

RESEARCH ARTICLE

To what extent are conspiracy theorists concerned for self versus others? A COVID-19 test case

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Abstract

We examined whether people who are prone to believe COVID-19 conspiracy theories are characterised by an especially strong concern for others or an especially strong concern for the self, and whether these orientations are associated with willingness to take a COVID-19 vaccine. We surveyed 4,245 participants from eight nations; three months later we re-contacted 1,262 participants from three nations. Belief in COVID-19 conspiracy theories was related to greater concerns about one's own safety, and lower concerns about the safety of close others. Furthermore, conspiracist ideation at Wave 1 predicted reluctance to take a COVID-19 vaccine at Wave 2, mediated through relative concern for self versus others. In sum, people who are high in conspiracy beliefs have relatively higher concern for the self relative to others, with troubling implications for public health.

KEYWORDS

conspiracy theories, COVID-19, prosocial behavior, vaccine hesitancy

1 | INTRODUCTION

Conspiracies occur when groups of people coordinate secretly to do something unlawful or unethical (e.g., Big Tobacco's cover-up of evidence that cigarettes cause cancer). The term *conspiracy theory* refers to the belief that a conspiracy has occurred, when the evidence is circumstantial or speculative (Levy, 2007). Interestingly, people who believe one conspiracy theory are more likely to believe other conspiracy theories, even those that seem logically incompatible (e.g., the more people believe Princess Diana was murdered, the more they believe she is still alive; Wood et al., 2012). This suggests that some people have a conspiracist worldview—a belief that it is common for networks of powerful people to execute sinister hoaxes on the public in near-perfect secrecy—which predisposes them to being open-minded to multiple non-official accounts of reality (Goertzel, 1994).

A rapidly growing body of research has focused on the intrapsychic factors that predict people's propensity to engage in conspiracist thinking. From this literature, a picture has emerged of the

conspiracy theorist as concerned, alienated, mistrustful, and angry (see Douglas et al., 2017, 2019, for reviews). However, what is unclear is the extent to which this concern, alienation, mistrust, and anger is focused on collective versus personal welfare. Are conspiracy theorists fueled by a prosocial concern for the welfare of others, or are they focused on more selfish concerns? By asking this question, we seek to develop our understanding of the social orientations that underpin the belief that the official version of events has been distorted by a covert alliance of powerful individuals.

Below, we unpack the case for and against conspiracy theorists being characterised by other-focused concern. We then examine how this question can help us understand vaccine hesitancy, a problem that has been listed by the World Health Organisation as one of the top ten threats to global health in 2019 (World Health Organization, 2019) and which has become especially critical in the wake of COVID-19.

Although the term *conspiracy theorist* often contains a pejorative edge, there are striking similarities between the rhetoric of

conspiracy theorists and those of social justice activists. By “speaking truth to power” (Imhoff & Bruder, 2014) or exhorting the public to “wake up”, conspiracy theorists mirror the language of false consciousness: the notion that people are sedated by a system of power that prevents them from perceiving the true nature of their social or economic situation. People who endorse conspiracy theories risk personal stigma by calling attention to what they see to be a hidden social injustice (Lantian et al., 2018) and ethnographic research demonstrates that many conspiracy theorists self-identify as activists (Harambam & Aupers, 2017). There is also evidence that stronger beliefs in conspiracy theories are associated with greater intentions to engage in non-normative, illegal forms of political action, driven by state-based anger (Imhoff et al., 2020; Jolley & Paterson, 2020). When somebody who believes a conspiracy theory attempts to convert other people to their worldview, it implies a broader concern for the public: an orientation that tilts towards concerns for the collective, even if that comes at the risk of personal ridicule and stigmatisation.

On the other hand, the conspiracy theorist could fit the profile of the selfish actor: people who are concerned about society, but in a self-focused way. There is a range of correlational evidence suggesting that those relatively high in conspiracist thinking have greater disregard for the concerns and interests of others. Specifically, those who endorse conspiracy theories tend to be higher in Machiavellianism (March & Springer, 2019) and are more willing to personally conspire against others (Douglas & Sutton, 2011). Similarly, they tend to be higher in individual-level narcissism (Cichocka et al., 2016a)—a personality trait associated with selfishness, personal entitlement, and low concern for others (Krizan & Herlache, 2018; Morf & Rhodewalt, 2001)—as well as collective narcissism, a trait associated with outgroup negativity (Cichocka et al., 2015, 2016b). People higher in conspiracy theorising are also more likely to report egocentric threat bias: the tendency to think that one is more susceptible to external threats than are other people (Imhoff & Lamberty, 2018). Dovetailing with the portrait painted by these correlational data are experimental data showing that exposure to conspiracy theories decreases various prosocial actions, including donation intentions (van der Linden, 2015) and vaccination intentions (Jolley & Douglas, 2014).

Especially relevant to the current article is a recent study drawing on a Facebook sample of 229 French participants (Marinthe et al., 2020; Study 2). Conducted soon after the French government had introduced COVID-19 lockdown measures, the study asked participants to rate their reasons for respecting the lockdown measures. Those who were relatively high on a measure of conspiracist ideation were significantly more likely to say that their motives for respecting the lockdown measures were “to protect myself from COVID-19” ($r = .18$). In contrast, there was no significant relationship between conspiracist ideation and their motivation to protect humanity ($r = .13$), protect their close relatives ($r = .07$), protect French people ($r = .05$), or protect vulnerable people ($r = .00$). This finding lends further substance to the “selfish actor” model of conspiracy theorists.

In the current study, we drew on the COVID-19 context as a test case to examine competing notions of the extent to which conspiracy theorising is associated with beliefs and behaviours that suggest concern for others versus concern for the self. The evidence base on this question (reviewed above) has overwhelmingly relied on single-nation, cross-sectional surveys. In the current article we broaden the empirical base using a multi-wave, multi-nation survey, one that was specifically designed to capture self- versus other-concern, in addition to vaccination intentions.

The current research focused on two questions. First, we examined the extent to which conspiracist ideation is associated with the fear that people close to them will die or get sick from COVID-19, versus the fear that they themselves will die or get sick. By asking the same questions and changing only the referent group, these measures offered a like-for-like comparison of whether conspiracist ideation is associated with self-focused or other-focused concern (something that previous research was not designed to do).

Another way of examining these questions is to investigate the extent to which conspiracist ideation is associated with different types of protection behaviours. Many recommended health-protection behaviours (e.g., hand-washing and social distancing) are designed to protect both the self *and* the collective. Emerging research has revealed mixed results regarding the relationship between conspiracist ideation and these socially responsible practices: one sample of participants on social media and Reddit forums suggested a significant negative relationship (Biddlestone et al., 2020) whereas another found no relationship (Plohl & Musil, 2020). Furthermore, robust associations have emerged between endorsing conspiracy beliefs about COVID-19 being manufactured in a lab and “self-centered prepping behavior” such as stockpiling (Imhoff & Lamberty, 2020). Comparing the relative associations between conspiracist ideation and these self- versus other-focused protective behaviours helps illuminate the underlying prosocial orientations (or otherwise) of conspiracy theorists.

Three months after Wave 1, we re-surveyed participants and examined their willingness to take a future COVID-19 vaccine. Vaccination is often considered a prototypical example of a free rider problem (Ibuka et al., 2014): non-vaccinators can avoid the (perceived) risk of vaccinating and still benefit from herd immunity provided by the majority of people who choose to vaccinate. As such, intentions to vaccinate potentially reflect the trade-offs people make regarding their concern for themselves versus concern for others. The issue of whether people will decide to be vaccinated is particularly timely given emerging evidence that a substantial proportion of the population would refuse a vaccine for COVID-19 (O’Keefe, 2020), partly as a result of conspiracy theories that mass vaccinations are being exploited as a ruse for controlling the population (e.g., Kata, 2010; Klofstad et al., 2019). This finding dovetails with a range of studies showing medium-to-large correlations between anti-vaccination sentiment and people’s general willingness to believe conspiracies (Hornsey et al., 2018a, 2020; Lamberty & Imhoff, 2018; Lewandowsky et al., 2015; Salvador Casara et al., 2019).

In sum, the current studies provide an opportunity to develop theory around the psychology of conspiracy theorists, and in particular the extent to which they express concern for self versus others. On an applied level, identifying the factors that contribute to believing COVID-19 conspiracy theories—and the associated hesitancy around making use of a vaccine—provides a unique opportunity to understand and intercept a major misinformation crisis, one that has the potential to further inflame a public health crisis.

2 | WAVE 1

2.1 | Method

2.1.1 | Sampling

We surveyed 4,245 participants from eight nations: Australia, France, Germany, Italy, the Netherlands, Spain, the United Kingdom, and the United States (translations for the French, German, Italian, Dutch, and Spanish samples were conducted by the authors). Both Waves 1 and 2 received ethics approval from the lead author's institutional review board. Sample sizes for both waves were determined as a function of funding constraints, but we note that both waves are highly powered to detect small effects at the individual level. Sensitivity power analysis was conducted using the R package *pwr* for multiple regression analysis (with nine predictors in the model). This indicates that our final sample in Wave 1 ($N = 4,181$) and Wave 2 ($N = 1,262$) had >99% and 96% statistical power to detect a small effect size of $f^2 = 0.02$ for the unique contribution of concern for self (or concern for other) in the prediction of belief in conspiracy theories.

Participants were invited to complete a survey that “aims to assess the impact of [COVID-19] on how people navigate their social world and the way they may interact with others”. All samples were collected through *Prolific*, in exchange for £7.50 per hour.¹ Of the original sample, 64 respondents either failed the attention check or did not respond to the attention check.² These respondents were removed from analyses, leaving a usable sample of 4,181. No other deletions were made. Overall, 50.9% of the sample identified as male, 47.8% identified as female, 1.3% identified as non-binary or “prefer to self-describe”. The average age was 31.48 years ($SD = 11.33$).

The samples were collected between 17 March and 7 April 2020, at a time when the epicenter of the COVID-19 crisis was in the industrialised West (hence the decision to sample from those nations). The number of nations is too small to draw meaningful cross-national comparisons, and any such comparisons would be difficult or even

problematic to interpret. At the time of data collection, some nations were more severely affected by COVID-19 than others (see Table 1 for historical context around each sample). The reason for collecting data across eight nations was to enhance generalisability, and to ensure that conclusions were not limited to one particular socio-political circumstance (as appears to be the case for climate change; Hornsey et al., 2018b).

2.1.2 | Measures

A challenge in researching COVID-19 conspiracy theories is that there are many of them, and the content of the conspiracy theories can fluctuate rapidly over time. To avoid this problem, we used a validated single-item scale to measure people's general propensity to believe that authorities are hiding the truth about COVID-19, rather than their endorsement of any particular conspiracy theory (Lantian et al., 2016). The question had the following preface:

For some political and social events it is suggested that the “official version” of events could be an attempt to hide the truth from the public. This “official version” could mask the fact that these events have been planned and secretly prepared by a covert alliance of powerful individuals or organizations (for example secret services or government). When it comes to COVID-19, what do you think?

Participants then rated their agreement with the statement “I think that the official version relating to COVID-19 given by the authorities very often hides the truth” (1 = strongly disagree, 7 = strongly agree).³

To measure *self-focused concern*, participants rated their agreement with two statements: “I fear that COVID-19 might pose a significant risk to my own health” and “I fear the worst-case scenario that I could die as a result of COVID-19” (1 = strongly disagree, 7 = strongly agree; $r = .70$). To measure *other-focused concern*, we asked the same questions, but this time phrased to refer to concern for people “close to me” (e.g., “I fear that COVID-19 might pose a significant risk to the health of other people who are close to me”; $r = .77$). The differentiation into self- versus other-focused concern was based on a clear conceptual distinction, but for the record the two factors also emerged when a factor analysis was conducted using oblimin rotation (other-ratings eigenvalue = 2.45, 61.17% variance explained; self-ratings eigenvalue = 1.03, 25.68% variance explained). Unsurprisingly, the two constructs were positively correlated ($r = .41$), reflecting a generalised concern about COVID-19.

To measure *protection behaviours*, participants rated the extent to which they agreed with six statements (1 = strongly disagree, 7 = strongly agree). Five of the items—washing hands more

¹For the French sample, 319 participants who responded on Prolific were supplemented with 207 respondents recruited through social media.

²No attention check was included in the Australian sample for Wave 1. This error was corrected in Wave 2.

³The original survey by Lantian et al. (2016) used a 9-point from “1 = Completely false to 9 = Completely true.” We adjusted the end-points so as to be more consistent with other measures in the survey.

TABLE 1 Contextual information regarding the cross-national samples for Waves 1 and 2

Country	Date of data collection (in 2020)	Contextual information
Australia, <i>n</i> = 730	March 17–20	There were 455 cases on March 17 and 928 on March 20 (14 deaths). Most flights were cancelled on the 19th; indoor gatherings of >100 people were banned; supermarkets tightened food buying restrictions.
UK, <i>n</i> = 537	March 24	Total number of confirmed cases was 8,200, with 1,400 new cases that day (deaths = 422). British government ordered a lockdown on March 23.
USA, <i>n</i> = 497	March 25	Total number of cases was 66,790, with 13,355 new cases that day. Total deaths by that date were 1,027. Many states were closing businesses, schools, and workplaces, and in many cases, citizens were requested to stay home.
Italy, <i>n</i> = 498	March 27–28	Total number of cases on March 27 was 86,500 and 92,500 on March 28. Total number of deaths on March 27 were 9,134 rising to 10,023 on March 28. Italy issued a nationwide lockdown on March 9, which was still in place at the time of data collection.
Germany, <i>n</i> = 498	March 26–27	Number of cases was 36,500 on March 26 and 42,288 on March 27. Number of deaths was 198 on March 26 rising to 253 on March 27. Strict social distancing measures were issued on March 22 and were still in place at the time of data collection.
Spain, <i>n</i> = 489	March 31–April 1	By March 31 there were 94,417 cases, 8,189 deaths and 49,243 people in hospitals. New cases and deaths were still increasing as of April 1. Spain went into mandatory lockdown on March 15, which was increased for another 2 weeks on March 26.
Netherlands, <i>n</i> = 407	March 30–April 4	By March 30 there were 11,750 total cases, and 864 deaths. By April 4 the total number of cases were 16,627 and 1,651 deaths. New cases were going down between March 30 and April 4 (from 1,200 to 780). Employees of non-essential jobs were asked to work from home: bars, restaurants, museums, schools and universities were closed, as were public gatherings and large-scale events.
France, <i>n</i> = 526	March 27–April 7	By March 27 there were 32,964 cases and 1,995 deaths. By April 7 the total number of cases were 109,069 and 10,328 deaths. France was in a strict nationwide lockdown during the time of data collection.
Australia (Wave 2), <i>n</i> = 442	June 24–July 2	At the time of data collection, a second wave of cases was starting (specifically in the state of Victoria) with cases increasing (29 cases on June 24 and 81 on July 2). There was no lockdown until July 2, when around 30,000 people living in the state of Victoria received stay-at-home orders.
UK (Wave 2), <i>n</i> = 457	June 25–July 1	At the time of data collection, cases were variable (652 new cases on June 24, 1,380 on June 27, and 689 on July 2). The UK was preparing for the easing of more lockdown restrictions that were going to start on July 4 (reopening of restaurants, pubs, hotels and hairdressers).
USA (Wave 2), <i>n</i> = 363	June 24–July 2	At the time of data collection, cases were still increasing (37,945 new cases on June 24 and 54,869 on July 2). Staying at home or social distancing restrictions varied by state, county, and/or city. Black Lives Matter protests after George Floyd's murder started about a month before data collection (on May 30).

frequently and thoroughly than usual, avoiding crowds, physically isolating from friends, stopping handshakes, and avoiding public spaces and public transport—were behaviours designed to mitigate the risk for both the self *and* the community. The sixth item—stocking up on food to prepare for COVID-19—was qualitatively distinct in that it was a behaviour that was primarily geared to benefiting the self (potentially at the expense of the community; Imhoff & Lamberty, 2020). This qualitative distinction was reflected quantitatively; the stockpiling item shared only modest correlations with the other items (all *r*s ≤ .20) and the item-total correlation of the stockpiling item with the other measures was low (0.22). Consequently, we interpreted the first item as an index of *self-focused protective behaviour* and combined the other five items into a scale of *other-focused protective behaviour* ($\alpha = 0.80$).

One complexity around interpreting the results is that some conspiracy theorists may be downplaying the severity of the pandemic—or

even imagining that it is fabricated—which in itself would have an impact on their ratings of concern and the type of behaviours they display. To check this, we measured *forecast mortality* by asking participants “In your opinion, out of 1,000 people infected with COVID-19, how many will die? Please indicate a number between 0 and 1,000 below.”

Demographics were measured at the end of the survey. We included the following demographics in our model as covariates: *age*, *gender* (−1 = male, 1 = female), *education* (1 = no formal education to 7 = doctoral degree), *political orientation* (0 = very left-wing, 100 = very right-wing), and *socioeconomic status* (SES; participants rated themselves on a ladder from 1 = the worst off in society to 10 = the best off in society).⁴

⁴Measures reported here are part of a larger survey, mostly examining clinical issues associated with isolation and social identity factors (e.g., national identification, multiple group membership).

Data for the two waves, and the relevant code for analyses, can be found in the following link: https://osf.io/d6p3h/?view_only=51985c795abf412e90498a7905cd758e.

2.2 | Results

Overall, 40.1% of the sample expressed some agreement with the conspiracy item (i.e., they indicated that they agreed, somewhat agreed, or strongly agreed with the statement). Means, standard deviations, and zero-order correlations between all variables in the model are reported in Table 2. To explore our main research question, we conducted multi-level modelling with the nlme package for R (Pinheiro et al., 2020). The results—summarised in the top half of Table 3—focus on the individual (Level 1) data while controlling for national differences (Level 2; i.e., allowing for random intercepts). It should be noted that we have simply modeled overlap in variance: where we use the term “predictor” it is in a purely statistical sense, and does not imply a temporal sequence of upstream and downstream processes. Below we interpret the Level 1 data, but we note the intraclass correlation (ICC) = 0.10, which indicates that a non-trivial amount of the variance in conspiracy scores (i.e., 10%) is attributable to between-nation differences.

In terms of demographics, younger participants and female participants were more likely to endorse conspiracist thinking about COVID-19. In line with an emerging trend in the literature (e.g., Hornsey et al., 2020; van der Linden et al., 2020), conspiracist thinking was also greater among more politically conservative participants. Finally, consistent with previous research (e.g., Van Prooijen, 2017), those higher in conspiracist thinking were lower in education and in perceived socio-economic status.

More relevant to the current research question, after controlling for the demographics, those who displayed relatively high levels of conspiracist thinking reported higher levels of self-focused concern and self-focused protective behaviours. In contrast, higher levels of conspiracist thinking were associated with lower levels of other-focused concern and other-focused protective behaviours.⁵

There was no evidence that the relatively low levels of other-focused concern and other-focused protective behaviours among those higher in conspiracist ideation were due to them downplaying the severity of the threat posed by the pandemic. Indeed, there was also a significant tendency for those higher in conspiracist ideation to report higher mortality risk ratings from COVID-19 ($\beta = 0.14, p < .001$).

2.3 | Discussion

Overall, people higher in conspiracist ideation had higher estimates of the mortality rate associated with COVID-19. But they responded to

⁵Note that the same pattern of results emerged if we left the demographic variables out of the analysis. This is true for both Wave 1 and Wave 2 analyses.

TABLE 2 Means, standard deviations, and bivariate correlations between all variables in the model

	W1, M(SD)	W2, M(SD)	1	2	3	4	5	6	7	8	9	10	11
1 Age	31.20 (11.13)	34.71 (12.01)	-	-0.02	-0.03	0.12***	0.14***	0.07*	0.00	0.09**	-0.05	0.05	0.09**
2 Gender	-0.04 (0.99)	0.06 (0.99)	0.07***	-	0.02	0.04	-0.09**	-0.02	0.08*	0.04	0.06*	0.10**	0.04
3 SES	5.86 (1.65)	5.57 (1.74)	-0.05***	-0.04**	-	0.33***	0.09**	0.03	-0.04	-0.19***	-0.06*	-0.07*	-0.09**
4 Education	4.70 (1.29)	4.52 (1.11)	0.19**	0.08***	0.22***	-	-0.08**	0.10***	0.05	-0.03	0.03	-0.13***	-0.11***
5 Political conservatism	38.11 (21.66)	36.69 (22.96)	0.11**	-0.15**	0.14**	0.00	-	0.01	-0.14***	-0.08**	-0.17***	0.33***	0.25**
6 Self-focused behaviour	4.06 (1.73)	3.79 (1.71)	0.10**	0.04*	-0.01	0.04*	0.04*	-	0.33***	0.28***	0.20**	0.03	0.00
7 Other-focused behaviour	6.12 (0.97)	5.55 (1.08)	0.08***	0.09***	0.06***	0.12***	-0.04*	0.23***	-	0.43***	0.46***	-0.17***	-0.23***
8 Self-focused concern	3.69 (1.67)	3.98 (1.68)	0.24***	0.08***	-0.13***	0.02	0.06***	0.24***	0.25***	-	0.62***	0.00	-0.13***
9 Other-focused concern	5.53 (1.35)	5.18 (1.52)	-0.02	0.08***	-0.04**	-0.04**	-0.10***	0.17***	0.31***	0.41***	-	-0.15***	-0.22***
10 Conspiracist ideation	3.72 (1.86)	1.75 (1.04)	0.04*	0.08***	-0.13***	-0.04**	0.16***	0.16***	-0.05**	0.17***	0.00	-	0.46***
11 Anti-vaccination attitude		2.40 (1.72)											

Note: Wave 1 correlations are below the diagonal, Wave 2 correlations are above the diagonal. (Wave 1 N = 4,052; Wave 2 N = 1,159). Minor variations from participant information reported in text are due to listwise deletion for analyses. Gender is coded such that -1 = male, 1 = female.

* $p < .05$; ** $p < .01$; *** $p < .001$.

TABLE 3 Variables associated with conspiracist thinking about COVID-19

Variable	t	β	b	95% CI
WAVE 1				
Age	15.44	-0.07***	-0.011	-0.016, -0.006
Gender (-1 = male, 1 = female)	-4.23	0.09***	0.16	0.106, 0.215
SES	-6.37	-0.10***	-0.11	-0.146, -0.077
Education	-2.49	-0.04 [†]	-0.06	-0.108, -0.013
Political conservatism	11.31	0.17***	0.015	0.012, 0.017
Self-focused protective behaviour	6.57	0.10***	0.11	0.078, 0.144
Other-focused protective behaviour	-4.08	-0.08***	-0.14	-0.213, -0.075
Self-focused concern	8.23	0.14***	0.16	0.119, 0.193
Other-focused concern	-2.70	-0.05**	-0.06	-0.108, -0.017
WAVE 2				
Age	-0.90	-0.02	-0.002	-0.006, 0.002
Gender (-1 = male, 1 = female)	5.57	0.15***	0.30	0.196, 0.409
SES	-2.97	-0.08**	-0.05	-0.083, -0.017
Education	-2.61	-0.07**	-0.07	-0.118, -0.017
Political conservatism	11.09	0.30***	0.014	0.011, 0.016
Self-focused protective behaviour	2.36	0.07 [†]	0.04	0.007, 0.074
Other-focused protective behaviour	-5.21	-0.16***	-0.15	-0.212, -0.096
Self-focused concern	3.94	0.14***	0.09	0.043, 0.128
Other-focused concern	-4.07	-0.14***	-0.10	-0.145, -0.051

* $p < .05$, ** $p < .01$, *** $p < .001$.

the threat of the pandemic in different ways than those lower in conspiracist thinking. The more participants engaged in conspiracist ideation, the more they reported self-focused concerns and behaviours, but the *less* they reported other-focused concerns and behaviours.

3 | WAVE 2

Wave 2 comprised participants who completed the original survey from Australia, the United Kingdom, and the United States, and was conducted approximately three months after Wave 1. This second survey was similar to that used in Wave 1, but with two main

alterations. First, we included a multi-item measure of conspiracist thinking, this time focusing on three specific COVID-related conspiracies. Second, we included a measure of intentions regarding a future COVID-19 vaccine.

One goal of Wave 2 was to replicate the pattern of findings demonstrated in Wave 1 (but with a different measure of conspiracist ideation). A second goal was to test the psychological factors that are associated with hesitancy around a future COVID-19 vaccine. It is well established that people with anti-vaccination views are prone to conspiracist ideation (Hornsey et al., 2018b, 2020; Lewandowsky et al., 2013, 2015), and we expect to find a similar relationship here. The current study also tests whether this relationship is mediated through people's self- versus other-focused concern. Across the two waves of data, we test a model in which conspiracist thinking predicts a greater discrepancy between self- and other-oriented concern, which in turn predicts vaccine hesitancy.

3.1 | Method

3.1.1 | Sampling

We invited participants from the Australian, UK, and US samples to conduct a second survey (data were collected June 24–July 2, 2020; see Table 1 for historical context). Of those who responded to the Wave 1 survey, 63.6% of Australian residents, 74.6% of US residents, and 87.3% of UK residents completed the second survey. Compared to completers, non-completers were somewhat younger, $t(1777) = 6.84$, $p < .001$, and less educated, $t(1776) = 3.23$, $p = .001$. However, completers and non-completers were statistically equivalent in terms of gender ($p = .102$), political ideology ($p = .506$), and SES ($p = .737$). Importantly, completers and non-completers did not differ in terms of endorsement of the conspiracy item in Wave 1 ($p = .247$).

Of the original sample, 28 failed an attention check, leaving a final N of 1,262 for analysis (Australia $n = 442$, UK $n = 457$, US $n = 363$). No other deletions were made. Overall, 53.5% of this sample identified as female, 45.4% identified as male, and 1.1% identified as non-binary or "prefer to self-describe." The average age was 35.04 years ($SD = 11.33$).

3.1.2 | Measures

We did not re-measure gender, age, SES, or education; instead, we used participants' responses at Wave 1. We did re-measure political ideology, given that the "left-right" distinction used in Wave 1 is not as common in the United States as it is in some other countries. At Wave 2, participants placed themselves on a spectrum ranging from very left-wing (0) to very right-wing (100) as well as one ranging from very liberal (0) to very conservative (100). The two items were strongly correlated ($r = .88$) and so were averaged into a single scale of political ideology.

Items measuring self-focused concern and other-focused concern were the same as used in Wave 1. As for Wave 1, the two items within each measure correlated highly with each other at Wave 2 (self-focused concern: $r = .72$; other-focused concern: $r = .82$) and so were combined into scales. We also used the same stockpiling question to measure self-focused protective behaviour. In addition to the five items that we previously used to measure other-focused protective behaviour, we included three extra behaviours: shopping online as much as possible, socializing with others online instead of meeting them in person, and staying home unless it is important to go out. As in Wave 1, the conceptual difference between stockpiling and the other items was borne out empirically: the item-total correlation for stockpiling was low (0.33).

To measure conspiracist ideation, participants rated the extent to which they agreed with three statements: “Bill Gates wants to use a mass vaccination campaign against COVID-19 to implant microchips in people that would be used to track people with a digital ID”, “Coronavirus is caused or spread by 5G technology”, and “COVID-19 was intentionally created by Chinese scientists as a biowarfare weapon” (1 = strongly disagree, 7 = strongly agree). Endorsements of these items were positively correlated with each other and so these items were averaged into a single scale of conspiracist ideation ($\alpha = 0.66$).

Finally, to measure vaccination intentions, we asked participants to rate the extent to which they agreed with the statement: “Should a vaccine for COVID-19 be created in the future, I would take the vaccine” (1 = strongly disagree, 7 = strongly agree). In the analyses below, we reversed this item such that high scores indicated more anti-vaccination sentiment.

3.2 | Results

Predictably, level of support for the specific conspiracy theories measured in Wave 2 was less strong than for the item used in Wave 1, which was phrased more generally. Of the overall sample, 24.7% scored at the midpoint or above in terms of their agreement with the statement “COVID-19 was intentionally created by Chinese scientists as a biowarfare weapon.” The Bill Gates conspiracy was the next popular (14.3% of the sample scored at the midpoint or above), and the 5G item had the least endorsement (5.3%).

Our first step was to replicate the analyses we conducted in Wave 1, only this time with the revised conspiracist ideation scale. Inspection of the ICC showed that a negligible amount of the variance in conspiracy scores was attributable to national differences ($ICC < 0.01$). Thus, we conducted a general linear regression collapsing samples across the three nations, but we note that the conclusions were identical when the same analyses were conducted through multilevel modelling.

Results of the standard regression are summarised in the bottom half of Table 3. The pattern of conclusions was identical to that found in Wave 1. Endorsement of COVID-19 conspiracy theories was greater among women, conservatives, and among those

who reported lower levels of education and socio-economic status. Of more relevance to the current research question, conspiracist ideation was associated with greater self-related concern and self-protective behaviour, but lower other-related concern and other-protective behaviour.

Overall, 40.3% expressed strong agreement with the statement that they would take a future COVID-19 vaccine. However, 21.7% of the sample either expressed some disagreement or scored on the midpoint. Consistent with expectations, the anti-vaccination measure was correlated reliably with the conspiracist ideation measure at Wave 2 ($r = .46, p < .001$) and also at Wave 1 ($r = .25, p < .001$). Interestingly, the Bill Gates item which explicitly referred to vaccination ($r = .37$) did not correlate with the vaccination measure any more strongly than the 5G item ($r = .38$) or the bioweapon item ($r = .36$).

To test whether the discrepancy between self- and other-oriented concern mediated this relationship, we used Model 4 of the PROCESS macro with 5,000 bootstrapped samples and 95% bias-corrected confidence intervals (Hayes, 2013). To minimise the potential for inflated correlations as a function of one-shot correlational surveys, we used the Wave 1 measures of conspiracist ideation and concern as predictors. Because we were interested in the *relative* concern for self versus others—not the overall level of concern—we regressed other-ratings of concern on self-ratings of concern and used the residuals as the mediator.

The Wave 1 ratings of conspiracist ideation were associated with less of an emphasis on concern for others (relative to the self), $b = -0.04, SE = 0.02, 95\% CI [-0.066, -0.004]$, which in turn was associated with lower anti-vaccination attitudes, $b = -0.32, SE = 0.05, 95\% CI [-0.407, -0.224]$. The indirect effect was significant, $b = 0.011, SE = 0.006, 95\% CI [0.001, 0.023]$, and remained significant after controlling for nation, $b = 0.012, SE = 0.006, 95\% CI [0.002, 0.024]$.⁶ It should be noted also that the mediational effect reported above was replicated when we calculated difference scores between self-ratings and other-ratings of concern and used that as the mediator, $b = 0.014, SE = 0.005, 95\% CI [0.006, 0.025]$.

4 | GENERAL DISCUSSION

The COVID-19 pandemic offers a novel opportunity to examine the prosocial orientations (or otherwise) of people who are high in conspiracist ideation. A pattern emerged such that those high in conspiracist ideation were relatively concerned about their own wellbeing, and relatively willing to engage in behaviours that primarily reflect self-interest (i.e., stockpiling). In contrast, those high in conspiracist ideation were relatively *less* concerned about the wellbeing of people close to them, and relatively *unwilling* to engage in behaviours that would be useful in protecting others (e.g., social distancing). Conspiracy theorists were also less inclined to take a future

⁶When we just used the Wave 2 scores, the same significant indirect effect emerged, $b = 0.03, SE = 0.01, 95\% CI [0.015, 0.057]$.

COVID-19 vaccine, a variance that was partly attributable to their relatively self-focused concerns.

In short, a portrait emerged of the conspiracy theorist as focused on self-oriented concerns more so than concerns for collective welfare. This pattern was consistent across two different measures of conspiracist ideation, collected three months apart. It is not an artifact of conspiracy theorists' downplaying the reality of the threat; if anything, those high in conspiracist ideation perceived *more* threat from the pandemic. Neither are the relationships reducible to differences in age, education, SES, gender, or political orientation, which were all controlled for. Finally, our findings suggest that these relationships are not specific to a particular socio-political circumstance given that the findings consistently emerged in an analysis of eight nations.

Like any dataset, the current studies have limitations. We drew exclusively from Western, industrialised nations, and cannot make claims for generalisation outside that context. We do not have objective measures of behaviour, relying instead on self-reports of behaviour. Although we collected measures three months apart, the data are correlational, and we do not make claims about cause and effect. What we can claim is that we have discovered a new understanding of correlates of conspiracy theorising in the West, one that helps reconcile competing intuitions about whether their concerns are shaped primarily by self-focused or other-focused orientations.

Given the politically combustible environment in which we live, we feel a responsibility to put these data in perspective. First, the relationships reported here are not large, even though they are reliable statistically. Second, endorsement of some of the fringe conspiracy theories about COVID-19—for example, that it is caused by 5G technology and that it is being used as a ruse to implant microchips—was low. The high levels of conspiracy theorising apparent in Wave 1 (in which we used a generic measure) no doubt captured some theories that readers might consider fantastical or absurd, and other theories that readers might construe as rational skepticism (Van Prooijen, 2019). Finally, more research would be necessary to determine if the conclusions of this article could be generalised to non-COVID contexts.

Having said that, the COVID-19 context is a particularly timely one in which to examine this question. Responsible behaviour from individuals—including widespread uptake of a vaccine—remains our best hope of defeating this and future pandemics. However, there are signs that this frontier of human resistance is fragile: there has been imperfect compliance with recommended health-protection behaviours, and suspicion about a pending vaccine is high enough to threaten herd immunity. The current data show that both of these problems are particularly acute among those high in conspiracy theorising. Understanding this phenomenon may help inform interventions designed to increase societal resilience in the face of current and future pandemics. Although there is little evidence that brief, one-shot interventions can have significant effects on those high in conspiracy theorising, an aspirational goal would be a long-term process of systemic change to reduce the feelings of mistrust, powerlessness, and alienation that have been shown empirically to provide the breeding ground for conspiracist thinking (Hornsey, 2020; van Prooijen & Acker, 2015).

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CONFLICTS OF INTEREST

The authors have no conflicts of interest to declare.

ETHICS STATEMENT

Both Waves 1 and 2 received ethics approval from the lead author's institutional review board.

TRANSPARENCY STATEMENT

Data for the two waves, and the relevant code for analyses, can be found at https://osf.io/d6p3h/?view_only=51985c795abf412e90498a7905cd758e.

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