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## Moral decision-making and support for safety procedures amid the COVID-19 pandemic<sup>☆</sup>

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### ABSTRACT

Given that individual differences influence virus-mitigating behaviors and the COVID-19 pandemic posed new moral dilemmas for individuals to resolve, across three studies ( $N = 704$ ), we assessed how masculine honor beliefs (MHB), beliefs in pure good (BPG), evil (BPE), and the dark triad (DT) influence COVID-19 moral decision-making. Specifically, we analyzed moral decision-making at the microlevel (i.e., individual- and familial-level; Study 1), in decisions with (hypothetical) life-or-death consequences (Study 2), and at the macrolevel (i.e., nationwide virus-mitigation efforts; Study 3). In all studies, participants completed the four individual difference scales and rated their pandemic attitudes on Likert-type agreement scales, and resolved various moral dilemmas in Studies 2 and 3. Consistent with our hypotheses, individuals reported more virus-mitigation efforts in order to protect their families than themselves. In terms of hypothetical life-or-death and nationwide decisions, MHB, BPE, and the DT predicted more confidence and social motivations, whereas BPG predicted more distress. This research has implications for moral decision-making at varying degrees of severity during the COVID-19 pandemic.

The COVID-19 pandemic affected countries and individuals differently, and such unprecedented experiences can create uncertainty and distress (Herat, 2020). Due to the rapid-spreading nature of a viral pandemic, fear is a common negative emotion experienced by populations as a result (Ahorsu et al., 2020). At the individual-level, COVID-19 poses new and important moral dilemmas (Donnarumma & Pezzulo, 2020) given that compliance with virus-mitigation practices (e.g., social distancing, quarantining) is largely an individual moral decision (Alkire & Chen, 2004; Childress et al., 2002; Harris & Holm, 1995). In resolving public health-related moral dilemmas, individuals can suffer moral distress (Borges et al., 2020). Healthcare workers, for example, may be particularly vulnerable to this distress because of dilemmas such as the allocation of limited resources to numerous patients (Greenberg et al., 2020; White & Lo, 2020) and limited health system capacity (Emanuel et al., 2020). Given the high-stakes consequences of decisions related to COVID-19, we examined the influence of the pandemic and certain individual differences on individuals' moral decision-making.

Obviously, there is great uncertainty in moral decision-making during a pandemic (Van Bavel et al., 2020), but we might have specific

moral obligations to protect others from infection (Harris & Holm, 1995; Yang & Ren, 2020) and avoid unnecessary risk, particularly in the workplace (Coulthard, 2020). It is important to also consider factors beyond social pressure related to behavioral efforts to prevent the spread of COVID-19 because individual differences can influence how proactive one is in terms of virus-mitigation (e.g., social distancing; Blagov, 2020). For example, empathy (Pfattheicher et al., 2020), fear related to the pandemic (Harper et al., 2020), perceived pandemic severity (Oosterhoff & Palmer, 2020), and expectations of social cooperation (Alessandri et al., 2020) are positively associated with COVID-19 behavioral compliance (i.e., virus-mitigation; e.g., social distancing, not hoarding food and supplies). Considering the pandemic is such a highly stressful and uncertain situation (Herat, 2020) and individual decisions have great, unprecedented, and collective consequences (Donnarumma & Pezzulo, 2020; Van Bavel et al., 2020), we examined how more enduring (i.e., not pandemic-specific) individual differences manifest in pandemic moral decision-making. Specifically, we assessed the following individual differences due to their varying motivations to protect others and maintain a positive social reputation: Masculine

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Honor Beliefs (MHB), Beliefs in Pure Good (BPG), Beliefs in Pure Evil (BPE), and the Dark Triad (DT) of personality. Schiffer et al. (2020) suggest MHB, BPG, BPE, and the DT, specifically, relate to moral decision-making differently, in terms of the ease and guilt experienced when making hypothetical life-or-death decisions, which we applied to the COVID-19 pandemic in making decisions of increasing severity (i.e., microlevel to macrolevel decisions).

MHB reflect the idea that men should, at all costs, protect their family, property, and reputation from threat (e.g., Cohen, 1998; Cohen & Nisbett, 1994). Masculine honor dictates that men should defend themselves and others from threat and also maintain strong familial and communal relationships (Saucier & McManus, 2014). This mindset originates from cultures of honor (e.g., the American South; Cohen & Nisbett, 1994), in which honor is vulnerable to being lost, so one must earn and maintain their honor (e.g., Saucier et al., 2016). Although MHB are not confined to regional differences (Saucier, Miller, et al., 2018), men from honor cultures tend to respond to insults more aggressively than men from non-honor cultures (Cohen et al., 1996) and consider violence to be acceptable if used as a means of protection (Nisbett, 1993), including at the national level with increased approval of war and intergroup aggression (Saucier, Webster, et al., 2018). Consistently, MHB relate to the expectation that threats to one's honor, including insults to a man's masculinity (Saucier et al., 2015) and romantic rejections (Stratmoen et al., 2018), should be confronted, and perceptions of men depend upon the defense of their honor (O'Dea et al., 2017; O'Dea, Chalman, et al., 2018).

Given the desire to establish and maintain dominance (Cohen et al., 1996), stronger MHB relate to more competitive social beliefs (i.e., only the powerful, fit, and successful will survive in society; Saucier, Webster, et al., 2018), muscularity concerns (as a way to deter threats; Saucier, O'Dea, & Stratmoen, 2018), and beliefs that fights must be won by any means necessary (O'Dea, Martens, & Saucier, 2018). In terms of moral decision-making, when resolving hypothetical life-or-death moral dilemmas, individuals higher in MHB resolved dilemmas with more ease and stronger desires to be in charge and receive credit for their decisions (Schiffer et al., 2020). This strategic decision-making inspired by a desire to be in control is consistent with the value MHB place on having a tough social reputation (Saucier, O'Dea, & Stratmoen, 2018). As such, the current research sought to assess how MHB manifest in COVID-19 decision-making given that individuals higher in MHB place great value on protecting oneself and others (Saucier et al., 2016), but may also make decisions to receive social praise (Schiffer et al., 2020).

BPG describe how strongly one believes pure good exists in the world, and are, therefore, positively associated with prosociality toward others (Webster & Saucier, 2013). As such, individuals higher in BPG are more likely to defy altruistic, heroic behavior (Webster & Saucier, 2017). Additionally, altruistic beliefs relate to having personal moral conduct standards and believing morality is a core part of life (Bergner & Ramon, 2013). In terms of moral decision-making, individuals higher in BPG reported feeling more guilt when resolving hypothetical life-or-death moral dilemmas (Schiffer et al., 2020). This is consistent with the idea that concern for others' suffering affects moral decision-making (Crockett et al., 2014) and that people generally try to avoid being responsible for negative outcomes, especially when they involve others (Kahneman, 2013). Given that empathy is positively associated with COVID-19 behavioral compliance (Oosterhoff & Palmer, 2020; Pfattheicher et al., 2020), individuals higher in BPG likely make prosocial moral decisions during the COVID-19 pandemic, but may struggle emotionally to make such difficult decisions, consistent with Schiffer et al.'s (2020) findings.

On the other hand, BPE describe how strongly one believes pure evil exists in the world which relates to pessimism (Webster & Saucier, 2013), aggression, and punitiveness (Vasturia et al., 2018; Webster & Saucier, 2015). Although BPE relate to approval of intergroup aggression and perceiving the world as a dangerous place (Webster & Saucier, 2013), they also are positively associated with rewarding heroic

behavior (Webster & Saucier, 2017). In other words, individuals higher in BPE may view the world negatively, but might be motivated to change the world positively. In terms of moral decision-making, when resolving hypothetical life-or-death moral dilemmas, individuals higher in BPE expressed stronger desires to make the decision and get credit for it, while not trusting others to make the same decisions (Schiffer et al., 2020). This suggests that BPE manifest in a desire to be recognized for making difficult decisions. Overall, individuals higher in BPE likely also make prosocial moral decisions related to the COVID-19 pandemic out of motivation to prevent further evil given that such decisions would warrant praise and boost one's social image, consistent with Schiffer et al.'s (2020) BPE decision-making findings.

Similarly, the DT includes three socially maladaptive personalities (i.e., Machiavellianism, narcissism, and psychopathy; Paulhus & Williams, 2002), characterized by risk behaviors (Crysel et al., 2012) as well as impulsive and exploitative social tactics that benefit oneself but not others (Jonason et al., 2015; Kurt & Paulhus, 2008). With respect to the COVID-19 pandemic, individuals with stronger DT tendencies tend to engage in fewer health-promoting behaviors and are more reckless in exposing others to risk (Blagov, 2020), which could be attributed to these individuals often demonstrating lower moral development (Campbell et al., 2008) in making decisions largely unaffected by empathic concern (Conway & Gawronski, 2013) or aversions to harming others (Duke & Bègue, 2015). Consistently, individuals with stronger DT tendencies resolved (hypothetical) life-or-death moral dilemmas with more ease and stronger desires to make decisions and receive credit for them while also distrusting others to make decisions (Schiffer et al., 2020). These findings suggest, even when lives are (hypothetically) at stake, individuals higher in the DT may use the opportunity to benefit their social image. As such, individuals with stronger DT tendencies likely make decisions that benefit themselves by improving their social status during the pandemic.

## 1. Current studies overview

The current research examined how MHB, BPG, BPE, and the DT influence COVID-19 moral decision-making, due to the varying value these individual differences place on familial protection and social reputations. Specifically, this program of research assessed moral decisions amid the COVID-19 pandemic, beginning at the microlevel with individual- and familial-level decisions (Study 1) and progressing to decisions with (hypothetical) life-or-death consequences (Study 2), and ending with a macrolevel decision with implications for nationwide public health (Study 3). The progression of these studies allows for better understanding (albeit cross-sectionally) of pandemic moral decision-making in situations of increasing severity, as well as the influence of MHB, BPG, BPE, and the DT on such decision-making processes.

In all studies, to account for differences in attitudes toward the COVID-19 pandemic, we gauged participants' general perceptions of social distancing, individuals' abilities to take care of themselves and make their own choices, trust in the government, and preoccupations with COVID-19. Across all studies, we hypothesized stronger MHB would relate to more negative perceptions of social distancing, more beliefs in individuals' abilities to take care of themselves, and less governmental trust; BPG with more COVID-19 preoccupation and positive perceptions of social distancing; and both BPE and the DT with more negative perceptions of social distancing and beliefs in individuals' abilities to take care of themselves. Overall, this program of research examines moral decision-making patterns amid the COVID-19 pandemic in decisions of increasing severity while accounting for individual differences associated with strong familial and reputational concerns, which likely manifest in different motivations for making pandemic-related decisions (e.g., protection of others, social recognition).

## 2. Study 1

Although compliance with virus-mitigation practices is primarily an individual decision (Alkire & Chen, 2004; Childress et al., 2002; Harris & Holm, 1995), these choices have implications for others' health (Donnarumma & Pezzulo, 2020). Accordingly, the COVID-19 pandemic created a lot of public fear associated with the virus (Ahorsu et al., 2020) and posed great risks to individuals and their families (Prime et al., 2020). Families are in a particularly challenging position because public health related lockdowns left families to raise and educate children without much institutional support, adding to the already stressful nature of a pandemic (Power, 2020). Because people tend to be biased toward protecting their kin, as inclusive fitness theory suggests (Hamilton, 1964), individuals might have different priorities for their families than for themselves during the pandemic. Accordingly, Study 1 investigated this comparison in terms of pandemic behaviors (e.g., social distancing) and emotions (e.g., distress). To do this, we used a between-groups design to compare how participants' social motivations change depending on whether they were responding to COVID-19 behaviors and emotions with regard to themselves, their family, or a control in which we just examined general attitudes and behaviors. We also examined the influence of MHB, BPG, BPE, and the DT on pandemic decision-making.

Given the importance MHB place on protecting oneself and others, we hypothesized stronger MHB to relate to more pandemic perseverance (e.g., beliefs about getting through the pandemic safely), but in order to not be perceived as overreacting, weak, or fearful, we also expected stronger MHB to relate to less panic behaviors (e.g., hoarding food) and adherence to pandemic restrictions. Out of concern for the safety and well-being of oneself and others, we hypothesized stronger BPG to relate to more safety compliance, panic behaviors, researching the virus to educate oneself about the virus and its spread, negative affect, pandemic perseverance, and pandemic concern (e.g., worrying about getting enough food). Given BPE and the DT's relationships with riskier (Crysel et al., 2012) yet confident decision-making (Schiffer et al., 2020), we hypothesized both stronger BPE and DT tendencies to relate to less safety compliance, panic behaviors, negative affect, and pandemic concern. If there were interactions between MHB, BPG, BPE, the DT, and our conditions, we expected those relationships to be strongest when reflecting on one's family (rather than oneself) given that the pandemic has created great additional stressors for families specifically (e.g., finances, children's remote learning) and individuals may be more inclined to engage in virus-mitigation practices in order to protect their family, consistent with inclusive fitness theory.

## 3. Study 1 method

### 3.1. Participants

Our study was preregistered on the Open Science Framework (OSF; <https://osf.io/dmsh9>).<sup>1</sup> We attempted to recruit at least 193 participants (correlational study with  $\rho = 0.20$ , power = 0.80,  $\alpha = 0.05$ ). Participants were recruited from the CloudResearch software (Litman, Robinson, & Abberbock, 2017). Data were collected between June 2 and 3, 2020. After removing 176 participants (43 who did not answer any questions, 71 participants who failed captchas at the start of the survey, 62 participants who failed one of three attention checks), we had 238 participants for data analysis. There were 81 men, 155 women, and two participants who declined to answer. The majority (73%) of our sample was White and the average age was 39.69 ( $SD = 14.80$ ).

<sup>1</sup> Materials and data (in raw and cleaned form) for all studies are available on the OSF at the links provided in each study's Participants section.

### 3.2. Materials

Unless otherwise stated, all measures were completed on 1 (*strongly disagree*) to 9 (*strongly agree*) Likert-type scales. Antithetical items were reverse-scored, and then averaged to create composite scores with higher scores indicating higher levels of the construct.

#### 3.2.1. Predictor measures

**Individual differences.** We used Saucier et al.'s (2016) 35-item Masculine Honor Beliefs scale (MHBS) to measure participants' MHB (e.g., *A man's family should be his number one priority*). We used Webster and Saucier's (2013) 28-item Beliefs in Pure Good scale to measure participants' BPG (e.g., *There is such a thing as a truly selfless/altruistic person*) and their 22-item Beliefs in Pure Evil scale to measure participants' BPE (e.g., *Evil people are just compelled to harm others*). We used Jones and Paulhus's (2014) 27-item Short Dark Triad (SD3) scale, which includes nine items for each construct (e.g., *I like to use clever manipulation to get my way*), to measure participants' socially maladaptive tendencies.

**Conditions.** To understand participants' pandemic priorities, we altered the recipient of pandemic behaviors and emotions in three ways. In the Control Condition, participants only saw the root information of behaviors and emotions (e.g., *I would steal a mask*). In the Self Condition, behaviors and emotions were framed within the context of oneself (e.g., *I would steal a mask for myself*), and were framed within the context of one's family in the Family Condition (e.g., *I would steal a mask for my family*).

#### 3.2.2. Dependent measures

For our exploratory factor analyses (EFA) in the following subsections, we used JAMOWI with minimum residuals extraction and an oblimin rotation. Retained factors were based on logic and parallel analysis and loaded onto their main factor with loadings greater than 0.50 and did not cross-load onto other factors with a level greater than 0.40.

**General pandemic attitudes.** We measured participants' attitudes toward the COVID-19 pandemic in terms of social distancing, individual freedom, governmental intervention, and obsession with COVID-19 from Lee (2020) using 19 items. We retained 15 items from our EFA which loaded onto four factors which we labeled: Distancing Negativity (e.g., *Social distancing is bad for my family*), Individual Freedom (e.g., *I should be able to make my own decisions*), Governmental Intervention (e.g., *The government should take care of me*), and Obsession (Lee, 2020; e.g., *I could not stop thinking about the coronavirus*). See Supplementary Table 1.

**Pandemic behaviors.** We wrote 15 items to measure participants' various behaviors during the COVID-19 pandemic (e.g., social distancing). Based on our EFA, 14 items were retained that loaded onto three factors: Safety Compliance (e.g., *I would wear a mask*), Research (e.g., *I would research the virus and its spread*), and Panic Behaviors (e.g., *I would hoard food*). See Supplementary Table 2.

**Pandemic emotions.** We also measured participants' emotions during the COVID-19 pandemic. These 15 items were written partly based on the negative affect items of the Positive and Negative Affect Schedule (PANAS; Watson et al., 1988), but we also included items more specifically linked to emotions toward current issues during the pandemic (e.g., food, finances, mental and physical health). We retained 12 items from our EFA, and three factors emerged: Negative Affect (e.g., *I am distressed*), Pandemic Perseverance (e.g., *I need to be strong*), and Pandemic Concern (e.g., *I am worried about getting enough food*). See Supplementary Table 3.

### 3.3. Procedure

Participants recruited via Amazon's TurkPrime provided informed consent, completed several captchas, and provided demographic

information. Our predictors (which were presented in a random order; MHBS, BPG, BPE, SD3) were counterbalanced with our criterion (Pandemic Behaviors and Pandemic Emotions; for which participants were shown one of the three conditions: Control, Self, Family). Participants then completed their General Pandemic Attitudes. Participants then could provide any additional information they wished, read a debriefing statement, were thanked, and compensated.

**4. Study 1 results & discussion**

Means, standard deviations, reliabilities, and intercorrelations among all variables are provided in Table 1. Consistent with our hypotheses about relationships between our predictor variables and General Pandemic Attitudes, higher MHB were significantly positively correlated with Distancing Negativity and Individual Freedom; higher levels of BPE were associated with significantly more Individual Freedom; and higher DT scores were associated with significantly more Distancing Negativity. Inconsistent with our hypotheses, higher MHB, BPE, and DT tendencies were significantly positively correlated with Obsession, whereas higher BPG were associated with significantly less Obsession. Higher DT scores were also associated with more support for Governmental Intervention but were unassociated with Individual Freedom. These relationships suggest individuals higher in MHB, BPE, and the DT are worried about the virus, but do not engage in virus-mitigating behaviors, specifically those that sacrifice one's behavioral freedoms, whereas individuals higher in BPG may be more optimistic and are, therefore, less preoccupied about the pandemic.

Next, we analyzed the effects of MHB, BPG, BPE, and the DT on participants' pandemic behaviors and emotions, and most of our findings were inconsistent with our hypotheses. For instance, higher MHB, BPE, and DT scores were associated with significantly higher Panic Behaviors and Pandemic Concern, with BPE also being associated with more Negative Affect. This may suggest that some of the precarious nature of MHB with regard to one's reputation could similarly apply to one's personal safety (which could be consistent with MHB's positive relationship with Obsession). As for BPE, a pessimistic view of human nature would likely manifest in negative responses to widespread panic, possibly due to seeing the worst in others and expecting them to spread and infect others at higher rates. The DT relationships are particularly interesting given higher DT scores were also associated with significantly less Safety Compliance and Research, consistent with our hypotheses. This seems to suggest some hypocrisy in being more worried about the pandemic but performing less prosocial, virus-mitigating behaviors to combat those feelings. Our BPG hypotheses were somewhat supported in that higher BPG were associated with greater Safety Compliance, Research, and Pandemic Perseverance, but unexpectedly also with less Panic Behaviors and Pandemic Concern. This suggests BPG manifest in compliance with best practices for combatting the COVID-19 virus, beliefs that others would also comply, and, therefore, less concern about the virus.

To examine the effects of our three conditions (i.e., Control, Self, and Family),<sup>2</sup> we used a one-way ANOVA with condition predicting pandemic behaviors (e.g., Safety Compliance) and emotions (e.g., Negative Affect).

<sup>2</sup> We also examined the interaction of condition and each of our continuous predictors predicting the three behavioral and three affective outcomes (Supplementary Tables 4–9). We did not hypothesize that these would interact (see preregistration) but noted that if they did interact, that we predicted the relationships would be strongest in the Family Condition. None of the interactions were significant predicting the affective outcomes (Negative Affect, Pandemic Perseverance, Pandemic Concern). Further, while many of the interactions predicting participants' Safety Compliance (BPG and DT), Panic Behaviors (MHBS, BPG, and BPE), and Research (MHBS and DT) were significant, the simple slopes did not follow a particular pattern and will not be discussed further.

**Table 1**  
Relationships between each of our predictor and criterion variables in Study 1.

Variable	M	SD	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.
1. MHBS	5.07	1.53	(0.96)													
2. BPG	6.73	1.19	-0.08	(0.92)												
3. BPE	5.56	1.93	0.45*	0.19*	(0.97)											
4. DT	3.72	1.30	0.44*	-0.48*	0.16*	(0.91)										
5. Safety Compliance	7.51	1.76	-0.12	0.20*	0.08	-0.21*	(0.90)									
6. Panic Behaviors	4.24	2.09	0.31*	-0.21*	0.15*	0.36*	0.27*	(0.79)								
7. Research	7.74	1.47	-0.03	0.31*	0.11	-0.24*	0.42*	0.14*	(0.86)							
8. Negative Affect	4.36	2.48	0.11	-0.07	0.17*	0.12	0.26*	0.43*	0.17*	(0.96)						
9. Pandemic Perseverance	7.53	1.30	0.08	0.40*	0.21*	-0.12	0.36*	0.10	0.50*	0.10	(0.86)					
10. Distancing Negativity	4.69	2.20	0.15*	-0.22*	0.21*	0.21*	0.15*	0.40*	0.13	0.68*	-0.02	(0.76)				
11. Individual Freedom	3.04	2.02	0.27*	0.22*	0.04	0.39*	-0.59*	0.06	-0.31*	0.01	0.10	0.10	(0.89)			
12. Governmental Intervention	5.92	1.82	0.26*	0.22*	0.13*	0.12	-0.18*	-0.03	-0.01	-0.29*	0.18*	-0.20*	0.30*	(0.77)		
13. Obsession	4.82	2.57	0.07	-0.10	0.07	0.20*	0.29*	0.22*	0.17*	0.33*	0.07	0.34*	-0.19*	-0.10	(0.95)	
14. Obsession	3.00	2.07	0.16*	-0.25*	0.14*	0.39*	0.03	0.35*	-0.02	0.53*	-0.07	0.47*	0.20*	-0.19*	0.30*	(0.85)

Note. \**p* < .05. MHBS = Masculine Honor Beliefs Scale; BPG = Beliefs in Pure Good; BPE = Beliefs in Pure Evil; DT = Dark Triad.



We found a significant effect of condition predicting each dependent variable,  $F_s(2,231) > 3.52$ ,  $ps < .031$ ,  $\eta^2_{ps} > 0.03$ ; except Pandemic Concern,  $F(2, 234) = 0.68$ ,  $p = .506$ ,  $\eta^2_p = 0.01$ . We probed the significant effects using Bonferroni pairwise comparisons. See Table 2. Consistent with our hypotheses, participants reported higher Safety Compliance, Panic Behaviors, Research, Negative Affect, and Pandemic Perseverance in the Family Condition than the Self Condition ( $ps < .027$ ) and higher Panic Behaviors and Negative Affect in the Family Condition than the Control Condition ( $ps < .010$ ). Consistent with our hypotheses, the Self and Control Conditions did not significantly differ ( $ps > .088$ ), likely because they were perceived as quite similar.

Overall, these findings demonstrate how pandemic moral decision-making differs at the microlevel in how pandemic priorities vary for oneself versus one's family. Consistent with our hypotheses, these findings showed that individuals prioritize virus-mitigation practices more for their families than for themselves, likely because of the family-related-stress the pandemic has created (Prime et al., 2020). Furthermore, Study 1 highlights the nuances of behaviors and emotions related to the pandemic as a function of individual differences, with MHB, BPE, and DT tendencies manifesting in greater panic and concern despite having negative attitudes toward virus-mitigation practices, and higher BPG manifesting in more favorable attitudes toward virus-mitigation and, therefore, less concern about the virus. Study 1 examined broad patterns at the microlevel in terms of individual and familial responses to the pandemic (e.g., virus-mitigation practices), given the various values and motivations (e.g., protecting oneself and one's family, maintaining social reputations) associated with MHB, BPG, BPE, and the DT.

## 5. Study 2

Given Study 1's examination of moral decision-making at the individual- and familial-level, Study 2 assessed decisions in higher-stakes situations through the use of hypothetical life-or-death moral dilemmas. As previously mentioned, the COVID-19 pandemic created unique moral dilemmas (Donnarumma & Pezzulo, 2020) that are stressful for individuals to resolve (Borges et al., 2020), with healthcare scenarios being particularly difficult due to potentially fatal consequences (Emanuel et al., 2020; Greenberg et al., 2020; White & Lo, 2020). Consistently, we used a between-groups design in which we presented participants with either existing hypothetical moral dilemmas involving dying individuals or COVID-19 versions of those dilemmas in which we specified the individuals were dying from COVID-19, which allowed us to examine moral decision-making with hypothetical life-or-death consequences both in general and within the context of the COVID-19 pandemic. As dual process theory suggests, such hypothetical life-or-death dilemmas engage both cognitive and emotional systems of decision-making, making these dilemmas difficult to resolve as these systems often conflict/compete (Greene et al., 2004). We also assessed the influence of MHB, BPG, BPE, and the DT on these decision-making processes given that these individual differences relate to hypothetical life-or-death moral decision-making (Schiffer et al., 2020) as well as to personal and familial priorities during the COVID-19 pandemic

**Table 2**

Means, standard deviations, and Bonferroni pairwise comparisons between conditions in Study 1.

Dependent variable	Control		Self		Family	
	M	SD	M	SD	M	SD
Safety Compliance	7.57 <sub>a,b</sub>	1.72	7.13 <sub>a</sub>	1.81	7.87 <sub>b</sub>	1.68
Panic Behaviors	3.62 <sub>a</sub>	1.87	3.80 <sub>a</sub>	1.96	5.40 <sub>b</sub>	2.03
Research	7.80 <sub>a,b</sub>	1.33	7.37 <sub>a</sub>	1.76	8.09 <sub>b</sub>	1.17
Negative Affect	4.04 <sub>a</sub>	2.28	3.93 <sub>a</sub>	2.60	5.20 <sub>b</sub>	2.40
Pandemic Perseverance	7.57 <sub>a,b</sub>	1.15	7.14 <sub>a</sub>	1.48	7.92 <sub>b</sub>	1.13
Pandemic Concern	4.53 <sub>a</sub>	2.11	4.62 <sub>a</sub>	2.43	4.93 <sub>a</sub>	2.04

Note. Means in a row not sharing subscripts are significantly different.

specifically (Study 1).

To assess factors related to decision-making processes, we inquired about participants' distress, confidence, social motivations (e.g., to be the hero), and distrust of others in their decision-making. Consistent with Schiffer et al.'s (2020) findings, we hypothesized stronger MHB, BPE, and DT tendencies would relate to more confidence, stronger social motivations, more distrust of others, and less distress, whereas stronger BPG would relate to more distress. We expected more utilitarian decisions (i.e., decisions benefitting the most people), more confidence, stronger social motivations, and more distress (as well as stronger relationships between our predictors and criteria) in COVID-19 dilemmas compared to original dilemmas due to the saliency of and fear caused by the pandemic and desires to prevent spreading the virus (Ahorsu et al., 2020). Considering the life-threatening, health-related moral dilemmas the pandemic has created (Emanuel et al., 2020; Greenberg et al., 2020; White & Lo, 2020), this study provides insight on how hypothetical life-or-death decision-making may be different when the situation involves individuals with serious illnesses or COVID-19 specifically, and how these processes vary as a function of MHB, BPG, BPE, and the DT.

## 6. Study 2 method

### 6.1. Participants

Study 2 was also preregistered on the OSF (<https://osf.io/mwh3n>). A power analysis was conducted for correlations ( $\rho = 0.20$ , power = 0.80,  $\alpha = 0.05$ ) and for a linear multiple regression with nine tested predictors (MHBS, BPG, BPE, DT, Condition, and each of their two-way interactions between condition and each of the continuous predictors;  $f^2 = 0.0625$ , power = 0.80,  $\alpha = 0.05$ ). This analysis yielded a necessary sample of 259 participants. After removing 135 participants (89 failed captchas or did not start the study, 46 failed one or more attention checks), 232 participants remained.<sup>3</sup> There were 83 men, 144 women, two gender non-conforming, one "other", and two participants who declined to respond. The majority were White (74%) and the average age was 39.83 ( $SD = 14.42$ ).

### 6.2. Materials

Again, all measures were completed on 1 (*strongly disagree*) to 9 (*strongly agree*) Likert-type scales, and antithetical items were reverse-scored and averaged to create composite scores with higher scores indicating higher levels of that construct. We used the same predictors as in Study 1: the MHBS from Saucier et al. (2016), the BPG and BPE scales from Webster and Saucier (2013), the SD3 from Jones and Paulhus (2014), and the General Pandemic Attitude items (i.e., Distancing Negativity, Individual Freedom, Governmental Intervention, and Obsession).

#### 6.2.1. Moral dilemmas & response items

We had two between-groups conditions for our moral dilemmas. In the Original Condition, we used the Heinz dilemma in which participants decide whether or not to steal an overpriced drug to save their (hypothetically) dying mother (Kohlberg & Gilligan, 1971) and the Transplant dilemma in which participants decide, as a doctor, whether or not to transplant multiple organs from one patient (killing the patient) into several other patients who would die otherwise (Greene et al., 2001). In the COVID-19 Condition, we specified the mother (Heinz) and the single patient (Transplant) had COVID-19. It is important to note

<sup>3</sup> Unfortunately, this did not meet the necessary sample of 259 participants. However, in lieu of reopening the study for additional data collection, we conducted a sensitivity analysis for the linear multiple regression which showed that our sample was sensitive to an effect size  $f^2 = 0.07$  which was a minimal drop in power, so we decided to continue with data analysis.

that we adjusted the Original Transplant dilemma to specify the patient had cancer to make comparisons across conditions for patients with serious illnesses. See Appendix A.

In response to each dilemma, we asked, “In this situation, would you [steal the drug/perform the transplant]?” with “Yes” or “No” answer options. Participants rated their agreement with 22 statements about their decision for each dilemma, specifically their Distress (e.g., *Making this decision makes me feel distressed*), Confidence (e.g., *I am confident in the decision I made*), Social Motivations (e.g., *I want to be the hero*), and Distrust (e.g., *I don't trust others to make this decision*). See Supplementary Table 10.

6.3. Procedure

Participants recruited via Amazon’s TurkPrime provided informed consent, passed several captchas, and provided demographic information. We counterbalanced the predictors (MHBS, BPG, BPE, SD3; which were randomized) with the criteria (COVID-19 or Original dilemmas) and then examined participants’ General Pandemic Attitudes. Upon completion, participants could provide any additional comments, read a debriefing statement, were thanked, and compensated.

7. Study 2 results & discussion

Consistent with Study 1, higher levels of MHB were related to greater Distancing Negativity, Individual Freedom and, unlike Study 1, greater Governmental Intervention endorsement. Higher levels of BPG were associated with less Distancing Negativity, but (unlike Study 1) were unrelated to perceptions of Individual Freedom and Obsession. BPE were, again, weakly correlated with these measures, having no significant relationships in the current study. Also consistent with our hypotheses, higher DT scores were associated with more Distancing Negativity and Governmental Intervention, but (unlike Study 1) were unrelated to Obsession. See Table 3. Taken together, these findings generally replicated Study 1 relationships with individuals higher in MHB and DT being primarily concerned with freedoms and individuals higher in BPG being primarily concerned with health and safety.

We then examined the relationships between MHB, BPG, BPE, the DT, and factors related to decision-making in our dilemma conditions. We used our four continuous predictors (i.e., MHB, BPG, BPE, DT), condition (i.e., Original versus COVID-19), and each of the 2-way interactions as predictors of participants’ decision-making processes (e.g., Confidence) in each dilemma separately (i.e., Heinz and Transplant; see Supplementary Tables 11–18). Higher MHB and BPE predicted greater Confidence, Social Motivations, and Distrust regardless of condition and moral dilemma.<sup>4</sup> These results are consistent with our expectations,

<sup>4</sup> There was no significant effect of condition, and, generally, condition (i.e., Original versus COVID-19) did not interact with any of our continuous predictors, except for two instances. In the Transplant dilemmas, the MHB and Condition interaction predicted participants’ Distress in decision-making,  $F(1, 219) = 4.62, p = .033, \eta^2_p = 0.02, 95\% \text{ CI } [0.06, 1.41]$ . Specifically, higher MHB were associated with more Distress in the Original Condition ( $B = 0.55, t = 2.23, p = .027, 95\% \text{ CI } [0.06, 1.03]$ ) but not in the COVID-19 Condition ( $B = -0.19, t = -0.79, p = .432, 95\% \text{ CI } [-0.65, 0.28]$ ), suggesting decisions were more distressing for individuals higher in MHB when dilemmas involved an individual with positive a life-threatening illness (not COVID-19; possibly due to skepticism about the severity with COVID-19 found among those higher in political conservatism). On the other hand, the DT and Condition interaction predicted participants’ Social Motivations in the Heinz dilemmas,  $F(1, 218) = 4.34, p = .038, \eta^2_p = 0.02, 95\% \text{ CI } [-0.93, -0.03]$ . Specifically, higher DT scores were associated with greater Social Motivations in both the Original ( $B = 0.41, t = 2.70, p = .007, 95\% \text{ CI } [0.11, 0.71]$ ) and COVID-19 Conditions ( $B = 0.89, t = 5.20, p < .001, 95\% \text{ CI } [0.55, 1.22]$ ), and these relationships were significantly stronger in the COVID-19 Condition than in the Original Condition.

Table 3  
Means, standard deviations, and correlations between each of the continuous variables in Study 2.

Variable	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.
1. MHBS	5.17	1.38	(0.95)														
2. BPG	6.75	1.16	-0.19*	(0.92)													
3. BPE	5.55	1.75	0.47*	0.02	(0.96)												
4. DT	3.71	1.18	0.52*	-0.47*	0.22*	(0.89)											
5. Transplant Distress	5.12	2.67	-0.01	0.08	-0.02	-0.10	(0.94)										
6. Transplant Confidence	6.38	2.13	0.15*	0.11	0.18*	0.04	-0.46*	(0.90)									
7. Transplant Social Motivations	3.96	1.75	0.41*	-0.13*	0.23*	0.39*	-0.18*	0.48*	(0.81)								
8. Transplant Distrust	4.96	2.34	0.21*	-0.14*	0.22*	0.22*	0.22*	0.22*	0.23*	(0.84)							
9. Heinz Distress	5.82	2.45	-0.08	0.09	-0.01	-0.15*	0.19*	-0.06	-0.04	-0.00	(0.91)						
10. Heinz Confidence	6.31	2.02	0.19*	0.08	0.17*	0.15*	-0.19*	0.33*	0.26*	0.16*	-0.40*	(0.87)					
11. Heinz Social Motivations	4.02	1.81	0.43*	-0.21*	0.30*	0.51*	-0.18*	0.15*	0.68*	0.15*	-0.18*	0.38*	(0.80)				
12. Heinz Distrust	5.70	2.34	0.26*	-0.10	0.31*	0.32*	0.08	0.12	0.26*	0.52*	0.03	0.28*	0.30*	(0.81)			
13. Distancing Negativity	3.31	1.88	0.28*	-0.24*	0.12	0.19*	-0.07	0.21*	0.19*	0.07	-0.00	-0.02	0.10	-0.02	(0.84)		
14. Obsession	3.13	2.03	0.07	-0.10	0.05	0.10	0.26*	-0.03	0.19*	0.12	0.24*	-0.09	0.16*	0.02	(0.84)		
15. Individual Freedom	5.76	1.68	0.25*	0.04	0.11	0.13	-0.16*	0.27*	0.15*	-0.01	-0.06	0.08	0.06	-0.06	0.45*	(0.68)	
16. Governmental Intervention	4.73	2.62	0.14*	-0.07	0.06	0.27*	0.05	0.04	0.22*	0.11	-0.02	0.01	0.13	-0.05	0.23*	-0.03	(0.98)
17. Transplant decision	0.20	0.40	0.36*	-0.14*	0.14*	0.37*	0.16*	-0.17*	0.16*	0.09	-0.06	-0.01	0.22*	0.05	0.17*	0.06	0.14*
18. Heinz decision	0.52	0.50	0.03	-0.11	-0.07	0.17*	0.19*	-0.12	0.02	0.04	0.00	0.11	0.02	0.23*	-0.10	-0.10	0.15*

Note. \* $p < .05$ . MHBS = Masculine Honor Beliefs Scale; BPG = Beliefs in Pure Good; BPE = Beliefs in Pure Evil; DT = Dark Triad. The decisions were coded as 0 = “no” and 1 = “yes” in regard to stealing the drug and performing the transplant.

previous theory, and research suggesting MHB and BPE are associated with posturing and confidence (Saucier, O’Dea, & Stratmoen, 2018; Saucier, Webster, et al., 2018), are precarious (possibly leading to feelings of distrust when faced with moral decisions) and expecting the worst in others. Higher BPG were associated with less Social Motivations in both dilemmas, and less Distrust in Transplant dilemmas. Finally, higher DT scores related to higher Social Motivations and Distrust in both dilemmas, and higher Confidence and less Distress in the Heinz dilemma. This suggests people higher in DT ideologies may be skeptical about the motivations of others, but simultaneously are motivated to make decisions that enhance their own social image. These findings were further supported by participants’ decisions: higher MHB, BPE, and DT and lower BPG were associated with higher likelihood of performing the transplant, while only higher DT scores were related to a greater likelihood of stealing the drug. Given the increased social motivations experienced by individuals higher in MHB, BPE, and the DT as well as the lack of social motivations for individuals higher in BPG, these findings suggest making the decision to perform the transplant may reap social benefits or admiration, an outcome desired by individuals higher in MHB, BPE, and the DT, but not BPG.

Study 2 highlights moral decision-making with hypothetical life-or-death consequences and factors related to making such decisions. Although decisions did not differ between Original versus COVID-19 dilemmas, the factors related to decision-making in hypothetical life-or-death situations were influenced by MHB, BPG, BPE, and the DT, consistent with previous research (Schiffer et al., 2020). In fact, each individual difference seemingly relates to different facets of moral decision-making. Consistent with our hypotheses, MHB seem to relate most to individual freedoms, confidence, and positive impression management (i.e., Social Motivations; e.g., heroism). BPG seem to relate to trusting others to do the “right thing” over making decisions to better one’s social image, while BPE seem concerned with the opposite. Finally, our DT findings may be the most interesting, with DT ideologies manifesting in distrust of others while (hypocritically) making decisions to benefit oneself. Additionally, these affective processes involved in decision-making appeared to manifest in the decisions participants made when deciding to perform the transplant or steal the drug. Overall, although individuals are stressed about the pandemic, namely for their families (Study 1), when faced with a hypothetical life-or-death situation, individuals higher in MHB, BPE, and the DT made more confident and socially-motivated decisions, regardless of if decisions involved sacrificing someone with COVID-19 (Study 2).

## 8. Study 3

Given Study 1’s assessment of pandemic decision-making at the individual and familial levels and Study 2’s assessment of hypothetical life-or-death decisions, Study 3 assessed moral decision-making on a (hypothetically) larger-scale: nationwide priorities during the COVID-19 pandemic. Virus-mitigation efforts negatively affected the US economy through reduced workforce (Nicola et al., 2020) and money circulation (McKee & Stuckler, 2020), manifesting in individual differences in pandemic-related economic anxiety (Mann et al., 2020). Similarly, governments have provided different economic responses to the pandemic (e.g., stimulus packages; Elgin et al., 2020), but the uncertainty surrounding the pandemic and its duration (Herat, 2020) makes it difficult to anticipate the long-term economic repercussions. Accordingly, there was discussion about opening the economy by lessening social distancing measures at the time of this research (June 2020). If the economy opened, it would risk many lives, but if social distancing continued, the economy would suffer. Rights-based ethical theories maintain that societies must decide what rights to uphold for its citizens (Norman, 1998), and this dilemma highlights the conflict between rights to individual freedom versus public health and safety during a global pandemic. Given the variable nature of individual differences and pandemic opinions, Study 3 examined participants’ resolution of this

nationwide dilemma, factors related to making that decision (e.g., confidence), and the influence of MHB, BPG, BPE, and DT on these processes.

Based on Study 2 findings, we hypothesized higher MHB, BPE, and DT to predict more Confidence, Social Motivations, Distrust, and less Distress and higher BPG to predict more Distress and less Confidence, Distrust, and Social Motivations. With respect to relationships between our predictor variables and General Pandemic Attitudes, we hypothesized higher MHB, BPG, BPE, and DT to be associated with higher Obsession as well as MHB and BPE specifically with higher Individual Freedom; both BPG and DT with higher Distancing Negativity; and the DT also with more Governmental Intervention. Beyond our assessment of microlevel (Study 1) and hypothetical life-or-death (Study 2) decision-making, Study 3 provides insight on how attitudes and opinions toward the COVID-19 pandemic manifest in one’s preference for either the economy or public health and how individual differences relate to this decision, the emotional toll it may take, and motivations behind a decision.

## 9. Study 3 method

### 9.1. Participants

Study 3 was also preregistered on the OSF (<https://osf.io/3qfnw>). Participants were recruited via the CloudResearch (Litman et al., 2017) software. A power analysis was conducted for a correlational study ( $\rho = 0.20$ , power = 0.80,  $\alpha = 0.05$ ). This yielded a necessary sample size of 193. After removing 250 participants (208 failed one of the captchas or did not advance beyond the informed consent, 42 failed one or more attention checks), we had 234 participants for data analysis.<sup>5</sup> There were 83 men, 149 women, and two gender non-conforming participants. The majority were White (79%) and the average age was 39.85 ( $SD = 13.74$ ).

### 9.2. Materials

Again, unless otherwise stated, these scales were measured on 1 (*strongly disagree*) to 9 (*strongly agree*) Likert-type scales, antithetical items were reverse-scored and averaged to create composite scores (higher scores indicating higher levels of that construct).

#### 9.2.1. Predictor measures

Consistent with Studies 1 and 2, we used the MHBS from Saucier et al. (2016), the BPG and BPE scales from Webster and Saucier (2013), the SD3 from Jones and Paulhus (2014), and the General Pandemic Attitudes items (i.e., Distancing Negativity, Individual Freedom, Governmental Intervention, and Obsession from Lee, 2020).

#### 9.2.2. Moral dilemma & response items

We created the following dilemma based on a nationwide debate occurring at the time of this research: “*The COVID-19 pandemic has spread across the globe killing thousands of people, but now the spread seems to be slowing down. People are discussing whether or not the economy should open up. If we stop social distancing and open the economy, many more lives may be at risk. If we continue social distancing, the economy may be seriously hurt.*” In response to this, we asked, “In this situation, would you continue social distancing?” with “Yes” or “No” answer options. Participants rated their agreement with the same items from Study 2 about the decision they made (i.e., Distress, Confidence, Social Motivations, Distrust).

<sup>5</sup> After an initial collection (137 who passed all captchas and attention checks) of participants on July 3, 2020, we had to reopen the study to collect additional participants on August 4–6, 2020.



9.3. Procedure

Participants recruited via Amazon’s TurkPrime provided informed consent, passed several captchas, and provided demographic information. We counterbalanced our predictors (MHBS, BPG, BPE, SD3; which were presented randomly) and the criterion measures (the dilemma and its responses). Participants then indicated their General Pandemic Attitudes, had an opportunity to provide any additional information, read the debriefing statement, were thanked, and were compensated.

10. Study 3 results & discussion

To test whether MHB, BPG, BPE, and DT scores are related to moral decision-making on a larger scale, we examined correlations among our variables. See Table 4. MHB was the only predictor significantly correlated with participants’ decision about nationwide priorities (i.e., public health versus the economy), with individuals higher in MHB tending to favor opening the economy by reducing social distancing measures. Participants higher in MHB and DT tendencies reported greater Distress and Social Motivations when weighing decisions of economic hardship versus public health. Although individuals higher in MHB and the DT may be more averse to virus-mitigation efforts (greater Distancing Negativity and Individual Freedom), these findings suggest this was not an easy decision to make (greater Distress) but may have been perceived as necessary and, therefore, reflected positively on the decision-maker (greater Social Motivations). Higher BPG were associated with less Distress and more Confidence when resolving the nationwide debate and, consistent with Studies 1 and 2, BPG related to less Distancing Negativity but were generally uncorrelated with perceptions about Individual Freedom, Governmental Intervention, and Obsession. Also consistent with Study 1 and 2 findings, participants higher in BPE reported greater Confidence and Social Motivations when making their decisions suggesting that, again, these participants may take opportunities to better their social image.

Overall, Study 3 highlights the individual variability in making a nationwide decision amid a pandemic that has implications for both the economy and the physical health and safety of millions. Our hypotheses were partially supported with individuals higher in MHB, BPE, and the DT experiencing greater social motivations in their decision-making; interestingly, however, MHB and the DT also manifested in more distressed decision-making, whereas BPG related to confident decision-making. These patterns may suggest that individuals higher in BPG saw a clearer resolution of the economy dilemma whereas individuals higher in MHB and the DT saw the benefits of both options, making it more difficult to choose between the economy and public health. In sum, Study 3 replicates and extends the findings of Studies 1 and 2 by showing the generalizability between our predictor variables and moral decision-making experiences by showing that these effects manifest generally

(Study 1), in hypothetical life-or-death decision-making (Study 2), and even when making specific nationwide recommendations for virus-mitigation (Study 3).

11. General discussion

Overall, the current research demonstrated how the COVID-19 pandemic affected moral decision-making (through June of 2020) at the microlevel (i.e., the individual and familial level; Study 1) and progressed to larger-scale decisions (e.g., hypothetical life-or-death decisions; Study 2) at the macrolevel (i.e., nationwide; Study 3). In addition to understanding the influence of the pandemic on moral decision-making, we also analyzed the effects of MHB, BPG, BPE, and the DT on these processes. This work extends moral research in three domains: in the context of the COVID-19 pandemic, the specific individual difference measures involved, and the use of moral dilemmas.

With respect to extending COVID-19 moral research, some previous research highlights the importance of moral obligations in preventing the spread of the virus (e.g., Coulthard, 2020; Harris & Holm, 1995; Yang & Ren, 2020) whereas the current research examined moral decision-making during the COVID-19 pandemic. Most notably, given the great risks the COVID-19 pandemic posed to families (Prime et al., 2020), Study 1 revealed more proactive virus-mitigation behaviors and stressful pandemic emotions when reflecting upon one’s family during the pandemic compared to reflecting upon oneself. Studies 2 and 3 highlighted the variability in public responses to the COVID-19 pandemic when lives are hypothetically at stake and when making a nationwide policy decision, respectively. Additionally, the assessment of factors related to making these moral decisions provided further understanding of nuances in pandemic decision-making. Overall, this program of research provided insight on moral decision-making with varying degrees of severity in the context of the COVID-19 pandemic.

With respect to extending MHB, BPG, BPE, and DT research, this program of research provides insight on how their familial and social goals relate to COVID-19 pandemic moral decision-making. Individuals higher in MHB generally reported being more distressed about the pandemic, but being less favorable toward virus-mitigation (Study 1), and, consistently, struggled to decide between economic hardship and public health when making a nationwide decision about how to proceed during the pandemic, but, ultimately, tended to favor the economy (Study 3). Interestingly though, when lives were hypothetically at stake (Study 2), higher MHB predicted more confident and socially-motivated decision-making, consistent with MHB’s prioritization of protecting others (Saucier et al., 2016). These MHB decision-making patterns appear to be consistent with individuals higher in MHB wanting to maintain a tough social reputation (Saucier, Miller, et al., 2018), suggesting they may potentially perceive virus-mitigation efforts as showing weakness. Given the patriotism and value placed on defending

Table 4  
Means, standard deviations, and relationships among our variables in Study 3.

Variable	M	SD	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
1. MHBS	5.13	1.47	(0.96)											
2. BPG	6.72	1.16	-0.15*	(0.91)										
3. BPE	5.65	1.91	0.42*	0.18*	(0.97)									
4. DT	3.65	1.30	0.58*	-0.40*	0.23*	(0.92)								
5. Distress	3.09	2.05	0.29*	-0.14*	0.11	0.40*	(0.92)							
6. Confidence	7.16	1.47	-0.01	0.18*	0.15*	-0.05	-0.25*	(0.81)						
7. Social Motivations	4.42	1.82	0.35*	-0.11	0.34*	0.53*	0.38*	0.29*	(0.83)					
8. Distrust	6.66	1.79	0.04	0.04	0.11	0.05	0.13	0.41*	0.22*	(0.58)				
9. Distancing Negativity	3.37	2.09	0.46*	-0.22*	0.13	0.41*	0.30*	-0.19*	0.15*	-0.11	(0.86)			
10. Individual Freedom	6.25	1.51	0.38*	-0.10	0.18*	0.20*	-0.02	-0.03	0.04	-0.17*	0.38*	(0.59)		
11. Governmental Intervention	4.75	2.58	-0.13*	0.00	-0.04	0.11	0.30*	0.11	0.23*	0.23*	-0.16*	-0.36*	(0.95)	
12. Obsession	3.18	2.17	0.08	-0.09	0.11	0.33*	0.50*	0.16*	0.42*	0.30*	0.08	-0.17*	0.46*	(0.86)
13. Decision	0.89	0.31	-0.15*	0.04	0.01	0.01	0.15*	0.10	0.22*	0.09	-0.51*	-0.32*	0.33*	0.24*

Note. \*p < .05. MHBS = Masculine Honor Beliefs Scale; BPG = Beliefs in Pure Good; BPE = Beliefs in Pure Evil; DT = Dark Triad. The decisions were coded as 0 = “no” and 1 = “yes” in regard to whether we should continue to social distance.

one's country associated with masculine honor ideology (Barnes et al., 2015), these individuals may perceive the national economic fallout of the pandemic as more damaging than the virus itself, perhaps because they perceive the economic consequences of the pandemic to be more long-term.

On the other hand, individuals higher in BPG were more favorable toward virus-mitigation and likely tended to experience less distress about the pandemic because of their own compliance and optimism about others' compliance as well whereas individuals higher in BPE reported more pandemic-related emotional distress and less virus-mitigation practices (Study 1). When making hypothetical life-or-death decisions (Study 2), individuals higher in BPG reported less social motivations while individuals higher in BPE made more confident and socially-motivated decisions. Similarly, when making nationwide decisions (Study 3), individuals higher in BPG experienced more confident and less distressed decision-making whereas individuals higher in BPE experienced more confident decision-making, but also were more socially-motivated. These BPG patterns are consistent with the empathic and prosocial nature of BPG (Webster & Saucier, 2013), suggesting individuals higher in BPG made decisions that they perceived as being the right decision to make for the greater good, whereas these BPE patterns of socially-motivated decision-making could be consistent with motivations to reward heroic behavior (Webster & Saucier, 2017) in efforts to maintain status and social image.

Similar to MHB and BPE, individuals higher in the DT were also concerned with the pandemic (Study 1), but reported less favorable attitudes toward virus-mitigation efforts. Most consistently, individuals higher in the DT made socially-motivated decisions both when lives were at stake (Study 2) and when making a nationwide decision (Study 3). These DT patterns are consistent with the ego-centric nature of the construct (e.g., Jonason et al., 2015) in wanting to maintain status and social image, and also suggest some hypocrisy in terms of being concerned about the virus but not engaging in the necessary precautions to fight it. Overall, our findings were again consistent with the familial and social priorities of MHB, BPG, BPE, and the DT as well as Schiffer et al.'s (2020) moral decision-making findings in the context of the COVID-19 pandemic.

With respect to extending moral dilemma research, the methodologies in Studies 2 and 3 offered a unique approach to using dilemmas when a new and widespread social situation occurs. In comparing (hypothetical) life-or-death moral dilemmas that involved an individual positive with either COVID-19 or another illness (Study 2), we found no difference in decisions made in the original version of a dilemma versus a COVID-19-adapted version. This potentially suggests decision-making is not altered by the saliency of a given moral dilemma, implying these moral dilemmas were perhaps interpreted with equal realism across both conditions (i.e., Original versus COVID-19 Dilemmas). Additionally, our use of a more realistic moral dilemma reflecting a nationwide debate in Study 3 contributed to understanding real-world moral debates and the emotional toll these decisions may have. Other research has used simulations of real-world events and their moral implications (e.g., fleeing a high-risk city; Donnarumma & Pezzulo, 2020), but Study 3 evaluated lay decisions in making a (hypothetical) large-scale decision that has implications for both the economy and the spread of the virus. Overall, Studies 2 and 3 demonstrated the utility of using moral dilemmas when contextualized within a current and collective social situation.

### 11.1. Limitations & future directions

Broadly, this work is correlational and cross-sectional, which affects the power and generalizability of these findings. Additionally, given the rapid onset of the virus and highly changing situation, we stress that these findings apply to US COVID-19 pandemic experiences only, and these studies were not administered at the beginning nor peak of COVID-19 cases (Study 1, June 2–3, 2020; Study 2, June 14, 2020; Study 3, July

3, reopened August 4–6), although cases were still rising throughout this program of research. Limitations to the latter two studies include the ecological validity of moral dilemmas and their potential for discrepancy between actual and hypothetical behavior. Further, the COVID-19 dilemmas in Study 2 and the dilemma in Study 3 were not established moral dilemmas. However, the lack of differences between our COVID-19 dilemmas and existing dilemmas in Study 2 support their validity. Additionally, Study 2 comparisons between conditions for Transplant dilemmas could have been influenced by the fact that the Original Condition involves a cancer patient who does not pose infectious risk. Future COVID-19 moral decision-making research should continue to evaluate participants' priorities and how they differ in various contexts (e.g., familial), given the high-risk nature of the COVID-19 pandemic (Prime et al., 2020). Additionally, future COVID-19 moral dilemma research should assess and/or establish dilemma validity and consider using dilemmas that reflect real-world debates or events (e.g., Study 3; Donnarumma & Pezzulo, 2020). Furthermore, it may be beneficial to provide more than dichotomous act-versus-omission options for moral dilemmas to gauge other options for resolution.

## 12. Conclusion

Our studies revealed how nuanced pandemic moral decision-making is in terms of how priorities differ for oneself versus one's family (Study 1), hypothetical life-or-death decisions (Study 2), and nationwide priorities (Study 3). Interestingly, our findings highlight the prioritization of one's family over oneself during the pandemic (Study 1), the generalizability of existing moral dilemmas in the lack of differences across conditions in Study 2, and the utility of using nationwide debates as moral dilemmas for participants to resolve (Study 3). Additionally, this program of research demonstrated the importance of individual differences in pandemic moral decision-making. Specifically, MHB, BPE, and the DT consistently manifested in socially-motivated decision-making aimed at maintaining freedoms during the COVID-19 pandemic, whereas BPG manifested in prosocial attitudes, emotions, and behaviors aimed at improving public health through virus-mitigation efforts. Accordingly, the current research contributes to understanding not only *what* decisions are being made during the COVID-19 pandemic, but also *how* these decisions are made (e.g., affect, motivation). Policymakers could use this research to understand the situational and individual factors affecting pandemic moral decision-making and perhaps receptivity to new pandemic policy. Overall, these findings have great implications for microlevel to macrolevel moral decision-making, as a function of individual differences, during a highly stressful and uncertain time.

### CRedit authorship contribution statement

Ashley A. Schiffer: conceptualization, methodology, investigation, writing - original draft, and writing - review and editing.

Conor J. O'Dea: conceptualization, methodology, investigation, data analysis, writing - original draft, and writing - review and editing.

Donald A. Saucier: conceptualization, methodology, investigation, writing - review and editing, and project administration.

### Appendix A. Study 2 moral dilemmas

*Transplant dilemma (original from Greene et al., 2001/COVID-19)*

You are a doctor. You have five patients, each of whom is about to die due to a failing organ of some kind. You have a **cancer/COVID-19** patient in critical condition whose organs would be fine for these transplants.

The only way that you can save the lives of the first five patients is to transplant five of the **single/COVID-19** patient's organs (against the patient's will) into the bodies of the other five patients. If you do this, the

**cancer/COVID-19 patient will die, but the other five patients will live.**  
In this situation, would you perform the transplant?

Yes  
No

*Heinz dilemma (original from Kohlberg & Gilligan, 1971/COVID-19)*

Your mother is on her deathbed **with the coronavirus**. There was one drug that the doctors thought might save her. The drug was expensive to make, but the druggist was charging ten times what the drug cost him to produce. He paid \$200 for the drug and charged \$2000 for a small dose of the drug. You went to everyone you know to borrow the money but could only get together about \$1000 which is half of what it cost. You told the druggist that your mother is dying and asked him to sell it cheaper or let him pay later. But the druggist said: "No, I discovered the drug and I'm going to make money from it."

In this situation, would you steal the drug?

Yes  
No

## Appendix B. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.paid.2021.110714>.

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