Coping Strategies and Belief in COVID-19 Conspiracy Theories

Short title: *Coping and COVID-19 Conspiracy Beliefs*

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Coping Strategies and Belief in COVID-19 Conspiracy Theories

Abstract:

Conspiracy beliefs have been related to aversive emotional experiences often accompanying major world events and have also been linked to maladaptive ways of coping with stress. In this research, we examined how different coping strategies (i.e., self-sufficient, social-support, avoidance, and religious) predicted the adoption of COVID-19 conspiracy theories. In two studies (Study 1, n = 1000 and Study 2, n = 616) conducted among Polish participants, we found that avoidance and religious coping were positively linked to COVID-19 conspiracy beliefs. In Study 1, conspiracy beliefs also mediated the positive relationships between avoidance and religious coping and adherence to safety and self-isolation guidelines during the COVID-19 pandemic. Study 2 additionally showed that the relationship between fear, induced by reading threatening news on COVID-19, and conspiracy beliefs was the strongest among those high in avoidance coping. These studies highlight the role of coping strategies in the adoption of COVID-19 conspiracy beliefs.

Keywords: coping strategies, avoidance coping, religious coping, COVID-19 conspiracy beliefs

Coping Strategies and Belief in COVID-19 Conspiracy Theories

The COVID-19 pandemic impacted people's lives on many different levels, including their everyday leisure and labour activities, physical and mental health, and their general well-being. The uncertainty related to the global public health emergency that followed the disease's outbreak was associated with an intensification of psychological problems such as stress, anxiety, depression, and frustration (APA, 2020; Duan & Zhu, 2020; Serafini et al., 2020). Moreover, the urge to identify the origins of the virus, fuelled by the need to alleviate the psychological effects of the situation, seemed to give rise to several conspiracy theories (Kowalski et al., 2020). Previous research has shown that adopting conspiracy beliefs in the context of a global pandemic may lead to maladaptive outcomes, such as a refusal to vaccinate against COVID-19 (e.g., Marchlewska, Hamer, et al., 2022) or lower adherence to safety and self-isolation guidelines (e.g., Łowicki et al., 2022; Sternisko et al., 2023). Literature on the potential psychological concomitants of general conspiracy beliefs is vast, for example linking it to maladaptive stress-coping strategies (Marchlewska, Green, et al., 2022). However, less is known about the relationships between coping and conspiracy beliefs in the context of the COVID-19 pandemic (Pfeffer et al., 2022), which is the area our studies aim to address. Specifically, in the present paper, we explore the potential consequences of COVID-19-related conspiracy beliefs and the role of fear in adoption of such explanations among individuals with maladaptive stress responses.

COVID-19 Conspiracy Beliefs

Conspiracy theories are typically defined as secret plots by malevolent groups, whose actions allegedly cause important events of public interest (e.g., Douglas & Sutton, 2023; Douglas et al., 2019). COVID-19 conspiracy beliefs included speculations that the virus was purposely manufactured by the Chinese or the Americans to give them a head start in the economic war, or that the pandemic was a hoax designed to cover up some political actions

and influence people's behaviour (e.g., Douglas, 2021; Liekefett et al., 2023; Marchlewska, Górska, et al., 2022). Past research on COVID-19 conspiracy beliefs has demonstrated that endorsement of such theories was associated with feelings of anxiety (Liekefett et al., 2023), lack of control (Šrol et al., 2021) and stress (Pfeffer et al., 2022).

Both past theorising and empirical research seem to concur with the view that conspiracy beliefs have emotional underpinnings, such as feelings of anxiety during difficult situations (van Prooijen & Douglas, 2017). However, recent findings have shown that while aversive experiences or negative emotional states seem to play a role in explaining why people endorse conspiracy theories, how people deal with these adversities is also important (Marchlewska, Green, et al., 2022; Molenda et al., 2023; Pfeffer et al., 2022). For example, Marchlewska, Green, et al. (2022) showed that maladaptive stress-coping strategies (i.e., avoidance coping) predicted higher belief in conspiracy theories and experimentally-primed avoidance coping increased conspiracy beliefs (see also Pfeffer et al., 2022). Thus, it seems that stress-coping – especially avoidance coping – may be related to the adoption of conspiracy explanations. This might be the case because conspiracy theories represent an avoidant response or simply occur as a rationale for avoiding confrontation with a stressor (Marchlewska, Green, et al., 2022). Indeed, they divert attention from the reality of the stressful situation (e.g., the COVID-19 pandemic) to conspiracy explanations, which may temporarily alleviate the stress. However, rather than helping, this could be even more detrimental during a pandemic, since these stress-avoidant tendencies might translate into lower compliance with public health guidelines and thus jeopardise the mitigation of the pandemic (e.g., Chong et al., 2020).

Importantly, COVID-19 conspiracy beliefs could result from aversive experiences (e.g., stress) and may have severe concomitants and consequences (Douglas, 2021; van Mulukom et al., 2022). The endorsement of COVID-19 conspiracy theories has been

previously linked to lower adherence to safety and self-isolation guidelines (Kowalski et al., 2020; Łowicki et al., 2022; Pummerer et al., 2022), lower intentions to vaccinate against COVID-19 (Bertin et al., 2020; Marchlewska, Hamer, et al., 2022) and lower psychological well-being (van Mulukom et al., 2022), making conspiracy beliefs a potential threat to public health. Thus, in the current research, we aimed to investigate the relationships between COVID-19 conspiracy beliefs, stress-coping strategies and public health-related concomitants of the pandemic.

Coping with Stress – Forms and Concomitants

Coping can be defined as the execution of a response to a stressor (Carver et al., 1989; Lazarus, 1993) and is considered fundamental to human functioning (Aldwin, 2011; Zimmer-Gembeck & Skinner, 2016). People cope with stress using various strategies, which bears consequences for mental health (Clarke, 2006; Taylor & Stanton, 2007). Thus, coping can be adaptive or maladaptive, depending on the stress-related outcome achieved in the process (Taylor & Stanton, 2007). Thus, coping is considered adaptive when it leads to a progression in achieving one's goals, an extenuation of distress or an improvement of functioning in general, whereas maladaptive coping results in sustained levels of stress (Marchlewska, Green, et al., 2022; Nielsen & Knardahl, 2014; Zeidner & Saklofske, 1996).

Moreover, based on the way people tackle stressful events, previous research has distinguished between avoidance and approach coping (e.g., Finset et al., 2002; Roth & Cohen, 1986). Avoidance coping "includes both cognitive and behavioural responses that serve the function of avoiding the distressing event or circumstances" (Zimmer-Gembeck & Skinner, 2016, p. 490) and avoidance strategies involve such responses as mental or behavioural disengagement, denial or substance use (e.g., Litman, 2006). Avoidance coping can be considered maladaptive, because it has been associated with unfavourable outcomes, such as higher psychological distress, more health-related problems and lower well-being

(Krattenmacher et al., 2013; Nielsen & Knardahl, 2014). On the other hand, approach coping encompasses those behavioural and cognitive responses that aim to manage adversities or stressful situations (Clarke, 2006; Finset et al., 2002). Approach coping responses can be twofold: self-sufficient/problem-focused, comprised of such strategies as planning or active coping (Litman, 2006; Marchlewska, Green, et al., 2022) and social support/emotion-focused coping, which includes venting of emotions and other subtypes of social support (instrumental and emotional; e.g., Stowell et al., 2001). Approach (particularly self-sufficient/problem-focused) coping tends to be related to better mental and physical health, higher academic performance and greater social competence (Clarke, 2006; Krattenmacher et al., 2013; Stowell et al., 2001; Taylor & Stanton, 2007; Zimmer-Gembeck & Skinner, 2016), indicating that approach coping might be deemed adaptive.

A different form of coping with stress is religious coping – a propensity for focusing on religion during stressful times (Carver et al., 1989). This form of coping appears distinct from other coping strategies and is at times treated as a separate factor or excluded from further analyses (e.g., Heydecke et al., 2004; Marchlewska, Green, et al., 2022; Stowell et al., 2001). Indeed, researchers focused on religious coping argued that this type of stress-coping could constitute a unique dimension of the coping processes (Pargament, 2011). This introduces some complexity: while religious coping is often measured in a general way (as in the widely used multi-factor scales; e.g., Carver, 1997; Carver et al., 1989), it might also be equivocal. It may occur because religious coping can be employed for different reasons, making it difficult to know whether it was active or avoidant (Stowell et al., 2001; see also Carver et al., 1989), which is why some scholars emphasised that it can be both detrimental and beneficial (Pargament, 2011). Overall, coping with stress is consequential for individuals' health and psychosocial functioning (e.g., Clarke, 2006; Taylor & Stanton, 2007).

Interestingly, recent research conducted in the context of the COVID-19 pandemic revealed that avoidance coping strategies (e.g., denial) were also related to lower adherence behaviours (e.g., not maintaining social distance; Bailey et al., 2021; Chong et al., 2020). Avoiding the stressor might accompany a lower willingness to act in line with public health guidelines, as indeed, compliance with pandemic-related restrictions seems more of an active behaviour, not an avoidant one. In line with this reasoning, in the present research we proposed that different coping strategies would be associated with adherence to public health guidelines and that this would be accounted for by COVID-19 conspiracy beliefs.

COVID-19 Conspiracy Beliefs and Coping With Stress

Recent findings have demonstrated that conspiracy beliefs might constitute "a stress-avoiding coping response" (Marchlewska, Green, et al., 2022; p. 533), according to which adopting conspiracy explanations can be used as a maladaptive way to deal with a stressor by shifting one's attention away from it instead of actively facing it. In the current research, we aimed to check if avoidance coping would be related to higher endorsement of COVID-19 conspiracy theories too. Moreover, we hypothesised that religious coping might show similar associations as avoidance coping; that is, it might displace coping efforts from pursuing the resolution of the stressor to focusing on one's religion only. Therefore, both avoidance and religious coping could be related to higher COVID-19 conspiracy beliefs.

Since coping implies executing a response to a stressor (e.g., Lazarus, 1993), the role of coping strategies should be more pronounced in the presence of stressful stimuli, for example, while processing fear-inducing, threatening information (Roth & Cohen, 1986). Thus, we further aimed to explore the role of fear in adopting conspiracy explanations, since anxiety and fear have been linked to both pre-pandemic conspiracy beliefs (e.g., Grzesiak-Feldman, 2013), as well as to COVID-19 pandemic-related conspiracy beliefs (Barahmand et al., 2022). Recent research suggested that experimentally manipulated COVID-19 threat

salience increased feelings of fear, which in turn was related to conspiracy beliefs (Jutzi et al., 2020). Thus, combining the lines of research regarding the role of (a) fear and (b) coping with stress in conspiracy beliefs, we assumed that if induced fear leads to higher conspiracy beliefs and maladaptive coping is related to these beliefs, then experimentally increased fear should be linked to greater endorsement of conspiracy theories, especially among those who do not have the resources to deal with these aversive experiences (i.e., those high in maladaptive coping). In such a way, we aimed to investigate not only the role of fear or coping strategies but also the interplay between them in predicting conspiracy beliefs.

Overview of the Current Research

The main aim of our research was to replicate and scrutinise past findings regarding the role of stress-coping in the endorsement of conspiracy theories, additionally enhancing our designs by examining possible adverse outcomes of the COVID-19 conspiracy beliefs (Study 1, correlational) and investigating how dispositional use of coping strategies may shape the response toward fearful situations (Study 2, experimental). Both studies were conducted among Polish participants and we used the COPE inventory (Carver et al., 1989), and the COVID-19 conspiracy beliefs questionnaire (Kowalski et al., 2020).

We hypothesised that avoidance (H1A) and religious (H1B) coping should be related to higher conspiracy beliefs (these hypotheses were tested in both studies). Moreover, in Study 1, we also tested the hypotheses that avoidance (H2A) and religious (H2B) coping strategies would be linked to lower adherence to safety and self-isolation guidelines, and that these relationships would be mediated by COVID-19 conspiracy beliefs. In Study 2, we manipulated feelings of fear (by exposure to COVID-19 threat; Jutzi et al., 2020) to examine the role of an induced state of fear in adopting COVID-19 conspiracy explanations, additionally utilising the coping with stress framework (Marchlewska, Green, et al., 2022). Specifically, we hypothesised that COVID-19 threat salience (compared to a control

condition) should boost feelings of fear (mediator; H3), which would further be related to higher conspiracy beliefs, although – in line with previous hypotheses (H1A, H1B) – only among individuals high in avoidance (H4A) and religious coping (H4B). Our studies were not preregistered. In both studies, we aimed to include at least 400 participants, which gave us a power of .80 for detecting small associations between variables; for r = .14 (Cohen, 1988), G*Power 3.1 (Faul et al., 2009) provides a target of 398 participants. All participants issued informed consent to participate in the studies. Both studies were conducted in March 2021. Data and code for both studies are posted at https://osf.io/ey4cf/?view_only=3808622a6059425aa0b2e868ee13e2d4.

Study 1

In Study 1, we tested the hypotheses that avoidance (H1A) and religious (H1B) coping would positively predict conspiracy beliefs. We therefore aimed to replicate the pattern of results obtained by Marchlewska, Green, et al. (2022) in a different context related to a global crisis (i.e., the COVID-19 pandemic). We also investigated the possible outcomes of conspiracy beliefs, assuming that avoidance (H2A) and religious (H2B) coping would be negatively linked to the adherence to safety and self-isolation guidelines, and that these relationships would be mediated by COVID-19 conspiracy beliefs.

Method

Participants and Procedure

Data for Study 1 were obtained through an online survey (CAWI), conducted on a nationwide sample of Poles, representative in terms of gender, age and settlement size. Data were collected by an external research company, used in academic studies before (e.g.,

Kowalski et al., 2020). The final sample for this study included 1000 Polish participants (549 women), aged between 18 and 85 (M_{age} = 47.99, *SD* = 16.49).[1] [2]

Measures

Coping Strategies were measured using the COPE inventory (Carver et al., 1989), which is comprised of 15 four-item scales exploring adaptative and maladaptive coping strategies. Participants were asked to answer what they did and felt when they experienced stressful events. In line with Marchlewska, Green, et al. (2022), we differentiated four factors: **self-sufficient coping** (measuring planning, e.g., "I try to come up with a strategy about what to do", acceptance, e.g., "I get used to the idea that it happened", active coping, e.g., "I take direct action to get around the problem", positive reframing, e.g., "I look for something good in what is happening", suppression of other activities, e.g., "I try hard to prevent other things from interfering with my efforts at dealing with this", and restraint, e.g., "I make sure not to make matters worse by acting too soon"; α = .90), **social support** (measuring the use of instrumental social support, e.g., "I talk to someone to find out more about the situation", emotional social support, "I talk to someone about how I feel,", and venting of emotions, e.g., "I let my feelings out"; α = .89), **avoidance coping** (measuring denial, e.g., "I act as though it didn't happen", behavioural disengagement, e.g., "I just give up trying to reach my goal", mental disengagement, e.g., "I go to the movies or watch TV, to think about it less", humour, e.g., "I make fun of the situation", and substance use, e.g., "I try to lose myself for a while by drinking or taking drugs"; α = .87) and **religious coping** (e.g., "I put my trust in God"; α = .94) which was its own factor.[3] Items were scored on a four-point scale, where higher scores

[1] Besides variables reported here, Study 1 also involved measures of prejudice and social psychological variables (e.g., climate change conspiracy beliefs) included for the purposes of different projects. Please contact the first author for details.
[2] Complete information about demographics for both studies can be found in the Supplements (Table S3).
[3] See the Supplements for further details regarding factor structure and factor loadings of the COPE inventory.

indicated a higher disposition toward the coping strategy (1 = *I usually do not do this at all* and 4 = *I usually do this a lot*).

COVID-19 Conspiracy Beliefs were measured with a 16-item questionnaire, based on a scale previously used by Kowalski and colleagues (2020).[4] We measured various types of COVID-19 conspiracy beliefs, such as "Coronavirus was created by ecologists to reduce population and help the environment" or "Coronavirus was created by pharmaceutical organizations". Participants responded on a scale from 1 = *definitely disagree* to 5 = *definitely agree*, α = .96.

Adherence to Safety and Self-Isolation Guidelines was measured with a 6-item questionnaire, based on a scale previously used by Kowalski et al. (2020): "To avoid coronavirus infection, I limit my contacts with relatives and friends", "Due to the epidemic, I wash my hands more often and longer than usual", "I always wear the mask so that it also covers my nose", "I try to keep distance from others when I am outside the home", "I go shopping wearing a mask", "I participate in big events, for example big house parties (reverse coded item)". Participants responded on a scale from 1 = *definitely false* to 5 = *definitely true*, α = .87.

Results and Discussion

Zero-Order Correlations

First, we computed correlations between continuous variables (see Table 1). In line with our predictions, COVID-19 conspiracy beliefs were linked to avoidance and religious coping. Adherence to safety and self-isolation guidelines was positively associated with self-sufficient coping but negatively with avoidance coping. COVID-19 conspiracy beliefs and adherence to safety and self-isolation guidelines were negatively related to each other.[5]

[4] For more information regarding the scale's factor structure, see the Supplements.
[5] To investigate if there were any differences between genders (male = 0, female = 1), we computed an independent *t*-test for the main variables. There was a significant effect of gender on COVID-19 conspiracy beliefs (male *M* = 2.27, *SD* = 0.95; female *M* = 2.52, *SD* = 1.10), *t*(995.832) = -3.88, *p* = < .001, social-support

---- Table 1 ----

Regression Analyses

COVID-19 Conspiracy Beliefs (DV1). Second, we computed a multiple regression analysis to investigate the effects of self-sufficient coping, social support, avoidance coping and religious coping on COVID-19 conspiracy beliefs (Table 2). We also included demographic variables (i.e., gender and age) as covariates. In line with our assumptions, both avoidance and religious coping were positively linked to COVID-19 conspiracy beliefs.

---- Table 2 ----

Adherence to Safety and Self-Isolation Guidelines (DV 2). Finally, we computed a hierarchical multiple regression analysis to investigate the effects of self-sufficient coping, social support, avoidance coping, religious coping and COVID-19 conspiracy beliefs on adherence to safety and self-isolation guidelines (Table 3). We also included gender and age as covariates. In Step 1, we introduced coping strategies and demographic variables. We found a significant and negative relation between avoidance coping and our dependent variable. We also found a significant, but positive, link between religious coping and adherence to safety and self-isolation guidelines. In Step 2, we added COVID-19 conspiracy beliefs and found a negative relation with adherence to safety and self-isolation guidelines. After introducing COVID-19 conspiracy beliefs into the equation, we still found a significant, though weaker, negative link between avoidance coping and an adherence to safety and self-isolation guidelines. Religious coping also remained a significant, but positive, predictor of the dependent variable.

---- Table 3 ----

(male M = 2.48, SD = 0.49; female M = 2.58, SD = 0.51), $t(998) = -3.19$, $p = .001$, religious coping (male M = 2.11, SD = 0.91; female M = 2.24, SD = 0.96), $t(978.938) = -2.25$, $p = .024$. There was no significant effect of gender on self-sufficient coping, $t(998) = 0.33$, $p = .738$, avoidance coping, $t(998) = 1.60$, $p = .111$, adherence to safety and self-isolation guidelines, $t(998) = -0.86$, $p = .392$.

In order to perform a full test of our hypotheses, we conducted a mediation analysis using Model 4 with one mediator in the Process Software 3.5 (Hayes, 2018). We examined whether COVID-19 conspiracy beliefs mediated the path between avoidance coping and adherence to safety and self-isolation guidelines. As covariates, we used gender, age, self-sufficient coping, social-support and religious coping (Figure 1). Significance was tested with bootstrapped 95% confidence intervals for the unstandardised indirect effects, constructed with 5,000 resamples. The indirect effect of avoidance coping on adherence to safety and self-isolation guidelines via COVID-19 conspiracy beliefs was significant and negative, b = -0.17, SE = 0.03, 95% CI [-0.24, -0.12].

---- Figure 1 ----

We conducted a second mediation analysis (model 4) to test whether COVID-19 conspiracy beliefs mediated the path between religious coping and adherence to safety and self-isolation guidelines (see Figure 2). As covariates we used gender, age, self-sufficient coping, social-support and avoidance coping. The indirect effect of religious coping on adherence to safety and self-isolation guidelines via COVID-19 conspiracy beliefs was also significant and negative, estimate = b = -0.07, SE = 0.01, 95% CI [-0.09, -0.04].

---- Figure 2 ----

Study 1 confirmed our basic prediction about the importance of avoidance coping in explaining the relationship between higher endorsement of COVID-19 conspiracy beliefs and lower adherence to safety and self-isolation guidelines. In line with previous research (Marchlewska, Green, et al., 2022), we found that those who had dispositional tendencies to avoid thinking about the stressful situation by temporarily focusing on a different stimulus were more willing to believe in “hidden enemies” who could be blamed for the COVID-19 pandemic. They also seemed less willing to adhere to safety and safe-isolation guidelines. Interestingly, we also found that religious coping was positively linked to COVID-19

conspiracy beliefs, which also served as a partial replication of previous findings on the relationship between conspiracy beliefs and religious coping (Marchlewska, Green, et al., 2022). On the other hand, however, mere religious coping served as a positive predictor of adherence to safety and self-isolation guidelines. This would suggest that religious coping, though related to conspiracy beliefs, in some cases may be positively linked to healthy behaviours during pandemic – this seemed to be the case especially after accounting for the shared variance between religious coping and conspiracy beliefs.

Study 2

The aim of Study 2 was twofold: first, we aimed to extend the results of Study 1 on the role of avoidance (H1A) and religious (H1B) coping on COVID-19 conspiracy theory endorsement; second, we examined whether the dispositional tendency to use (vs. not) these strategies might boost the effects of fear on COVID-19 conspiracy beliefs. According to Freckelton (2020), threats related to the COVID-19 pandemic generated fear that could lead to undesirable community phenomena, including scapegoating and trusting conspiracy explanations rather than scientifically based information. Indeed, previous research found that high-anxiety situations increased conspiracy beliefs (Grzesiak-Feldman, 2013). Importantly, Jutzi et al.'s (2020) findings suggested that COVID-19 threat salience increased fear, which then translated to higher endorsement of conspiracy theories. In Study 2, we expected that the effect of fear on conspiracy beliefs would be stronger among those who used maladaptive ways of coping because they lacked the resources to deal with their fears. Thus, in fear-inducing situations, such as COVID-19 threat salience, those who predominantly relied on maladaptive coping strategies (i.e., avoidance and religious coping) would not be able to manage their feelings effectively and, as a result, they would be especially prone to respond with conspiracy beliefs. To shed new light on a possible mechanism described in past studies regarding the role of fear and coping with stress in adopting conspiracy explanations (e.g.,

Marchlewska, Green, et al., 2022), we aimed to investigate how the interplay between them is related to conspiracy beliefs. Specifically, we examined if experimentally-induced fear would be related to higher conspiracy beliefs, especially among those who predominantly relied on maladaptive strategies whilst dealing with adversities. To test these hypotheses, we manipulated the COVID-19 threat by suggesting (or not) that the media reported a new, very dangerous COVID-19 variant that made more people seriously ill and was harder to treat than the earlier versions of the coronavirus. We expected this manipulation to boost feelings of fear (mediator; H3) that should be further linked to increased COVID-19 conspiracy beliefs only among those high in avoidance (moderator; H4A) and religious coping (moderator; H4B).

Method

Participants and Procedure

Data for Study 2 was obtained through an online survey (CAWI), conducted on a nationwide sample of Poles, representative in terms of gender, age and settlement size. Data was collected by an external research company, which had been used in academic studies before (e.g., Kowalski et al., 2020). We recruited 724 participants, but this time, due to the experimental character of the study, we included an attention check (participants were asked about the content of the text that was used as a manipulation). Aiming to increase internal validity, we excluded from the analyses the data from those participants who failed the attention check.[6] This resulted in a final sample of 616 respondents (319 women), aged between 18 and 81 (M = 47.49, SD = 16.08).

At the beginning of the study, all respondents were asked to complete demographic variables and the coping strategies questionnaire. Then, participants were randomly assigned to one of two experimental conditions: threat (n = 301) and control (n = 315). In both

[6] When these participants were not excluded, the pattern of results remained the same.

conditions, participants were asked to read a mock newspaper clipping. These articles were graphically prepared to imitate an internet news website (see the Supplements for the graphics with the manipulation). The threat condition contained an article about a coronavirus mutation and its dangers. In the control condition, participants read an article about pearls and how to collect them (see the Supplements). Afterwards, participants completed a state of fear measure and COVID-19 conspiracy beliefs scale. Then, they were asked to provide an answer to the attention check question. After participants completed the questionnaire, they were thanked and debriefed.

Measures

Coping Strategies were measured with the COPE inventory (Carver et al., 1989). As in Study 1, the four-factor structure identifying self-sufficient coping (α = .90), social support (α = .91), avoidance coping (α = .87) and religious coping (α = .95) was deemed the most reasonable fit in Study 2 (see the Supplements for further details).

State of Fear was measured with 6 items, namely: “afraid”, “scared”, “frightened”, “nervous”, “jittery”, “shaky”. We used the fear subscale from the Positive and Negative Affect Schedule-Expanded Form (Watson & Clark, 1994; Polish adaptation Fajkowska & Marszał-Wiśniewska, 2009). Participants were instructed to indicate the extent to which they felt each affect at that moment on the scale from 1 = *very slightly or not at all* to 6 = *extremely*, α = .93.

COVID-19 Conspiracy Beliefs were measured as in Study 1 (Kowalski et al., 2020), on a scale from 1 = *definitely disagree* to 5 = *definitely agree*, α = .97.

Results and Discussion

Zero-Order Correlations

First, we computed correlations between all the variables across both conditions (Table 4). Similarly to Study 1, we found positive correlations between COVID-19

conspiracy beliefs and both types of coping: avoidance and religious. We also found a positive relationship between COVID-19 conspiracy beliefs and the state of fear measure. State of fear was also positively and significantly associated with social support, avoidance coping and religious coping.[7]

---- Table 4 ----

Regression Analyses

State of Fear (DV1). Second, we computed a multiple regression analysis to investigate the effects of the threat condition on state of fear (Table 5). As in Study 1, we controlled for basic demographic variables (i.e., gender and age). We found a significant positive effect of the threat condition on state of fear.[8]

---- Table 5 ----

COVID-19 Conspiracy Beliefs (DV2). Finally, we computed a hierarchical regression analysis to check whether there was an indirect effect of the threat manipulation on COVID-19 conspiracy beliefs via state of fear only among those high (vs. low) in avoidance and religious coping. To this end, we investigated the effects of the experimental condition (threat vs. control), state of fear, self-sufficient coping, social support, avoidance coping, religious coping and interactions of state of fear and coping strategies on COVID-19 conspiracy beliefs (Table 6). We also included demographic variables, such as gender and age as covariates.

In Step 1, we introduced variable coding in the experimental condition (control = -1 vs. threat = 1) and demographics. The effect of the experimental condition (control vs. threat)

[7] To investigate if there were any differences between genders (male = 0, female = 1), we computed independent t-test for the main variables. There was significant effect of gender on COVID-19 conspiracy beliefs (male M = 2.18, SD = 0.98; female M = 2.40, SD = 1.14), $t(609.895) = -2.57$, $p = .011$, social-support (male M = 2.37, SD = 0.53; female M = 2.64, SD = 0.55), $t(614) = -6.12$, $p = <.001$, state of fear (male M = 2.23, SD = 1.17; female M = 2.55, SD = 1.38), $t(608.699) = -3.07$, $p = .002$. There was no significant effect of gender on self-sufficient coping, $t(614) = 0.43$, $p = .658$, avoidance coping, $t(614) = 1.57$, $p = .116$ or religious coping, $t(614) = -1.88$, $p = .061$.

[8] When we did not control for the effects of gender and age, the pattern of results remained the same.

on COVID-19 conspiracy beliefs was not significant. In Step 2, we added state of fear and found its significant and positive effect on COVID-19 conspiracy beliefs. In Step 3, we entered self-sufficient coping, social support, avoidance coping, religious coping and interactions of state of fear with coping strategies. As in Study 1, we found positive effects of avoidance and religious coping on COVID-19 conspiracy beliefs. After controlling for coping strategies, the effect of fear became non-significant, but we found a positive and significant effect of the interaction between fear and avoidance coping on COVID-19 conspiracy beliefs.

---- Table 6 ----

In order to perform a full test of our hypotheses, we conducted a moderated mediation analysis, examining avoidance coping as a moderator, using model 14 in Process 3.5 (Hayes, 2018). Significance was tested with bootstrapped 95% confidence intervals for the unstandardised indirect effects, constructed with 5,000 resamples. The analysis displayed in Figure 3 examined whether avoidance coping moderated the mediational effect of the condition (threat vs. control) on COVID-19 conspiracy beliefs via state of fear. Avoidance coping was introduced as a moderator between state of fear and COVID-19 conspiracy beliefs. As covariates, we used gender, age, self-sufficient coping, social-support and religious coping. The interaction between state of fear and avoidance coping positively and significantly predicted COVID-19 conspiracy beliefs, b = 0.17, SE = 0.07, 95% CI [0.03, 0.31], p = .017. The index of the moderated mediation was positive and significant, b = 0.07, SE = 0.04, 95% CI [0.002, 0.141]. Thus, the results showed that the indirect effect of threat (vs. control) condition on COVID-19 conspiracy beliefs via state of fear was significant only among individuals who scored high (b = 0.05, SE = 0.02, 95% CI [0.004, 0.09]) vs. low (b = -0.01, SE = 0.02, 95% CI [-0.05, 0.03]) on avoidance coping.

---- Figure 3 ----

Next, we conducted another moderated mediation analysis, examining religious coping as the moderator, using the same process as above (see Figure 4). The analysis displayed in Figure 4 examined whether religious coping moderated the mediation between condition (threat vs. control) and COVID-19 conspiracy beliefs via state of fear. Religious coping was the moderator between state of fear and COVID-19 conspiracy beliefs. As covariates, we used gender, age, self-sufficient coping, social-support and avoidance coping. The effect of the interaction between state of fear and religious coping on COVID-19 conspiracy beliefs was not significant, $b = 0.04$, $SE = 0.03$, 95% CI [-0.02, 0.11], $p = .214$. The index of the moderated mediation was not significant, $b = 0.02$, $SE = 0.02$, 95% CI [-0.01, 0.05].

---- Figure 4 ----

In Study 2, we replicated the results obtained in Study 1, suggesting that both avoidance and religious coping may play an important role in predicting COVID-19 conspiracy beliefs. Study 2 additionally revealed that threats related to the COVID-19 pandemic generated fear that can lead to seizing on conspiracy explanations especially among those scoring high on avoidance coping. We did not find a similar effect for people high in religious coping. Thus, it seemed that while dispositional use of both avoidance and religious coping strategies was linked to adopting COVID-19 conspiracy theories, avoidance coping additionally boosted such convictions when faced with higher levels of fear. This suggests that avoidance coping may play an extremely important role in shaping conspiracy beliefs related to the COVID-19 pandemic.

General Discussion

In two studies, we replicated and extended previous findings (Marchlewska, Green, et al., 2022), showing that avoidance coping is related to higher conspiracy beliefs. This time, however, we demonstrated that this process was observable also in the case of a global,

unexpected, fear-enhancing event (i.e., the COVID-19 global pandemic; H1A). We also showed that using avoidance strategies was linked to lower adherence to safety guidelines regarding the pandemic, as suggested in past studies (Bailey et al., 2021), and this relationship was mediated by COVID-19 conspiracy beliefs (H2A). In both studies, religious coping was also positively related to COVID-19 conspiracy beliefs (H1B), as in previous research (Marchlewska, Green, et al., 2022; Study 1). However, the relationship between religious coping and adherence to safety guidelines was more complex: on the one hand, religious coping was related to higher conspiracy beliefs (H1B), but on the other hand, after accounting for the shared variance between religious coping and conspiracy beliefs, it was a positive predictor of aligning with health-related guidelines. As expected, the relationship between religious coping and aligning with the guidelines was mediated by COVID-19 conspiracy beliefs (H2B). In Study 2, we extended past work and showed that an experimental manipulation involving threatening information about the COVID-19 pandemic increased feelings of fear (H3), leading to a higher propensity to endorse conspiracy explanations, but only among those who frequently used avoidance coping (moderated mediation, H4A). However, this effect did not occur for religious coping (H4B).

Theoretical Implications

The results of our studies showed that both avoidance and religious coping were related to higher conspiracy beliefs. This is in line with past theorising that individuals with a tendency to avoid the stressor might be more prone to believing in conspiracy explanations, because these explanations could constitute an avoidant response themselves, which deflects attention away from the stressful situation – in this case, the COVID-19 pandemic (Marchlewska, Green, et al., 2022). We also extended past findings, showing that those who tended to use avoidance coping with stress seemed more inclined to endorse conspiracy theories and this further translated to a decreased compliance with the pandemic-related

guidelines, as the latter seems to require undertaking some actions related to the stressor and not avoiding it. These results are also in line with previous research suggesting that some avoidance coping behaviours were linked to lower alignment with safety guidelines during the pandemic (Chong et al., 2020), as well as with extensive research on potential consequences of COVID-19 conspiracy beliefs (e.g., Kowalski et al., 2020; Łowicki et al., 2022).

With regard to religious coping, it seems to be a matter of even greater complexity. On the one hand, we found that religious coping was related to higher conspiracy beliefs, which aligns with some previous research (Marchlewska, Green, et al., 2022; Study 1). This could suggest that religious coping (at least measured in a general, non-specific way as in the COPE inventory) is somewhat similar in its relationship with conspiracy beliefs to avoidance coping: perhaps a strong reliance on God and increased praying could be, in fact, aimed at avoiding the stressful situation. Thus, people scoring higher on religious coping might be more attracted to conspiracy explanations – but this issue requires further research since the role of religiosity and religious coping seems more complex. Specifically, on the other hand, after we accounted for conspiracy beliefs, mere religious coping was linked to higher compliance with the pandemic-related guidelines. The findings regarding religiosity partially support the positive relationship between religious coping and adherence to health-related guidelines: it has been demonstrated that religiosity was associated with submissiveness and agreeableness (Saroglou et al., 2009; Tsang et al., 2021), which might incline people to align with pandemic-related recommendations. Overall, our results seem to corroborate previous theorising that religious coping can be both deleterious and advantageous (Pargament, 2011).

We also explored the role of manipulated feelings of fear (via exposure to a threatening article about COVID-19) and dispositional use of coping strategies on conspiracy beliefs, demonstrating that reading a text about the pandemic increased levels of fear, which further led to higher COVID-19 conspiracy beliefs, but only among those with a higher (vs.

lower) tendency to use avoidance coping. Thus, this study combined two lines of research and theorising (regarding negative emotions and coping with stress) on the possible underpinnings of conspiracy beliefs, suggesting a possible mechanism when threatening information that arouses fear might result in increased conspiracy beliefs. While, according to past research (e.g., Grzesiak-Feldman, 2013), fear itself was linked to higher conspiracy beliefs, we propose that it may boost conspiracy beliefs especially among those who do not have the resources needed to deal with these kinds of feelings, that is those who rely on maladaptive avoidance coping strategies. Of course, these suggestions await further investigation. It is worth noting that we did not find a similar interaction effect for religious coping, which emphasises even more that it makes a worthwhile avenue for future studies to examine in more detail.

Limitations and Future Directions

Although our research sheds new light on the possible role of the coping strategies in explaining COVID-19 conspiracy beliefs and adherence to safety and self-isolation guidelines, it is not without limitations. Both studies were conducted in one socio-political and cultural context (i.e., Poland), and it is unclear how the findings would apply in other contexts. Therefore, future research should use samples drawn from different countries and cultures, in particular beyond WEIRD contexts (Henrich et al., 2010). Also, it is worth noting that our sample sizes were significantly greater than we initially calculated, which enhanced the risk of oversampling since even marginal effects in such sample sizes can be statistically significant. Thus, future studies should not recruit beyond *a priori* established sample sizes. Moreover, the conclusions from our studies are based on self-reported measures and thus, a research design focused on real behaviour or existing data, for example, obtained from social media platforms, is needed. Another drawback that needs to be noted is that although in the experimental Study 2 we included an attention check to see if participants read questions carefully, we did not include any attention check in the correlational Study 1. Considering the

challenges of online data collection (e.g., not seeing participants face-to-face to watch if they are completing the questionnaires attentively), such an attention check is necessary, and future studies should include one.

Despite showing the effect of experimentally-induced fear on conspiracy beliefs only among participants frequently using avoidance coping strategies, we did not manipulate coping strategies directly. A potential avenue for future studies would be to examine if experimentally activated coping strategies have an effect on COVID-19 conspiracy beliefs (e.g., similarly to Marchlewska, Green, et al., 2022; Study 3). Another possible future direction in this area would be to investigate if long-term interventions aimed at improving stress-coping skills (i.e., using less maladaptive and more adaptive coping strategies) could result in a decrease in belief in conspiracy theories. A similar intervention could also examine if improving stress management skills would indirectly (e.g., by reducing conspiracy beliefs) strengthen prosocial behaviours in the domain of public health (e.g., adherence to safety and self-isolation guidelines).

Finally, considering the more complex nature of the link between religious coping, COVID-19 conspiracy beliefs and compliance with the pandemic-related guidelines, future research should also examine religious coping and religiosity more thoroughly. For example, Łowicki et al. (2022) investigated different types of religiosity and demonstrated that religious fundamentalism, but not the centrality of religiosity was related to higher COVID-19 conspiracy beliefs, which further translated into more socially undesirable pandemic-related behaviour (e.g., lower adherence to the guidelines). Similarly, one could employ a more detailed inventory that measures different types of religious coping (e.g., positive and negative; Pargament et al., 2011) to meticulously examine the relationships of this coping strategy with social phenomena (e.g., conspiracy beliefs).

Conclusions

The present research provides new insight regarding the role of different stress-coping strategies in shaping the endorsement of conspiracy theories. We demonstrated that higher avoidance and religious coping were positively associated with beliefs in conspiracy theories about the COVID-19 outbreak. Additionally, we showed that individuals with a stronger tendency to rely on avoidance coping were more prone to be affected by external stimuli inducing fear. That is, when faced with content discussing the potential threat of the coronavirus disease that increased feelings of fear, they were more likely to endorse a conspiracy theory about that particular topic. Therefore, our research suggests that lowering conspiracy theory endorsement might be achieved through developing stronger adaptive stress-coping strategies and limiting the use of the maladaptive ones.

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Table 1

Means, Standard Deviations, and Zero-Order Correlations (Study 1)

Variable	*M*	*SD*	1	2	3	4	5	6	7
1. COVID-19 conspiracy beliefs	2.40	1.04	-	-.04	.04	.25***	.23***	-.37***	-.18***
2. Self-sufficient coping	2.70	0.37		-	.43***	.16***	.18***	.12***	.25***
3. Social support	2.54	0.50			-	.23***	.19***	.03	-.06
4. Avoidance coping	2.01	0.41				-	.16***	-.18***	-.19***
5. Religious coping	2.18	0.94					-	.05	-.05
6. Adherence to safety and self-isolation guidelines	4.13	0.92						-	.38***
7. Age	47.99	16.49							-

$*$ $p < .05$. $**$ $p < .01$. $***$ $p < .001$.

Table 2

Predictors of COVID-19 Conspiracy Beliefs (Study 1)

Variable	*B*	95% CI		*p*	*SE B*	β	R^2	*F*
		LL	UL					
							.14	$F(6, 993) = 26.17$***
Gender (male = 0, female = 1)	0.25	0.13	0.37	<.001	0.06	.12		
Age	-0.01	-0.01	-0.003	<.001	0.002	-.11		
Self-sufficient coping	-0.18	-0.37	0.01	.067	0.10	-.06		
Social support	-0.08	-0.22	0.05	.235	0.07	-.04		

Avoidance coping	0.57	0.42	0.73	<.001	0.08	.22
Religious coping	0.23	0.16	0.29	<.001	0.03	.20

*p < .05. **p < .01. ***p < .001.

Table 3

Predictors of Adherence to Safety and Self-Isolation Guidelines (Study 1)

Variable	*B*	95% CI		*p*	*SE B*	β	R^2	ΔR^2	*F*
		LL	UL						
Step 1							.17		$F(6, 993)$ = 34.03***
Gender (male = 0, female = 1)	0.03	-0.07	0.14	.587	0.05	.02			
Age	0.02	0.02	0.02	<.001	0.002	.36			
Self-sufficient coping	0.05	-0.12	0.21	.574	0.09	.02			
Social support	0.10	-0.02	0.22	.108	0.06	.05			
Avoidance coping	-0.31	-0.44	-0.17	<.001	0.07	-.14			
Religious coping	0.07	0.02	0.13	.012	0.03	.08			
Step 2							.27	.10	$F(7, 992)$ = 53.24***
Gender (male = 0, female = 1)	0.11	0.01	0.21	.040	0.05	.06			
Age	0.02	0.02	0.02	<.001	0.002	.32			
Self-sufficient coping	-0.01	-0.16	0.15	.929	0.08	-.003			
Social support	0.07	-0.04	0.19	.204	0.06	.04			
Avoidance coping	-0.13	-0.26	-0.001	.048	0.07	-.06			
Religious coping	0.14	0.09	0.20	<.001	0.03	.15			
COVID-19 conspiracy beliefs	-0.30	-0.36	-0.25	<.001	0.03	-.35			

*p < .05. **p < .01. ***p < .001.

Table 4

Means, Standard Deviations, and Zero-Order Correlations (Study 2)

Measure	*M*	*SD*	1	2	3	4	5	6	7
1. COVID-19 conspiracy beliefs	2.29	1.07	-	-.02	.05	.20***	.19***	.11**	-.20***
2. Self-sufficient coping	2.75	0.37		-	.35***	.19***	.16***	-.03	.16***
3. Social support	2.51	0.56			-	.22***	.15***	.18***	-.12**
4. Avoidance coping	1.93	0.40				-	.14***	.21***	-.23***
5. Religious coping	2.13	0.93					-	.10*	-.002
6. State of fear	2.40	1.29						-	-.03
7. Age	47.49	16.08							-

*p < .05. **p < .01. ***p < .001.

Table 5

Predictors of State of Fear (Study 2)

Variable	*B*	95% CI		*p*	*SE B*	β	R^2	*F*
		LL	UL					
							.12	$F(3, 612) = 28.54$***
Condition (control = -1; threat = 1)	0.42	0.33	0.52	<.001	0.05	.33		
Age	-0.001	-0.01	0.01	.935	0.003	-.003		
Gender (male = 0, female = 1)	0.33	0.14	0.52	<.001	0.10	.13		

*p < .05. **p < .01. ***p < .001.

Table 6

Predictors of COVID-19 Conspiracy Beliefs (Study 2)

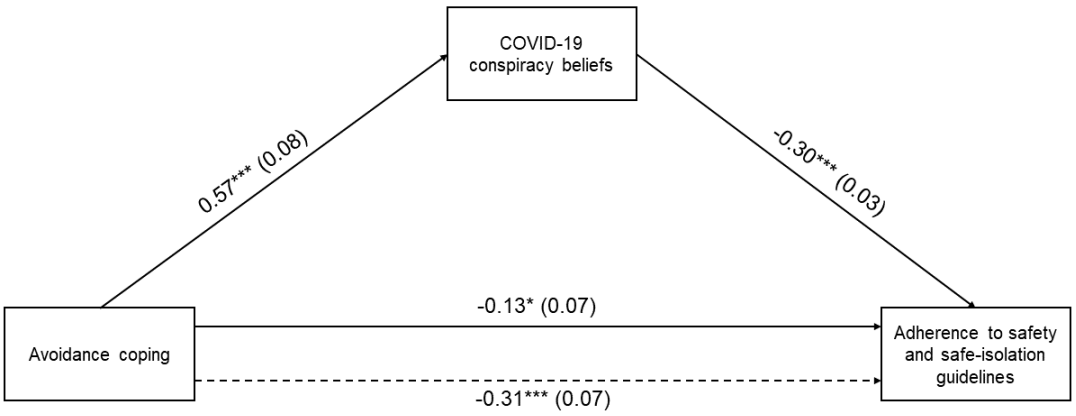
Variable	*B*	95% CI		*p*	*SE B*	β	R^2	ΔR^2	*F*
		LL	UL						
Step 1							.05		$F(3, 612) = 10.45^{***}$
Age	-0.01	-0.02	-0.01	<.001	0.003	-.20			
Gender (male = 0, female = 1)	0.19	0.03	0.36	.023	0.09	.09			
Condition (control= -1; threat = 1)	-0.04	-0.12	0.05	.384	0.04	-.03			
Step 2							.06	.01	$F(4, 611) = 9.90^{***}$
Age	-0.01	-0.02	-0.01	<.001	0.003	-.20			
Gender (male = 0, female = 1)	0.16	-0.01	0.33	.059	0.09	.08			
Condition (control = -1; threat = 1)	-0.08	-0.17	0.01	.080	0.05	-.07			
State of fear	0.10	0.03	0.17	.005	0.04	.12			
Step 3							.12	.01	$F(12, 603) = 7.02^{***}$
Age	-0.01	-0.02	-0.01	<.001	0.003	-.15			
Gender (male = 0, female = 1)	0.22	0.05	0.39	.013	0.09	.10			
Condition (control = -1; threat = 1)	-0.02	-0.11	0.07	.678	0.05	-.02			
State of fear	0.03	-0.05	0.10	.455	0.03	.03			
Self-sufficient coping	-0.15	-0.41	0.10	.244	0.13	-.05			
Social support	-0.06	-0.23	0.11	.500	0.09	-.03			
Avoidance coping	0.40	0.18	0.62	<.001	0.11	.15			
Religious coping	0.19	0.10	0.28	<.001	0.05	.17			
State of fear X Self-sufficient coping	-0.10	-0.29	0.08	.277	0.09	-.05			
State of fear X Social support	0.11	-0.02	0.24	.103	0.07	.07			
State of fear X Avoidance coping	0.16	0.01	0.31	.037	0.08	.09			

State of fear X Religious coping	0.03	-0.04	0.10	.780	0.04	.03

*$p < .05$. **$p < .01$. ***$p < .001$.

Figure 1

Indirect Effect of Avoidance Coping on Adherence to Safety and Safe-Isolation Guidelines via COVID-19 Conspiracy Beliefs, Controlling for Self-Sufficient, Social Support and Religious Coping, Gender and Age (Study 1)

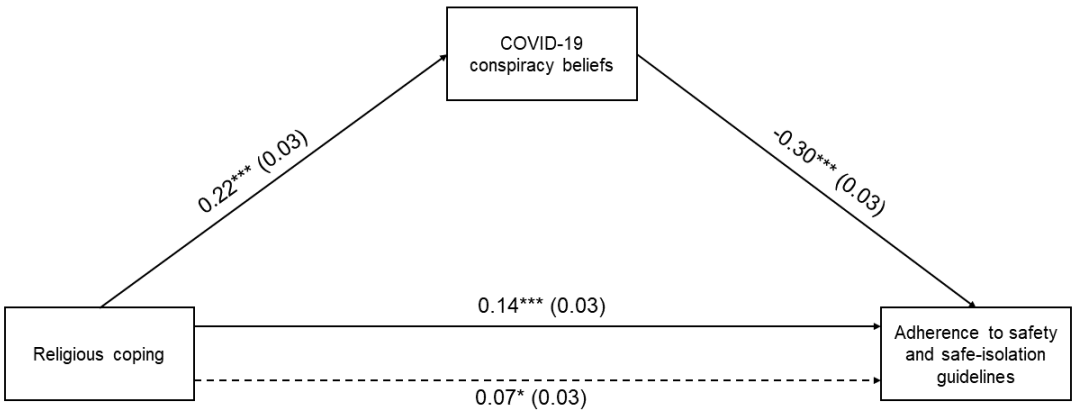


Note. Entries are unstandardised coefficients. Dotted line indicates total effect (not controlling for the third variable).

*$p < .05$. **$p < .01$. ***$p < .001$.

Figure 2

Indirect Effect of Religious Coping on Adherence to Safety and Safe-Isolation Guidelines via COVID-19 Conspiracy Beliefs, Controlling for Self-Sufficient, Social Support and Avoidance Coping, Gender and Age (Study 1)

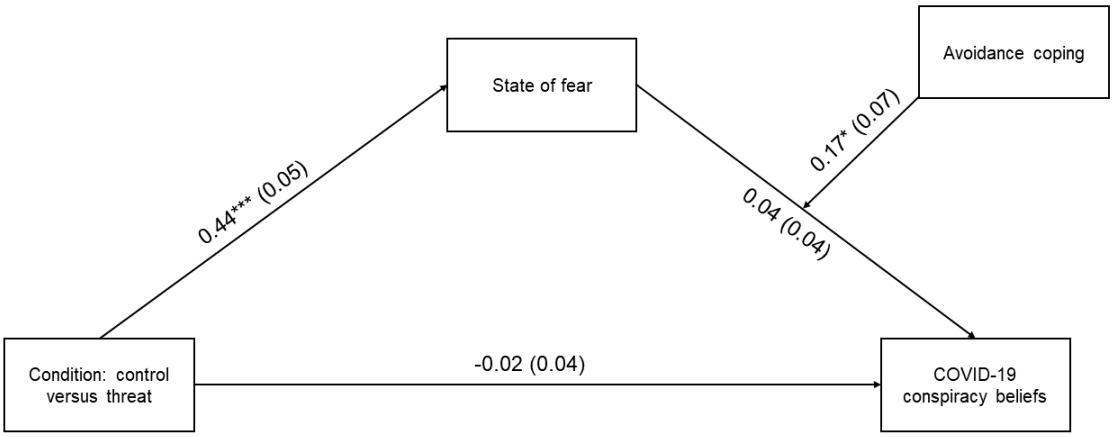


Note. Entries are unstandardised coefficients. Dotted line indicates total effect (not controlling for the third variable).

$^{*}p < .05$. $^{**}p < .01$. $^{***}p < .001$.

Figure 3

Moderated Mediation of Avoidance Coping on Condition and COVID-19 Conspiracy Beliefs via State of Fear Controlling for Self-Sufficient, Social-Support, Religious Coping, Gender and Age (Study 2)

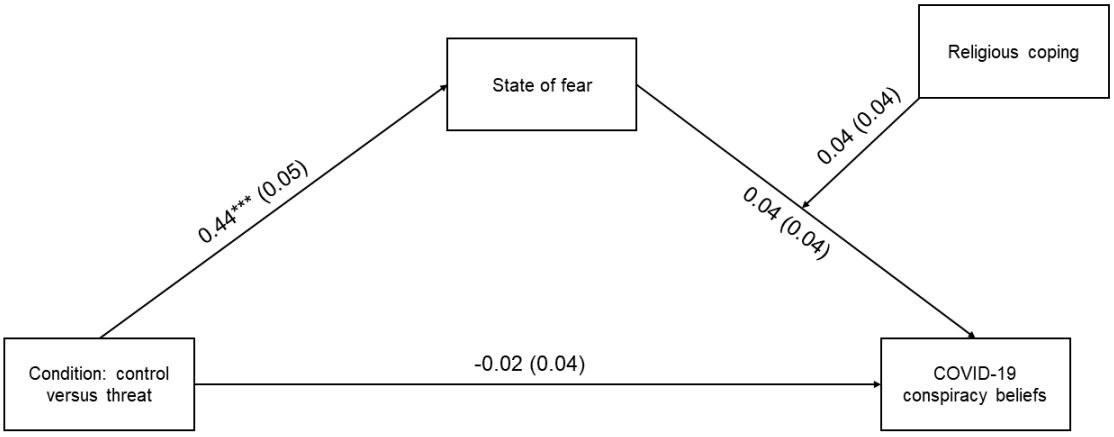


Note. Entries are unstandardised coefficients.

*p < .05. **p < .01. ***p < .001.

Figure 4

Moderated Mediation of Religious Coping on Condition and COVID-19 Conspiracy Beliefs via State of Fear Controlling for Self-Sufficient, Social-Support, Avoidance Coping, Gender and Age (Study 2)



Note. Entries are unstandardised coefficients.

*p < .05. **p < .01. ***p < .001.

Statement of Contribution

What is already known on this subject?

- Conspiracy beliefs have been linked to aversive experiences and maladaptive coping with stress strategies (e.g., avoidance coping).
- COVID-19 conspiracy beliefs have been related to lower compliance with public health guidelines.

What does this study add?

- Avoidance and religious coping were linked to COVID-19 conspiracy beliefs as well.

- COVID-19 conspiracy beliefs mediated the relationships between coping and adherence to public health guidelines.
- Avoidance coping moderated the relationship between induced fear and COVID-19 conspiracy beliefs.