



# Social media skepticism and belief in conspiracy theories about COVID-19: the moderating role of the dark triad

Ashraf Sadat Ahadzadeh<sup>1</sup> · Fon Sim Ong<sup>2</sup> · Shin Ling Wu<sup>3</sup>

Accepted: 4 August 2021 / Published online: 10 August 2021

© The Author(s), under exclusive licence to Springer Science+Business Media, LLC, part of Springer Nature 2021

## Abstract

The prevalence of conspiracy theories about COVID-19 in the wide-open social media environment has raised considerable concerns about the adverse effects of believing such theories. The previous work showed that skepticism is negatively associated with acceptance of media content. However, this association has yet to be investigated between skepticism towards content on social media and conviction of COVID-19 conspiracy theories. Furthermore, this association can be a function of social media users' dark triad traits comprising Machiavellianism, narcissism and psychopathy. A convenient sample of 439 Malaysian young adult social media users was recruited to complete the survey. Results showed that skepticism has a negative relationship with belief in conspiracy theories about COVID-19. However, the strength of the relationship is varied depending on respondents' Machiavellianism and narcissism levels. The negative association between skepticism and belief in COVID-19 conspiracy theories is weaker for individuals with high scores on Machiavellianism. High and moderate scores on narcissism were also found to diminish the negative relationship of skepticism with COVID-19 conspiracy ideation. The results yield implications for enhancing healthy skepticism to mitigate belief in conspiracy theories promulgated on social media. Nonetheless, Machiavellianism and narcissism appeared to weaken the power of skepticism on conspiracy theories.

**Keywords** Skepticism · Dark triad · Conspiracy theory · COVID-19 · Social media

## Introduction

Conspiracy theories (CTs) refer to false beliefs in which the ultimate cause of significant social and political events are attributed to secret collusions manoeuvred by multiple actors who work together for their personal gains (Douglas et al., 2019). CTs tend to gain momentum during social and political

crises such as pandemics (Bierwaczzonek et al., 2020). Since December 2019, the coronavirus disease (COVID-19) pandemic has put pressure on hospitals in many countries with increasing number of hospitalizations and deaths (World Health Organization, 2021). In the interim, due to the lack of solid scientific and governmental consensus on the causes of spreading and solutions to contain the virus, narratives and accounts about the origins of the virus, its cures, and the probable social and political powerful actants involved are ripping through social media (Ahmed et al., 2020). Therefore, social media has become a hosting platform for promulgating CTs worldwide expeditiously. Misinformation, disinformation and conspiratorial fantasies shared on the social media are overshadowing fact-based information (Pulido et al., 2020), implying the implicit endorsement of CTs that tags with sharing. Results also demonstrated that a remarkable percentage of people explicitly reported believing in COVID-19 CTs (Miller, 2020a; Uscinski et al., 2020).

Belief in CTs about COVID-19 has impinged on several aspects greatly. These comprise of yielding poor well-being (Chen et al., 2020), resistance to preventive actions (such as wearing a face mask, washing hands and practicing social distancing) (Motta et al., 2020), racial hostility and

✉ Ashraf Sadat Ahadzadeh  
ahadzadeh1980@gmail.com

Fon Sim Ong  
fonsim.ongfonsim@gmail.com

Shin Ling Wu  
shinling\_wu@hotmail.com

<sup>1</sup> Department of Journalism, Xiamen University Malaysia, Jalan Sunsuria, Bandar Sunsuria, 43900 Sepang, Selangor, Malaysia

<sup>2</sup> Nottingham University Business School, University of Nottingham Malaysia, Jln Broga, 43500 Semenyih, Selangor, Malaysia

<sup>3</sup> Department of Psychology, School of Medical and Life Sciences, Sunway University, 5, Jalan Universiti, Bandar Sunway, 47500 Petaling Jaya, Selangor, Malaysia

exclusionary narratives (Depoux et al., 2020), violent behaviors (Jolley & Paterson, 2020), fears of vaccination and unwillingness to be vaccinated (Romer & Jamieson, 2020). In view of the detrimental effects associated, a surge of scholarly interest in possible factors contributing to such belief emerged. Drawing on the existing literature, the factors can be divided into situational, dispositional and political dimensions. Situational factors are characterised by epistemic motives (e.g. understanding desire for certainty and desire for control) whereas dispositional factors refer to individual characteristics that influence behaviors and actions (Cassese et al., 2020; Miller, 2020a, 2020b; Uscinski et al., 2020).

From the situational perspective, Miller (2020a, 2020b) found that the pandemic situation induces feeling of uncertainty which in turn amplifies belief in COVID-19 CTs. Similarly, learned helplessness (a perception of failing to control or change the aversive situation) gives rise to conspiratorial thinking (Farhart et al., 2020 as cited in Cassese et al., 2020). Also, individuals psychologically predisposed to conspiratorial thinking tend to believe in COVID-19 CTs (Miller, 2020b; Uscinski et al., 2020). Conversely, resilience as a predisposition force serves as a buffer against COVID-19 CTs (Miller, 2020b). From the political aspect, Republicans in the United States were found to believe in COVID-19 CTs more than Democrats or Independents (Uscinski et al., 2020) due to extensive criticisms targeting the Republican president in handling the pandemic.

Typically, CTs are not supported by evidence that withstands scrutiny but this does not stop them from growing (Lewandowsky & Cook, 2020). A CT could turn out to be true if substantial evidence on the causes and procedures of the theory are put forward in support of the theory (Dentith, 2014), supporting that conspiracies may not necessarily be “a figment of anyone’s imagination” (Goertzel, 2020, p. 493). However, some individuals especially ideologues are reluctant to accept the evidence when it opposes their prior beliefs and tend to “defend their prior attitudes and actively challenge attitudinally incongruent arguments” (Kraft et al., 2015, p.121). This can be attributed to motivated reasoning where individuals tend to maintain their pre-existing attitudes through biased reasoning processes, producing defences that mainly serve their personal desires rather than accurately reflect the evidence (Kunda, 1990). In view of this, a CT is likely to remain a CT, even in the emergence of supporting evidence, for individuals with motivated reasoning as they have the tendency to accept what they choose to readily believe with less scrutiny than that which they desire to believe.

In attempting to understand the influence of CTs on individuals, researchers turn to examine the factors that render people susceptible to CTs. In this regard, media skepticism which is the core to media literacy has received considerable attention due to the proliferation of falsehood on social media

(Fletcher & Nielsen, 2019; Vraga & Tully, 2019). Media skepticism enables users to combat disinformation and misinformation (Ashley et al., 2010; Maksil et al., 2015). The nuances of COVID-19 CTs aplenty in the absence of more informed knowledge create fear and insecurity that affect society negatively. Therefore, the present study aims to provide a better understanding of individuals’ behavior with regard to believing in CTs during the pandemic by examining the association of skepticism towards social media content and COVID-19 conspiracy ideation which is relatively a new research direction.

While the association between skepticism and belief in CTs seems to suggest a direct relationship, very often, individuals’ behaviors are navigated by a complex interplay of a variety of components, let alone strive through difficult periods such as the COVID-19 pandemic. Therefore, a simple correlation between social media skepticism and belief in CTs is insufficient to provide an understanding of the complex behavior of the CT-oriented people. It is claimed that differences in dispositional and personality characteristics may affect the extent to which individuals believe in CTs (Swami et al., 2016). Conspiracists’ belief is also linked to the dark triad which is made up of three personality traits (i.e., Machiavellianism, narcissism and psychopathy) (Douglas et al., 2017; March & Springer, 2019; Nowak et al., 2020). Association between skepticism and belief in COVID-19 CTs can be influenced by dispositions of social media users. Underlying this background, it is timely and useful for researchers to investigate these personality traits as third variables that may alter individuals’ disposition toward the belief in CTs. In the present study, these personality traits will be introduced as moderating variables in explaining the relationship between social media skepticism and belief in COVID-19 CTs.

The present study sets out to achieve two main objectives: (i) to examine the relationship between social media skepticism and belief in COVID-19 CTs and (ii) to test the moderating role of dark triad personality traits in the relationship between social media skepticism and belief in COVID-19 CTs.

## Background of the Study

### Media Skepticism and Belief in Conspiracy Theories

Skepticism is a “tendency towards a kind of judicious doubt and promotes recognizing any information or rationale offered as limited by the perspective and/or motivations of its narrator” (Feuerstein, 1999, p.45). It invokes reflective thought and careful consideration of any beliefs (Feuerstein, 1999). Media skepticism refers to mistrust toward media messages and the way information source functions (Tsftati, 2003). It is conceptualised as questioning about fairness, factuality,

accuracy and completeness of media messages (Maksl et al., 2015) with emphasis on critical thinking (Feuerstein, 1999). The mechanism of skepticism aids to reduce susceptibility to misinformation effects as it encourages interrogation of origins and accuracy of information on media (Lewandowsky et al., 2012; Tsfati, 2003). Media skepticism was found to be the predictor of assessment of news source credibility (Carr et al., 2014).

Aside from that, skepticism can also be a solution to various problems entrenched in contemporary news consumption where rumours, misinformation and conspiratorial thoughts spread much faster than truth on social media. However, results showed that social media users possess a sense of ‘generalised skepticism’ which serves them as a deterrent for not scrutinizing information critically (Fletcher & Nielsen, 2019). Media and news literacy orientations can promote skepticism toward political CTs (Kahne & Bowyer, 2017; Maksl et al., 2015; Vraga & Tully, 2015).

An emerging body of literature has been conducted to investigate the potential of media literacy that aids to enhance individuals’ skepticism in combating misinformation on social media. For example, Kahne and Bowyer (2017) found that greater media literacy enables individuals to assess evidence-based posts more accurate than misinformation posts. Besides, warning about misleading and false information on Facebook also influenced users’ judgment toward the accuracy of such information (Clayton et al., 2020). Likewise, news literacy on social media sites like Twitter would reinforce perceptions of high-quality information and increase doubt about low-quality or false information (Tully et al., 2020). In other words, skeptics demonstrate better adjudication of information accuracy.

### Moderating Role of the Dark Triad

The dark triad is a set of personality traits namely Machiavellianism, narcissism, and psychopathy. These three traits “often show differential correlates but share a common core of callous-manipulation” (Furnham et al., 2013, p. 199). Machiavellianism portrays a tendency to exploit, deceive, and manipulate others (Christie & Geis, 1970). Machiavellians tend to be cynical and distrustful (Christie & Geis, 1970; Furnham et al., 2013; Jones & Paulhus, 2011). Machiavellianism is also characterised by a strategic-calculating orientation (Jones & Paulhus, 2011), which fits well with the conception of the Machiavellian as a conservative and utilitarian (Christie & Geis, 1970; Jones & Paulhus, 2011). Driven by self-gain, individuals with Machiavellianism are more likely to appear low on honesty-humility (Ogunfowora et al., 2013).

The emergent literature has shown that Machiavellianism is positively associated with conspiracist ideation (March & Springer, 2019; Nowak et al., 2020). Often, Machiavellians perceive that those with power in the government would

engage in similar tactics and they are inclined to conspire too if they were given the power (Douglas & Sutton, 2011). Research showed that suspiciousness, political cynicism and lack of trust in the government can contribute to belief in CTs (Imhoff & Lamberty, 2018; Swami et al., 2016). All these results strengthen the assertion that tendency to believe in CTs can be associated with Machiavellianism characteristics.

Machiavellianism could attenuate the negative relationship between social media skepticism and belief in COVID-19 CTs. Skepticism is “a constructive response to political blunders and public affairs news media, representing a critical but open posture toward news media and politicians” (Pinkleton et al., 2012, p.26). It can foster a heightened attention to media and media content by scrutinizing facts and motives with an open mind and free of any resentment (Tsfati, 2003). Skeptics may not manifest Machiavellian attributes such as cynicism and manipulation. Past studies found that skeptics are oriented to know the truth by critical thinking and enhanced information seeking (Vraga & Tully, 2019; Yamamoto & Kushin, 2014) while Machiavellians tend to build cynical distrust (Dahling et al., 2009) that reflects their resentment and hostility towards media (Pinkleton et al., 2012; Tsfati, 2003). In fact, healthy skepticism can turn to cynicism if individuals feel that “critically consuming news and information has no value to them or is a waste of their time” (Vraga & Tully, 2019, p. 5).

Narcissism is typically characterized by dominance, increased sense of entitlement and superiority (Paulhus & Williams, 2002). Narcissists are engrossed with how others perceive them (Horvath & Morf, 2009). Narcissism was found to be positively related to belief in CTs (Cichocka, Marchlewska, & de Zavala, 2016a; Cichocka, Marchlewska, de Zavala, & Olechowski, 2016b; March & Springer, 2019). The propensity of them believing in CTs can be due to their desire to retain a favorable impression of others. The relationship between narcissism and belief in CTs was attributed to the tendency of the individuals with high narcissistic behavior to be the centre of attention (March & Springer, 2019), and hence, any sharing of CTs on social media allows them to receive the extent of attention they desired for. Narcissism promotes paranoia, a pattern of thinking that triggers an irrational suspicion or mistrust of others and perceive their actions as intentionally malevolent (Cicero & Kerns, 2011; Cichocka, Marchlewska, & de Zavala, 2016a). Research reported that paranoia is positively linked with belief in CTs about political and social events caused by high authoritarians (Darwin et al., 2011; Wilson & Rose, 2014).

The negative relationship between skepticism and belief in COVID-19 CTs on social media could be contingent on users’ narcissism. There exists evidence showing that narcissists with excessive self-focused attention has less propensity to engage in reflective thinking processes (Littrell et al., 2019). Previous work also demonstrated a significant association

between narcissism and overconfidence (Macenczak et al., 2016) while overconfidence has a negative relationship with cognitive reflection (Noori, 2016). Narcissists tend to act without undertaking deliberate information processing (Lee & Seidle, 2012). In this view, narcissism characteristics may not be agreeable with skepticism which entails critical thinking and careful information processing. Given this, it could be assumed that social media users with high scores on narcissism characteristics may not judge social media content critically and hence they are susceptible to agreeing with CTs.

Psychopathy is typically perceived as thrill seeking, lack of empathy and low in interpersonal emotions (Paulhus & Williams, 2002). It is characterised by social dominance, self-confidence, and callous manipulation (Hare & Neumann, 2008). Psychopaths were found to have the tendency to believe CTs (Hughes & Machan, 2021; March & Springer, 2019). Previous research showed that strange beliefs/magical thinking has a significant positive association with ideation of CTs (Barron et al., 2018) because higher odd beliefs/magical thinking reinforces a sense of control that belief in CTs could provide (Swami et al., 2011).

Psychopathy may affect the relationship between skepticism and belief in CTs. Individuals with psychopathy often show deficits in learning (Oba et al., 2019) and demonstrate a reduced capacity to process multicomponent perceptual information simultaneously (Hamilton & Newman, 2018). In addition, psychopaths have difficulties in switching their attention and often fail to integrate additional information into their thinking (Burley et al., 2020). According to Jones and Paulhus (2011), psychopathy was positively associated with impulsivity. Impulsivity was a potential obstacle to the development of adaptive social problem solving skills and also the learning of effective social problem solving strategies (McMurran et al., 2002; McMurran et al., 2005). All these psychopathic characteristics may impair social media users' skepticism.

## The Present Study

Given the spread of COVID-19 CTs on social media, it is timely to know what factors have an association with tendency to believe in such theories. The existing literature reviewed above found that skepticism on media information negatively predicts belief in CTs whereas the dark triad personality traits are positively associated with the acceptance of CTs. Therefore, the present study develops the following hypotheses to test the relationship between social media information skepticism and belief in COVID-19 CTs as well as to provide a more in-depth understanding on the moderating influence of the personality traits on this relationship.

H1: There is a negative relationship between social media information skepticism and COVID-19 conspiracy theory beliefs.

H2: Machiavellianism moderates the negative relationship between social media information skepticism and COVID-19 conspiracy theory beliefs such that the relationship is weakened for individuals who score high on Machiavellianism.

H3: Narcissism moderates the negative relationship between social media information skepticism and COVID-19 conspiracy theory beliefs such that the relationship is weakened for individuals who score high on narcissism.

H4: Psychopathy moderates the negative relationship between social media information skepticism and COVID-19 conspiracy theory beliefs such that the relationship is weakened for individuals who score high on psychopathy.

## Method

### Procedure

A cross-sectional design was established to collect data from young adult social media users from Kuala Lumpur, Malaysia, using an online survey. The rationale of choosing this segment as research target population was supported by the fact that about 81% of the Malaysian population (as of January 2020) were identified as active social media users (Müller, 2020) of which the majority of them were in their 20s and 30s and mainly residing in urban areas (Malaysian Communications and Multimedia Commission (MCMC), 2018). Results also showed that Malaysian social media users aged between 18 to 24 years old were the biggest age group that trust social media (Hirschmann, 2021a).

An online survey was created using Google Form. The questionnaire started with a brief introduction to the research. Participants were assured that their responses would be kept strictly confidential and used only for research purpose. Their participation is completely voluntary and as such they were free to withdraw from the survey at any time. In the first section of the questionnaire, a filter question was designed to ensure that the survey is completed by participants who was a user of at least one of the social media sites such as Facebook, Instagram, Twitter etc. The other sections covered the sociodemographic characteristics of participants and items measuring the predictor and outcome constructs. Questions on the constructs were asked in no particular order to reduce common method bias (MacKenzie & Podsakoff, 2012). Participants were required to complete all items in the survey to ensure no missing data.

We used G\*power to calculate the required sample size for the study. We performed the most common recommended setting for social science research to determine the sample size for a moderation model (Hair et al., 2017). Setting G\*power at

“F tests analysis”, statistical test: “Linear multiple regression: fixed model, R2 deviation from zero”, the type of power analysis: “A-priori: Compute required sample size – given  $\alpha$ , power and effect size”, effect size  $f^2 = 0.15$  (medium effect),  $\alpha$  err prob. = 0.05, and power ( $1 - \beta$  err prob) = 0.80, number of predictors = 7, the total sample size obtained was 103 with the actual power of 0.80. A research assistant was recruited to distribute the link of the survey among potential respondents. Using convenience sampling method, a total of 439 responses were collected which met the required sample determined by G\*power. Data collection took less than one month from 15 July to 10 August 2020. The protocol of the study (including the research procedure, the rights and safety of the participants, and the method of data collection) was approved by the Review Board of XXX University Malaysia to comply with research ethics policy.

## Participants

Out of the 439 participants, 117 were male (26.7%) and 322 were female (73.3%), respectively. Majority of them ranging from the age of 18 to 22 (81.3%), were single (97%) and Chinese (90.6%) and pursued tertiary education (62.9%). Less than half of the participants (44.6%) reported spending 4–6 h a day on social media sites, followed by 36.2% who spent 1–3 h on social media. Social media was the second most reliable source of news for 25.3% of the participants after online newspapers with 41.5%. Table 1 shows the demographic profile of respondents.

## Measures

### Social Media Skepticism

A 7-item scale was adopted from Maksl et al.’s (2015) study where respondents’ perception on whether news media are “fair, tell the whole story, are accurate, can be trusted, get in the way of society, solving its problems, and whether news media prioritize being the first to report a story” were sought (Maksl et al., 2015, p. 34). Participants were asked to think of information on social media when reading and choosing the option which best indicates their agreement or disagreement with each statement. Some items include “I think the news media are fair,” “I think the news media are accurate,” “I don’t think the news media can be trusted.” Responses were rated on a 5-point Likert scale from 1 (strongly disagree) to 5 (strongly agree). Some items were reverse coded so that a higher score indicated a higher level of skepticism towards the information on social media. Cronbach’s alpha of the scale reported in previous research was acceptable (Maksl et al., 2015; Vraga & Tully, 2015). The present study found an internal consistency of .91 for the scale.

**Table 1** Participants’ demographic background ( $N = 439$ )

Variable	n	Percentage (%)
Gender		
Male	117	26.7
Female	322	73.3
Age range		
18–22	357	81.3
23–27	54	12.3
28–32	19	4.3
33 and above	9	2.1
Marital status		
Single	426	97
Married	13	3
Ethnicity		
Malay	14	3.1
Chinese	398	90.6
Indian	8	2
Other	19	4.3
Education level		
Secondary	62	14.1
College/Diploma	101	23.0
Degree	251	57.2
Postgraduate	25	5.7
How many hours a day do you spend on social media sites?		
1–3	159	36.2
4–6	196	44.6
7–9	43	9.8
10–12	31	7.1
13 and above	10	2.3
What source of news do you consider to be the most reliable source?		
Social media	111	25.3
Online Newspapers	182	41.5
Printed Newspapers	54	12.3
Television	89	20.3
Word-of-mouth	3	.7

### Belief in Conspiracy Theories about COVID – 19

A 5-item COVID-19 conspiracy scale was developed for the present study. The scale included the most popular CTs in the world about COVID-19 as of July 2020 documented in the literature (Cassese et al., 2020; Georgiou et al., 2020; Miller, 2020a, 2020b). The five items include: “Coronavirus has escaped from a lab in one of the cities of China, Wuhan,” “Coronavirus is originated in the US,” “Many dead bodies affected by Coronavirus were secretly burned in China,” “The Covid-19 is a man-made virus,” and “Coronavirus was a part of a Chinese covert biological weapon programme.” The questionnaire was validated by a pilot study.

Participants rated each statement on a 5-point scale ranging from 1 = strongly disagree to 5 = strongly agree. The Cronbach's alpha for the scale was .75.

### The Dark Triad

The dark triad comprises Machiavellianism, narcissism, and psychopathy. The present study used the Short Dark Triad (SD3) scale developed by Jones and Paulhus (2014). The scale comprises of 27 items, with 9 items for each trait. Some items for the section of Machiavellianism include "It's not wise to tell my secrets," "I like to use clever manipulation to get my way," "Whatever it takes, I must get the important people on my side." Some items for narcissism include "People see me as a natural leader," "I hate being the center of attention," and "Many group activities tend to be dull without me." Some items of psychopathy are "I like to get revenge on authorities," "I avoid dangerous situations," and "Payback needs to be quick and nasty." All responses were rated on a 5-point Likert scale ranging from 1 = strongly disagree to 5 = strongly agree. Previous research showed an acceptable reliability for each sub-scale (Nowak et al., 2020). In the present study, internal consistency for Machiavellianism was  $\alpha = .75$ , for narcissism was  $\alpha = .61$  and for psychopathy was  $\alpha = .72$ . Although the alpha value of narcissism is less than 0.7, there is a general rule which recognises internal consistency value between 0.6–0.7 as acceptable (Ursachi et al., 2015).

### Analysis

The data was analysed using IBM SPSS Statistic version 25. Pearson Correlation analysis was computed to determine the relationship between all study variables. SPSS PROCESS macro by Hayes (2018) was used to test the moderating effect of Machiavellianism, narcissism and psychopathy on the negative relationship between skepticism towards information on social media and belief in CTs about COVID-19 while controlling for gender, age and education level. SPSS PROCESS macro uses ordinary least squares (OLS) regression to estimate the interaction in the moderation models. The predictors (skepticism, Machiavellianism, narcissism and psychopathy) were mean-centered when conducting the moderation analysis. The moderation analysis was conducted separately for each dark triad traits.

### Results

Before testing the hypotheses in the present study, common method bias was tested using the most widely used technique - Herman's single factor test (Podsakoff et al., 2003). From the

factor analysis, the total variance explained by one factor is 16.59% which indicated the absence of common method bias.

Pearson Correlation analysis was used to determine the negative relationship between skepticism towards information on social media and belief in CTs about COVID-19 (H1). As shown in Table 2, it was found that skepticism towards information on social media was significantly and negatively correlated with belief in CTs about COVID-19 ( $r = -.10$ ,  $p = .029$ ), supporting H1. Moreover, belief in CTs about COVID-19 was found to be significantly and positively correlated with Machiavellianism ( $r = .11$ ,  $p = .019$ ), narcissism ( $r = .11$ ,  $p = .024$ ) and psychopathy ( $r = .30$ ,  $p < .001$ ).

The moderating effect of Machiavellianism on the negative relationship between skepticism towards information on social media and belief in CTs about COVID-19 while controlling for gender, age and education level (H2) was examined using PROCESS macro. Skepticism did not significantly predict beliefs in CTs about COVID-19 ( $B = -.04$ ,  $SE = .04$ ,  $t = -0.95$ ,  $p = .345$ ) while Machiavellianism significantly predicted belief in CTs about COVID-19 ( $B = .09$ ,  $SE = .04$ ,  $t = 2.54$ ,  $p = .012$ ). The overall model was significant,  $R^2 = .047$ ,  $F(6, 432) = 3.57$ ,  $p = .002$ , which explained 4.7% of the variance in belief in CTs about COVID-19. The interaction effect between skepticism towards information on social media and Machiavellianism was statistically significant ( $B = -.02$ ,  $SE = .01$ ,  $t = -3.12$ ,  $p = .002$ ) as displayed in Fig. 1. The interaction model was  $\Delta R^2 = .021$ ,  $F(1, 432) = 9.72$ ,  $p = .002$ , which explained 2.1% of the variance in belief in CTs about COVID-19.

Based on the conditional effects, significant relationship was found between skepticism towards information on social media and belief in CTs about COVID-19 for high level of Machiavellianism,  $B = -.13$ ,  $t(432) = -3.14$ ,  $p = .002$ , 95% CI  $[-.22, -.05]$ . Meanwhile, no significant relationship was found between skepticism and belief in CTs about COVID-19 for low and moderate level of Machiavellianism (see Table 3). Thus, when Machiavellianism is high, the negative relationship between skepticism towards information on social media and belief in CTs about COVID-19 is diminished, thus supporting H2.

When investigating the moderation effect of narcissism (H3), it was found that skepticism towards information on social media did not significantly predict belief in CTs about COVID-19 ( $B = -.06$ ,  $SE = .04$ ,  $t = -1.49$ ,  $p = .138$ ) while narcissism significantly predicted belief in CTs about COVID-19 ( $B = .12$ ,  $SE = .04$ ,  $t = 2.77$ ,  $p = .006$ ). The overall model was significant,  $R^2 = .049$ ,  $F(6, 432) = 3.71$ ,  $p = .001$ , which explained 4.9% of the variance in belief in CTs about COVID-19. The interaction effect between skepticism towards information on social media and narcissism is statistically significant ( $B = -.02$ ,  $SE = .01$ ,  $t = -3.24$ ,  $p = .001$ ) as shown in Fig. 2. The interaction model was  $\Delta R^2 = .023$ ,  $F(1, 432) =$

**Table 2** Correlations between all study variables ( $N = 439$ )

No.	Variables	Mean (SD)	1	2	3	4	5
1.	Skepticism	20.98 (4.92)	1				
2.	Machiavellianism	31.19 (5.22)	-.12*	1			
3.	Narcissism	26.20 (4.37)	-.08	.26***	1		
4.	Psychopathy	23.37 (5.23)	-.21***	.24***	.31***	1	
5.	Belief in CTs about COVID-19	14.41 (3.97)	-.10*	.11*	.11*	.30***	1

\* $p < .05$ . \*\*\* $p < .001$

10.52,  $p = .001$ , which explained 2.3% of the variance in belief in CTs about COVID-19.

Based on the conditional effects, significant relationship was found between skepticism towards information on social media on belief in CTs about COVID-19 for moderate,  $B = -.08$ ,  $t(432) = -2.01$ ,  $p = .046$ , 95% CI  $[-.15, -.002]$  and high level of narcissism,  $B = -.15$ ,  $t(432) = -3.37$ ,  $p < .001$ , 95% CI  $[-.23, -.06]$ , whereas there is no significant relationship between skepticism and beliefs in CTs about COVID-19 for low level of narcissism (see Table 4). As a result, the negative relationship between skepticism towards information on social media and belief in COVID-19 conspiracy theories is weaker for individuals with moderate and high levels of narcissism, thus supporting the moderating effect of narcissism (H3).

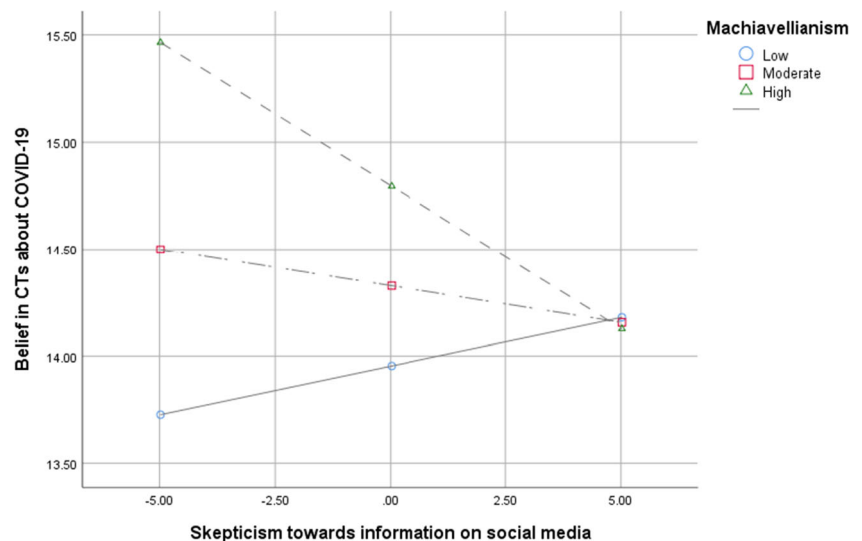
As shown in Fig. 3, psychopathy did not significantly moderate the relationship between skepticism towards information on social media and belief in CTs about COVID-19 (H4). Skepticism towards information on social media did not significantly predict belief in CTs about COVID-19 ( $B = -.04$ ,  $SE = .04$ ,  $t = -1.12$ ,  $p = .265$ ) while psychopathy significantly predicted belief in CTs about COVID-19 ( $B = .24$ ,  $SE = .04$ ,  $t = 6.32$ ,  $p < .001$ ). The overall model was significant,  $R^2 = .10$ ,  $F(6, 432) = 8.41$ ,  $p < .001$ , which explained 10% of

the variance in belief in CTs about COVID-19. The interaction effect between skepticism towards information on social media and psychopathy is not significant ( $B = -.01$ ,  $SE = .01$ ,  $t = -1.21$ ,  $p = .227$ ) with  $\Delta R^2 = .003$ ,  $F(1, 432) = 1.47$ ,  $p = .227$ , which explained 0.3% of the variance in belief in CTs about COVID-19. Thus, H4 is not supported.

## Discussion

The present study aimed to examine the association between social media information skepticism and belief in CTs about COVID-19 and the moderating role of the dark triad personality traits on this association among Malaysian young adult social media users.

As postulated in H1, skepticism towards information on social media was negatively associated with the ideation to CTs about COVID-19, suggesting that the attitude of doubt towards content on social media aids to buffer susceptibility to COVID-19 CT effects. The result substantiates the assertion that skepticism negatively predicts the acceptance of misinformation and disinformation because it motivates people “to question the origins of information that may later turn out to be false” (Lewandowsky et al., 2012, p. 120). Skepticism

**Fig. 1** Interaction effect between skepticism towards information on social media and Machiavellianism on belief in CTs about COVID-19

**Table 3** Conditional effects of skepticism towards information on social media on belief in CTs about COVID-19 by Machiavellianism

Machiavellianism	Effect	<i>t</i>	<i>p</i>	95% <i>CI</i>	
				Lower	Upper
Low	.05	0.83	.407	−.06	.15
Moderate	−.03	−0.84	.401	−.11	.05
High	−.13	−3.14	.002	−.22	−.05

**Table 4** Conditional effects of skepticism towards information on social media on belief in CTs about COVID-19 by narcissism

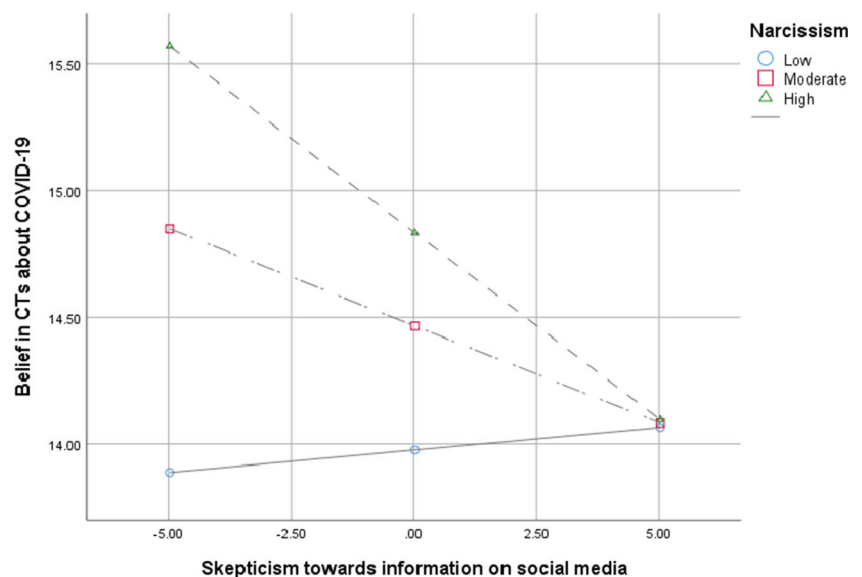
Narcissism	Effect	<i>t</i>	<i>p</i>	95% <i>CI</i>	
				Lower	Upper
Low	.02	0.37	.713	−.08	.11
Moderate	−.08	−2.01	.046	−.15	−.002
High	−.15	−3.37	< .000	−.23	−.06

involves analytical thinking (Feuerstein, 1999) and analytic thinking reduces belief in CTs (Swami et al., 2014). The present study further corroborates the result that individuals who scored high on media skepticism may assess the news program as less credible than those who scored low on media skepticism (Carr et al., 2014). The result also provides support for the negative association between news media literacy and the likelihood of endorsing CTs (Craft et al., 2017). Skeptical news media consumers are less likely to be exposed to non-mainstream media due to their belief in the lack of reliability of online news sources (Tsfati, 2010). Also, they are more likely to engage in situations and activities that require a deep elaboration (Tsfati & Cappella, 2005). Their skepticism towards information on social media could be associated with their media and news literacy (Vraga & Tully, 2019). Skepticism is consequential in the context of social media because it is receptive to misinformation (Craft et al., 2017; Kahne & Bowyer, 2017). Those with high score on media skepticism tend to repudiate the overwhelming reports in media (Tsfati, 2003). If given a choice to adjudicate the social media content while maintaining the interest for information accuracy, they should be less agreeable to the content on such outlets (Tsfati, 2003). This tendency will be advantageous for

society as it then reduces the negative impact of false or misleading information (Lewandowsky et al., 2012). Therefore, cultivating skepticism towards media messages, including online information, should remain as the fundamental of media and news literacy programs (Ashley et al., 2010; Maksl et al., 2015) because it promotes accurate judgment of truth claims (Kahne & Bowyer, 2017) and may mitigate the tendency to endorse CTs.

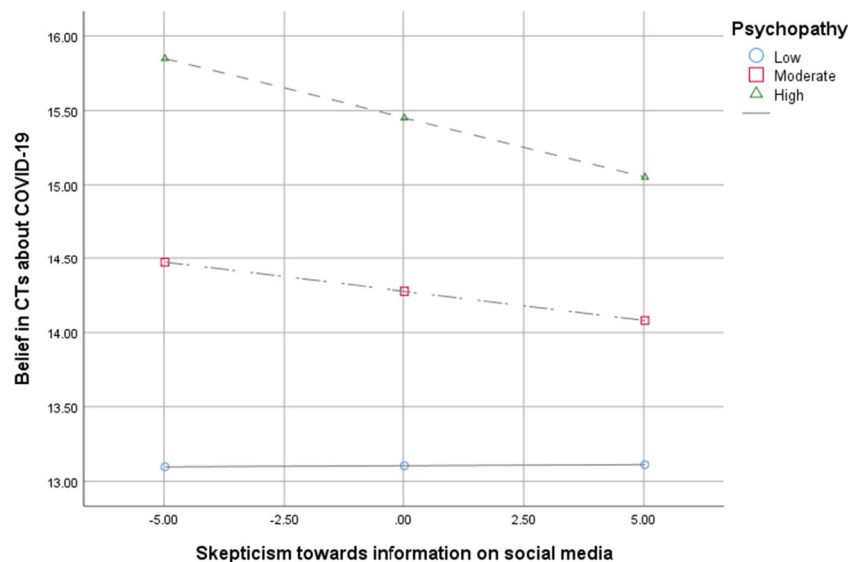
Machiavellianism was found to be the moderator on the relationship between skepticism and belief in CTs about COVID-19 (H2), suggesting that high scores on Machiavellianism weaken the association between skepticism towards social media content and conspiring propositions. Participants characterized by Machiavellianism are more likely to have a stronger conviction about COVID-19 CTs and are less likely to evaluate news from a healthy and critical perspective. Machiavellians are cynical and distrustful in nature as well as strategic in manipulation (Furnham et al., 2013; Jones & Paulhus, 2011). Therefore, they may not engage in information evaluation process with a healthy skepticism. As such, Machiavellianism may diminish the negative relationship between skepticism and belief in CTs. The finding of the present study lends credibility to past research that showed

**Fig. 2** Interaction effect between skepticism towards information on social media and narcissism on belief in CTs about COVID-19





**Fig. 3** Interaction effect between skepticism towards information on social media and psychopathy on belief in CTs about COVID-19



Machiavellianism positively predicts the generic conspiracist beliefs (March & Springer, 2019), personal willingness to conspire (Douglas & Sutton, 2011), endorsement of conspiracy theories about the COVID-19 outbreak (Malesza, 2021) and COVID-19 vaccine intentions (Hughes & Machan, 2021).

Findings also supported the moderating role of narcissism on the relationship between skepticism and belief in COVID-19 CTs (H3). This reflects that high and moderate levels of narcissism can diminish the strength of the relationship between skepticism and the ideation of COVID-19 CTs because they are less likely to engage in a thoughtful message processing and reflective thinking (Lee & Seidle, 2012; Littrell et al., 2019). The results of the present study substantiate past research that showed narcissism is a robust predictor of conspiracy ideation (Cichocka, Marchlewska, & de Zavala, 2016a). This can be attributed to the narcissists' paranoia behavior which was found to be associated with conspiracy beliefs (Wilson & Rose, 2014). Furthermore, narcissists are attention-seeking (Raskin & Terry, 1988) and their desire to be the center of attention can also be linked with their tendency to have conspiracy mentalities (March & Springer, 2019).

The present study failed to support the hypothesised moderating role of psychopathy on the relationship between skepticism and belief in COVID-19 CTs (H4). This result suggests that psychopathy characteristics are less likely to impede skepticism in adjudicating information critically. One possible reason to explain the absence of the moderating influence of psychopathy lies in the scale items that mainly capture impulsivity feature of psychopathy (Jones & Paulhus, 2014). Past research also demonstrated that psychopathy, conceptualised as impulsivity, emotional reactivity, destructive and volatile nature, is not associated with the ideation of CTs (March & Springer, 2019). However, other characteristics of psychopathy which cover social dominance, exploitation, and

manipulation were found to be the predictors of belief in CTs (March & Springer, 2019).

## Implications

The present study yields some theoretical implications. Firstly, it investigated skepticism as one of the core components of media literacy along with the three dark personality traits, thus providing a better understanding on the complexity of individuals' behavior towards the acceptance of information about COVID-19 on social media. Secondly, the significant negative association between social media skepticism and belief in COVID-19 advanced the literature of media literacy and CTs. Prior studies did not examine the impact of skepticism on social media pertaining to belief in CTs associated to the unprecedented crisis like the pandemic, thus the present study provides a ground for further postulates in the future. Thirdly, the moderating role of Machiavellianism and narcissism on the relationship between social media skepticism and the ideation of COVID-19 CTs provides theoretical evidence supporting the dominant role of individuals' dark personality characteristics.

The present study also produces several practical implications. Results showed that skepticism predicted COVID-19 conspiracy beliefs, implying that skeptical social media users are less susceptible to conspiratorial content and more likely to show more responsible online behaviors. Emphasis on skepticism towards social media content may possibly help cultivate the good practice of fact-checking and critical thinking. Sceptics are more likely to refute the influence of the COVID-19 CTs. In light of this, media literacy advocates should emphasize skepticism as an essential disposition to empower users' ability to distinguish conspiratorial content and resist falsehood as a result of inaccurate reports about the pandemic that effectuate uncertainty and stress among public.

The descriptive results of the present study showed that the participants of the present study considered social media news more reliable than printed newspaper or television, supporting the Statista survey that showed majority of the Malaysian respondents (86%) get their news online, including through social media, and 30% of them get their news through print media (Hirschmann, 2021b). Nonetheless, Malaysian young adults appeared to have low awareness of potential media effects and critical thinking abilities of information encountered on digital media (Chin & Zanuddin, 2019). They were also found to report some difficulties in evaluating the relevance and usefulness of information on digital media (Pandian et al., 2020). All these results call for an attention of media literacy education to empower individuals to become more critical social media users with a focus on healthy skepticism.

In addition, fostering skepticism toward information on social media while avoiding Machiavellianism characteristics (such as cynicism, manipulation and exploitation) should be the driven forces in media literacy programmes. Healthy skepticism on social media content should be inculcated while the elements of accuracy, trustworthiness, fairness, and completeness of information are valued. Having a misanthropic view of the world may intensify tendency to believe CTs. While skepticism is negatively linked with CTs belief, Machiavellianism can be detrimental as reflective thinking is absent, instead, cynical hostility and rejection of media driven by antagonism are dominant. Results of the present study demonstrated that users high on Machiavellianism are more likely to accept COVID-19 CTs because they may not be armed with skepticism. Given this, indirect intervention programs through creation of awareness (such as # Say “Yes” to Responsible Sharing of News campaign) are recommended to prevent social media users from communicating inaccurate information to promote anti-malevolent behaviors on social media.

The result showed that high and moderate levels of narcissism can weaken the negative relationship of skepticism on COVID-19 CTs, implying that social media users may be defenceless to conspiratorial content if their skepticism is diminished by narcissism. The negative impact of rampant narcissism impairs users’ concern about the quality of information on social media and thus intensifies their propensity to endorse CTs. Narcissism is manifested as a stable trait (Vater et al., 2014) and can be harnessed for good intentions. Research showed that some characteristics of narcissism such as inflated self-image and sense of importance appeared to be associated with higher self-esteem, greater resilience and less depression (Brailovskaia et al., 2019; Mehdizadeh, 2010). In view of this, those concerned of the inimical effects of CTs on social media can promote positive narcissism for self-enhancement and discourage users from engaging in deconstructive dimensions of narcissism that lead to vindictive motivations such as creating and promulgating CTs on social media.

## Limitations and Future Research

Although the findings from the present study have made several contributions to the literature, it was limited by its reliance on a correlational design. Therefore, the present study failed to provide results for causality of COVID-19 CT belief (Creswell & Creswell, 2014). The sample of the current study was recruited conveniently and was predominantly constituted by female young adult social media users who were mainly Chinese, thus imperilling the generalizability of the results (Babbie, 2017). A replication of the study can be conducted to improve on the inclusiveness of the sample which shows an adequate and accurate representation of the population. The present study used self-report measurements which are subject to participants’ social desirability response bias, thus compromising the validation of scoring in the research measures (Arnold & Feldman, 1981). In addition to skepticism as one of the core components of media literacy, media locus of control and automatic versus mindful thought processing have the potential to protect media audience from being susceptible to the effects of conspiratorial information on social media (Maksl et al., 2015) which can be the focus of future research. While the present study focused on dark personality traits that may affect media consumption, future studies are recommended to investigate the moderating role of big five personality factors on the relationship between social media skepticism and conspiracy beliefs. In addition, the scale used to measure COVID-19 CTs was not inclusive due to the dynamic nature of such theories during the pandemic. Therefore, future research is suggested to expand the scale comprising the recent CTs.

**Funding** This study was funded by Xiamen University Malaysia Research Grant (XMUMRF/2019/C3/IART/0004).

**Data Availability** The raw data of the present study is available at <https://osf.io/k4vab/>

## Declarations

**Ethical Approval** The protocol of the study (including the research procedure, the rights and safety of the participants, and the method of data collection) was approved by the Review Board of Xiamen University Malaysia to ensure the principles of research ethics.

**Informed Consent** Informed consent was obtained from all individual participants of the present study.

**Conflict of Interest** The authors declare that they have no conflict of interest.

**CRedit Authorship Contribution Statement** Ashraf Sadat Ahadzadeh: Conceptualization, Investigation, Methodology, Writing-original draft, Funding acquisition. Shin Ling Wu: Formal analysis. Fon Sim Ong: Writing - review & editing.

## References

- Ahmed, W., Vidal-Alaball, J., Downing, J., & Seguí, F. L. (2020). COVID-19 and the 5G conspiracy theory: Social network analysis of twitter data. *Journal of Medical Internet Research*, 22(5), e19458. <https://doi.org/10.2196/19458>
- Arnold, H. J., & Feldman, D. C. (1981). Social desirability response bias in self-report choice situations. *Academy of Management Journal*, 24(2), 377–385. <https://doi.org/10.5465/255848>
- Ashley, S., Poepsel, M., & Willis, E. (2010). Media literacy and news credibility: Does knowledge of media ownership increase skepticism in news consumers? *Journal of Media Literacy Education*, 2(1), 37–46.
- Babbie, E. R. (2017). *The basics of social research (7th ed)*. Cengage Learning.
- Barron, D., Furnham, A., Weis, L., Morgan, K., Towell, T., & Swami, V. (2018). The relationship between schizotypal facets and conspiracist beliefs via cognitive processes. *Psychiatry Research*, 259, 15–20. <https://doi.org/10.1016/j.psychres.2017.10.001>
- Bierwiazek, K., Kunst, J. R., & Pich, O. (2020). Belief in COVID-19 conspiracy theories reduces social distancing over time. *Applied Psychology: Health and Well-Being*, 12(4), 1270–1285. <https://doi.org/10.1111/aphw.12223>
- Brailovskaia, J., Teismann, T., Zhang, X. C., & Margraf, J. (2019). Grandiose narcissism, depression and suicide ideation in Chinese and German students. *Current Psychology*, 40, 1–9. <https://doi.org/10.1007/s12144-019-00355-1>
- Burley, D. T., Deriu, V., Masin, R., Gray, N. S., & Snowden, R. J. (2020). Emotional modulation of the pupil in psychopathy: A test of the response modulation hypothesis. *International Journal of Psychophysiology*, 155, 168–174. <https://doi.org/10.1016/j.ijpsycho.2020.06.008>
- Carr, D. J., Barnidge, M., Lee, B. G., & Tsang, S. J. (2014). Cynics and skeptics: Evaluating the credibility of mainstream and citizen journalism. *Journalism & Mass Communication Quarterly*, 91(3), 452–470. <https://doi.org/10.1177/1077699014538828>
- Cassese, E. C., Farhart, C. E., & Miller, J. M. (2020). Gender differences in COVID-19 conspiracy theory beliefs. *Politics & Gender*, 16, 1009–1018. <https://doi.org/10.1017/S1743923X20000409>
- Chen, X., Zhang, S. X., Jahanshahi, A. A., Alvarez-Risco, A., Dai, H., Li, J., & Ibarra, V. G. (2020). Belief in a COVID-19 conspiracy theory as a predictor of mental health and well-being of health care workers in Ecuador: Cross-sectional survey study. *JMIR Public Health and Surveillance*, 6(3), e20737.
- Chin, Y. S., & Zanuddin, H. (2019). New media literacy and media use among university students in Malaysia. *International Journal of Engineering and Advanced Technology*, 8(5C), 469–474.
- Christie, R., & Geis, F. (1970). *Studies in Machiavellianism*. Academic Press.
- Cicero, D. C., & Kerns, J. G. (2011). Is paranoia a defence against or an expression of low self-esteem? *European Journal of Personality*, 25(5), 326–335. <https://doi.org/10.1002/per.794>
- Cichočka, A., Marchlewska, M., & de Zavala, A. G. (2016a). Does self-love or self-hate predict conspiracy beliefs? Narcissism, self-esteem, and the endorsement of conspiracy theories. *Social Psychological and Personality Science*, 7(2), 157–166. <https://doi.org/10.1177/1948550615616170>
- Cichočka, A., Marchlewska, M., de Zavala, A. G., & Olechowski, M. (2016b). They will not control us': Ingroup positivity and belief in intergroup conspiracies. *British Journal of Psychology*, 107(3), 556–576. <https://doi.org/10.1111/bjop.12158>
- Clayton, K., Blair, S., Busam, J. A., Forstner, S., Glance, J., Green, G., Kawata, A., Kovvuri, A., Martin, J., Morgan, E., Sandhu, M., Sang, R., Scholz-Bright, R., Welch, A. T., Wolff, A. G., Zhou, A., & Nyhan, B. (2020). Real solutions for fake news? Measuring the effectiveness of general warnings and factcheck tags in reducing belief in false stories on social media. *Political Behavior*, 42, 1073–1095. <https://doi.org/10.1007/s11109-019-09533-0>
- Craft, S., Ashley, S., & Maksl, A. (2017). News media literacy and conspiracy theory endorsement. *Communication and the Public*, 2(4), 388–401. <https://doi.org/10.1177/2057047317725539>
- Creswell, J. W., & Creswell, J. D. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches (4th ed)*. California Sage Publications. Inc..
- Dahling, J. J., Whitaker, B. G., & Levy, P. E. (2009). The development and validation of a new Machiavellianism scale. *Journal of Management*, 35(2), 219–257. <https://doi.org/10.1177/0149206308318618>
- Darwin, H., Neave, N., & Holmes, J. (2011). Belief in conspiracy theories. The role of paranormal belief, paranoid ideation and schizotypy. *Personality and Individual Differences*, 50, 1289–1293. <https://doi.org/10.1016/j.paid.2011.02.027>
- Dentith, M. R. X. (2014). Evidence and conspiracy theories. In *The Philosophy of Conspiracy Theories*. P. Macmillan. [https://doi.org/10.1057/9781137363169\\_9](https://doi.org/10.1057/9781137363169_9)
- Depoux, A., Martin, S., Karafillakis, E., Preet, R., Wilder-Smith, A., & Larson, H. (2020). The pandemic of social media panic travels faster than the COVID-19 outbreak. *Journal of Travel Medicine*, 27(3), 1–2. <https://doi.org/10.1093/jtm/taaa031>
- Douglas, K. M., & Sutton, R. M. (2011). Does it take one to know one? Endorsement of conspiracy theories is influenced by personal willingness to conspire. *British Journal of Social Psychology*, 50(3), 544–552. <https://doi.org/10.1111/j.2044-8309.2010.02018.x>
- Douglas, K. M., Sutton, R. M., & Cichočka, A. (2017). The psychology of conspiracy theories. *Current Directions in Psychological Science*, 26(6), 538–542. <https://doi.org/10.1177/0963721417718261>
- Douglas, K. M., Uscinski, J., Sutton, R. M., Cichočka, A., Nefes, T., Ang, C. S., & Deravi, F. (2019). Understanding conspiracy theories. *Advances in Political Psychology*, 40(Suppl. 1), 3–35. <https://doi.org/10.1111/pops.12568>
- Fletcher, R., & Nielsen, R. K. (2019). Generalised skepticism: How people navigate news on social media. *Information, Communication & Society*, 22(12), 1751–1769. <https://doi.org/10.1080/1369118X.2018.1450887>
- Feuerstein, M. (1999). Media literacy in support of critical thinking. *Journal of Educational Media*, 24(1), 43–54. <https://doi.org/10.1080/1358165990240104>
- Furnham, A., Richards, S. C., & Paulhus, D. L. (2013). The dark triad of personality: A 10 year review. *Social and Personality Psychology Compass*, 7(3), 199–216. <https://doi.org/10.1111/spc3.12018>
- Georgiou, N., Delfabbro, P., & Balzan, R. (2020). COVID-19-related conspiracy beliefs and their relationship with perceived stress and pre-existing conspiracy beliefs. *Personality and Individual Differences*, 166, 110201. <https://doi.org/10.1016/j.paid.2020.110201>
- Goertzel, T. (2020). Conspiracy theories in science. *EMBO Reports*, 11(7), 493–499. <https://doi.org/10.1038/embor.2010.84>
- Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2017). *A primer on partial least squares structural equation modeling (PLS-SEM) (2nd ed.)*. Sage.
- Hamilton, R. K., & Newman, J. P. (2018). Information processing capacity in psychopathy: Effects of anomalous attention. *Personality Disorders: Theory, Research, and Treatment*, 9(2), 182–187. <https://doi.org/10.1037/per0000223>
- Hare, R. D., & Neumann, C. S. (2008). Psychopathy as a clinical and empirical construct. *Annual Review of Clinical Psychology*, 4, 217–246. <https://doi.org/10.1146/annurev.clinpsy.3.022806.091452>
- Hayes, A. F. (2018). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach (2<sup>nd</sup> ed)*. Guilford publications.

- Hirschmann, R. (2021a). Respondents' trust in social media for news in Malaysia 2020 by age group. Statista. Retrieved July 10, 2021, from <https://www.statista.com/statistics/983048/malaysia-trust-in-social-media-news-by-age/#:~:text=During%20the%20period%20surveyed%2C%2019,respondents%20to%20trust%20social%20media>
- Hirschmann, R. (2021b). Malaysians' top sources for news 2020. Statista.com. Retrieved July 10, 2021, from <https://www.statista.com/statistics/982719/malaysia-top-news-sources/>
- Horvath, S., & Morf, C. C. (2009). Narcissistic defensiveness: Hypervigilance and avoidance of worthlessness. *Journal of Experimental Social Psychology*, 45(6), 1252–1258. <https://doi.org/10.1016/j.jesp.2009.07.011>
- Hughes, S., & Machan, L. (2021). It's a conspiracy: Covid-19 conspiracies link to psychopathy, Machiavellianism and collective narcissism. *Personality and Individual Differences*, 171, 110559. <https://doi.org/10.1016/j.paid.2020.110559>
- Imhoff, R., & Lamberty, P. (2018). How paranoid are conspiracy believers? Toward a more fine-grained understanding of the connect and disconnect between paranoia and belief in conspiracy theories. *European Journal of Social Psychology*, 48(7), 909–926. <https://doi.org/10.1002/ejsp.2494>
- Jolley, D., & Paterson, J. L. (2020). Pylons ablaze: Examining the role of 5G COVID-19 conspiracy beliefs and support for violence. *British Journal of Social Psychology*, 59(3), 628–640. <https://doi.org/10.1111/bjso.12394>
- Jones, D. N., & Paulhus, D. L. (2011). The role of impulsivity in the dark triad of personality. *Personality and Individual Differences*, 51(5), 679–682. <https://doi.org/10.1016/j.paid.2011.04.011>
- Jones, D. N., & Paulhus, D. L. (2014). Introducing the short dark triad (SD3): A brief measure of dark personality traits. *Assessment*, 21(1), 28–41. <https://doi.org/10.1177/1073191113514105>
- Kahne, J., & Bowyer, B. (2017). Educating for democracy in a partisan age: Confronting the challenges of motivated reasoning and misinformation. *American Educational Research Journal*, 54(1), 3–34. <https://doi.org/10.3102/0002831216679817>
- Kraft, P. W., Lodge, M., & Taber, C. S. (2015). Why people “don't trust the evidence” motivated reasoning and scientific beliefs. *The Annals of the American Academy of Political and Social Science*, 658(1), 121–133. <https://doi.org/10.1177/0002716214554758>
- Kunda, Z. (1990). The case for motivated inference. *Psychological Bulletin*, 108(3), 480–498. <https://doi.org/10.1037/0033-2909.108.3.480>
- Lee, S. Y., & Seidle, R. (2012). Narcissists as consumers: The effects of perceived scarcity on processing of product information. *Social Behavior and Personality: An International Journal*, 40(9), 1485–1499. <https://doi.org/10.2224/sbp.2012.40.9.1485>
- Lewandowsky, S., & Cook, J. (2020). *The conspiracy theory handbook*. John Cook, Center for Climate Change Communication, George Mason University. Retrieved June 16, 2021, from <https://www.climatechangecommunication.org/wp-content/uploads/2020/03/ConspiracyTheoryHandbook.pdf>
- Lewandowsky, S., Ecker, U. K. H., Seifert, C. M., Schwarz, N., & Cook, J. (2012). Misinformation and its correction: Continued influence and successful debiasing. *Psychological Science in the Public Interest*, 13(3), 106–131. <https://doi.org/10.1177/1529100612451018>
- Littrell, S., Fugelsang, J., & Risko, E. F. (2019). Overconfidently underthinking: Narcissism negatively predicts cognitive reflection. *Thinking & Reasoning*, 26, 1–29. <https://doi.org/10.1080/13546783.2019.1633404>
- Macenczak, L. A., Campbell, S., Henley, A. B., & Campbell, W. K. (2016). Direct and interactive effects of narcissism and power on overconfidence. *Personality and Individual Differences*, 91, 113–122. <https://doi.org/10.1016/j.paid.2015.11.053>
- MacKenzie, S. B., & Podsakoff, P. M. (2012). Common method bias in marketing: Causes, mechanisms, and procedural remedies. *Journal of Retailing*, 88(4), 542–555. <https://doi.org/10.1016/j.jretai.2012.08.001>
- Maksl, A., Ashley, S., & Craft, S. (2015). Measuring news media literacy. *Journal of Media Literacy Education*, 6, 29–45.
- Malaysian Communications and Multimedia Commission (2018). Internet Users Survey 2018. Retrieved January 7, 2021, from <https://www.mcmc.gov.my/skmmgovmy/media/General/pdf/Internet-Users-Survey-2018.pdf>
- Malesza, M. (2021). The Dark Triad and beliefs in conspiracy theories about COVID-19. ResearchGate. Retrieved July 12, 2021, from [https://www.researchgate.net/publication/343948511\\_The\\_Dark\\_Triad\\_and\\_beliefs\\_in\\_conspiracy\\_theories\\_about\\_the\\_COVID-19](https://www.researchgate.net/publication/343948511_The_Dark_Triad_and_beliefs_in_conspiracy_theories_about_the_COVID-19)
- March, E., & Springer, J. (2019). Belief in conspiracy theories: The predictive role of schizotypy, Machiavellianism, and primary psychopathy. *PLoS One*, 14(12), e0225964. <https://doi.org/10.1371/journal.pone.0225964>
- Mehdizadeh, S. (2010). Self-presentation 2.0: Narcissism and self-esteem on Facebook. *Cyberpsychology, behavior, and social networking*, 13(4), 357–364. <https://doi.org/10.1089/cyber.2009.0257>
- McMurrin, M., Blair, M., & Egan, V. (2002). An investigation of the correlations between aggression, impulsiveness, social problem-solving, and alcohol use. *Aggressive Behavior: Official Journal of the International Society for Research on Aggression*, 28(6), 439–445. <https://doi.org/10.1002/ab.80017>
- McMurrin, M., Egan, V., & Duggan, C. (2005). Stop & think! Social problem solving therapy with personality disordered offenders. In M. McMurrin & J. McGuire (Eds.), *Social problem solving and offending: Evidence, evaluation and evolution*. Wiley.
- Miller, J. M. (2020a). Do COVID-19 conspiracy theory beliefs form a monological belief system? *Canadian Journal of Political Science*, 53(2), 319–326. <https://doi.org/10.1017/S0008423920000517>
- Miller, J. M. (2020b). Psychological, political, and situational factors combine to boost COVID-19 conspiracy theory beliefs. *Canadian Journal of Political Science*, 53(2), 327–334. <https://doi.org/10.1017/S000842392000058X>
- Motta, M., Stecula, D., & Farhart, C. (2020). How right-leaning media coverage of COVID-19 facilitated the spread of misinformation in the early stages of the pandemic in the US. *Canadian Journal of Political Science*, 53, 335–342. <https://doi.org/10.1017/S0008423920000396>
- Müller, J. (2020). Active social media users as percentage of the total population in Malaysia from 2016 to 2020. Statista. Retrieved February 9, 2021, from <https://www.statista.com/statistics/883712/malaysia-social-media-penetration/#:~:text=As%20of%20January%202020%2C%20about,the%20total%20population%20in%20Malaysia>
- Noori, M. (2016). Cognitive reflection as a predictor of susceptibility to behavioral anomalies. *Judgment and Decision making*, 11(1), 114–120.
- Nowak, B., Brzóska, P., Piotrowski, J., Sedikides, C., Żemojtel-Piotrowska, M., & Jonason, P. K. (2020). Adaptive and maladaptive behavior during the COVID-19 pandemic: The roles of dark triad traits, collective narcissism, and health beliefs. *Personality and Individual Differences*, 167, 110232. <https://doi.org/10.1016/j.paid.2020.110232>
- Oba, T., Katahira, K., & Ohira, H. (2019). The Effect of Reduced Learning Ability on Avoidance in Psychopathy: A Computational Approach. *Frontiers in Psychology*, 10, 1–15. <https://doi.org/10.3389/fpsyg.2019.02432>
- Ogunfowora, B., Bourdage, J. S., & Nguyen, B. (2013). An exploration of the dishonest side of self-monitoring: Links to moral disengagement and unethical business decision making. *European Journal of Personality*, 27(6), 532–544. <https://doi.org/10.1002/per.1931>

- Pandian, A., Baboo, S. B., & Yi, L. J. (2020). Digital storytelling: Engaging young people to communicate for digital media literacy. *Jurnal Komunikasi: Malaysian journal of communication*, 36(1), 187–204. <https://doi.org/10.17576/JKMJC-2020-3601-11>
- Paulhus, D. L., & Williams, K. M. (2002). The dark triad of personality: Narcissism, Machiavellianism, and psychopathy. *Journal of Research in Personality*, 36(6), 556–563. [https://doi.org/10.1016/S0092-6566\(02\)00505-6](https://doi.org/10.1016/S0092-6566(02)00505-6)
- Pinkleton, B. E., Austin, E. W., Zhou, Y., Willoughby, J. F., & Reiser, M. (2012). Perceptions of news media, external efficacy, and public affairs apathy in political decision making and disaffection. *Journalism & Mass Communication Quarterly*, 89(1), 23–39. <https://doi.org/10.1177/1077699011428586>
- Podsakoff, P. M., MacKenzie, S. B., Lee, J.-Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology*, 88(5), 879–903. <https://doi.org/10.1037/0021-9010.88.5.879>
- Pulido, C. M., Villarejo-Carballido, B., Redondo-Sama, G., & Gómez, A. (2020). COVID-19 infodemic: More retweets for science-based information on coronavirus than for false information. *International sociology*, 0268580920914755, 35, 377–392. <https://doi.org/10.1177/0268580920914755>
- Raskin, R., & Terry, H. (1988). A principal-components analysis of the narcissistic personality inventory and further evidence of its construct validity. *Journal of Personality and Social Psychology*, 54(5), 890–902. <https://doi.org/10.1037/0022-3514.54.5.890>
- Romer, D., & Jamieson, K. H. (2020). Conspiracy theories as barriers to controlling the spread of COVID-19 in the US. *Social Science & Medicine*, 263, 113356. <https://doi.org/10.1016/j.socscimed.2020.113356>
- Swami, V., Coles, R., Stieger, S., Pietschnig, J., Furnham, A., Rehim, S., & Voracek, M. (2011). Conspiracist ideation in Britain and Austria: Evidence of a monological belief system and associations between individual psychological differences and real-world and fictitious conspiracy theories. *British Journal of Psychology*, 102(3), 443–463. <https://doi.org/10.1111/j.2044-8295.2010.02004.x>
- Swami, V., Weis, L., Lay, A., Barron, D., & Furnham, A. (2016). Associations between belief in conspiracy theories and the maladaptive personality traits of the personality inventory for DSM-5. *Psychiatry Research*, 28, 86–90. <https://doi.org/10.1016/j.psychres.2015.12.027>
- Swami, V., Voracek, M., Stieger, S., Tran, U. S., & Furnham, A. (2014). Analytic thinking reduces belief in conspiracy theories. *Cognition*, 133(3), 572–585. <https://doi.org/10.1016/j.cognition.2014.08.006>
- Tsfati, Y. (2003). Media skepticism and climate of opinion perception. *International Journal of Public Opinion Research*, 15(1), 65–82. <https://doi.org/10.1093/ijpor/15.1.65>
- Tsfati, Y. (2010). Online news exposure and trust in the mainstream media: Exploring possible associations. *American Behavioral Scientist*, 54, 22–42. <https://doi.org/10.1177/0002764210376309>
- Tsfati, Y., & Cappella, J. N. (2005). Why do people watch news they do not trust? The need for cognition as a moderator in the association between news media skepticism and exposure. *Media Psychology*, 7, 251–271. [https://doi.org/10.1207/S1532785XMEP0703\\_2](https://doi.org/10.1207/S1532785XMEP0703_2)
- Tully, M., Vraga, E. K., & Bode, L. (2020). Designing and testing news literacy messages for social media. *Mass Communication and Society*, 23(1), 22–46. <https://doi.org/10.1080/15205436.2019.1604970>
- Ursachi, G., Horodnic, I. A., & Zait, A. (2015). How reliable are measurement scales? External factors with indirect influence on reliability estimators. *Procedia Economics and Finance*, 20, 679–686. [https://doi.org/10.1016/S2212-5671\(15\)00123-9](https://doi.org/10.1016/S2212-5671(15)00123-9)
- Uscinski, J. E., Enders, A. M., Klofstad, C., Seelig, M., Funchion, J., Everett, C., Wuchty, S., Premaratne, K., Murthi, M. (2020). Why do people believe COVID-19 conspiracy theories? *Harvard Kennedy School Misinformation Review*, 1(3), 1–12. <https://doi.org/10.37016/mr-2020-015>
- Vater, A., Ritter, K., Strunz, S., Ronningstam, E. F., Renneberg, B., & Roepke, S. (2014). Stability of narcissistic personality disorder: Tracking categorical and dimensional rating systems over a two-year period. *Personality Disorders: Theory, Research, and Treatment*, 5(3), 305–313. <https://doi.org/10.1037/per0000058>
- Vraga, E. K., & Tully, M. (2015). Media literacy messages and hostile media perceptions: Processing of nonpartisan versus partisan political information. *Mass Communication and Society*, 18, 422–448. <https://doi.org/10.1080/15205436.2014.1001910>
- Vraga, E. K., & Tully, M. (2019). News literacy, social media behaviors, and skepticism toward information on social media. *Information, Communication & Society*, 24 (2), 150–166. <https://doi.org/10.1080/1369118X.2019.1637445>
- Wilson, M. S., & Rose, C. (2014). The role of paranoia in a dualprocess motivational model of conspiracy belief. In J. W. van Prooijen & P. A. M. van Lange (Eds.), *Power, politics, and paranoia* (pp. 273–291). Cambridge University Press.
- World Health Organizations (2021). WHO Coronavirus Disease (COVID-19). Retrieved February 10, 2021, from [https://covid19.who.int/?gclid=Cj0KCQiA3smABhCjARIsAKtrg6Kre4omrYyXgTB\\_Y3xvfYgkmpq5cREaEeyWZuqwsaNY5M93951UFkJQaAjkNEALw\\_wcB](https://covid19.who.int/?gclid=Cj0KCQiA3smABhCjARIsAKtrg6Kre4omrYyXgTB_Y3xvfYgkmpq5cREaEeyWZuqwsaNY5M93951UFkJQaAjkNEALw_wcB)
- Yamamoto, M., & Kushin, M. J. (2014). More harm than good? Online media use and political disaffection among college students in the 2008 election. *Journal of Computer-Mediated Communication*, 19, 430–445. <https://doi.org/10.1111/jcc4.12046>

**Publisher's Note** Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.