Predicting COVID-19 conspiracist ideation from the Dark Tetrad traits

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Abstract

Previous research has suggested that the Dark Triad traits and, specifically, Machiavellianism and psychopathy, are associated with a tendency to believe in conspiracy theories. The current study ($N = 203$) aimed to replicate and extend the existing research by examining the relationship between the Dark Tetrad traits—Machiavellianism, narcissism, psychopathy, and everyday sadism—and a novel measure of COVID-19 conspiracist ideation. Machiavellian views and psychopathic antisociality were significant positive predictors of the tendency to believe in COVID-19 conspiracy theories, even when accounting for the participants' knowledge about COVID-19. Overall, the results suggest that some (but not all) aspects of the Dark Tetrad are associated with COVID-19 conspiracist ideation.

Keywords: Dark Tetrad, Machiavellianism, narcissism, psychopathy, sadism, COVID-19, conspiracy theories

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1. Introduction

As of the middle of July 2020, the number of new COVID-19 cases in the US was increasing rapidly. Approximately 60,000 new cases were being reported each day (Centers for Disease Control and Prevention, 2020). At the same time, many Americans continued to flout guidelines from the CDC intended to prevent the spread of COVID-19. As an example, only 65% of Americans reported regularly wearing face masks in public (Igielnik, 2020).

One reason for this lack of caution may have been the overwhelming number of conspiracy theories related to COVID-19 that had arisen. Recent research has indicated that believing in COVID-19 conspiracy theories is associated with taking less preventative measures in response to COVID-19 (e.g., social-distancing) (Imhoff & Lamberty, 2020; Swami & Barron, 2020; but see also Alper, Bayrak, & Yilmaz, 2020), as well as being less interested in getting a vaccination when one becomes available (Bertin, Nera, & Delouvée, 2020). An important question remains, however: *What is it about a person that leads them to believe in such conspiracies?*

The present study examines how differences in the *Dark Tetrad* personality traits relate to the endorsement of COVID-19 conspiracy theories. The Dark Tetrad is a constellation of four personality traits, combining the *Dark Triad* traits (i.e., manipulative Machiavellianism, grandiose narcissism, and remorseless psychopathy; Paulhus & Williams, 2002) with everyday sadism (i.e., the tendency to derive pleasure from everyday acts of cruelty; Buckels, Jones, & Paulhus, 2013). Only one extant study has examined multiple aversive personality traits in the context of conspiracist ideation (i.e., March & Springer, 2019). This is unfortunate because there is good reason to believe that many of these traits would be linked to a belief in conspiracy theories.

1.1. Machiavellianism and conspiracist ideation

Of the Dark Tetrad traits, the link between Machiavellianism and conspiracist ideation appears the most intuitive. Currently, Machiavellianism is considered to comprise two components (see Monaghan, Bizumic, & Sellbom, 2016): Machiavellian tactics and Machiavellian views. The former describes the tendency to behave deceptively to further one's goals, whereas the latter describes the tendency to have a cynical and misanthropic view of the world.

It is plausible that engaging in Machiavellian tactics (i.e., manipulating and deceiving others) would lead a person to believe that those in power are also engaged in manipulation and deception. Machiavellianism does appear to be associated with believing in conspiracy theories (March & Springer, 2019), and this association seems to be explained by a personal willingness to conspire (Douglas & Sutton, 2011).

It is, likewise, plausible that having a Machiavellian worldview and being generally distrustful of others would lead one to be especially circumspect of those in power. Consistent with this notion, political cynicism has been linked to believing in conspiracy theories about the 7/7 and 9/11 terrorist attacks (Swami, Chamorro-Premuzic, & Furnham, 2010; Swami et al., 2011). Along the same lines, suspiciousness (Swami, Weis, Lay, Barron, & Furnham, 2016) and a lack of trust in the government (Imhoff & Lamberty, 2018) have been linked to conspiracist ideation.

As of yet, no research has considered the link between Machiavellianism and conspiracist ideation at the level of the subscale. Doing so would provide insight into whether the tendency to believe in conspiracy theories is driven by a Machiavellian's use of deceptive tactics, their cynical worldview, or both.

1.2. Narcissism and conspiracist ideation

There is also good reason to believe that grandiose narcissism would be associated with conspiracist ideation. Douglas, Sutton, and Cichocka (2017) proposed that one reason people believe in conspiracy theories is because of a need to maintain a positive impression

of one's self and one's social group—motivations that may be particularly pronounced in narcissistic individuals. Consistent with this notion, levels of individual narcissism have been linked to conspiracist ideation (Cichocka, Marchlewska, & Zavala, 2016), and levels of collective narcissism (i.e., the belief that one's group is superior to other groups) has been linked to believing in conspiracy theories about one's outgroup but not one's ingroup (Cichocka, Marchlewska, Zavala, & Olechowski, 2015).

March and Springer (2019) did not find a relationship between grandiose narcissism and conspiracist ideation. It should be noted, however, that their analysis partialled out the variance that narcissism shares with Machiavellianism and psychopathy. Narcissism is especially prone to construct slippage when Machiavellianism and narcissism are partialled out (Vize, Collison, Miller, & Lynam, 2018). The failure to find a relationship could, therefore, be attributable to the inclusion of Machiavellianism and psychopathy in the model. In the current study, a separate regression model is fit for each of the Dark Tetrad traits.

1.3. Psychopathy and conspiracist ideation

March and Springer (2019) also showed that primary psychopathy, but not secondary psychopathy, is associated with conspiracist ideation. Primary psychopathy includes the more selfish and unempathetic aspects of psychopathy, whereas secondary psychopathy comprises the more reckless aspects of the construct (see Levenson, Kiehl, & Fitzpatrick, 1995).

Although the two-factor solution is the dominant model of psychopathy (Salekin, Chen, Sellbom, Lester, & MacDougall, 2014), the three-factor solution (Brinkley, Diamond, Magaletta, & Heigel, 2008; Sellbom, 2011) is used here to provide a more nuanced understanding of the relationship between psychopathy and conspiracist ideation. The three-factor solution decomposes primary psychopathy into egocentricity and callousness and reconceptualizes secondary psychopathy as antisociality. It is plausible that egocentricity would be associated with conspiracist ideation for the very same reason that

narcissism is. Namely, conspiracist ideation could be a way for those scoring high in egocentricity to feel special about themselves. Clinical callousness has also been shown to exhibit substantial associations with conspiracist ideation (Swami et al., 2016), although the association disappears when accounting for suspiciousness and unusual beliefs. There is, as of yet, little reason to believe that the antisociality component would be associated with conspiracist ideation.

1.4. Sadism and conspiracist ideation

No prior research has examined the association between sadism and conspiracist ideation. It is, nevertheless, plausible that one reason those high in everyday sadism derive pleasure from perpetrating acts of cruelty is because they think that other people deserve it. Sadism is, in fact, associated with cynicism (Mededović & Bulut, 2018), and sadistic individuals also tend to perceive others as being aggressive, demanding, and opportunistic (Rogers, Le, Buckels, Kim, & Biesanz, 2018). Those scoring high in sadism may believe in conspiracy theories because they think others would act nefariously if given the chance.

1.5. The current study

The present study intends to replicate and extend the results from March and Springer (2019) by examining whether the subscales of the Dark Tetrad traits are associated with the tendency to believe in COVID-19 conspiracy theories. In the process, the present study will also provide initial validation for a novel measure of COVID-19 conspiracist ideation: The *COVID-19 Conspiracist Ideation Scale* (CCIS). Unlike other recent measures of the tendency to believe in COVID-19 conspiracy theories (e.g., Georgiou, Delfabbro, & Balzan, 2020), the CCIS does not focus on specific conspiracy theories (e.g., COVID-19 being a population-control scheme developed, in part, by Microsoft founder Bill Gates). Instead, it attempts to assess a broader form of COVID-19 conspiracist ideation (e.g., believing prominent scientists are suppressing the truth about COVID-19) to be as inclusive of COVID-19 conspiracy theories as possible.

To provide initial validation for the scale, the CCIS will be examined in the context

of four measures that assess a person's (1) conspiracy mentality, (2) intolerance of uncertainty, (3) trust that the government is handling COVID-19 well, and (4) knowledge about COVID-19. Given that believing in one conspiracy theory is associated with believing in other (even fictitious; Swami et al., 2011) conspiracy theories (e.g., Goertzel, 1994), the CCIS should show a sizable positive association with the measure of conspiracy mentality. It should, likewise, be associated with an inability to tolerate uncertainty, since the tendency to believe in conspiracy theories is believed to be driven, in part, by a desire to feel in control (Douglas et al., 2017). Believing in COVID-19 conspiracy theories should also be associated with (but distinguishable from) believing that the government is handling COVID-19 well. For instance, a person who believes the government purposefully allowed the release of COVID-19 should likely also believe that the government is not being entirely honest about COVID-19, but these beliefs should be separable. Similarly, COVID-19 conspiracist ideation should be associated with, but distinct from, general knowledge about COVID-19. A person who mistakenly believes a COVID-19 vaccine exists should not necessarily believe that it exists *and* is only being given to elite members of society.

2. Methods

2.1. Participants and procedures

Undergraduate students ($N = 218$) completed the measures described below as part of a longer survey administered at a large university in the Pacific Northwest. Seven participants were excluded from the survey under suspicion of straight-lining and six participants were excluded under suspicion of speeding (see Kay & Saucier, 2020). An additional two participants were excluded after being identified as having an inordinate influence on the results of the regression models¹. The resulting sample included 203

¹ The first participant was flagged for having 43.97 times more influence on the estimated regression line for psychopathy than the average participant (*Cook's D* = .29). The second participant was flagged for having 28.83 times more influence on the estimated regression line for sadism than the average participant (*Cook's*

participants (65.52% women) between the ages of 18 and 27 (M age = 19.67; SD age = 1.62). Using the effect size thresholds outlined by Gignac and Szodorai (2016), a sample of this size would have an 81.97% possibility of correctly detecting a medium effect.

2.2. Materials

For consistency and to reduce participant confusion, the same 5-pt Likert response scale (1 = “strongly disagree”; 5 = “strongly agree”) was used for all measures in the present study. Cronbach’s alphas for all scales are shown in Table 1.

2.2.1. Machiavellianism. The *Two-Dimensional Mach-IV* (Monaghan et al., 2016; Monaghan, Bizumic, & Sellbom, 2018) is a 10-item assessment of Machiavellian tactics (e.g., “Honesty is the best policy in all cases.”; *Reversed*) and Machiavellian views (e.g., “Anyone who completely trusts anyone else is asking for trouble.”).

2.2.2. Narcissism. The 13-item version of the *Narcissistic Personality Inventory* (Gentile et al., 2013) assesses grandiose narcissism in terms of the three factors identified by Ackerman et al. (2011): Leadership/authority (e.g., “I am a born leader.”), grandiose exhibitionism (e.g., “I will usually show off if I get the chance.”), and entitlement/exploitativeness (e.g., “I insist upon getting the respect that is due me.”).

2.2.3. Psychopathy. The three-factor solution (Brinkley et al., 2008; Sellbom, 2011) of the *Levenson Self-Report Psychopathy Scale* (Levenson et al., 1995) includes 19 items measuring egocentricity (e.g., “For me, what’s right is whatever I can get away with.”), callousness (e.g., “I feel bad if my words or actions cause someone else to feel emotional pain.”; *Reversed*), and antisociality (e.g., “I find myself in the same kinds of trouble, time after time.”).

2.2.4. Sadism. The *Assessment of Sadistic Personalities* (Plouffe, Saklofske, & Smith, 2017) assesses everyday sadism as a single factor (e.g., “Being mean to others can be exciting.”).

$D = .16$). Full model results including these participants can be obtained by contacting the first author.

Table 1

Descriptive statistics, gender comparisons, and Cronbach's alphas for the Dark Tetrad traits and the COVID-19 measures.

	α	Mean (SD)			t	g
		Overall	Women	Men		
<i>Machiavellianism</i>	.69	2.44 (0.51)	2.36 (0.53)	2.60 (0.45)	-3.19**	0.49
Tactics	.69	2.42 (0.72)	2.35 (0.65)	2.56 (0.84)	-1.81	0.27
Views	.67	2.47 (0.64)	2.38 (0.65)	2.66 (0.57)	-3.10**	0.47
<i>Narcissism</i>	.81	2.69 (0.60)	2.60 (0.64)	2.88 (0.46)	-3.53**	0.53
Leadership/Authority	.77	2.78 (0.83)	2.64 (0.87)	3.06 (0.66)	-3.82**	0.57
Grandiose Exhibitionism	.74	2.66 (0.76)	2.62 (0.81)	2.74 (0.65)	-1.13	0.17
Entitlement/Exploitativeness	.56	2.66 (0.71)	2.56 (0.71)	2.85 (0.68)	-2.81**	0.42
<i>Psychopathy</i>	.85	2.19 (0.53)	2.09 (0.51)	2.39 (0.51)	-3.86**	0.58
Egocentricity	.85	2.11 (0.63)	1.98 (0.60)	2.34 (0.63)	-3.81**	0.57
Callousness	.66	2.12 (0.74)	2.00 (0.71)	2.35 (0.75)	-3.15**	0.47
Antisociality	.64	2.45 (0.71)	2.41 (0.74)	2.54 (0.64)	-1.26	0.19
<i>Sadism</i>	.83	1.79 (0.63)	1.63 (0.58)	2.11 (0.62)	-5.16**	0.78
<i>Conspiracist Ideation (COVID-19)</i>	.74	2.28 (0.75)	2.37 (0.72)	2.10 (0.79)	2.32*	0.35
<i>Conspiracy Mentality</i>	.66	3.24 (0.67)	3.26 (0.67)	3.18 (0.67)	0.85	0.13
<i>Intolerance of Uncertainty</i>	.70	3.05 (0.48)	3.09 (0.46)	2.98 (0.50)	1.43	0.22
<i>Trust in Government</i>	.88	2.58 (0.81)	2.60 (0.81)	2.54 (0.82)	0.46	0.07
<i>Knowledge (COVID-19)</i>	.52	4.05 (0.54)	4.03 (0.51)	4.10 (0.59)	-0.83	0.12

Note. * $p < .05$; ** $p < .01$. α is Cronbach's alpha. g is Hedges' g . Effect sizes equal to or greater than .50 are bolded.

2.2.5. Belief in COVID-19 conspiracy theories. The bespoke *COVID-19 Conspiracist Ideation Scale* (CCIS; Appendix A) includes five-items intended to assess a person's belief in generic COVID-19 conspiracy theories ($\bar{r}_{ij} = .36$; e.g., "COVID-19 is a biological weapon that was developed under laboratory conditions."). Parallel analysis (Horn, 1965) with 10,000 iterations supported the extraction of a single factor.

2.2.6. Validation measures. Four additional measures were included to validate the CCIS: (1) The *Conspiracy Mentality Questionnaire* (e.g., "Events which superficially seem to lack a connection are often the result of secret activities."; Bruder, Haffke, Neave, Nouripanah, & Imhoff, 2013), (2) the 12-item *Intolerance of Uncertainty Scale* (e.g., "It frustrates me not having all the information I need."; Carleton, Norton, & Asmundson, 2007), (3) a COVID-19 adaptation of the *Trust in the Government Swine Flu Scale* (e.g., "The government is handling the COVID-19 outbreak in a competent way."; Freimuth, Musa, Hilyard, Quinn, & Kim, 2014), and (4) the *COVID-19 Knowledge Test* (Appendix B).

The COVID-19 Knowledge Test was created specifically for the present study. It is loosely based on the *Knowledge of Sars Measure* (Cheng & Ng, 2006) and includes three correct (e.g., "The first case of COVID-19 was identified in Wuhan, Hubei.") and three incorrect (e.g., "COVID-19 is caused by a kind of bacteria called streptococcus.") statements about COVID-19.

3. Results

All analyses for the present study were conducted in *R* (R Core Team, 2020), and the present manuscript was created using the *papaja* package (Aust & Barth, 2020).

Consistent with previous research (e.g., Plouffe et al., 2017; Muris, Merckelbach, Otgaar, & Meijer, 2017), men scored higher than women on all of the Dark Tetrad traits (Table 1) and the Dark Tetrad traits were all moderately-to-largely intercorrelated (Table 2). No gender differences were found for any of the COVID-19-related measures.

Table 2

Intercorrelations among the Dark Tetrad traits and the COVID-19 measures.

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.
1. <i>Machiavellianism</i>	-													
2. Tactics	.69**	-												
3. Views	.84**	.18**	-											
4. <i>Narcissism</i>	.32**	.03	.40**	-										
5. Leadership/Authority	.25**	-.00	.34**	.79**	-									
6. Grandiose Exhibitionism	.14	-.04	.18*	.78**	.37**	-								
7. Entitlement/Exploitativeness	.36**	.09	.41**	.75**	.50**	.36**	-							
8. <i>Psychopathy</i>	.68**	.40**	.64**	.53**	.36**	.30**	.59**	-						
9. Egocentricity	.62**	.27**	.63**	.57**	.42**	.31**	.63**	.90**	-					
10. Callousness	.50**	.61**	.26**	.11	.06	.03	.18**	.60**	.36**	-				
11. Antisociality	.43**	.14*	.47**	.40**	.25**	.29**	.37**	.73**	.49**	.25**	-			
12. <i>Sadism</i>	.54**	.31**	.51**	.50**	.42**	.28**	.47**	.76**	.70**	.45**	.55**	-		
13. <i>Knowledge (COVID-19)</i>	-.11	-.11	-.10	-.04	-.03	-.03	-.02	-.14*	-.16*	-.13	-.05	-.22**	-	
14. <i>Conspiracist Ideation (COVID-19)</i>	.12	-.09	.22**	.18*	.15*	.11	.16*	.21**	.21**	-.03	.23**	.18*	-.39**	

Note. * $p < .05$; ** $p < .01$. Correlations equal to or greater than .20 are bolded.

3.1. Validating the COVID-19 Conspiracist Ideation Scale

The CCIS showed a strong positive association with the Conspiracy Mentality Questionnaire ($r = .49, p < .001$). The CCIS ($r = .24, p < .001$) and the Conspiracy Mentality Questionnaire ($r = .28, p < .001$) were both associated with being intolerant of uncertainty, and the associations were similar in magnitude ($z = -0.72, p = .469$). The CCIS ($r = -.11, p = .107$) did not show an association with believing the government was handling COVID-19 competently, whereas the Conspiracy Mentality Questionnaire did ($r = -.23, p = .001$). Nevertheless, the size of the association between the CCIS and trust in government was not significantly different than the size of the association between the Conspiracy Mentality Questionnaire and trust in government, $z = 1.58, p = .114$. Finally, the CCIS exhibited a substantial negative association with knowledge about COVID-19 ($r = -.39, p < .001$), which proved to be larger than the association between the Conspiracy Mentality Questionnaire and knowledge about COVID-19 ($r = .00, p = .988$) ($z = -5.56, p < .001$).

3.2. Predicting COVID-19 conspiracist ideation

The participants' levels of COVID-19 conspiracist ideation were predicted from their knowledge about COVID-19 and their levels of each of the Dark Tetrad traits across four models (Table 3). The addition of the Machiavellianism subscales ($\Delta R^2 = .06, F(2, 188) = 6.53, p = .002$) and psychopathy subscales ($\Delta R^2 = .07, F(3, 189) = 6.04, p < .001$) explained variation in the tendency for participants to believe in COVID-19 conspiracy theories above-and-beyond their knowledge about COVID-19. The narcissism subscales ($\Delta R^2 = .03, F(3, 189) = 2.31, p = .078$) and the sadism composite ($\Delta R^2 = .01, F(1, 192) = 3.18, p = .076$) did not.

The participants' levels of the Machiavellianism subscales and knowledge about COVID-19 explained 20.12% of the variation in their levels of COVID-19 conspiracist ideation, $R^2 = .20, F(4, 188) = 15.79, p < .001$. Participants who exhibited higher levels of Machiavellian views were more likely to endorse COVID-19 conspiracy theories, $\beta = 0.21$,

Table 3

Models predicting belief in COVID-19 conspiracy theories from knowledge about COVID-19 and the Dark Tetrad traits.

	<i>r</i>	β	95% CI
<i>Machiavellianism</i>			
Knowledge (COVID-19)	-.39**	-0.38**	[-0.51, -0.25]
Tactics	-.09	-0.15*	[-0.28, -0.02]
Views	.22**	0.21**	[0.08, 0.34]
<i>Narcissism</i>			
Knowledge (COVID-19)	-.39**	-0.39**	[-0.52, -0.27]
Leadership/Authority	.15*	0.08	[-0.08, 0.23]
Grandiose Exhibitionism	.11	0.03	[-0.11, 0.17]
Entitlement/Exploitativeness	.16*	0.11	[-0.04, 0.26]
<i>Psychopathy</i>			
Knowledge (COVID-19)	-.39**	-0.38**	[-0.51, -0.26]
Egocentricity	.21**	0.11	[-0.04, 0.26]
Callousness	-.03	-0.16*	[-0.29, -0.03]
Antisociality	.23**	0.21**	[0.06, 0.35]
<i>Sadism</i>			
Knowledge (COVID-19)	-.39**	-0.36**	[-0.49, -0.23]
Sadism	.18*	0.12	[-0.01, 0.25]

Note. * $p < .05$; ** $p < .01$. Correlations equal to or greater than .20 are bolded.

95% CI [0.08, 0.34], $t(188) = 3.21$, $SE = 0.07$, $p = .002$. Machiavellian tactics showed no such relationship. In fact, when accounting for Machiavellian views, Machiavellian tactics was slightly negatively associated with endorsement of COVID-19 conspiracy theories, $\beta = -0.15$, 95% CI [-0.28, -0.02], $t(188) = -2.22$, $SE = 0.07$, $p = .028$.

The participants' levels of the narcissism subscales and knowledge about COVID-19 explained 18.95% of the variation in their levels of COVID-19 conspiracist ideation, $R^2 = .19$, $F(5, 189) = 11.05$, $p < .001$. However, neither leadership/authority ($\beta = 0.08$, 95% CI [-0.08, 0.23], $t(189) = 0.99$, $SE = 0.08$, $p = .322$), grandiose exhibitionism ($\beta = 0.03$, 95% CI [-0.11, 0.17], $t(189) = 0.39$, $SE = 0.07$, $p = .698$), nor entitlement/exploitativeness ($\beta = 0.11$, 95% CI [-0.04, 0.26], $t(189) = 1.38$, $SE = 0.08$, $p = .170$) were significant predictors of believing in COVID-19 conspiracy theories.

The participants' levels of the psychopathy subscales and knowledge about COVID-19 explained 22.72% of the variation in their levels of COVID-19 conspiracist ideation, $R^2 = .23$, $F(5, 189) = 13.89$, $p < .001$. Participants who exhibited higher levels of antisociality were *more* likely to endorse COVID-19 conspiracy theories, ($\beta = 0.21$, 95% CI [0.06, 0.35], $t(189) = 2.80$, $SE = 0.07$, $p = .006$), whereas participants who exhibited higher levels of callousness were *less* likely to endorse COVID-19 conspiracy theories ($\beta = -0.16$, 95% CI [-0.29, -0.03], $t(189) = -2.33$, $SE = 0.07$, $p = .021$). After partialling out the variance shared among the subscales, egocentricity was not associated with COVID-19 conspiracist ideation, $\beta = 0.11$, 95% CI [-0.04, 0.26], $t(189) = 1.43$, $SE = 0.08$, $p = .156$.

The participants' levels of sadism and knowledge about COVID-19 explained 16.29% of the variation in their levels of COVID-19 conspiracist ideation, $R^2 = .16$, $F(3, 192) = 18.68$, $p < .001$. That said, participants with higher levels of sadism *were not* more likely to endorse a belief in COVID-19 conspiracy theories, $\beta = 0.12$, 95% CI [-0.01, 0.25], $t(192) = 1.78$, $SE = 0.07$, $p = .076$.

4. Discussion

The primary goal of the present study was to replicate and extend previous work showing an association between aversive personality traits and a tendency to believe in conspiracy theories (i.e., March & Springer, 2019). The previous work was extended in three ways. First, the link between aversive personality traits and conspiracist ideation was examined in the context of COVID-19. Second, Machiavellianism and psychopathy were decomposed into smaller units to provide a more nuanced understanding of the association between these traits and conspiracist ideation. Finally, the influence of everyday sadism on conspiracist ideation was considered.

The relationship between Machiavellianism and COVID-19 conspiracist ideation was almost entirely attributable to the participants' levels of Machiavellian views. In other words, it appears that the general distrust and cynicism characteristic of Machiavellianism is what links it to an increased endorsement of conspiracy theories. The reason that a willingness to conspire fully mediated the relationship between Machiavellianism and endorsement of conspiracy theories in previous work (Douglas & Sutton, 2011) may be because a willingness to conspire is driven by a distrust of others.

There was little evidence that narcissism was associated with the tendency to believe in COVID-19 conspiracy theories. This is consistent with the findings from March and Springer (2019) but not from Cichocka and colleagues (Cichocka et al., 2016, 2015). Although the Dark Tetrad traits were not entered into a single model in the current study, it is possible that the failure to find an association between any aspect of narcissism and COVID-19 conspiracist ideation is due to partialling out the shared variance among the narcissism subscales. Compatible with this notion, there was a slight positive association between both leadership/authority and entitlement/exploitativeness and belief in COVID-19 conspiracy theories before partialling out the shared variance. It is possible that narcissistic people are drawn to conspiracy theories because they feel a sense of superiority over others. However, given the variable nature of these results, it would be best to avoid

drawing too definite of a conclusion.

The antisocial component of psychopathy was a significant predictor of COVID-19 conspiracist ideation before *and* after the other aspects of psychopathy were accounted for. To the extent that antisociality is marked by a lack of conscientiousness (Garofalo, Noteborn, Sellbom, & Bogaerts, 2019; Miller, Gaughan, & Pryor, 2008), those scoring high in antisociality may believe in conspiracy theories because they are unwilling to do the due diligence necessary to debunk those theories (see Brotherton, French, & Pickering, 2013).

Of the two aspects of psychopathy that originate with primary psychopathy (i.e., egocentricity and callousness), only egocentricity was a significant positive predictor of COVID-19 conspiracist ideation. This would suggest that the previously identified link between primary psychopathy and believing in conspiracy theories (March & Springer, 2019) is due to the more egocentric aspects of the construct. Nevertheless, it is important to note that this association became non-significant when partialling out the variance that egocentricity shares with the other aspects of psychopathy. In contrast, when the variance callousness shares with egocentricity and antisociality was partialled out, it became a positive predictor of COVID-19 conspiracist ideation. As with narcissism, it is important to emphasize caution in interpreting these results.

Finally, before taking into account knowledge about COVID-19, everyday sadism was a significant predictor of the tendency to believe in COVID-19 conspiracy theories. If misanthropy underlies the acts of cruelty committed by sadists, it is plausible that sadists would believe in conspiracy theories for the very same reason that Machiavellians do: They expect malfeasance from others (Mededović & Bulut, 2018; Rogers et al., 2018). However, given the partialled results, it is possible that some of the relationship is also simply due to sadists being less knowledgeable about COVID-19 and, by extension, more likely to endorse conspiracy theories about the disease.

Beyond investigating associations between the Dark Tetrad traits and COVID-19 conspiracist ideation, a secondary goal of the present study was to provide initial validation

for a COVID-19 conspiracist ideation scale. Largely consistent with expectations, the CCIS was associated with having a conspiracy mindset, as well as being less tolerant of uncertainty and less knowledgeable about COVID-19. Interestingly, the CCIS was not associated with trusting the government to respond appropriately to COVID-19. One plausible explanation is that conspiracy theorists and non-conspiracy theorists alike are concerned about the US governments' current approach to the pandemic. Further validation is necessary, but the current evidence suggests the CCIS adequately operationalizes COVID-19 conspiracist ideation.

4.1. Limitations and future directions

In addition to further validating the CCIS, there are a number of promising future directions for examining the relationship between aversive personality traits and conspiracist ideation. For instance, using elemental measures of aversive personality traits (e.g., the *Five-Factor Narcissism Inventory*; Lynam et al., 2011) could provide an even more nuanced understanding of the relationship between the traits and the tendency to believe in conspiracy theories. If the link between narcissism and conspiracist ideation is due, in part, to a desire to maintain a positive self-image, we might expect a rather pronounced association between the need for admiration component of the Five-Factor Narcissism Inventory and conspiracist ideation. In a similar vein, future studies would be well-advised to include potential mediators of the relationship between aversive personality traits and conspiracist ideation. Research could, for example, examine whether a tendency to be skeptical does, in fact, underlie the association between Machiavellian views and a belief in conspiracy theories.

5. Conclusion

The current study provided evidence that people with aversive personality traits are more likely to believe in COVID-19 conspiracy theories. Perhaps because of a general distrust of others, those scoring high in Machiavellian views were found to be higher on COVID-19 conspiracist ideation. Being rash and generally unconscientious—as captured

by the antisociality component of psychopathy—was also linked to believing in COVID-19 conspiracy theories. Future research would benefit from investigating whether believing in conspiracy theories helps explain the relationship between aversive personality traits and a reluctance to engage in preventative behaviours.

DRAFT

Appendix A. The COVID-19 Conspiracist Ideation Scale

Directions: Indicate your level of agreement with each of the following statements.

Respond to each statement using the following scale.

5 = strongly agree

4 = agree

3 = neither agree nor disagree

2 = disagree

1 = strongly disagree

1. COVID-19 is a biological weapon that was developed under laboratory conditions.
2. A COVID-19 vaccine exists but is only available to elite members of society.
3. The government had foreknowledge of COVID-19 but allowed its release to further its own goals.
4. Prominent scientists are suppressing the truth about COVID-19.
5. A secret organization instructed the media to downplay the risks of COVID-19.

Appendix B. The COVID-19 Knowledge Test

Directions: Indicate your level of agreement with each of the following statements.

Respond to each statement using the following scale.

5 = strongly agree

4 = agree

3 = neither agree nor disagree

2 = disagree

1 = strongly disagree

1. Fever is a major symptom of COVID-19.
2. A vaccine is not yet available for preventing COVID-19.
3. The first case of COVID-19 was identified in Wuhan, Hubei.
4. COVID-19 is caused by a kind of bacteria called streptococcus. (*Reverse*)
5. There are currently no reported cases of COVID-19 in the US. (*Reverse*)
6. Children are most vulnerable to COVID-19. (*Reverse*)

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