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Is the COVID-19 pandemic even darker for some? Examining dark personality and affective, cognitive, and behavioral responses to the COVID-19 pandemic

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ABSTRACT

As the COVID-19 pandemic and interventions intended to minimize its spread continue to impact daily life, personality research may help to address the different ways in which people respond to a major global health crisis. The present study assessed the role of dark personality traits in predicting different responses to the pandemic. A nationally representative sample of 412 Americans completed measures of the Dark Tetrad as well as perceptions of COVID-19 threat, emergency beliefs, and positive and negative affect in response to COVID-19. Narcissism and Machiavellianism predicted greater negative affect and perceptions of threat during the pandemic, while psychopathy predicted positive affect. Conversely, sadism predicted greater positive affect. Dark personality also showed some predictive ability in explaining pandemic-related behaviors (e.g., more frequent cleaning) but not others (e.g., social distancing). Our findings provide evidence for differences in how dark personality traits predict individual responses to global crises.

1. Introduction

COVID-19 is a health crisis of international concern, with more than 2.8 million cases reported worldwide in the first four months after its initial outbreak in December 2019 (Worldometers, 2020). Due to the highly contagious nature of the virus (Sanche et al., 2020), the World Health Organization (2020) has recommended that all individuals engage in "social distancing" by limiting social interactions and maintaining a distance of at least six feet from others, and many communities have issued policies intended to mitigate the spread of the virus (Zajenkowski et al., 2020).

Given that both the virus itself and the measures taken to prevent its transmission have had a substantial impact on people's daily lives (Qiu et al., 2020), it is important to consider how external (e.g., adherence to health recommendations) and internal responses (e.g., perceptions of threat, emotional reactions) differ between individuals. Health communications and interventions could be improved by understanding how different individuals respond to the pandemic and the interventions intended to limit the spread of COVID-19 (Blagov, 2020). Additionally, research on the relationship between personality and the pandemic may contribute to personality psychology more broadly by examining how personality traits predict the ways in which people respond to an unprecedented shift in their environment.

1.1. Individual differences and responses to COVID-19

Several studies have examined trait predictors of COVID-19 behaviors. For example, trait empathy has been positively linked to engaging in social distancing (Pfattheicher et al., 2020) while endorsing greater self-interest has been shown to negatively predict social distancing and positively predict hoarding (Oosterhoff & Palmer, 2020). Greater impulse control and fear of infection have both been shown to predict engaging in social distancing and protective health behaviors like handwashing and sanitizing surfaces (Harper et al., 2020; Van Rooij et al., 2020). In general, it appears that individuals are more likely to comply with health recommendations when they are concerned about the health of others, when they perceive the virus as a threat, and when they are able and willing to control their impulses.

1.2. Dark personality

Paulhus and Williams (2002) introduced the term "Dark Triad" to refer to three overlapping subclinical personality constructs—narcissism (characterized by self-aggrandizement and desire for attention),

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Machiavellianism (characterized by a willingness to manipulate others), and psychopathy (characterized by impulsivity and callousness). Chabrol et al. (2009) suggested that a fourth trait, sadism (characterized by the tendency to be cruel toward others for pleasure or dominance), should be added to the previously defined dark personality traits to form a "Dark Tetrad". Sadism is a unique construct that correlates moderately with the Dark Triad, suggesting that the Dark Tetrad can be conceptualized as four unique, yet closely related personality traits (Međedović & Petrović, 2015).

1.3. Dark personality during a pandemic

Dark personality traits may be of particular interest during a pandemic. The Dark Tetrad traits appear to be united by a lack of empathy (Jones & Figueredo, 2013). Specifically, these four traits have been negatively linked to experiencing empathetic responses to the emotions of others (Pajevic et al., 2018). Uniquely, individuals who are high in sadism are not just indifferent to other's emotions, but actively derive pleasure from inflicting suffering on others (Chester et al., 2019). Individuals who are high in Dark Triad traits are also more likely to engage in high-risk behaviors that may adversely affect health (Malesza & Ostaszewski, 2016). Specifically, Psychopathy and Machiavellianism have been linked to more health-risk behaviors (e.g., drug use, unprotected sex), fewer health-protective behaviors (e.g., exercise, wearing seatbelts), and poorer health outcomes (Hudek-Knežević et al., 2016; Jonason et al., 2015), whereas narcissism has positively predicted some health behaviors (e.g., exercise) but negatively predicted others (e.g., unprotected sex) (Malesza & Kaczmarek, 2019).

Given the negative association between dark personality traits and both health protective behaviors and empathy, individuals who are high in these traits may underestimate the risks associated with COVID-19 and be less concerned about how others are affected by the pandemic. Thus, dark traits could be positively linked to self-serving behaviors like stockpiling and negatively linked to social distancing and behaviors intended to help individuals affected by the pandemic. One finding that suggests this may not always be the case; narcissism has been positively linked to endorsing prosocial behaviors (Zuo et al., 2016).

Prior studies have shown that narcissistic rivalry (the narcissistic tendency to devalue others), Machiavellianism, and psychopathy negatively predict likelihood of engaging in social distancing and hygiene-promoting behaviors (Blagov, 2020; Zajenkowski et al., 2020). However, a majority of participants in both studies reported high rates of compliance with health recommendations. Further, Zajenkowski et al. (2020) found that personality traits only accounted for a small percentage of the variance that did exist in reports of compliance.

A necessary and additional direction worth examining is the ability of dark personality traits to predict unique cognitive-affective responses to the pandemic. For instance, Machiavellians attain their goals by manipulating a predictable social system (Jones, 2016). Similarly, narcissists maintain their grandiose self-concept by seeking affirmation from others in social settings (Morf & Rhodewalt, 2001). Therefore, individuals who are higher in Machiavellianism and narcissism may perceive the pandemic as a threat to the social stability that they rely on to exploit others and support their sense of superiority. Psychopathy and sadism, by contrast, are both characterized by antisocial tendencies (Foulkes, 2019; Leistico et al., 2008), so they may not be associated with these concerns about social instability. Additionally, dark traits have been linked to having thoughts about and preparing for major emergencies (Jackson, 2018). Thus, those who are high in dark traits may have beliefs about emergencies in general that affect their perceptions of the pandemic. To the extent that individuals high in dark traits perceive the threat of COVID-19 differently, they may also report different levels of affect in response to the pandemic.

1.4. The present research

This study aimed to investigate three exploratory research questions regarding the relationship between dark personality traits and responses to the COVID-19 pandemic. First, do those who are high in dark personality traits experience different emotions than those who are low in dark personality in response to COVID-19? Second, are dark personality traits related to perceiving the COVID-19 pandemic differently? Third, are those who are high in dark personality traits more or less likely to engage in certain pandemic-related behaviors? While prior research has investigated the relationship between the Dark Triad and compliance with health recommendations (Blagov, 2020; Zajenkowski et al., 2020), this study contributes to the literature by examining both affect and cognition in response to the COVID-19 pandemic and by including all four components of the Dark Tetrad.

2. Method

Data and materials may be accessed at REDACTED.

2.1. Participants and procedure

All study procedures were approved by the university's Institutional Review Board. A nationally representative sample of 412 Americans (50.2% female; 72.8% White/Caucasian) aged 18–78 years ($M = 45.38$, $SD = 16.29$) from 43 states and the District of Columbia were recruited through Prolific to complete an online survey as part of a larger study on the psychological impact of the COVID-19 pandemic. Participants were informed that they would fill out a series of questionnaires concerning their personalities and their thoughts, feelings, and behaviors in response to the COVID-19 pandemic and gave consent prior to participating in the study. We excluded participants from all analyses if they failed three or more attention checks or were identified as multivariate outliers on three or more outlier checks (out of a total of four attention checks and outlier checks). In total, we removed nine participants. A sensitivity analysis (Faul et al., 2007) indicates that with our final sample of 402 participants we have sufficient power ($\beta = 0.80$) to detect an effect of $R^2 = 0.03$ for multiple regression analyses and to find odds ratios within logistic regression which are less than or equal to 0.74 or greater than or equal to 1.34.

2.2. Measures

2.2.1. Dark Tetrad

Narcissism, Machiavellianism, and psychopathy were measured using the Dirty Dozen (Jonason & Webster, 2010). *Narcissism* ($\alpha = 0.82$) was measured with 4 items (e.g., "I tend to want others to admire me"). *Machiavellianism* ($\alpha = 0.79$) was measured with 4 items (e.g., "I tend to manipulate others to get my way"). *Psychopathy* ($\alpha = 0.75$) was measured with 4 items (e.g., "I tend to lack remorse"). Sadism was measured using the *Assessment of Sadistic Personality* ($\alpha = 0.84$; Plouffe et al., 2017), which consists of 9 items (e.g., "I think about hurting people who irritate me"). All items from both scales were rated on a 1 (*strongly disagree*) to 7 (*strongly disagree*) response scale.

2.2.2. COVID-19 threat

We created a measure of COVID-19 threat based on the *SARS Fear Scale* (Ho et al., 2005) originally designed for use with healthcare workers during the SARS epidemic in Hong Kong. Participants responded to the stem "*Covid-19/Coronavirus makes me feel…*" with how true each statement was of them on a scale of 1 (*Not at all true of me*) to 5 (*Very true of me*). Fear related to COVID-19 was assessed using seven items (e.g., "Fear that I will be infected"; $\alpha = 0.91$). Instability resulting from COVID-19 was assessed using five items (e.g., "Feel that I have lost control of my life"; $\alpha = 0.77$). Scores were constructed by taking the mean of items for fear and instability, respectively.

2.2.3. Emergency beliefs

We assessed beliefs regarding emergencies using an adapted version of a measure originally used by Drury et al. (2013) in a study addressing the role of disaster myths in the perception of emergencies. Participants responded to eight items addressing how people behave in response to disasters (e.g., "In an emergency/crises people are driven by simple instincts."; α = 0.74). Responses were rated on a scale ranging from 1 (*Disagree strongly*) to 7 (*Agree strongly*). The average of all items was taken to construct an overall Emergency Beliefs score, with higher scores indicating more negative emergency beliefs.

2.2.4. Emotional responses to COVID-19

Emotional responses to COVID-19 were assessed using an adapted version of a measure of affect in response to the SARS epidemic (Reynolds et al., 2008). Participants responded to the prompt "*When you think about the Covid-19/Coronavirus pandemic in the last few weeks, have you felt….*" with the degree to which they felt each emotion on a scale of 1 (*Not at all*) to 5 (*Very much so*). Five words measured positive affect (e.g., *Happiness, Relief*) (α = 0.82) and twelve words measured negative affect (e.g., *Helplessness, Anger*) (α = 0.92).

2.2.5. COVID-19 behaviors

A series of items were developed to assess behaviors that participants may have engaged in during the COVID-19 pandemic. Compliance with health guidelines was measured with 3 items regarding social distancing (e.g., "Have you attended a social gathering in person?") and 2 items regarding sanitary recommendations (e.g., "Have you washed/sanitized your hands more frequently than usual?"). A single item measured excessive purchasing or stockpiling ("Have you bought more food/supplies than is necessary?"). Prosocial behavior was measured with a single item ("Have you been engaged in any activities to help those affected by the pandemic?"). Participants reported whether they had engaged in each behavior by indicating either "yes" (coded as 1), "no" (coded as 0), or "not applicable" (removed from analyses).

2.2.6. COVID-19 experience

In order to control for experience with COVID-19, we included five items assessing whether participants had been tested for COVID-19 (1 item), had been diagnosed with COVID-19 (1 item), or knew anyone who had COVID-19 (3 items). Participants reported whether or not they had experienced each item by indicating either "yes" (coded as 1), "no" (coded as 0) or "not applicable" (removed from analyses). Responses for all items were summed to create a composite score of COVID experience.

3. Results

A correlation matrix of all predictors and continuous outcome variables is shown in Table 1, along with descriptive statistics. All dark tetrad traits were correlated with one another ($r = 0.35$ to $r = 0.64$) and with COVID-19 fear and negative affect during the pandemic. Furthermore, all but sadism were positively correlated with COVID-19 instability and all but narcissism were correlated with emergency beliefs. There was a significant negative relationship between psychopathy and positive affect during the COVID-19 pandemic. Further, none of the dark tetrad traits were associated with COVID-19 experience, indicating that those with higher levels of dark tetrad traits were no more or less likely to have been tested and diagnosed with COVID-19, or to have known others with COVID-19.

3.1. Emotional responses to COVID-19

In order to determine whether those who are high in dark personality traits experienced different emotions in response to the COVID-19 pandemic, we conducted multiple linear regression analyses with narcissism, Machiavellianism, psychopathy, and sadism as predictor variables and negative and positive affect as separate outcome variables. We controlled for COVID-19 experience in each analysis (see Table 2). Dark tetrad traits and COVID-19 experience accounted for roughly 10% of the variance in negative affect, [$F(5, 388) = 9.51$, $p < .001$, adjusted $R^2 = 0.10$] and 2% of the variance in positive affect, [$F(5, 388) = 2.65$, $p = .02$, adjusted $R^2 = 0.02$]. Specifically, narcissism and Machiavellianism were positively associated with negative affect during the COVID-19 pandemic. Sadism positively predicted positive affect, while psychopathy was negatively related to positive affect. Our covariate, COVID-19 experience, was positively associated with negative affect but was unrelated to positive affect.

3.2. COVID-19 threat

In order to address whether dark personality traits were related to perceptions of the COVID-19 pandemic, additional multiple linear regressions were conducted on COVID-19 fear, COVID-19 instability, and emergency beliefs. Dark tetrad traits and COVID-19 experience accounted for about 5% of the variance in COVID-19 fear [$F(5, 388) = 5.15$, $p < .001$, adjusted $R^2 = 0.05$] and about 8% in COVID-19 instability, [$F(5, 388) = 7.36$, $p < .01$, adjusted $R^2 = 0.08$]. Participants higher in Machiavellianism tended to be more fearful of contracting COVID-19. Similarly, participants higher in Machiavellianism and narcissism perceived greater instability during the COVID-19 pandemic. COVID-19 experience was positively associated with both of these outcome variables. The model with the outcome variable of emergency beliefs, or how individuals perceive emergencies in general was not significant, [$F(5, 388) = 1.75$, $p = .12$, adjusted $R^2 = 0.01$].

3.3. COVID-19 behaviors

Finally, we examined our last research question of whether dark triad traits were associated with social distancing, cleanliness, and

Table 1
Correlations and means and standard deviations for Dark Tetrad traits, COVID-19 emotional responses, threat, emergency views, and Covid-19 experience.

	1	2	3	4	5	6	7	8	9	Mean (SD)	Range
1. Machiavellianism										2.51 (1.31)	1–6.75
2. Narcissism	0.54**									2.76 (1.33)	1–6.5
3. Psychopathy	0.57**	0.35**								2.12 (1.13)	1–6.5
4. Sadism	0.61**	0.43**	0.64**							1.74 (0.88)	1–6.11
5. Covid-19 fear	0.19**	0.14**	0.10*	0.12*						2.48 (1.08)	1–5
6. Covid-19 instability	0.18**	0.19**	0.11*	0.08	0.54**					3.08 (0.98)	1–5
7. Negative affect	0.25**	0.28**	0.16**	0.16**	0.57**	0.70**				2.56 (0.97)	1–4.92
8. Positive affect	−0.07	0.00	−0.12*	0.01	−0.21**	−0.22**	−0.33**			2.54 (0.84)	1–5
9. Emergency views	0.10*	0.05	0.13**	0.13**	0.33**	0.38**	0.34**	−0.17**		4.44 (0.90)	1.75–6.88
10. Covid-19 experience	0.04	0.06	−0.04	−0.02	0.17**	0.21**	0.14**	0.08	0.02	0.49 (0.93)	0–4

Note.
* $p < .05$.
** $p < .01$.

Table 2
Multiple linear regression analyses with Dark Tetrad traits, COVID-19 emotional responses, threat, and emergency beliefs, while *Controlling for Covid-19 Experience.*

Outcome	Narcissism	Machiavellianism	Psychopathy	Sadism	Covid-19 experience	Adjusted R^2
	b [95% CI]	*b* [95% CI]	*b* [95% CI]	*b* [95% CI]	*b* [95% CI]	
Negative affect	0.15 [0.07, 0.23]	0.10 [−0.01. 0.20][a]	0.04 [−0.07, 0.16]	−0.06 [−0.21, 0.10]	0.13 [0.03, 0.23]	0.10
Positive affect	0.02 [−0.05, 0.09]	−0.03 [−0.12, 0.06]	−0.15 [−0.25, −0.05]	0.14 [0, 0.27]	0.07 [−0.02, 0.16]	0.02
COVID fear	0.04 [−0.06, 0.13]	0.12 [0.00, 0.23]	0.01 [−0.12, 0.14]	0.01 [−0.16, 0.18]	0.19 [0.08, 0.31]	0.05
COVID instability	0.10 [0.01, 0.18]	0.11 [0.00, 0.21]	0.02 [−0.09, 0.14]	−0.12 [−0.27, 0.04]	0.21 [0.10, 0.31]	0.08
Emergency beliefs	−0.01 [−0.09, 0.07]	0.00 [−0.10, 0.10]	0.06 [−0.05, 0.16]	0.10 [−0.04, 0.25]	0.03 [−0.07, 0.13]	0.01

Note: bolded values are significant at $p \leq .05$.
[a] 0.068.

prosocial behavior. We first analyzed the reported frequencies to determine how often these behaviors were performed. As shown in Table 3, many of these behaviors had little variance. For example, the vast majority of participants indicated that they had been social distancing and that they had not attended large gatherings or traveled. Furthermore, the majority of participants reported that they had been washing their hands more than usual. Because such limited variability in the outcome variable could lead to biased estimates in logistic regression, we chose to only conduct logistic regression analyses on the three variables that had sufficient variance – cleanliness, hoarding, and prosocial behavior. Similar to the linear regressions above, narcissism, Machiavellianism, psychopathy, sadism, and COVID-19 experience were all entered as predictors into the model, with COVID-19 experience as a covariate.

All omnibus models including cleanliness behavior [χ^2 (5) = 23.43, $p < .001$], hoarding [χ^2 (5) = 11.99, $p = .04$], and prosocial behavior [χ^2 (5) = 13.06, $p = .02$], were significant. As shown in Table 4, individuals with high levels of narcissism and psychopathy had lower odds of engaging in cleanliness behavior. That is, for every one-point increase in narcissism or psychopathy, the odds of engaging in cleanliness behavior decreased by a factor of 0.77 and 0.68, respectively. However, for every one-point increase in sadism, the odds of engaging in cleanliness behavior increased by a factor of 1.67. While COVID-19 experience was associated with greater odds for buying more food or supplies than necessary, there were no significant Dark Tetrad predictors of hoarding. Finally, narcissists and those reporting more COVID-19 experience had greater odds in reporting that they had engaged in prosocial activities.

4. Discussion

This study examined the role of dark personality traits in predicting affective, cognitive, and behavioral responses to the COVID-19 pandemic. Both narcissism and Machiavellianism predicted negative emotional responses to the pandemic and perceptions of instability caused by COVID-19, while only Machiavellianism predicted greater fear of being infected with COVID-19. These results suggest the pandemic may be especially threatening to these individuals because they perceive it as a threat to the stability of their social environment.

Social instability may be threatening to narcissists because they rely on social feedback to support their grandiose self-concept (Morf & Rhodewalt, 2001), and to Machiavellians because they depend on their ability to exploit others within a social system to attain their goals (Jones, 2016).

By contrast, neither psychopathy nor sadism were significant predictors of fear or instability in the face of COVID-19 but were predictive of positive affect. Psychopathy negatively predicted positive affect in response to the pandemic. The restrictions placed on public life in order to prevent transmission of COVID-19 may result in fewer opportunities for these individuals to engage in the impulsive tendencies associated with psychopathy, possibly leading to less positive affect. Interestingly, sadism was associated with greater positive affect in response to the pandemic. Sadism has been associated with taking pleasure in the suffering of others (Chester et al., 2019), so sadistic individuals may experience more positive emotions in situations like the pandemic that appear to negatively impact the quality of people's daily lives.

Comparing our results to the earlier work examining dark personality and behavior (Blagov, 2020; Zajenkowski et al., 2020), we did not find that dark personality traits significantly predicted self-reports of social distancing compliance. In fact, the overwhelming majority of our participants reported that they were engaging in social distancing and frequent handwashing while avoiding travel and in-person social gatherings. Given that our sample included a wide range of scores on measures of dark personality (see Table 1), this lack of variability does not appear to be an issue of range restriction. These results may support the notion that the pandemic is a "strong situation" in which situational cues overpower the role of personality in predicting variability in behavior (Snyder & Ickes, 1985). Due to the lack of variability in responses, we chose not to analyze whether personality traits predicted differences in these behaviors. However, dark personality traits did show some significant associations with other pandemic behaviors. For instance, those who were higher in narcissism and psychopathy reported being less likely to clean regularly touched surfaces in their home, possibly reflecting their tendency to be impulsive and devalue the future consequences of their actions (Crysel et al., 2013). Sadism, on the other hand, positively predicted cleaning behaviors. This finding is difficult to interpret, as sadism has not previously been studied in relation to health behaviors. Those who are high in sadism may be more likely to engage in cleaning behavior specifically in response to the pandemic, but it is also possible that sadism is associated with more health protective behaviors in general. Narcissism was shown to positively predict engaging in behaviors to help those affected by the pandemic. This replicates findings that narcissism is positively associated with prosocial behaviors (Zuo et al., 2016), and may reflect a tendency to opportunistically engage in selfless acts to garner approval from others (Eberly-Lewis & Coetzee, 2015).

Table 3
Frequencies of COVID-19 behaviors.

Item	Yes	No	Not applicable
Have you been engaging in social distancing?	380 (94.5%)	19 (4.7%)	3 (0.7%)
Have you attended a social gathering in person?	13 (3.2%)	386 (96%)	3 (0.7%)
Have you traveled (e.g. spring break, vacation)?	12 (3.0%)	386 (96%)	4 (1%)
Have you washed/sanitized your hands more frequently than usual?	361 (90%)	39 (9.7%)	1 (0.2%)
Have you been cleaning frequently-touched surfaces in your house (e.g. doorknobs, countertops) on a daily basis?	256 (63.8%)	142 (35.4%)	3 (0.7%)
Have you bought more food/supplies than is necessary?	157 (39.1%)	240 (59.7%)	5 (1.2%)
Have you been engaged in any activities to help those affected by the pandemic (e.g. blood donation, mask sewing, food bank donation)?	63 (15.7%)	334 (83.1%)	5 (1.2%)

Table 4
Logistic regressions with Dark Tetrad traits and COVID-19 behaviors.

Outcome	Narcissism	Machiavellianism	Psychopathy	Sadism	Covid-19 experience	χ^2
	OR [95% CI]	*OR* [95% CI]	*OR* [95% CI]	*OR* [95% CI]	*OR* [95% CI]	
1. Have you been cleaning frequently-touched surfaces in your house (e.g. doorknobs, countertops on a daily basis?)	**0.77 [0.64, 0.94]**	1.10 [0.87, 1.39]	**0.68 [0.53, 0.88]**	**1.67 [1.16, 2.41]**	**1.37 [1.06, 1.77]**	**23.43**
2. Have you bought more food/supplies than is necessary?	1.08 [0.90, 1.30]	1.10 [0.87, 1.38]	1.18 [0.92, 1.52]	0.79 [0.56, 1.10]	**1.33 [1.07, 1.67]**	**11.99**
3. Have you been engaged in any activities to help those affected by the pandemic (e.g. blood donation, mask sewing, food bank donation)?	**1.30 [1.02, 1.67]**	1.00 [0.74, 1.36]	0.98 [0.70, 1.38]	0.80 [0.50, 1.27]	**1.41 [1.10, 1.82]**	**13.06**

Note: Bolded values are statistically significant ($p < .05$).

Our results have important implications for understanding how differences in dark personality traits predict the ways in which individuals orient themselves to their social environment. Narcissism and Machiavellianism predicted perceptions of social instability and greater emotional distress in response to the pandemic, indicating that individuals with these traits may place significant value on social predictability. Psychopathy and sadism, however, did not significantly predict feeling threatened by social instability. Given that some researchers have questioned whether psychopathy and Machiavellianism are actually separate constructs (Miller et al., 2017), our results help to conceptually distinguish these two traits by indicating potential differences in the degree to which people with these traits rely on predictable social environments. Additionally, sadism may uniquely predict positive responses to chaotic social environments. Since those who were higher in sadism reported greater positive affect in response to COVID-19, it may be that these individuals derive pleasure from events that are generally perceived as having a negative impact on society. Future research on dark personality should attempt to directly address how different traits predict the desire for social stability.

Studying personality during the pandemic is also useful for identifying individuals who are likely to experience distress in response to global crises. Narcissists and Machiavellians appear to experience more negative emotion and perceive the pandemic as more threatening, and may thus benefit from interventions aimed at encouraging individuals to adopt mindsets to help them cope with the stress of uncertain environments (Bavel et al., 2020). Future research may contribute further by identifying other individual differences that predict these responses to instability and by investigating whether these individual differences have further negative consequences on quality of life.

4.1. Limitations and future directions

The findings should be considered in light of several limitations. First, the use of self-report may be problematic for assessing socially undesirable traits or behaviors that could be viewed negatively during a pandemic (e.g., non-compliance with social distancing). A second and related limitation is our use of some measures that had not been previously validated. Of note is the lack of variability we observed in some of our behavioral outcome variables. The use of dichotomous, "yes or no" response scales may have made our measures less sensitive to differences in how likely individuals were to engage in these behaviors. We chose this response option to reduce participant fatigue, but future research should consider different options. Third, although we utilized a large nationally representative sample, these results are only likely to generalize to the American population at the particular time that these data were collected. Longitudinal studies of the response to COVID-19 could add to the present findings by demonstrating how responses change as the nature of pandemic changes. Finally, although we used a validated measure of the Dark Triad that has shown good psychometric properties (Jonason & Webster, 2010), it has been criticized for its limited convergent validity with some facets of longer Dark Triad measures (Miller et al., 2012). Additional work would be well served to replicate the current findings with other assessment options.

4.2. Conclusion

Research on personality and responses to COVID-19 is essential, both for addressing differences in how individuals respond to the pandemic and for understanding how personality traits predict the ways in which people feel, think, and act when faced with a novel environment. Our findings indicate that during the initial stages of the pandemic in the United States, dark personality differentially predicted cognitive and emotional responses to the pandemic but had less impact on the prediction of pandemic-related behavior. Narcissists and Machiavellians appeared to experience more negative emotions in response to the pandemic and perceive it as an especially threatening situation, possibly indicating that these individuals depend on stable social structures to attain their goals and react negatively to perceived social instability. Individuals with more antisocial traits (psychopathy and sadism) were not as threatened by the pandemic. Thus, our results suggest that dark personality traits may be differentiated in part by their relationship to social stability. The results of the current study represent an important addition to our understanding of how dark personality traits function in uncertain times and to our general understanding of the psychological experiences of people living through a global pandemic.

CRediT authorship contribution statement

Benjamin Hardin: writing – original draft (equal); writing - reviewing and editing (equal); conceptualization (supporting); methodology (supporting); formal analysis (supporting). **Lauren Jordan**: writing – original draft (equal); writing - reviewing and editing (equal); conceptualization (supporting); methodology (supporting); formal analysis (lead). C. Veronica **Smith**: writing – original draft (equal); writing - reviewing and editing (equal); Conceptualization (lead); methodology (lead); formal analysis (supporting).

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