



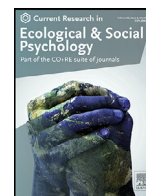
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## Conspiracy beliefs, regulatory self-efficacy and compliance with COVID-19 health-related behaviors: The mediating role of moral disengagement

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### ABSTRACT

Although recent studies on the 2019 coronavirus disease (COVID-19) have highlighted the negative effects of moral disengagement on intentions to comply with COVID-19 containment measures, little is known about the mediating role of moral disengagement in the relationship between regulatory self-efficacy in complying with the containment measures, beliefs in conspiracy theories and compliance with COVID-19 health-related behaviors.

Data were collected from 1164 young adults (women,  $N = 796$ ; 68.4%; mean age  $25.60 \pm 4.40$  years) who completed an online survey from 15th May to 22nd June 2021. Results of the multi-group path analyses indicated that higher beliefs in conspiracy theories were associated with lower compliance with COVID-19 health-related behaviors, whereas higher self-efficacy beliefs in complying with the containment measures were associated with higher compliance with COVID-19 health-related behaviors. Moral disengagement significantly mediated the associations between beliefs in conspiracy theories, regulatory self-efficacy, and compliance with COVID-19 health-related behaviors. Finally, the tested model was gender-invariant.

Findings suggest that public health authorities and social care professionals should promote interventions aimed at improving regulatory self-efficacy, emphasizing the moral significance of respecting or ignoring the recommended COVID-19 measures (e.g., physical distance in public), and enhancing people's concern for the potential harms of their immoral actions.

### 1. Introduction

In February 2020, Italy was the first European country with a diagnosed case of coronavirus disease 2019 (COVID-19). Then in October 2020, Italy was hit by the second wave of the pandemic that lasted until mid-2021. Since then, the number of cases in Italy increased steadily, surpassing 18.3 million as of June 2022 (Statista, 2022). During the two epidemic waves, individuals living in Italy experienced sudden, drastic, and unexpected changes in their everyday life.

In particular, Italy faced a high rate of COVID-19-related deaths, especially among the elderly population, and, in response to the ongoing public health emergency, the Italian Government pursued and enforced strong containment measures, such as self-isolation, social distancing, and quarantine, aimed at limiting the spread of the virus and at saving the greatest number of lives possible (Dorucci et al., 2021). In favor of a greater common good, people were asked to comply with the containment measures to contribute to collective safety. Likely, the actions of

everyone had a crucial impact on the lives of every other person within one's family, and social network.

In this context, and in line with a socio-cognitive approach, our study addressed key issues concerning the exercise of moral agency (Bandura, 2002) in adhering with COVID-19 health-related behaviors. Specifically, we focused on Moral Disengagement (MD) as a set of crucial mechanisms that actively operate in alleviating people's self-sanctions when transgressing COVID-19 containment measures. Accordingly, results from a recent study carried out during COVID-19 pandemic showed an increase of MD mechanisms (e.g., distortion of consequences and advantageous comparison) among the Italian population (Gori and Topino, 2021).

In examining the role of MD during COVID-19 pandemic in Italy, we posited a theoretical model in which two set of beliefs might enhance mechanisms of MD and COVID-19 health-related behaviors: namely, beliefs in Conspiracy Theories (CTs) and Regulatory Self-Efficacy (R-SE). Although the role of R-SE on MD has been previously examined in the

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pre-pandemic era (Bandura et al., 2001), in the present study we tested the joint contribution of beliefs in CTs and R-SE in complying with COVID-19 containment measures on MD and COVID-19 health-related behaviors.

### 1.1. Moral disengagement and regulatory self-efficacy

According to social cognitive theory (Bandura, 1986), people develop internal moral standards to anticipate, monitor, and judge their own actions. People are then more likely to behave in a way that confers satisfaction and to avoid acts that will bring self-sanctions (Bandura, 2002). Even though moral standards are assumed to guide behaviors, some studies have demonstrated that the ability to distinguish what is right from what is wrong is not always followed by the capacity to behave accordingly (Caprara et al., 2014). In fact, the self-regulatory function of moral standards can be activated and deactivated selectively, and MD is the key to the deactivation process (Bandura, 1990).

MD refers to cognitive mechanisms (referred to as disengagement mechanisms) that inhibit and restructure the consequences of unethical and harmful behaviors (Bandura, 1999). Bandura (1999) identified eight specific MD mechanisms: *moral justification, euphemistic language, advantageous comparison, displacement and diffusion of responsibility, disregarding the consequences of action, dehumanization and attribution of blame*. The aforementioned mechanisms are categorized in four higher dimensions: reprehensible conduct, non-responsibility, detrimental effects and victim (Bandura et al., 1996; McAlister et al., 2006). The reprehensible conduct dimension includes the first three mechanisms—moral justification, euphemistic labeling, and advantageous comparison—through which individuals reconstrue immoral behaviors as permissible and acceptable. The non-responsibility dimension includes two cognitive mechanisms—displacement and diffusion of responsibility—through which individuals minimize or place blame on external factors for the harm they cause. The detrimental effects dimension includes one cognitive mechanism—disregarding or distorting the consequences of action—through which individuals misrepresent the harmful consequences of their misconducts. The victim dimension includes two cognitive mechanisms—dehumanization and attribution of blame—through which the blame for own behavior is shifted to the victim.

As MD is context-dependent, several measures have been developed over the years, such as MD in regards to aggression (Bandura et al., 1996), civic duties (Caprara and Capanna, 2005) and sport (Boardley and Kavussanu, 2007). In times of COVID-19 pandemic, some authors created ad-hoc measures to assess MD in regards to the current health crisis and results showed that MD negatively affected intentions to comply with social distancing measures (i.e., wearing masks) (Devereux et al., 2021; Miller et al., 2016; Wu et al., 2022).

Moreover, in a recent study on the psychological factors related to people's compliance to the current pandemic regulations, results showed that people with higher levels of MD tendencies and higher conspiracy beliefs were less compliant with the lockdown measures (Maftei et al., 2022).

One variable which could reduce the tendency to morally disengage is regulatory self-efficacy (R-SE), defined as individuals' perceived capability to resist pressure to misbehave (Bandura, 1997). According to Bandura (1997), R-SE is acquired and reinforced by successful personal experiences and by observing the successes and failures of others who are similar to oneself. Research has shown that R-SE plays a pivotal role in contrasting adolescent transgressive behaviors not only directly but also indirectly through its impact on MD (Bandura et al., 2001). For instance, R-SE in regard to doping behaviors has been found to influence doping likelihood both directly and indirectly via MD among college athletes (Ring and Kavussanu, 2018). Moreover, findings from a recent study on the role of emotional self-efficacy in times of COVID-19 pandemic showed that emotional self-efficacy had a protective role in fostering individuals' capabilities in complying with the containment mea-

asures to reduce the spread of the COVID-19 virus (Thartori et al., 2021). Thus, we expected that R-SE in complying with COVID-19 containment measures may directly favoring adherence to COVID-19 health-related behavioural and might lead individuals to refrain from selectively activating mechanisms of MD.

### 1.2. The role of conspiracy beliefs

Conspiracy theories (CTs) refer to beliefs of how a group of actors engage in secret activities in order to achieve unlawful or malevolent goals for their own personal gain (Miller et al., 2016). People who favor CTs accuse those in authority of illegal and immoral acts (Jolley et al., 2018). Although beliefs in CTs may have positive consequences, such as to reduce uncertainty (van Prooijen and Jostmann, 2013), the majority of the literature to date has evidenced its negative consequences. For example, believing in CTs weakens trust in authorities, diminishes engagement in pro-health behaviors (Earnshaw et al., 2016) and intentions to vaccinate (Jolley and Douglas, 2014), and inspire people to commit unethical and immoral actions, such as to engage in everyday crime (Jolley et al., 2019). Studies carried out during the current pandemic showed that people believing in CTs were less likely to comply with authorities and to accept direct counterarguments from governments (Douglas, 2021; Murphy et al., 2022).

Given the proliferation of CTs during COVID-19 pandemic (Rovetta, 2021), we expected these types of beliefs to enhance MD and non-compliance with COVID-19 health-related behaviors. There is evidence that CTs contribute to an individual disengagement of morally relevant behaviors, such as norms violations and antisocial behaviors (Maftei and Holman, 2022).

### 1.3. The present study

Although recent studies have established the negative effects of MD on intentions to comply with social distancing measures (Wu et al., 2022), little is known about the mediating role of MD in the relationship between R-SE, beliefs in CTs and compliance with COVID-19 health-related behaviors. For instance, results from a recent study by Alessandri et al. (2020) showed that MD mediated the relationship between personality traits and rule-respecting behaviors during COVID-19.

In accordance with previous findings attesting the important contribution of MD, R-SE and beliefs in CTs to COVID-19 health-related behaviors, we sought to investigate a conceptual model in which R-SE in complying with the containment measures and beliefs in CTs contributes to individuals' compliance with COVID-19 measures (positively and negatively, respectively), both directly and indirectly through MD. In particular, we hypothesized that: (1) higher levels of R-SE will result in greater compliance and higher beliefs in CTs were related to lower compliance with COVID-19 health-related behaviors and that (2) these relationships will be mediated by levels of MD.

Moreover, because prior studies have highlighted gender differences in the development of MD, suggesting that males are more prone to MD than females (Bandura et al., 1996; Bjärehed et al., 2019), we tested the model separately in both men and women.

Finally, since previous studies showed that individuals with lower education are more inclined toward MD than individuals of higher education (McAlister et al., 2006), we controlled for this covariate in our analyses.

## 2. Methods

### 2.1. Participants

For this cross-sectional study, the sample was composed by 1164 Italian young adults from 18 to 35 years old (female  $N = 796$ , 68.4%; mean age  $25.60 \pm 4.40$  years). Of the participants, 42.1% had a middle or high-school degree, 32.6% had a bachelor's degree, 25.30% had a master's

degree or higher (e.g., Ph.D.). Additionally, participants reported that 42.4% were single, 5.6% married, 14.9% cohabiting and 35.3% in an exclusive relationship but not living together. Inclusion criteria included the following: i) at least 18 years of age; ii) provided consent to participate; iii) understanding of spoken and written Italian. The study was conducted in accordance with ethical standards and approved by the local ethics committee. Participants provided written consent prior to participation.

## 2.2. Procedure

The present study was part of a larger cross-sectional research project aimed at investigating the role of individual differences in facing the COVID-19 pandemic. An online survey was developed and disseminated using the Qualtrics software and took approximately 15–20 min to complete. Participants were recruited through social network advertisement (i.e., Facebook, Instagram) and with a snowball recruiting procedure (Fricker, 2008), whereby participants invited their relatives, friends and acquaintances to participate in the study. After providing their informed consent, the participants completed the online survey through an anonymous link. Data collection occurred from 15th May to 22nd June 2021.

## 2.3. Measures

### 2.3.1. Socio-demographics

The survey included questions concerning gender, age, young adults' relationship status, and educational level to obtain a profile of the respondents' socio-demographic features.

### 2.3.2. Conspiracy beliefs

Questions regarding conspiracy beliefs were taken from a larger survey tool developed by the World Health Organization (WHO) aimed at informing COVID-19 outbreak response measures (WHO, 2020). In the present study, we used 5 items that measure trends in possible conspiracy theories that may need to be addressed during COVID-19 pandemic (e.g., "I think that many very important things happen in the world, which the public is never informed about"; "I think that politicians usually do not tell us about the true motives for their decision"). Questions range on a 7-point Likert scale from 1 "certainly not true" to 7 "certainly true". In this study, the overall Cronbach's alpha was 0.83.

### 2.3.3. Regulatory self-efficacy

The 9-item ad hoc scale was developed to assess an individual's capability to comply with the COVID-19 containment measures (e.g., "How well can you adjust your personal needs to the changing government requests?"; "How well you can avoid social gatherings and stay at least 1 m away from other people when going to see your relatives/partners?"). The item formulation process followed Bandura's guidelines (2006). The participants rated the strength of their self-efficacy beliefs on a 5-point Likert scale ranging from 1 "not well at all" to 5 "very well". In this study, the overall Cronbach's alpha was 0.80.

### 2.3.4. Moral disengagement

The 12 items of the moral disengagement scale during COVID-19 (MDS-COVID19) were developed by adapting items from the scale of Bandura et al. (1996). Participants rated their level of agreement with twelve statements (e.g., "Going out for a walk with some friends is just a way for 'stretching our legs'"; "It is legitimate to disregard government restrictions to protect one's own right to freedom"; "People cannot be blamed for taking a walk, since there are many that do not respect the restrictions") using a 5-point Likert scale ranging from 1 "strongly disagree" to 5 "strongly agree". Exploratory and confirmatory Factor Analysis was used to test the factorial validity of the MDS-COVID19 scale (see Supplementary Materials for Details). In this study, the overall Cronbach's alpha was 0.90.

### 2.3.5. COVID-19 health-related behaviors

Questions regarding COVID-19 health-related behaviors were taken from a larger survey tool developed by the World Health Organization aimed at informing COVID-19 outbreak response measures (WHO, 2020). In the present study, we selected 3 dichotomous items (0=No; 1=Yes) in which participants were asked if they have taken measures to prevent infection from COVID-19 during the last 7 days (e.g., "Avoided touching my eyes, nose and mouth with unwashed hands"; "Stayed at home from work/school"; "Ensured physical distancing in public").

## 2.4. Data analytic approach

Preliminary, a series of factor analyses and measurement invariance (men vs women) on the adapted moral disengagement scale were tested to ascertain the good psychometric properties of the measure (see Supplementary Material for details).

To explore the hypothesized relations, a multiple group path analysis within the Structural Equation Modeling framework (SEM; Asparouhov and Muthén, 2009) was performed. All analyses were conducted using the software Mplus version 8.4 (Muthén & Muthén, 1998–2017). To test the mediational effect of MD in the relation of regulatory self-efficacy and beliefs in CTs to compliance with COVID-19 health-related behaviors, we used the MODEL INDIRECT command in Mplus 8.4, with the bootstrapping method with 1000 replications and 99% Confidence Interval (CI). In detail, a significant mediation effect was considered when the 99% CI did not include zero (Bollen and Stine, 1990; Lockwood and MacKinnon, 1998).

To test the moderated effect of gender in the hypothesized relations, we compare the constrained model (i.e., all regression paths were imposed to equality across men and women) versus the unconstrained model (i.e., all regression paths were freely estimated across the two groups) using the Bayesian Information Criterion (BIC; Schwarz, 1978) by which lower values indicated the plausibility of the model constraints (Wang and Wang, 2019).

## 3. Results

### 3.1. Statistical power analyses

We conducted an a priori power analysis using the G\*Power 3.1.9.7 statistical software package (Faul et al., 2007) to determine the minimum sample size needed to achieve a statistical power of 0.80, assuming a medium effect size and an alpha level of 0.05. The analysis showed that we needed a minimum of 119 participants to sufficiently power our design. Given our sample of 1164 participants, we submit that the results of our analysis are robust to make predictive inferences about the relationships between predictor and outcome variables.

### 3.2. Preliminary analyses

As reported in Table 1, all study variables were significantly correlated with each other.

### 3.3. Results of the multiple-group path analysis model

Considering that the full constrained model showed a lower BIC (BIC=5746.625) compared with the unconstrained model (BIC=5794.164), we retained all paths to be equal between men and women. The final model showed a good fit to the data  $\chi^2(10) = 20.781, p = .023; CFI = 0.972; TLI = 0.943, RMSEA = 0.048$  [90% CI: 0.017, 0.078]; SRMR = 0.041 and was depicted in Fig. 1.

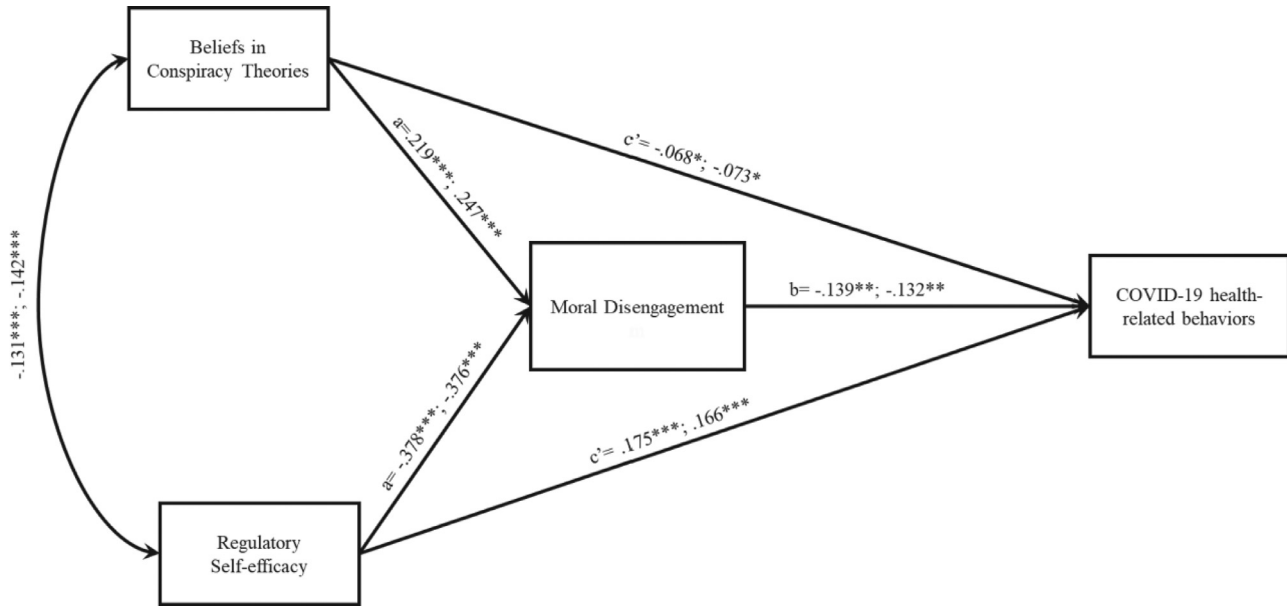
#### 3.3.1. Direct effects

As reported in Table 2, controlling for educational levels, the path model showed a positive direct association of R-SE and negative direct

**Table 1**  
Descriptive Statistics and Correlations for study variables.

Variables	N	M	SD	1	2	3	4	5	6
1. Gender (0=Men 1=Women)	1156	0.69	0.46	–					
2. Educational Level	1164	3.85	1.09	–0.01	–				
3. Conspiracy beliefs	849	4.05	1.20	–0.08*	–0.14**	–			
4. Regulatory Self-Efficacy	903	3.79	0.60	0.03	0.15**	–0.16**	–		
5. Moral Disengagement	871	1.72	0.65	–0.08*	–0.20**	0.32**	–0.43**	–	
6. COVID-19 health-related behaviors	933	0.80	0.23	0.07*	–0.05	–0.13**	0.22**	–0.21**	–

\*\*\*<0.001 \*\*<0.01 \*<0.05.



**Fig. 1.** \*\*<.001 \*\*<.01 \*<.05. Note. The first value refers to Men and the second to Women. Standardized effects were reported. The effects of educational level were estimated but not depicted for the sake of simplicity.

**Table 2**  
Coefficients of the multi-group (MG) path analysis model.

	Compliance with COVID-19 health-related behaviors							
	Men				Women			
	b	$\beta$	SE	p	b	$\beta$	SE	p
Educational Level	–0.024	–0.105	0.007	<0.05	–0.024	–0.116	0.007	<0.05
Moral Disengagement	–0.048	–0.139	0.016	<0.05	–0.048	–0.132	0.016	<0.05
Regulatory Self-Efficacy	0.065	0.175	0.015	<0.001	0.065	0.166	0.015	<0.001
Beliefs in conspiracy theories	–0.014	–0.068	0.007	<0.05	–0.014	–0.073	0.007	<0.05

associations of beliefs in CTs and MD with compliance with COVID-19 health-related behaviors for both men and women.

**3.3.2. Indirect effects**

Controlling for the direct effect of R-SE in complying with COVID-19 containment measures and MD ( $c = 0.065$ ,  $SE = 0.015$ ,  $p < .001$ ), the mediational models showed that for both men and women, higher levels of R-SE were associated with lower levels of MD ( $a = -0.408$ ,  $SE = 0.039$ ,  $p < .001$ ) that, in turn, significantly influenced compliance with COVID-19 health-related behaviors ( $b = -0.048$ ,  $SE = 0.016$ ,  $p = .003$ ). This mediated effect (higher R-SE → lower MD → higher compliance with COVID-19 health-related behaviors) resulted statistically significant ( $ab = 0.020$ ,  $p = .006$ ) as the 99% CI did not include zero (0.002 0.039).

Regarding beliefs in CTs, controlling for its direct effect on compliance with COVID-19 health-related behaviors ( $c = -0.014$ ,  $SE = 0.007$ ,  $p = .039$ ), the mediational model (higher beliefs in CTs → higher MD → lower compliance with COVID-19 health-related behaviors) resulted statistically significant ( $ab = -0.006$ , 99% CI:  $-0.012 -0.001$ ). In

detail, results evidenced that for both men and women, higher levels of beliefs in CTs were associated with higher levels of MD ( $a = 0.128$ ,  $SE = 0.018$ ,  $p < 0.001$ ) that, in turn, negatively influenced compliance with COVID-19 health-related behaviors ( $b = -0.048$ ,  $SE = 0.016$ ,  $p = .003$ ). In Fig. 1 were reported standardized effects for both men and women. The mediation model explained up to 8% of the variance in COVID-19 health-related behaviors in both men and women, and this effect was small.

Regarding the reverse mediations, beliefs in CTs and R-SE did not mediate the relationship between MD and the dependent variable (respectively:  $p = .70$ , 99% CI:  $-0.003, 0.004$ ;  $p = .58$ , 99% CI:  $-0.004, 0.002$ ).

**4. Discussion**

This study reported the mediating role of MD in the association between beliefs in CTs, R-SE and compliance with COVID-19 health-related behaviors among young adults, by using a multi-group path

analysis approach. Results indicated that, controlling for educational level, the effects of CTs and R-SE on compliance with COVID-19 health-related behaviors were partially mediated by the levels of MD. Further, the model was gender invariant, suggesting that the mediation worked in a similar way for both men and women.

In accordance with our first hypothesis, we found that higher levels of R-SE and lower beliefs in CTs were significant predictors of compliance with COVID-19 health-related behaviors. While the former promotes, the latter hinders the engagement in health-related behaviors during the COVID-19 pandemic. These findings are in line with previous studies suggesting that while people with high levels of R-SE perceive themselves as being able to self-regulate and have confidence that their own behaviors can help reduce the likelihood of getting and transmitting the COVID-19 virus (Hamerman et al., 2021), people that hold beliefs in CTs are less prone to comply with the recommended measures (Maftei and Holman, 2022). This result may be explained by the fact that people that hold beliefs in CTs also detain alternative explanations for the origin of the pandemic and so they underestimate the credibility of the information disseminated by the government as well as the perceived usefulness of the recommended measures.

Further, both R-SE and beliefs in CTs were directly associated with MD, with positive and negative effects respectively. These results are consistent with the literature attesting the pivotal role of R-SE in discouraging the normalization or justification of transgressive and unethical behaviors through the person's perceived capability to resist pressure to misbehave (e.g., Bandura, 1997; Bandura et al., 2001). Furthermore, given that conspiracy theories are associated with increased disengagement from important social issues (Jolley and Douglas, 2014), it is plausible that beliefs in CTs may alter one's perceptions of social norms by signaling that unethical activities are permissible and unethical behaviors justifiable.

Moreover, MD was significantly and negatively associated with COVID-19 health-related behaviors. This result is in line with previous studies attesting that people more prone to morally disengage are less compliant to the social distancing measures (Devereux et al., 2021; Maftei and Holman, 2022). This suggests that, because MD is a close predictor of individuals' enacted behaviors (Bandura, 2016), people that are more likely to feel the need to inhibit and restructure the consequences of unethical and harmful behaviors are also more likely to act immorally, such as by leaving their home and not ensuring physical distancing in public.

Although increased levels of MD previously have been shown to predict non-compliance with COVID-19 health-related behaviors (Devereux et al., 2021), the purpose of this study was to move beyond simply adding to this catalog of problems and testing an exploratory model. We did so with the finding that MD partially mediated the relationship between beliefs in CTs, R-SE and compliance with COVID-19 health-related behaviors. Thus, as assumed in our second hypotheses, the findings suggested that higher levels of R-SE may lead to fewer tendencies to moral disengage which may in turn lead to higher compliance with COVID-19 health-related behaviors. In contrast, individuals with higher beliefs in CTs may develop higher MD, and this may boost non-compliance with COVID-19 health-related behaviors.

Overall, our findings suggest that R-SE and beliefs in CTs may not directly lead to COVID-19 health-related behaviors, but that this association may be influenced by other factors, such as MD.

Although our results confirmed the hypothesized relations among the variables of interest, this study comes with several limitations. First, the cross-sectional and correlational nature of our data limits us in drawing conclusions regarding causality and cannot allow us to exclude other explanatory and unmeasured variables, such as people's general perception of the COVID-19 pandemic, antisocial personality traits (i.e., psychopathy, narcissism or callousness), that are generally associated with MD. Another limitation is about the generalizability of the present findings from the Italian population to other cultural contexts. Nevertheless,

cross-cultural or longitudinal studies are needed to advance this line of work.

Despite these limitations, the results of this study have increased our understanding of the significant impact of MD on complying with the recommended measures during the COVID-19 pandemic. Consequently, despite discrediting CTs related to the current pandemic and ensuring a consistent and science-based communications, public health authorities and social care professionals should promote interventions aimed at improving regulatory self-efficacy, emphasizing the moral significance of respecting or ignoring the recommended COVID-19 measures (e.g., ensure physical distance in public) and enhancing people's concern for the potential harms of their immoral actions.

## Declaration of Competing Interest

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

## Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.cresp.2022.100069.

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