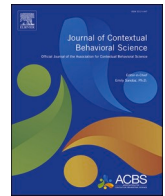




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I won't comply because it is a hoax: Conspiracy beliefs, lockdown compliance, and the importance of psychological flexibility

Marios Constantinou, PhD^{a,*}, Andrew T. Gloster, PhD^b, Maria Karekla, PhD^c

^a Department of Social Sciences, University of Nicosia, 46 Makedonitissas Avenue, 1700, Nicosia, Cyprus

^b Department of Psychology, Division of Clinical Psychology and Intervention Science, University of Basel, Missionsstrasse 62 A, 4055 Basel, Switzerland

^c ACHealthy Laboratory, Department of Psychology, University of Cyprus, P.O. Box 20537, Nicosia 1678, Cyprus

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ABSTRACT

The COVID-19 pandemic has brought unprecedented situations (government lockdowns, quarantines, etc.) and stressors (a seemingly “phantom” virus that can be lurking anywhere) causing uncertainty for the future, uncontrollable and unpredictable situations. It appears that especially during times of uncertainty and high stress, conspiracy theories flourish and these can affect the way individuals behave, especially in response to governmental recommendations for social isolation and quarantine. Psychological flexibility, we hypothesized, may act as a protective factor in the relation between COVID-19 distress, conspiracy theory beliefs and consequent behavior. In this respect, the aim of this paper was to examine how conspiracy theory beliefs, COVID-19 distress, adherence behavior, and psychological flexibility interact. Participants were 1001 individuals (802 women; Mage = 35.59years, SD = 10.07), who completed an online survey approximately one month after the first governmental measures of self-isolation and quarantine were enforced. Psychological flexibility was found to mediate the relation between conspiracy theory beliefs and compliance behavior. Further, being highly stressed appeared to increase the probability that a person will believe conspiracy theories, while such beliefs influenced whether a person would follow public health recommendations. Psychological flexibility appeared to be a protective factor at low and moderate distress levels. However, at high levels of COVID-19 distress, individuals prone to conspiracy theory beliefs would be less likely to conform to governmental public health recommendations irrespective of their psychological flexibility levels.

When ancient Greeks needed answers for phenomena they could not explain - especially ones that distressed them - they would visit Pythia the oracle at Delphi or would devise “Gods” and stories to make sense of why and how things in their environment worked. Modern society is not immune to the making up of stories or searching for extraordinary explanations in attempts to make sense of stressful phenomena or complex world events, such as the COVID-19 pandemic. This pandemic has brought with it unprecedented situations (government lockdowns, quarantines, etc.) and stressors (a seemingly “phantom” virus that can be lurking anywhere) causing uncertainty for the future, uncontrollable and unpredictable situations. It is therefore no wonder that many individuals in their attempts to make sense of the pandemic gravitated towards stories rather than emerging scientific discourse to help explain these newfound experiences. Why were governments quick enough to lock everyone at home? Was quarantine an excuse to install 5G antennas uninterrupted? Is the death rate from COVID-19 really that high or is

there over-reporting with the governments aiming to scare people into wanting a vaccine that will be developed supposedly to save them, only to inject us all with a “big brother” chip? These are just a few of the questions/stories discussed extensively in social media in recent months (Hussain, 2020). Many of these questions and the answers provided can be labeled conspiracy theory beliefs (Douglas, Sutton, & Cichocka, 2017).

Conspiracy theory beliefs are attributions or explanations purporting that an agent (individual, group, or organization) is deliberately and intentionally plotting to accomplish a sinister goal despite other more probable explanations or strong evidence against these beliefs (Aar-onivitch, 2009; Van der Linden, 2015). Pinto characterized such conspiracy theories as “a booming business” in this COVID-19 era (Pinto, 2020). Especially, during times of uncertainty and high stress, conspiracy theories flourish (Marchlewska, Cichocka, & Kossowska, 2018), and given present day social media and the internet, their spread is extensive

* Corresponding author.

E-mail addresses: constantinou.m@unic.ac.cy (M. Constantinou), andrew.gloster@unibas.ch (A.T. Gloster), mkarekla@ucy.ac.cy (M. Karekla).

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and global (Douglas et al., 2019). The problem with believing in conspiracy theories arises when these beliefs are rigidly held and impact behavior. Espousal of certain conspiracy theories negatively impacts society when scientific evidence is rejected and individuals behave in ways that can harm both themselves and others (Van der Linden, 2015). Recent examples range from anti-vaccination movements bringing a resurgence of diseases that were almost extinct, to rejection of climate science that threatens the survival of our whole planet (Uscinski, Douglas, & Lewandowsky, 2017). Regarding COVID-19, lockdowns and quarantines are considered by many governments, following scientific advice, as necessary in order to prevent or minimize the spread of the virus. Unaffected by widespread consensus in the media, individuals with stronger conspiracy theory beliefs are less willing to adhere to prescribed public health measures, thus placing individuals' and those they came into contact with at risk for contracting and spreading the virus (Constantinou, Kagiialis, & Karekla, 2020).

Experiences of anxiety, feelings of powerlessness, and uncontrollability over a situation, are all strongly related to increased levels of conspiracy theory beliefs (Bruder, Haffke, Neave, Nouripannah, & Imhoff, 2013; Radnitz & Underwood, 2017; Swami et al., 2016; Zarefski, 2014). Conspiracy beliefs, in turn, are predicted by low levels of trust and high levels of anomie (Abalakina-Paap, Stephan, Craig, & Gregory, 1999). Personality factors have also been examined, with political cynicism and defiance of authority positively correlating with conspiracy theory beliefs (Swami, Chamorro-Premuzic, & Furnham, 2009). Females, individuals high in spiritualism, precognition, paranormal beliefs, schizotypy, and paranoid ideation have all been found to have stronger conspiracy beliefs (Darwin, Neave, & Holmes, 2011). In addition, lower levels of analytical and rational thinking increase the likelihood of believing conspiracy theories (Swami, Voracek, Stieger, Tran, & Furnham, 2014). Overall, there is a psychological function served by conspiracy theory beliefs that provide a sense of meaning and control (Newheiser, Farias, & Tausch, 2011) and an outlet for intense emotions such as hostility (Abalakina-Paap et al., 1999). Such control or emotional relief are examples of experiential avoidance or psychological inflexibility, where a person attempts to control distressing or unwanted thoughts and emotions by engaging in behaviors to get rid of them (Karekla & Panayiotou, 2011; Kashdan, Barrios, Forsyth, & Steger, 2006). In the short term, this avoidance can reduce distress and is, thus, reinforcing. In the long term, however, an inflexible pattern of behaving develops, whereby the person avoids distressing thoughts and emotions irrespective of the specific context and irrespective of more and continued difficulties. The opposite of experiential avoidance, rigidity, and inflexible behavior, is psychological flexibility (PF), found to relate to the ways individuals utilize when coping with stressors (Kashdan, Disabato, Goodman, Doorley, & McKnight, 2006; Karekla & Panayiotou, 2011; Leonidou, Panayiotou, Bati, & Karekla, 2019; Panayiotou, Karekla, & Leonidou, 2017; Panayiotou, Karekla, & Mete, 2014). Psychological flexibility has been found to demonstrate both stable and trait-like aspects (i.e., stable tendencies within individuals) as well as dynamic and state-like properties (i.e., representing a dynamic process that can change over time, across situations/contexts, and in response to interventions like Acceptance and Commitment Therapy; Hayes, Strosahl, & Wilson, 2011). Though, ingredients considered to compose analytical thinking (flexible, open-minded thinking and openness; Baron, 2008) are lower in conspiracy theory believers (Swami et al., 2014), the concept of psychological flexibility has not yet been directly examined as to how it may relate to conspiracy theory beliefs. It remains to be examined how PF relates to conspiracy theory beliefs and psychological distress experienced during a pandemic and how these in turn impact behavior and particularly adherence behavior to government recommendations.

Therefore, the aim of this paper was to examine the relationships between conspiracy theory beliefs, COVID-19 distress, adherence behavior, and psychological flexibility. We hypothesize that individuals who present as high in experiential avoidance (low psychological

flexibility) will present with greater COVID-19 distress and will hold stronger conspiracy theory beliefs, which in turn will be associated with lower adherence to governmental recommendation for preventing the virus spread during the COVID-19 pandemic. Specifically, we first expected PF to mediate the relation between conspiracy theory beliefs and adherence behavior to government imposed social distancing measures. It was demonstrated that conspiracy theory believers tend to not adhere to government-based regulations (Constantinou et al. under review). We wanted to examine whether psychological flexibility mediates and thus explains this relation. Next, we wanted to examine whether this aforementioned mediation would break down at different levels of stress. We hypothesized that if individuals are highly distressed, psychological flexibility would no longer buffer the relationship between conspiracy theory beliefs and adherence behavior. Thus, we aimed to examine a model whereby COVID-19 distress would moderate the mediation impact of PF between conspiracy theory beliefs and adherence behavior.

1. Methods

1.1. Participants

Participants were 1001 individuals (802 women; Mage = 35.59years, SD = 10.07), who completed an online survey during the first week of April 2020 (approximately one month after the first measures of self-isolation and quarantine were enforced in the countries of Cyprus and Greece). Participants had to be older than 18 years, speak Greek, and complete a digital informed consent to participate. About 93% of the sample had at least a bachelor's degree. Sixty percent lived in an urban setting (town with more than 100,000 inhabitants) and the median individual income was 995 euros per month (due to a large number of outliers on both ends the mean was deemed not representative) with the lowest individual income being zero and the highest 8720 euros per month.

Only one person noted that they were personally diagnosed with COVID-19 and 11 individuals reported one family member who was diagnosed. Only six people reported that a member of their family passed away due to COVID-19.

1.2. Procedure

The study was approved by the Cyprus National Bioethics Committee. Invitation calls for the study were posted online via Facebook and Twitter and also emailed to friends and colleagues to share on their social media sites.

Participation was open for seven days in April 2020, during which lockdown procedures were in place. The measures implemented in Greek speaking countries were some of the most stringent in Europe (i.e., social distancing, illegal to leave ones' house without governmental approval and only allowed to leave the house once a day, etc.) and these were enforced with monetary punishments for offenders. At the time of data collection, an increasing curve of COVID-19 incidences was occurring in both Greece and Cyprus. Participants completed a 10-min-long internet-based questionnaire (in Google forms).

1.3. Measures

Measures were completed in Greek. For any measures not available in Greek, a forward and backward translation process was carried out by researchers fluent in both Greek and English languages. The questionnaire included first demographic information (living area, personal income, age, sex, and education). The rest of the questionnaire included the following measures:

Conspiracy Theory Beliefs. Participants reported on a Likert scale (1–10; with 1 = “certainly no” and 10 = “certainly yes”) the strength of their belief on 13 statements related to COVID-19 (9 statements) and other popular conspiracy theories circulating Facebook and Twitter at

the time (e.g., most countries’ presidents are in a conspiracy to keep us locked at home so they can pass unwanted policies; see Table 1 for all the statements and Constantinou et al., 2020 for more information). Scores on the different statements are summed so that higher scores indicate higher belief in conspiracy theories. Cronbach’s alpha for the scale was high and equal to .92.

Likelihood of adhering to governmental regulations imposed as a result of the COVID-19 pandemic. Participants also rated on a Likert scale (1–10; with 1 = “certainly no” and 10 = “certainly yes”) in one question, the likelihood of following the regulations for social distancing and quarantine related to COVID-19 (see Constantinou et al., 2020).

COVID-19 distress. Present moment subjective feelings of distress, hopelessness, sadness and being on edge (see Table 2), were assessed via four statements using a Likert scale (1–10; with 1 = “certainly no” and 10 = “certainly yes”). Scores on these statements were summed to form a COVID-19 distress scale with higher scores indicating greater psychological distress at present and relation to the COVID-19 pandemic. These single questions, adapted to be COVID-19 specific in this study, for each emotional state were previously used and reported to be sensitive for screening purposes (Mackenzie et al., 2014; Turon et al., 2019; Young, Nguyen, Roth, Broadberry, & Mackay, 2015). Chronbach’s alpha for the scale was good and equal to .84.

Psy-flex (Greek version: Paraskeva-Siamata, Spyridou, Gloster, & Karekla, 2018; Original English version: Gloster et al., under submission; Available from the authors upon request) is a short (10 item in its Greek version) self-report state and context sensitive measure of psychological flexibility assessing all facets of the construct of PF (Item examples are: “I determine what’s important for me and decide how I want to invest my energy”; I can look at hindering thoughts from a distance without having them control me; I face myself/others with tolerance, benevolence and compassion; I engage thoroughly in things that are important, useful, or meaningful to me; If need be, I can let unpleasant thoughts and experiences happen without having to get rid of them immediately) for the past seven days. Items are rated on a scale from 1 = very rarely to 5 = very often and summed. Higher scores represent higher psychological flexibility. The Psy-flex was evaluated across four diverse clinical and non-clinical samples and supported a one factor solution and good psychometric properties (reliability: Raykov estimation range .78-.97; convergent, divergent, and incremental validity; Gloster et al., under submission). Cronbach’s alpha for this sample was .81.

1.4. Analyses

PROCESS, a freely available computational tool for SPSS (Hayes, 2013; see <http://www.processmacro.org>) was used to examine the potential moderation, mediation and moderated mediation effects of interest. PROCESS is based on multiple regression analyses (estimates are calculated using OLS regressions) and bootstrapping framework.

Table 1
Conspiracy theory beliefs measure statements.

Conspiracy Theory Belief Statements
1. COVID-19 does not exist for real
2. COVID-19 was created in a laboratory by scientists.
3. There is a vaccine/therapy and will be provided only after millions become infected
4. Deaths in countries like Italy, US, and Spain are lower than reported in the media
5. Nobody has died from COVID-19
6. Individuals who died were those who would soon die anyway
7. The ultimately goal of COVID-19 is to chip us with the vaccine that will be soon invented
8. COVID-19 and other viruses such as Ebola were created for population control
9. Most countries’ presidents are in a conspiracy to keep us locked at home so they can pass unwanted policies
10. Child vaccines cause autism
11. They have been air-spraying and poisoning us for years
12. Swine flu was created by pharma companies so they can sell their medications
13. Generally I believe in conspiracy theories

Table 2
§: COVID-19 distress assessment items.

Presently:
1) I feel great distress regarding the whole situation with COVID-19 certainly no 1 2 3 4 5 6 7 8 9 10 certainly yes
2) I feel sad, down or hopeless regarding the whole situation with COVID-19 certainly no 1 2 3 4 5 6 7 8 9 10 certainly yes
3) I worry about what tomorrow will bring certainly no 1 2 3 4 5 6 7 8 9 10 certainly yes
4) I feel on agitated or on edge regarding the whole situation with COVID-19 certainly no 1 2 3 4 5 6 7 8 9 10 certainly yes

To examine the mediating effects of PF on the relation between conspiracy theory beliefs and adherence behaviour, we performed the analyses corresponding to Model 4 of this approach, where the mediator (i.e., PF) is assumed to affect the path from the independent variable (i.e., Conspiracy theory beliefs) to the dependent variable (i.e., adherence behaviors). Normal-theory tests, bias corrected, and accelerated bootstrapping were employed to test these effects. Similarly, moderated mediation (PROCESS Model 7) was used to examine the aforementioned mediating effects of PF at different levels of COVID-19 distress (moderator). The model determines whether effects vary at different levels of the moderator (effects are reported at M and ±1SD of the moderator).

All regression coefficients provided by the PROCESS macro are unstandardized regression coefficients. So that present study results can be meta-analytically and/or systematically integrated with previous literature, standardized coefficients are required. As such, the above analyses were repeated using construct z-scores that provide standardized coefficients. Given the cross-sectional nature of the data, all models were re-run to examine competing models (e.g., where the outcome becomes predictor, predictor moderator etc.) and the resulting effects were comparable (see Cain, Zhang, & Bergeman, 2018; Maxwell & Cole, 2007 for more information on this approach).

2. Results

2.1. Preliminary analysis

Table 3 presents the distribution of measures and bivariate correlations between PF, COVID-19 distress (anxiety, sadness, hopelessness, worry, feeling on edge), conspiracy theories belief, and adherence to recommendations for social distancing. On average, participants tended to be quite psychologically flexible (M = 40.83, SD = 4.33) and adherent to governmental measures of social isolation (M = 9.20, SD = 1.46),

Table 3
Measures distribution and bivariate correlations among psychological flexibility, anxiety, conspiracy theories belief, and social distancing recommendations adherence (N = 1001).

	Mean (SD)	Range of Scores in this Sample	1.	2.	3.	4.
1. Psychological Flexibility	40.83 (4.33)	30–50				
2. COVID-19 Distress	23.22 (9.01)	4–40	.23*			
3. Conspiracy Theory Beliefs	45.76 (24.50)	13–123	-.11*	.13*		
4. Social Distancing Recommendations Adherence	9.20 (1.46)	1–10	.14*	.08*	-.32*	
5. Age	35.59 (10.07)	18–73	.15*	-.03	-.16*	.14*

Note: Possible range of scores for each scale: PsyFlex = 10–50; COVID-19 Distress = 4–40; Conspiracy Theory Beliefs = 13–130; Adherence to recommendations = 1–10. *p < .001.

with medium levels of COVID-19 distress ($M = 23.22$, $SD = 2.86$), and somewhat low on conspiracy theory beliefs yet presenting with great variability ($M = 45.76$, $SD = 24.50$). Higher psychological flexibility was related to lower COVID-19 distress and conspiracy theory beliefs, and higher adherence to measures of social isolation (Pearson's $r_s > 0.11$, $p_s < .001$).

A MANOVA did not show sex, education level, employment status or place of residence on COVID-19 distress, psychological flexibility, conspiracy theories belief and social distancing recommendation adherence, Wilks $\lambda = 0.98$, $F(4.892) = 1.56$, $p = .10$, partial $\eta^2 = 0.007$. Participant's age was positively related to social distancing recommendation adherence, unrelated to COVID-19 distress, and negatively related to conspiracy theories belief and psychological inflexibility (see Table 3).

2.2. PF as a mediator between conspiracy theory beliefs and adherence behavior

PF was examined as a mediator or mechanism helping to explain the association between conspiracy theory beliefs and adherence behaviour covarying out age which was found to be significant in the preliminary analysis. Results using PROCESS macro for SPSS Model 4 suggested a significant indirect path consistent with mediation ($b = -0.001$, CIs = -0.0007 and -0.0001 ; $\beta = -0.01$, CIs = -0.02 and -0.002 ; Effect size = 1.74%; see Fig. 1 for the path coefficients). Thus, the results suggested that greater beliefs in conspiracy theories predicted lower levels of PF, which in turn predicted lower levels of adherence to social distancing recommendations. The mediation effect size of this mediation was significant.

2.3. Moderated mediation model: COVID-19 distress moderation of the PF mediation of the relation between conspiracy theory beliefs and adherence behavior

To examine whether COVID-19 distress moderates the previous mediation analysis of PF on the relation between conspiracy theory beliefs and adherence behavior, the moderated mediation model (PROCESS macro for SPSS Model 7, see Fig. 2a and b) was used. Results showed that the interaction between conspiracy theories beliefs and COVID-19 distress was statistically significant ($b = 0.002$, $s.e. = 0.001$, $\beta = 0.11$, $s.e. = 0.03$, $t(997) = 3.68$, $p < .001$), suggesting that COVID-19 distress moderates the effect of conspiracy theories beliefs on PF, which in turn mediates the effect on adherence behavior. Simple slopes of the relation between conspiracy theories beliefs at different levels of COVID-19 distress (using the “pick-a-point” approach, see Hayes, 2018) suggested that at the -1SD on COVID-19 distress, the effect of PF was negative and significant ($b = -0.04$, $s.e. = 0.01$, $\beta = -0.16$, $s.e. = 0.04$, $p < .001$). At the mean of COVID-19 distress, the effect of PF was again negative and significant ($b = -0.02$, $s.e. = 0.01$, $\beta = -0.06$, $s.e. = 0.03$, $p < .05$). At +1SD of COVID-19 distress (i.e., high anxiety), PF was no longer a significant mediator ($b = 0.01$, $s.e. = 0.01$, $\beta = 0.05$, $s.e. = 0.04$,

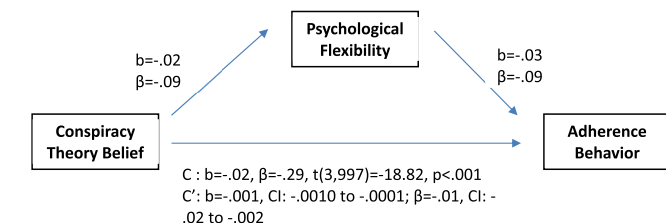


Fig. 1. Psychological flexibility as a mediator between conspiracy theory belief and adherence behavior (process model 4).
 A path: $b = -.02$, $\beta = -.09$, $t(998) = -2.77$, $p < .01$
 B path: $b = .03$, $\beta = .09$, $t(997) = 2.76$, $p < .01$

Fig. 1. Psychological flexibility as a mediator between conspiracy theory belief and adherence behavior (process model 4).

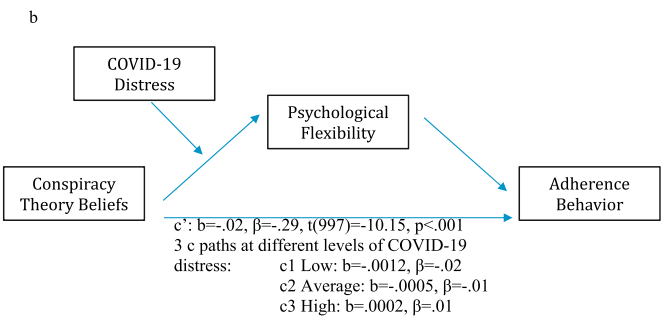
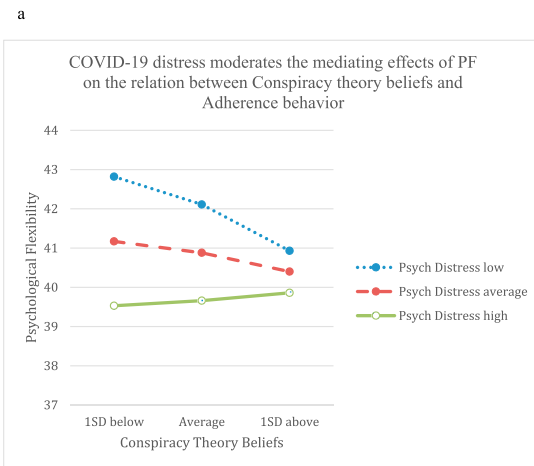


Fig. 2. a & 2b: Moderated Mediation Model: COVID-19 Distress Moderates the Mediating Effects of Psychological Flexibility on the Relation Between Conspiracy Theory Beliefs and Adherence Behavior (PROCESS Model 7- moderated mediation).
 A path: $b = -.01$, $\beta = -.06$, $t(996) = -2.61$, $p < .001$
 W (COVID-19 distress) \rightarrow M (PF): $b = -.11$, $\beta = -.23$, $t(996) = -7.43$, $p < .001$
 Interaction \rightarrow M (PF): $b = .002$, $\beta = .11$, $t(996) = 3.68$, $p < .001$
 B path: $b = -.03$, $\beta = -.09$, $t(997) = 2.76$, $p < .01$

Fig. 2. a & 2b: Moderated Mediation Model: COVID-19 Distress Moderates the Mediating Effects of Psychological Flexibility on the Relation Between Conspiracy Theory Beliefs and Adherence Behavior (PROCESS Model 7- moderated mediation).

$p > .05$). See Fig. 2a which illustrates these effects.

The regression of social distancing recommendation adherence onto conspiracy theories beliefs and PF, shows that both conspiracy theories beliefs and PF were significant predictors (conspiracy theories belief: $b = -0.02$, $s.e. = 0.002$, $\beta = -0.29$, $s.e. = 0.03$, $t(997) = -10.15$, $p < .001$; PF: $b = 0.04$, $s.e. = 0.01$, $\beta = 0.09$, $s.e. = 0.03$, $t(997) = 3.44$, $p < .001$). The omnibus test of the conditional indirect effect (Preacher, Rucker, & Hayes, 2007) reflected in the Index of Moderated Mediation (Hayes, 2015, 2018a, 2018b) of COVID-19 distress on adherence behavior was significant (CI: .0001 and .0002), thus the indirect effect is conditional on the level of COVID-19 distress. The conditional indirect effects of PF on adherence behavior were negative and significant for the low and average levels of COVID-19 distress (at -1SD: $IE = -0.001$, CI: -0.002 to -0.001 ; at average: $IE = -0.001$, CI: -0.001 to -0.0001), as the null of 0 did not fall between the lower and upper limit of the 95% confidence intervals for each effect. For the high levels of COVID-19 distress however, the conditional indirect effect was not significant ($IE = 0.0002$, CI: -0.0004 to $.001$). See Fig. 2b which demonstrates this moderated mediation model and suggests that at low and average levels of COVID-19 distress, PF mediates the relation between conspiracy theory beliefs and adherence behavior. However, at high levels of distress, PF no longer mediates this relationship.

3. Discussion

This study helped explain how belief in conspiracy theories manifests in the behavior of non-adherence to recommended scientific guidelines established by governments to prevent the spread of the COVID-19 virus.

Belief in conspiracy theories appears to be a process through which some individuals cope with uncontrollable, not easily comprehensible situations (Newheiser et al., 2011) and provide an outlet for the expression of negative feelings (Abalakina-Paap et al., 1999). These functions can be considered as examples of an experiential avoidance approach to unwanted emotions. The present findings suggest that psychological flexibility (the opposite of experiential avoidance) does indeed contribute to this process and thus helps explain partly the relation between COVID-19 distress and conspiracy theory beliefs and subsequent adherence behavior to governmental-regulations for dealing with the pandemic.

PF was found to mediate the relation between conspiracy theory beliefs and adherence behavior to social distancing recommendations. Based on these observations, it appears that people who believe in conspiracy theories may defy government-imposed regulations especially when they struggle more with their internal thoughts and feelings (low psychological flexibility). PF is characterized by a combination of mindfulness, acceptance of all internal events (thoughts and emotions) and committed action thus acts as a regulation process to explain how beliefs in conspiracy theories result in non-adherence behavior to governmental recommendations. A moderated mediation approach was used to further examine the mediating role of PF at various levels of COVID-19 distress on the relation between conspiracy theory beliefs and social-distancing adherent behavior. PF emerged as a significant mediator at low and average levels of COVID-19 distress, whereas at high levels of distress individuals who believe in conspiracy theories are more likely to engage in non-adherent behavior irrespective of flexibility. This further lends support to the hypothesis that PF can be an important protective factor in the process of promoting desirable and healthy behaviors during uncertain and stressful times such as those experienced during a pandemic. However, if distress levels become extremely high, psychological flexibility loses its ability to act as a buffer and individuals are more likely to believe in conspiracy theories and non-adhere to governmental regulations. Targeting psychological flexibility in prevention programs can potentially provide means via which to intervene so as to counter the impact of conspiracy theory beliefs and distressing emotions on associated harmful behavioral patterns for individuals and the society in general. Further, media and governments should aim to maintain low distress levels in their populations in order for psychological flexibility and other adaptive coping responses to take effect. Alternatively, if distress levels become too high, psychological flexibility no longer is able to buffer conspiracy theory beliefs and their impact on adherence behaviors. Additional approaches may also be utilized to deal with distress, perceived threat, build resources and protect reinforcing routines of individuals. Contextualizing the present study findings and the role of PF in relation to other explanatory models of adherence to governmental-regulation behavior, in other social crisis situations such as terrorism, may aid in finding additional prevention and intervention venues. For example, findings stemming from political science and social psychology and literature on how authoritarianism, supernatural beliefs and political extremism develop in response to stressful situations and trauma may aid in developing protective coping styles that will be prophylactic towards manipulation of fear into extremist views and behaviors (e.g., Canetti-Nisim & Beit-Hallahmi, 2007; Canetti-Nisim, Halperin, Sharvit, & Hobfoll, 2009; Hall, Saltzman, Canetti, & Hobfoll, 2015; Hobfoll, Canetti-Nisim, & Johnson, 2006). The COVID-19 pandemic is also paralleled with an “infodemic” from digital communications spreading misinformation and conspiracy theories (Olatunji, Ayandele, Ashirudeen, & Olaniru, 2020). Another step in managing the spread of conspiracy theories and their impact on behavior can be to monitor or enforce controls on digital media misinformation spread and on educating individuals about inaccurate and false information.

This study was limited by its cross-sectional design and subjective nature of questionnaire reporting and lack of actual observation or verification of behaving. Though the models tested hypothesis in a certain direction, no causation can of course be inferred given the cross-

sectional methodology of this study. Testing mediation models with cross-sectional data has been associated with inflated bias. To partially address this problem, we ran competing models of pathways and the resulting effects were comparable to the models hypothesized and presented above. In this study we used a newly developed measure (Psy-Flex) to assess psychological flexibility. We acknowledge that this construct has been difficult to measure and it may relate to other constructs like openness (Kashdan et al., in press). Future studies should explore whether assessing psychological flexibility with different measures results in different result patterns. Another limitation has to do with participants’ demographics (predominantly females and well-educated) on average scoring high in psychological flexibility and somewhat low on conspiracy theory beliefs. This may have caused a ceiling effect for our findings and also resulted in small effect sizes found for the models tested. Further, participants had limited direct exposure to COVID at the time of the study (chronologically early during the pandemic), thus making this virus threat invisible and thus more unpredictable, uncontrollable and distressing (Shaw, 2020). Therefore, findings should be interpreted in light of these limitations and future research should specifically aim to examine individuals scoring high in conspiracy theory beliefs and separately individuals low in PF. Yet, strengths of the study include a large sample size recruited mainly via social media, which is a medium through which conspiracy theories are promoted and disseminated (Sharma, Yadav, Yadav, & Ferdinand, 2017; Wajahat, 2020). Despite these limitations, the present study provides a new, fruitful perspective into a possible mechanism and a protective factor on the impact of conspiracy theory beliefs in relation to emotional state and behavioral adherence to recommendations aimed to promote society and individual health. Therefore, it warrants further exploration given that at present more lockdowns and further measures are imposed in countries around the world, as the virus spread is resurging.

Overall, being highly distressed increases the probability that someone will believe conspiracy theories, and this impacts whether they will follow public health recommendations. Psychological flexibility appears to be a protective factor at low and moderate COVID-19 distress levels for the impact of conspiracy theory beliefs on behavior. However, at high levels of COVID-19 distress, individuals prone to conspiracy theory beliefs will probably not conform to governmental public health recommendations irrespective of their psychological flexibility status.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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