 2022, Study 3). Then, they were instructed to briefly summarize the text before responding to a pair of questions that assessed engagement with the article, and questions that assessed conspiracy beliefs. Finally, participants responded to questions that assessed entertainment value and perceptions of evil (in this order).

3.1.3 Materials

Participants were instructed to read a text about an election in a fictitious country called Contoria and to “vividly imagine” that they were citizens of the country (used by van Prooijen et al., 2022, Study 3). The high antagonistic text described the election as chaotic and emotionally charged, whereas the low antagonistic text described the election as placid and civil.

Participant engagement with the text was assessed through open-ended responses to the following instruction: “Please briefly

summarize the events in Contoria using at least 50 characters (1–2 short sentences).” It was also assessed through responses to a pair of yes-no questions: “Did the two candidates become genuinely angry at each other regularly in debates?” and “Is Contorian society deeply divided because of this election?”

Contoria conspiracy beliefs were assessed with seven items: There will be cheating in the results counting process; Election officers are bribed to favor one of the candidates; Secret organizations in Contoria strongly influence the election outcome; Opinion polls have been secretly manipulated; The winner has already been decided in secret before the election; There are “shadowy forces” behind the elections; A conspiracy will determine the election outcome. Participants responded by indicating the extent that they believed each statement would occur on a 5-point scale that ranged from “very unlikely” to “very likely.” This measure had good internal consistency (Cronbach's $\alpha = 0.95$). Entertainment value was assessed with the same four items used in Study 1. This measure had good internal consistency (Cronbach's $\alpha = 0.91$). Evil perceptions were assessed with the same four items used in Study 1. This measure had good internal consistency (Cronbach's $\alpha = 0.90$).

3.2 Results

3.2.1 Evil perceptions and entertainment value

Evil perception ratings of the Contoria text were significantly higher in the high antagonistic condition ($M = 2.84$, $SD = 0.63$) than in the low antagonistic condition ($M = 2.16$, $SD = 0.73$), $t_{(134)} = 5.80$, $p < 0.001$, *Cohen's d* = 1.00 (95% CI = 0.62 to 1.37). This suggests that the high antagonistic text was perceived as more evil.

Entertainment ratings of the Contoria text were significantly higher in the high antagonistic condition ($M = 3.87$, $SD = 0.91$) than in the low antagonistic condition ($M = 3.41$, $SD = 0.93$), $t_{(134)} = 2.91$, $p < 0.001$, *Cohen's d* = 0.50 (95% CI = 0.15 to 0.84). This suggests that the high antagonistic text was perceived as more entertaining.

3.2.2 Effect of condition and mediators on conspiracy beliefs

Conspiracy beliefs were significantly higher in the high antagonistic condition ($M = 2.65$, $SD = 0.98$) than in the low antagonistic condition ($M = 1.88$, $SD = 0.93$), $t_{(134)} = 4.69$, $p < 0.001$, *Cohen's d* = 0.80 (95% CI = 0.44 to 1.16).

A parallel mediation analysis was conducted to assess whether evil perceptions or entertainment value mediated the effect of condition on conspiracy beliefs (see Figure 2). As shown in Table 2, text condition indirectly influenced conspiracy beliefs through its effect on evil perceptions. However, text condition did not influence conspiracy beliefs through its effect on entertainment value.

When each mediator was entered independently into a separate analysis, similar mediational effects occurred. That is, entering entertainment value alone as a mediator revealed that text condition did not indirectly influence conspiracy beliefs through entertainment value, $B = -0.05$, $SE = 0.04$; 95% CI = [−0.13; 0.04]. Evil perception, however, did mediate the effect of condition

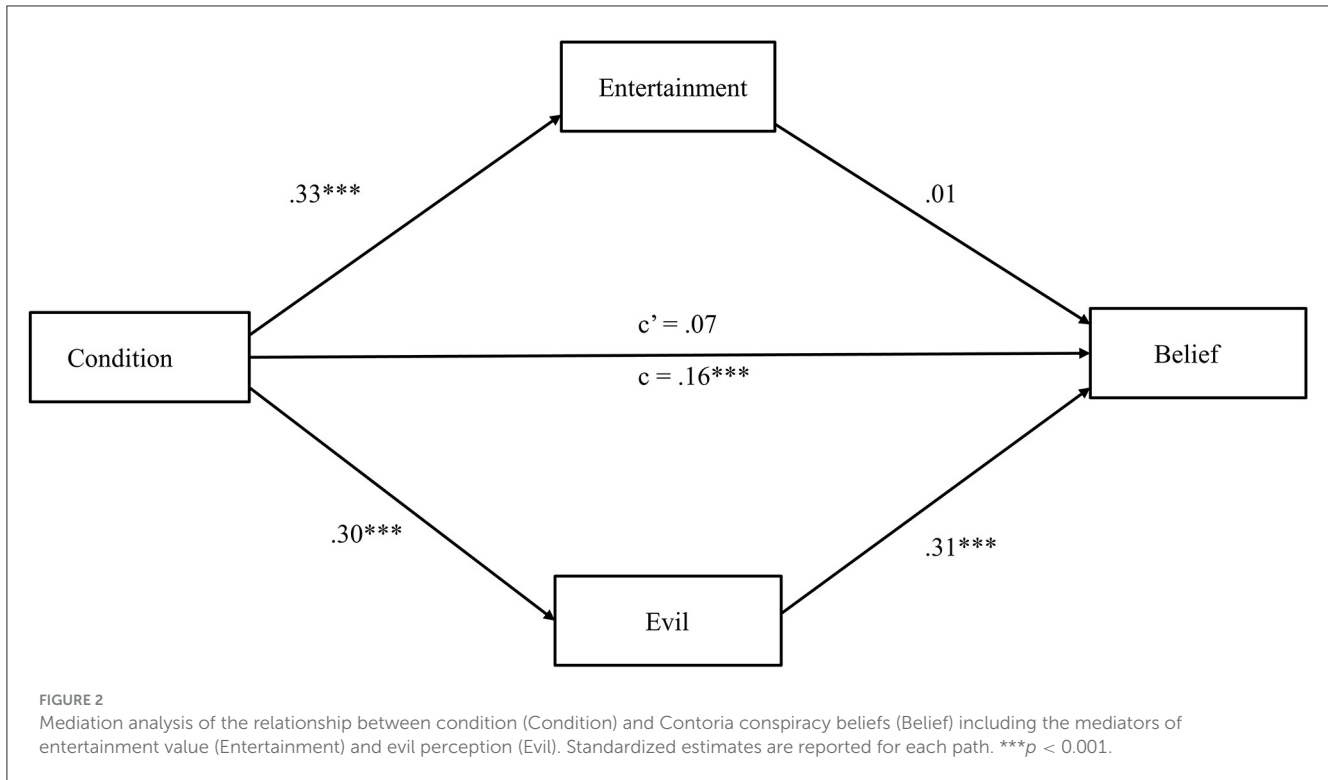


TABLE 2 Indirect and total effects (study 2).

Type	Effect	Estimate	SE	Lower	Upper	β	z	p
Indirect	Cond \Rightarrow Entertain \Rightarrow Belief	0.02	0.04	-0.05	0.10	0.01	0.58	0.283
	Cond \Rightarrow Evil \Rightarrow Belief	0.40	0.10	0.21	0.60	0.20	3.98	< 0.001
Component	Cond \Rightarrow Entertain	0.46	0.16	0.15	0.77	0.24	2.93	0.003
	Entertain \Rightarrow Belief	0.05	0.08	-0.11	0.21	0.04	0.59	0.279
	Cond \Rightarrow Evil	0.68	0.12	0.45	0.91	0.45	5.85	< 0.001
	Evil \Rightarrow Belief	0.60	0.11	0.38	0.81	0.44	5.43	< 0.001
Direct	Cond \Rightarrow Belief	0.34	0.17	0.01	0.68	0.17	2.01	0.022
Total	Cond \Rightarrow Belief	0.77	0.16	0.44	1.09	0.38	4.70	< 0.001

Confidence intervals computed with method: Standard (Delta method). Betas are completely standardized effect sizes.

on conspiracy beliefs, $B = 0.39$, $SE = 0.10$; 95% CI = [0.19; 0.59]. It is worth noting that in this study’s mediational model, entertainment value was non-significantly but *negatively* associated with conspiracy beliefs, $B = -0.10$, $SE = 0.09$; 95% CI = [-0.28; 0.07], an effect opposite to the one predicted by van Prooijen et al. (2022).

3.2.3 Within-condition and overall correlations between variables

Within the low antagonistic text condition, evil perceptions correlated negatively with entertainment value, $r(68) = -0.39$, $p < .001$, but positively with conspiracy beliefs [$r(68) = 0.46$, $p < .001$]. Entertainment value was not correlated with conspiracy beliefs [$r(68) = -0.11$, $p = .362$].

Within the high antagonistic text condition, evil perceptions correlated negatively with entertainment value, $r(64) = -0.28$, $p = .022$, but positively with conspiracy beliefs [$r(64) = 0.35$, $p = .004$]. Entertainment value was not significantly correlated with conspiracy beliefs [$r(64) = -0.09$, $p = .48$].

Across both conditions, evil perceptions correlated negatively with entertainment value, $r(134) = -0.19$, $p = .029$, but positively with conspiracy beliefs [$r(134) = 0.51$, $p < .001$]. Entertainment value did not correlate significantly with conspiracy beliefs [$r(134) = 0.00$, $p = .981$].

3.2.4 Relationship between evil perceptions and conspiracy beliefs

To address the possibility that evil correlated with conspiracy beliefs because some of the items of the beliefs measure mentioned

something evil, we examined the correlation of evil perceptions with each item on the conspiracy beliefs scale. Within the high antagonistic condition, each belief item correlated positively with the evil perception measure [$r(64) = 0.26, p = 0.019$; $r(64) = 0.33, p = 0.003$; $r(64) = 0.28, p = 0.012$; $r(64) = 0.40, p < 0.001$; $r(64) = 0.18, p = 0.072$; $r(64) = 0.27, p = 0.016$; $r(64) = 0.38, p < 0.001$].

Another way to test whether evil perceptions and conspiracy beliefs were identical measures is to conduct a principal component analysis to assess whether one or two components underlie the responses. A principal components analysis with oblimin rotation revealed two components with eigenvalues above 1.0 (6.53 and 1.89). A scree plot also suggested two components. Component 1 was composed of the belief items, and each item loaded > 0.78 onto this component. Component 2 was composed of the evil items, and each item loaded > 0.83 onto this component. Neither component had items with cross loadings (all < 0.17). These results suggest that the scales were not measuring the same construct.

3.3 Discussion

Study 2 conceptually replicated the results of Study 1 by revealing that the high antagonistic text led to more perceptions of evil intentions on the part of the conspirators, and these evil perceptions mediated the effect of text condition on conspiracy beliefs. Replicating the results of Study 1, appraisals of entertainment value did not mediate the effect of entertaining text on conspiracy beliefs.

4 Study 3

Study 3 was designed to replicate Study 2 using a larger sample and preregistration. Also, the measure of conspiracy belief was modified to include only items that did not mention anything evil, to ensure that evil perceptions were not the same construct as conspiracy beliefs. This was done to confirm that the relationship between conspiracy belief and evil perception was not due to semantic overlap of items from the two measures. As noted in the preregistration, we aimed to collect data from ~ 500 participants, the same sample size as used by van Prooijen et al. (2022). According to van Prooijen et al. (2022), "This sample provides 90% power to detect a small-to-medium effect size ($d = 0.29$, two-sided; approximately the equivalent of $\omega^2 = 0.02$)."³ This study and its analysis plan were preregistered at: https://osf.io/epx9t/?view_only=c8c6a3226a534d5cb0e918aff4f46565.

4.1 Materials and methods

4.1.1 Participants

Participants were US residents recruited through Prolific, as in previous studies. The study was conducted in July 2023. Because this study took less time than the previous studies to complete, they were paid $\sim \$2.00$ USD. In addition, eligibility for participating involved having English as a first language. Participants were excluded for the following reasons: English as a second language ($N = 12$); outlier in duration ($N = 1$); and failed to accurately

describe the article they should have read ($N = 7$). Of these exclusions, 8 were from the high antagonistic condition, and 12 were from the low antagonistic condition. This left a total of 481 eligible participants after exclusion. These participants had the following demographic characteristics: age ($M = 38.8, SD = 13.9$, range = 19–80), gender (49.3% men, 48.4% women, 2.3% other), ethnicity (72.1% White, 8.5% Black/African American, 8.5% Hispanic/Latino, 7.7% Asian, 3.1% all others), and education level (10.8% high school graduate; diploma or the equivalent; 21.2% some college credit, no degree; 10.4% Associate's degree; 36.8% Bachelor's degree; 13.9% Master's degree, with other category levels below 7%).

4.1.2 Procedure

The procedure was the same as Study 2 except that no personality questionnaires were presented at the beginning of the study and the conspiracy belief measure was modified to remove items that mentioned evil. The following items were used: A conspiracy will determine the election outcome; A secret powerful group will influence the election outcome; Powerful people are working behind the scenes to determine the election outcome; The outcome of the election will be determined by a group colluding in secret. Responses to these items were made on a 5-point scale (very unlikely to very likely). This measure was internally consistent (Cronbach's alpha = 0.93) as were the measures of entertainment value (Cronbach's alpha = 0.90) and evil perceptions (Cronbach's alpha = 0.88).³

4.2 Results

4.2.1 Entertainment value and evil perceptions

Evil perception ratings of the Contoria text were significantly higher in the high antagonistic condition ($M = 2.67, SD = 0.69$) than in the low antagonistic condition ($M = 2.24, SD = 0.70$), $t_{(479)} = 6.84, p < 0.001$, *Cohen's d* = 0.63 [95% CI = 0.45; 0.81]. This suggests that the high antagonistic text was perceived as more evil.

Entertainment ratings of the Contoria text were significantly higher in the high antagonistic condition ($M = 4.02, SD = 0.87$) than in the low antagonistic condition ($M = 3.37, SD = 0.98$), $t_{(479)} = 7.76, p < 0.001$, *Cohen's d* = 0.71 (95% CI = 0.52; 0.90). This suggests that the high antagonistic text was perceived as more entertaining.

4.2.2 Effect of condition and mediators on conspiracy beliefs

Conspiracy beliefs were significantly higher in the high antagonistic condition ($M = 2.45, SD = 1.12$) than in the low antagonistic condition ($M = 2.10, SD = 1.00$), $t_{(479)} = 3.62, p < 0.001$, *Cohen's d* = 0.33 [95% CI = 0.15; 0.51].

A parallel mediation analysis was conducted to assess whether evil perceptions or entertainment value mediated the effect of

³ After participants completed the above measures, they completed some exploratory measures that are not relevant to the hypotheses (Brief State Humility Scale and two attitudes questions).

condition on conspiracy beliefs (see [Figure 3](#)). As shown in [Table 3](#), text condition indirectly influenced conspiracy beliefs through its effect on evil perceptions. However, text condition did not influence conspiracy beliefs through its effect on entertainment value.

When each mediator was entered independently into a separate analysis, similar mediational effects occurred. That is, entering entertainment value alone as a mediator revealed that text condition did not indirectly influence conspiracy beliefs through entertainment value, $B = -0.06$, $SE = 0.04$; 95% CI = $[-0.13; 0.01]$. Evil perception, however, did mediate the effect of condition on conspiracy beliefs, $B = 0.20$, $SE = 0.04$; 95% CI = $[0.12; 0.28]$. Interested readers might notice that the entertainment value indirect effect was close to reaching the conventional level of significance. However, it is worth noting that in this study's mediational model, entertainment value was *negatively* associated with conspiracy beliefs, $B = -0.10$, $SE = 0.05$; 95% CI = $[-0.20; 0.01]$, an effect opposite to that predicted by [van Prooijen et al. \(2022\)](#).

4.2.3 Within-condition correlations between variables

Within the low antagonistic text condition, evil perceptions correlated negatively with entertainment value, $r(224) = -0.25$, $p < 0.001$, but positively with conspiracy beliefs [$r(224) = 0.44$, $p < 0.001$]. Entertainment value correlated negatively with conspiracy beliefs [$r(224) = -0.15$, $p = 0.020$].

Within the high antagonistic text condition, evil perceptions correlated negatively with entertainment value, $r(253) = -0.36$, $p < 0.001$, but positively with conspiracy beliefs, $r(253) = 0.19$, $p = 0.003$. Entertainment value was not significantly correlated with conspiracy beliefs, $r(253) = -0.02$, $p = 0.743$.

Across both conditions, evil perceptions correlated negatively with entertainment value, $r(479) = -0.18$, $p < 0.001$, and positively with conspiracy beliefs [$r(479) = 0.33$, $p < 0.001$]. Entertainment value did not correlate significantly with conspiracy beliefs [$r(479) = -0.02$, $p = 0.614$].

4.2.4 Relationship between evil perceptions and conspiracy beliefs

As in the previous studies, a principal components analysis with oblimin rotation revealed two components with eigenvalues above 1.0 (4.17 and 2.08). A scree plot also suggested two components. Component 1 was composed of the belief items, and each item loaded > 0.82 onto this component. Component 2 was composed of the evil items, and each item loaded > 0.84 onto this component. Neither component had items with cross loadings (all < 0.07).

5 General discussion

The current research revealed that conspiratorial/antagonistic texts increase evil perceptions, entertainment value, and conspiracy beliefs. These results are novel in demonstrating that antagonistic texts were perceived as having conspirators who had more evil intentions even when nothing evil or conspiratorial was explicitly noted in the texts used in Studies 2 and 3. Most

importantly, this perception of evil mediated the effect of manipulated conspiratorial/antagonistic text on conspiracy beliefs in all three studies. Thus, these results suggest that evil perceptions may increase conspiracy beliefs. Of course, these mediational results are correlational and subject to the limitations of correlational designs. However, these results provide the first evidence suggesting that evil perceptions mediate the effect of conspiratorial/antagonistic information on conspiracy beliefs. Future studies should manipulate the mediator in a variety of ways to test whether evil perceptions cause conspiracy beliefs.

5.1 Considering mediation

As with most research, testing mediation via correlational or experimental methods is not able to establish that the proposed mediator is the only mediator of an effect. Indeed, most complex effects like conspiracy beliefs are likely influenced by multiple mediators. The present research tested two mediators. One mediator, appraisals of entertainment value, had been examined in previous research using correlational and experimental methods, and the research suggested that entertainment value mediated the effect of text condition on conspiracy beliefs ([van Prooijen et al., 2022](#)). The present research did not replicate the mediation. Moreover, the experimental manipulation of entertainment value via text condition was found to not only influence appraisals of entertainment value but also perceptions of evil. Indeed, the manipulation of the information of Epstein's death used murder, which is regarded as evil by most. Moreover, the manipulation of the information about election seemed to more directly manipulate interpersonal conflict, or hostility between the candidates. Consistent with past research on the hostile attribution bias, situations containing some possible hostility are likely to be perceived as containing evil by some individuals. This manipulation also influenced perceptions of evil which then mediated the effect of text condition on conspiracy beliefs, as revealed by correlational analyses.

5.2 Why entertainment value was not a mediator?

That entertainment value did not mediate the effect of text condition on conspiracy beliefs in the current research is confusing given past research suggested that these appraisals did mediate this effect ([van Prooijen et al., 2022](#)). However, it is important to note this lack of mediation for entertainment value occurred across all three studies, including the third study which was preregistered and had a large sample. We can only speculate why this mediation did not occur.

[van Prooijen et al. \(2022\)](#) posited that entertainment value (e.g., interest, attentiveness) increases conspiracy beliefs because it causes perceivers to process information more fluently and increases emotional responses which reduces analytic thinking. Fluency has been found to increase truth beliefs but the information used in many of these fluency experiments is relatively simple

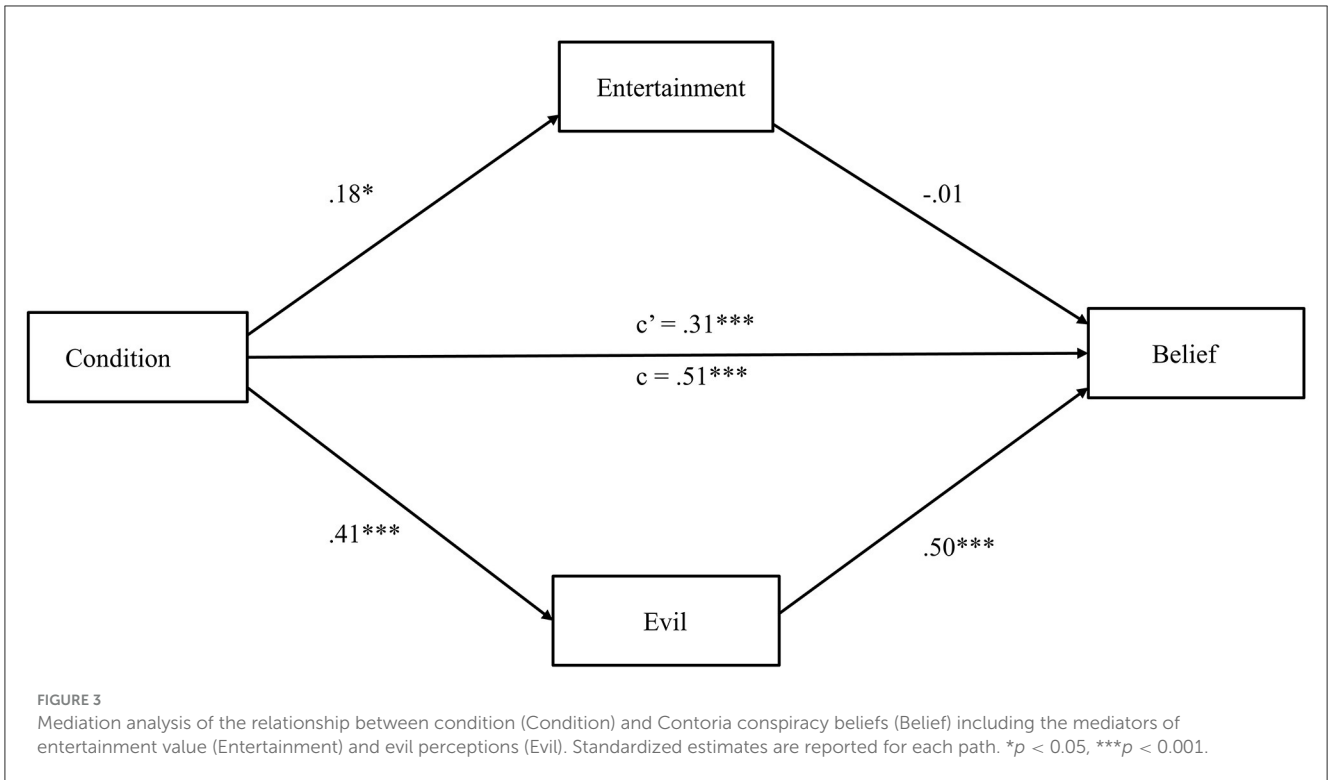


TABLE 3 Indirect and total effects (study 3).

Type	Effect	Estimate	SE	Lower	Upper	β	z	p
Indirect	Cond \Rightarrow Entertain \Rightarrow Belief	0.01	0.03	-0.06	0.07	0.00	0.22	0.413
	Cond \Rightarrow Evil \Rightarrow Belief	0.20	0.04	0.12	0.28	0.09	4.89	< 0.001
Component	Cond \Rightarrow Entertain	0.66	0.08	0.49	0.82	0.33	7.77	< 0.001
	Entertain \Rightarrow Belief	0.01	0.05	-0.09	0.11	0.01	0.22	0.413
	Cond \Rightarrow Evil	0.43	0.06	0.31	0.56	0.30	6.86	< 0.001
	Evil \Rightarrow Belief	0.46	0.07	0.33	0.59	0.31	6.98	< 0.001
Direct	Cond \Rightarrow Belief	0.14	0.10	-0.06	0.34	0.07	1.40	0.082
Total	Cond \Rightarrow Belief	0.35	0.10	0.16	0.54	0.16	3.62	< 0.001

Confidence intervals computed with method: Standard (Delta method). Betas are completely standardized effect sizes.

facts (e.g., Which is the most poisonous snake in the world?). Conspiracy-related information, particularly the type used in the past (van Prooijen et al., 2022) and current research, is more complex and involves judgments about the intentions of several actors. It is possible that such undermines the direct effect of fluency on truth beliefs. For example, one could be very interested in and attentive toward some information and engage in deep processing of it. This processing might involve counter-arguing with the information in such a way as to believe it less (Frey, 1986). In addition, the research on low analytic thinking being related to more conspiracy beliefs has revealed that this relationship is not simple and direct (e.g., Ståhl and van Prooijen, 2018).

The current lack of support for the mediating role of entertainment value on conspiracy beliefs raises another issue that might be worth mentioning. In their experiment using the fictional Contoria election, van Prooijen et al. (2022) manipulated the mediator by using text that was intended to be more entertaining in one condition than the other. This manipulation then influenced conspiracy beliefs. Some would posit that this design provides stronger evidence for mediation (conceptually) than statistical (correlational) mediation. This might be true, but what if the manipulation alters variables in addition to the preferred mediator? The results from the current experiments suggest that this “entertainment manipulation” also manipulated the perception of evil intentions. And the mediation evidence from the current

experiments suggests that evil perceptions statistically mediated the effect of text condition on conspiracy beliefs while entertainment value appraisals did not.

van Prooijen et al. (2022) indicated that the mediator was entertainment value, but we suspect that entertainment value may not be the mediator at a conceptual level. Imagine conducting another experiment with the fictional election in Contoria, but instead of using the antagonistic text, we use a text describing the two candidates engaged in unusual political behavior. For example, rather than passionately arguing for their conflicting ideas (as in van Prooijen et al., 2022), the politicians engage in beer drinking contests followed by feats of physical strength while wearing furry costumes. Surely, research participants would rate this as entertaining, but we doubt it would increase their conspiracy beliefs.

Methodological differences between the current studies and the previous ones by van Prooijen et al. (2022) may also explain why the current studies did not replicate the mediational results of entertainment value. As noted in the Method section, in the van Prooijen et al. (2022) Epstein study, the low conspiratorial condition text included this statement, “There is little reason to question the official reading of this event.” In contrast, the high-conspiratorial condition text included this statement, “There is, however, ample reason to question the official reading of this event.” We removed these two statements we thought they might induce an experimenter demand to believe (Orne, 1962) or psychological reactance to not believe the text information (Brehm, 1966). Moreover, by removing these sentences, we eliminated a confound between the two conditions. The elimination of these two troublesome sentences may have contributed to the lack of the mediational evidence for entertainment value. Studies 2 and 3 did not contain these problems, so this methodological difference is unlikely to account for all of the effects.

In addition to this difference between the past studies and the current studies, some other differences existed. In the current studies we shortened the measurement of entertainment value from 12 items to 4 items, to reduce the time the study took for participants to complete. When doing this, we used the 4 items from van Prooijen et al. (2022) that loaded most highly on the entertainment value factor in their factor analysis. In addition, van Prooijen et al. (2022) asked participants “To what extent was the Internet article you just read...” In our studies, we gave the following instructions, “Please answer the following about the article you just read.” If these minor differences contributed to the failure to replicate the van Prooijen et al. (2022) results, then their results must be standing on very thin ice.

5.3 Further considerations of evil perceptions

The within-condition correlations of entertainment value and evil perception were not consistent across studies, so these correlations are relatively uninformative concerning the relationship between entertainment value and evil perception (Study 1’s were not significant or positive and Studies 2 and 3 had correlations that were negative). These correlations suggest that

entertainment value and evil perception are not the same construct. Moreover, the current results suggest that evil perceptions likely play a more important role in mediating the relationship between conspiratorial/antagonistic texts and conspiracy beliefs than do appraisals of entertainment value.

Some readers might wonder if the perception of evil intentions by the conspirators is the same variable as conspiracy beliefs. We addressed this issue in three ways. We examined the correlations of each belief item with the evil perceptions measure, because some of the belief items may have included “evil” language whereas others did not. These correlations suggested that each belief item correlated in similar directions and magnitudes with evil perceptions, regardless of whether evil intentions were implied. Next, we conducted principal components analyses of the belief and evil perception items and found that these two sets of items consistently loaded on separate components. Finally, in Study 3, we included only belief items that made no allusions to evil, and still found that the antagonistic text lead to increased evil perceptions and that these evil perceptions mediated the effect of text condition on conspiracy beliefs. This evidence thus suggests that perception of evil intentions by the conspirators is not the same variable as conspiracy beliefs, but rather is a mediator of these beliefs.

In psychological research, an evil behavior is commonly defined as being unprovoked (or much greater than the provocation), intentional, and causing harm (Baumeister, 1999; Webster and Saucier, 2013). Future research on conspiracy beliefs should include measures of evil perceptions that assess these components. Additional future research could examine whether individual differences in belief in pure evil (e.g., Webster et al., 2021) correlate with conspiracy beliefs.

5.4 Further considerations of the measurement of conspiracy beliefs

As noted in Footnote 1, in Studies 1 and 2, we examined whether trait anger correlated with the measures, because previous research suggested that trait anger relates to conspiracy beliefs and evil perceptions (Harmon-Jones and Szmaniak, 2023). Trait anger did not correlate with conspiracy beliefs in the present research. In the previous trait anger studies, conspiracy beliefs were measured with true-false type conspiracy belief questions that did not mention the word conspiracy. In contrast, the current studies did not exactly measure this truth-type belief and mentioned the word conspiracy in the items. This latter measure was the one used by van Prooijen et al. (2022). In other research, we have manipulated the content of specific conspiracy theory stories to be low or high in evil intentions by the conspirators (Harmon-Jones et al., 2024). In this research, we have found that trait anger was more strongly correlated with believing (truth) high-evil than low-evil conspiracies. However, trait anger was not significantly correlated with believing that the story sounded like a conspiracy. We suspect that these differences in assessing conspiracy beliefs (i.e., “do you believe this information to be true?” vs. “is this information a conspiracy?”) contributed to the different results with trait anger. Either way, the evil perception results

are consistent across the current studies as well as other studies (Harmon-Jones and Szymaniak, 2023).

In the current studies, the measures of entertainment value and evil perceptions were placed after the measures of conspiracy beliefs. We used this order because past emotion research has suggested that completion of emotion-related measures prior to more cognitive/belief measures can reduce the accuracy of the cognitive measures (e.g., Berkowitz and Troccoli, 1990). However, this ordering of measures may be problematic for another reason: Conspiracy belief endorsement might have influenced ratings of entertainment value and evil perceptions. This thus could raise concerns about the proposed mediation. Future research could alter the order of the presentation of the measures, to test whether order has a significant influence on the results.

5.5 Effect sizes

For conspiracy beliefs, the sizes of the effect of text condition ranged from 1.17 in Study 1 to 0.33 in Study 3; Study 2's effect size was 0.80. It is difficult to interpret this range of effect sizes, but Study 1's may have been particularly large because this measure of conspiracy beliefs about Epstein created by van Prooijen et al. (2022) may contain demand characteristics, as noted by one reviewer.

For evil perceptions, the sizes of the effect of text condition ranged from 1.00 in Study 2 to 0.63 in Study 3. Study 1's effect size was 0.88. Again, it is difficult to interpret this range, but it is interesting to note that the text conditions manipulating the Epstein conspiracy did not have the largest effect size. However, it should be noted that the conspiratorial Epstein text involving a murder was rated as containing more evil conspirators than the antagonist text involving an election.

For entertainment value, the sizes of the effect of text condition ranged from 0.71 in Study 3 to 0.36 in Study 1; Study 2's effect size was 0.50. It is difficult to interpret this range, but these effect sizes, along with the other effect sizes for the other measures, appear to indicate that there were no systematic differences between the studies that led to larger vs. smaller effect sizes.

We do not wish to supply interpretations of the meaning of these effect sizes in terms of small, medium, and large, because of the variability in the sizes as a function of study. In addition, Funder and Ozer (2019) have recommended against such interpretations because they need to be contextualized against other similar research; this research is novel and thus difficult to compare to other studies that have manipulated texts related to conspiracies.

5.6 On the novel contributions of this research

These results thus provide novel evidence regarding variables that may influence conspiracy beliefs. Together with other recent research (Harmon-Jones and Szymaniak, 2023), they suggest that evil perceptions may increase conspiracy beliefs. Whereas the research by Harmon-Jones et al. (2024) examined individual differences that related to perceptions of evil within conspiracy

theories, the present research extended this work by examining a situation variable – the nature of the information – that influenced these perceptions of evil. Thus, both individual differences and situational variables may contribute to the perception of evil on the part of conspirators, and these perceptions may increase conspiracy beliefs. The current research thus adds to research illustrating the value of examining psychological components of conspiracy beliefs.

Although some may see evil perceptions as an inherent property of conspiracy beliefs, we believe that it is important to examine the contributions of each element of potentially conspiratorial information on belief in conspiracies. The current research suggests that perceptions of evil intent are more important than the entertainment value of the information. In fact, appraisals of entertainment value did not relate to conspiracy beliefs in the current research, suggesting that these appraisals do not contribute to conspiracy beliefs.

Data availability statement

The datasets presented in this study can be found in online repositories. The names of the repository/repositories and accession number(s) can be found at: https://osf.io/gb8mp/?view_only=529bf67704a049f095a0d5d1d998791.

Ethics statement

The studies involving humans were approved by the Human Research Ethics Advisory Panel C (Behavioral Sciences), University of New South Wales. The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study.

Author contributions

EH-J: Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing—original draft, Writing—review & editing. KS: Conceptualization, Data curation, Formal Analysis, Investigation, Methodology, Software, Validation, Writing—review & editing. DE: Conceptualization, Data curation, Formal Analysis, Investigation, Methodology, Validation, Writing—original draft, Writing—review & editing. GS: Conceptualization, Data curation, Formal Analysis, Investigation, Methodology, Validation, Writing—original draft, Writing—review & editing. CH-J: Conceptualization, Funding acquisition, Investigation, Methodology, Software, Writing—review & editing.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

The author(s) declared that they were an editorial board member of Frontiers, at the time of submission. This had no impact on the peer review process and the final decision.

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