



Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.



The role of ideological attitudes in responses to COVID-19 threat and government restrictions in Australia

Edward J.R. Clarke^{a,*}, Anna Klas^b, Emily Dyos^a

^a School of Science, Psychology and Sport, Federation University, Australia

^b Deakin University, Geelong, Australia, Misinformation Lab, School of Psychology

ARTICLE INFO

Keywords:

Right-wing authoritarianism
Social dominance orientation
COVID-19
Social distancing
Australia

ABSTRACT

Many government strategies to reduce the spread of Novel Coronavirus (COVID-19) involved unprecedented restrictions on personal movement, disrupting social and economic norms. Although generally well-received in Australia, community frustration regarding these restrictions appeared to diverge across political lines. Therefore, we examined the unique effects of the ideological subfactors of Right-Wing Authoritarianism (RWA; Aggression, Submission and Conventionalism) and Social Dominance Orientation (SDO; Dominance and Anti-egalitarianism) in predicting perceived personal threat of COVID-19, and support for and reactance to government restrictions, in Australian residents across two separate samples (S1 $N = 451$, S2 $N = 838$). COVID-19 threat was positively predicted by Submission, and negatively by Conventionalism, and Anti-egalitarianism. Support for restrictions was also positively predicted by Submission, and negatively by Conventionalism, Dominance, and Anti-egalitarianism. Reactance to government restrictions was negatively predicted by Submission, and positively by Conventionalism, Dominance, and Anti-egalitarianism. These findings suggest that right-wing ideological subfactors contribute to the one's perception of COVID-19 threat and government restrictions differentially.

1. Introduction

Late 2019 saw the emergence of the global threat of the Novel Coronavirus (COVID-19). In Australia, federal and state governments mandated several restrictions to mitigate the potential health impacts of COVID-19, which involved reducing social activities and movement that required physical contact or close proximity with others (Department of Health, 2020). While Australia's relative success in handling community outbreaks likely resulted from these measures (Anderson et al., 2020), political disagreement on the type and length of these restrictions persisted throughout 2020 (McGowan, 2020), potentially indicating a growing political divide on how the country should manage COVID-19. It is possible this political divergence could be partially attributed to underlying ideological differences, such as the subfactors of Right-Wing Authoritarianism (RWA) and Social Dominance Orientation (SDO), with each uniquely contributing to the perceived personal threat of COVID-19 and responses to government restrictions.

2. Literature review

2.1. Political differences in perceptions of personal threat of COVID-19

As COVID-19 continues to spread globally, its perceived threat has become increasingly politically-polarised in the United States (Hart et al., 2020). Democrats are more likely than Republicans to view COVID-19 as a major threat to public and personal health (Van Green & Tyson, 2020), and conservatism appears to be associated with lower levels of perceived personal COVID-19 vulnerability (Calvillo et al., 2020) and increased scepticism (Latkin et al., 2021). This is unexpected, given that conservatives are generally more threat sensitive than liberals (Jost et al., 2003), and have a heightened motivation to avoid pathogens (Tybur et al., 2016).

Yet there is also evidence that right-wing adherents might be more concerned about system-level threats over personal threats such as contracting COVID-19. For instance, right-wing attitudinal dimensions in Right-Wing Authoritarianism and Social Dominance Orientation, and conservatism, positively relate to external threats (threats that pose a danger to society as a whole), but they do not relate, or negatively relate,

* Corresponding author.

E-mail address: ej.clarke@federation.edu.au (E.J.R. Clarke).

<https://doi.org/10.1016/j.paid.2021.110734>

Received 28 June 2020; Received in revised form 27 January 2021; Accepted 31 January 2021

Available online 6 February 2021

0191-8869/© 2021 Elsevier Ltd. All rights reserved.

to internal threats (threats that pose a risk to the individual; Onraet et al., 2013). Therefore, right-wing adherents may be less concerned about threats to their personal health that would result from contracting COVID-19 and more concerned about political, economic, and social threats adjacent to COVID-19, such as government restrictions on social and economic behaviour. Due to the complex nature of the ideology-threat relationship, we propose it is worth exploring the unique ideological predictors of COVID-19 threat to personal health. Furthermore, given that the literature has largely focused on the United States to date, there is a need to examine whether political polarisation of COVID-19 has occurred in other socio-political contexts. As such, this paper focuses on the relationship between these aforementioned ideological beliefs and perceived personal threat of COVID-19, as well as responses to government restrictions, in Australia.

2.2. Political differences in response to government restrictions

Despite broad support for government restrictions in Australia to mitigate COVID-19 (Kassam, 2020) and increased trust in the government during the pandemic (Goldfinch et al., 2021), frustration within the Australian community toward social distancing measures appears to have risen, and become politically-polarised, over the course of the pandemic (Martin, 2020). Political and media elites on the political right have advocated positions contrary to established scientific advice on social distancing restrictions, with some strongly opposed to measures focused on limiting individual movement and business activity, as well as compulsory mask-wearing (Kozoi, 2020).

Difference in opinion regarding the level and type of social distancing restrictions required observed across the political divide might indicate core ideological differences, due to a misalignment between ideology and the restrictions imposed (Taber & Lodge, 2006). Specifically, restriction of movement, curfews, business closures and the resultant immediate economic fallout may be inconsistent with right-wing ideological values of individualism, pro-economic growth attitudes and the freedom to engage in cultural practices and preserve societal norms. Politically-motivated reasoning literature indicates that political ideologies can affect responses to information, even factual scientific information (Nisbet et al., 2015), as well as support for government policy solutions to societal problems such as climate change (Campbell & Kay, 2014). In this research, climate change mitigation solutions that proposed more government regulation were less popular with participants higher in free-market ideology, than solutions that were more free-market friendly. It is possible that COVID-19 regulations could be aversive to right-wing adherents, in that they may challenge these core ideological beliefs thus motivating heightened resistance to, and reactance toward, government restrictions.

2.3. Differential ideological effects: RWA and SDO subfactors

To better understand the potential role of political ideology in responses to COVID-19 threat and government restrictions, we propose a multidimensional ideological approach, utilising the subfactors of the two right-wing attitudinal dimensions of Right-wing Authoritarianism (RWA) and Social Dominance Orientation (SDO). RWA is split into three distinct subfactors; Aggression (the propensity to support harming an individual or group as endorsed by an authority), Submission (acceptance and willingness to obey authority), and Conventionalism (preference for traditional social norms; Altemeyer, 1981). SDO is split into two distinct but related subfactors; Dominance (preference for group-based dominance and oppression of low-status groups by high-status groups) and Anti-egalitarianism (a preference for hierarchy and group-based inequality; Ho et al., 2015).

Based on past work examining the differential effects of RWA and SDO subfactors on other socio-political outcomes, we argue that this approach has merit in the context of COVID-19. For instance, these subfactors differentially predicted types of climate change denial in one

sample, such that Conventionalism and Anti-egalitarianism predicted denial, whereas Aggression, Submission and Dominance did so inconsistently or not at all (Clarke et al., 2019). In a German sample, the Submission subfactor of RWA positively predicted pro-environmental beliefs, while Aggression negatively predicted them, and Conventionalism had no effect (Reese, 2012). Research into the role of SDO in environmentalism suggests that the Anti-egalitarianism subfactor, but less so Dominance, may be a more important subfactor in predicting attitudes and behaviour with respect to the environment (Stanley et al., 2017). Other domains where these subfactors differentially predict outcomes include benevolent sexism (predicted by traditionalism/conventionalism and dominance) and hostile sexism (predicted by conservatism/submission and anti-egalitarianism; Austin & Jackson, 2019), and voting intentions in the 2016 U.S. presidential election (anti-egalitarianism, aggression and traditionalism/conventionalism predicted voting for Trump over Clinton; Crowson & Brandes, 2017). These findings illustrate that despite all being theorised right-wing ideological subfactors, they can predict different and even opposing outcomes. Therefore, understanding the role of political ideology in responses to elements of the COVID-19 pandemic could benefit from this nuanced approach.

2.4. The current study

To our knowledge, no research has examined the impact of the subfactors of RWA and SDO on perceptions of COVID-19 threat, support for government restrictions, and reactance to these restrictions, in the Australian context. We adopted an exploratory approach to address this, using data from two different Australian samples collected at two different time periods in 2020 (May and December, respectively). As the data was taken from two datasets collected for an unrelated project, we provide further details on data collection in the supplementary materials. For simplicity, we refer to data collected in May as "Sample 1" or "S1" and data collected in December as "Sample 2" or "S2". Given the need to understand the underlying ideological predictors of attitudes toward COVID-19, this study aimed to examine the unique role of each of the three RWA subfactors and the two SDO subfactors on perceived threat of COVID-19, support for government restrictions (such as social distancing), and reactance to these restrictions. This approach also allowed us to examine the unique contributions of these subfactors in a context involving government action and intervention, to add to our understanding of how these subfactors simultaneously operate to predict attitudes to government restriction and regulation more generally. In addition, given the focus of most existing research on how ideological beliefs affect responses to the COVID-19 pandemic uses U.S. participant samples, this study provides a snapshot of these ideological effects in a socio-political context outside of the U.S. As this study is exploratory, no hypotheses were set.

3. Data collection and methodology

3.1. Participants and procedure

Australian residents (Sample 1 $N = 451$; 227 male, 217 female, 7 non-binary; $M_{age} = 32.12$, $SD_{age} = 10.99$; Sample 2 $N = 838$; 401 male, 418 female, 19 non-binary; $M_{age} = 31.50$, $SD_{age} = 11.14$) were recruited via the online crowdsourcing recruitment tool, Prolific. Sample 1 was collected between May 3rd and May 5th, 2020, and Sample 2 was collected between December 1st and 31st, 2020. Participants in Sample 1 were excluded from data collection for Sample 2, resulting in two separate but comparable samples being collected. There were some minor COVID-19 restrictions in place across most jurisdictions in Australia in May, with international borders closed and indoor person limits. However, in the intervening time between Sample 1 and Sample 2 recruitment, a significant COVID-19 community outbreak occurred in the state of Victoria resulting in a sustained period of lockdown (with

varying levels of restrictions on movement from July until November, including restriction of movement to a maximum five kilometre radius from one's home, and a nightly curfew) particularly in the city of Melbourne. A smaller albeit significant COVID-19 outbreak developed in the state of New South Wales during December, resulting in some imposition of restrictions within parts of the greater Sydney metropolitan area before and during the Christmas holiday period. We paid participants in Sample 1 \$2.10AUD and in Sample 2 \$2.25AUD each for their participation.

3.2. Measures

All scales outlined below were measured on a 7-point Likert scale. Versions of each measure are provided in the supplementary materials.

3.2.1. Aggression-Submission-Conventionalism (ASC) Scale

Dunwoody and Funke's (2016) 18-item multifactorial Aggression-Submission-Conventionalism scale measured the three Right-Wing Authoritarianism dimensions of Aggression (S1 $\alpha = 0.79$, $\omega = 0.85$; S2 $\alpha = 0.83$, $\omega = 0.89$), Submission (S1 $\alpha = 0.81$, $\omega = 0.88$; S2 $\alpha = 0.79$, $\omega = 0.86$) and Conventionalism (S1 $\alpha = 0.79$, $\omega = 0.85$; S2 $\alpha = 0.82$, $\omega = 0.89$) The ASC subscales have demonstrated superior discriminant validity between subscales compared to other multifactorial RWA scales (Dunwoody & Funke, 2016).

3.2.2. Social Dominance Orientation (SDO7) Scale

This eight-item short form version of the SDO7 scale (Ho et al., 2015) measured the two SDO subfactors of Dominance (S1 $\alpha = 0.72$, $\omega = 0.77$; S2 $\alpha = 0.74$, $\omega = 0.80$) and Anti-egalitarianism, (S1 $\alpha = 0.74$, $\omega = 0.78$, S2 $\alpha = 0.82$, $\omega = 0.88$).

3.2.3. Perceived COVID-19 Threat Scale

This three-item short form scale measured how personally threatened or worried someone was about the threat of COVID-19 (S1 $\alpha = 0.86$, $\omega = 0.86$; S2 $\alpha = 0.84$, $\omega = 0.84$) (Conway et al., 2020).

3.2.4. Governmental response to COVID-19 Scale – restriction dimension

This two-item subscale measured support for government policies that restricted people's movement in an effort to slow the spread of Coronavirus (Conway et al., 2020).

3.2.5. Governmental response to COVID-19 Scale – reactance dimension

This two-item subscale measured how angry and upset people felt in response to the government restricting their movement, to mitigate the impact of COVID-19 (Conway et al., 2020).

Table 1

Means and standard deviations for key variables across analyses, for both samples.

	Sample 1 (N = 451)	Sample 2 (N = 838)
Variable	M (SD)	M (SD)
Aggression	3.34 (1.07)	3.35 (1.12)
Submission	2.88 (0.90)	3.13 (0.90)
Conventionalism	3.68 (0.97)	3.68 (1.00)
Dominance	2.46 (1.11)	2.53 (1.15)
Anti-egalitarianism	2.65 (1.03)	2.55 (1.14)
COVID-19 Threat	3.75 (1.55)	3.86 (1.42)
Support for Restrictions	6.04 (1.11)	5.86 (1.14)
Reactance to Restrictions	2.06 (1.37)	2.36 (1.40)

Note. M = mean. SD = standard deviation. All variables were measured on a 7-point Likert scale.

4. Results

4.1. Descriptive statistics

Table 1 provides means and standard deviations for all variables used across analyses in Sample 1 and Sample 2. It is notable that overall support for restrictions was high and reactance was low in both samples.

Table 2 provides zero-order correlations between these variables for both samples.

4.2. Multiple regression analyses

4.2.1. Analytic strategy

To examine the relative and unique effects of the RWA and SDO subfactors on perceived COVID-19 threat, support for government restrictions, and reactance to government restrictions, three separate multiple linear regressions were conducted for each outcome variable. Including all RWA and SDO subfactors simultaneously in each regression model allowed us to examine the unique effects of each subfactor on each of our three outcome variables. We conducted all multiple linear regressions using R version 3.4.2, using the apaTables package version 2.0.5 (Stanley, 2018). We used a more conservative alpha level of 0.01 for significance testing to adjust for multiple comparisons, although the focus of our analyses is on the unique effect sizes of the subfactors rather than null hypothesis significance testing. We performed transformations on the support for/reactance to restrictions outcome variables, details of which can be found in supplementary materials.

4.3. COVID-19 threat

Anti-egalitarianism was the only subfactor to consistently and uniquely predict a decrease in COVID-19 threat (see Table 3). Although they did not predict threat perceptions in Sample 1, Submission (positively) and Conventionalism (negatively) predicted COVID-19 threat in Sample 2. The model explained 5–6% of the variance in COVID-19 threat across samples.

4.4. Support for government restrictions

As shown in Table 4, Submission (positively), and Anti-egalitarianism (negatively) predicted support for government restrictions across both samples. Dominance negatively predicted support in Sample 1 only, and Conventionalism negatively predicted support in Sample 2 only. The model explained 5% more variance in Support for Restrictions in Sample 2 than in Sample 1.

4.5. Reactance to government restrictions

Dominance positively predicted, and Submission negatively predicted, reactance to government restrictions in both samples (See Table 5). Conventionalism and Anti-egalitarianism only predicted reactance in Sample 2. The model explained 8% more variance in Sample 2 than in Sample 1.

5. Discussion

This study aimed to examine the unique contributions of RWA and SDO subfactors on three key COVID-related outcomes in two separate Australian samples. These outcomes were perceived COVID-19 threat, support for government restrictions, and reactance to government restrictions.

5.1. Ideological predictors of COVID-19 threat

Anti-egalitarianism was the only subfactor in the regression model to predict COVID-19 threat in both samples. This finding is somewhat

Table 2
Bivariate correlations of key variables for both samples (Sample 1/Sample 2).

	1	2	3	4	5	6	7
1. Aggression							
2. Submission	0.36*/0.27*						
3. Conventionalism	0.44*/0.43*	0.37*/0.34*					
4. Dominance	0.50*/0.52*	0.24*/0.24*	0.36*/0.40*				
5. Anti-egalitarianism	0.40*/0.47*	0.22*/0.20*	0.39*/0.35*	0.70*/0.71*			
6. COVID-19 Threat	0.04/−0.02	0.05/0.10	−0.08/−0.10*	−0.02/−0.10*	−0.14*/−0.16*		
7. Support for Restrictions	0.02/−0.11*	0.11/0.13*	−0.02/−0.18*	−0.22*/−0.27*	−0.25*/−0.32*	0.24*/0.34*	
8. Reactance to Restrictions	0.09/0.21*	−0.09/−0.07	0.17*/0.25*	0.28*/0.34*	0.26*/0.39*	−0.04/−0.13*	−0.62*/−0.63*

Note. Sample 1 correlations are presented on the left of each cell. Sample 2 correlations are presented on the right.

* $p < .01$.

Table 3
Multiple regression results for COVID-19 threat perceptions.

Predictors	Sample 1 ($R^2 = 0.05$)			Sample 2 ($R^2 = 0.06$)		
	β	$\beta 95\%CI$	sr^2	β	$\beta 95\%CI$	sr^2
Aggression	0.09	[−0.02, 0.20]	0.01	0.07	[−0.01, 0.15]	0.00
Submission	0.08	[−0.02, 0.18]	0.00	0.15*	[0.08, 0.23]	0.02
Conventionalism	−0.10	[−0.21, 0.01]	0.01	−0.12*	[−0.20, −0.05]	0.01
Dominance	0.11	[−0.02, 0.25]	0.01	0.00	[−0.10, 0.10]	0.00
Anti-egalitarianism	−0.22*	[−0.36, −0.10]	0.03	−0.19*	[−0.28, −0.09]	0.02

* $p < .01$.

Table 4
Multiple regression results for support for government restrictions.

Predictors	Sample 1 ($R^2 = 0.11$)			Sample 2 ($R^2 = 0.16$)		
	β	$\beta 95\%CI$	sr^2	β	$\beta 95\%CI$	sr^2
Aggression	0.14	[0.03, 0.20]	0.01	0.08	[0.00, 0.16]	0.00
Submission	0.15*	[0.05, 0.25]	0.02	0.24*	[0.17, 0.31]	0.05
Conventionalism	0.01	[−0.09, 0.12]	0.00	−0.16*	[−0.23, −0.08]	0.02
Dominance	−0.18*	[−0.31, −0.05]	0.01	−0.12	[−0.21, −0.02]	0.01
Anti-egalitarianism	−0.22*	[−0.35, −0.10]	0.02	−0.27*	[−0.36, −0.18]	0.04

* $p < .01$.

Table 5
Multiple regression results for reactance to government restrictions.

Predictors	Sample 1 ($R^2 = 0.13$)			Sample 2 ($R^2 = 0.21$)		
	β	$\beta 95\%CI$	sr^2	β	$\beta 95\%CI$	sr^2
Aggression	−0.07	[−0.18, 0.04]	0.00	−0.01	[−0.08, 0.06]	0.00
Submission	−0.21*	[−0.30, −0.11]	0.03	−0.21*	[−0.27, −0.14]	0.04
Conventionalism	0.14	[0.04, 0.25]	0.01	0.17*	[0.10, 0.24]	0.02
Dominance	0.24*	[0.11, 0.37]	0.03	0.12*	[0.03, 0.22]	0.01
Anti-egalitarianism	0.11	[−0.02, 0.23]	0.01	0.29*	[0.20, 0.38]	0.04

* $p < .01$.

comparable to other global socio-political and science-based issues such as climate change, where Anti-egalitarianism predicted higher levels of climate change denial and lower pro-environmental attitudes (Clarke

et al., 2019; Stanley et al., 2017). This may reflect the right-wing ideological tendency to be less concerned with personal threats over system-level threats (Onraet et al., 2013), despite a tendency for right-wing adherents to be pathogen avoidant (Tybur et al., 2016). Indeed, the reduced threat perception might be motivated by other factors such as opposition to government restrictions that aim to reduce the spread of COVID-19, consistent with an ideological solution aversion account (Campbell & Kay, 2014). Future research on the ideological predictors of COVID-19 threat could examine the potential mediating role of opposition to restrictions, as well as low trust in governments, to determine whether low COVID-19 threat perception is ideologically-motivated.

Submission (positively) and Conventionalism (negatively) predicted COVID-19 threat perception in Sample 2 only. As more became known about the health impacts of COVID-19 later in 2020, and the continued seriousness with which governments and experts approached the unfolding pandemic, this may have influenced those high in Submission to develop a heightened threat perception as a function of their respect for authorities (Mallinas et al., 2020). Conversely, Conventionalists might have reacted to the COVID-19 threat in a motivated manner, downplaying the personal health impacts as a function of increased government restrictions put in place in some jurisdictions in mid to late 2020 that were not initially in place during data collection in Sample 1. Although it must be noted that the size of the effect in both samples is relatively similar, and small.

5.2. Ideological predictors of reactions to government restrictions (support and reactance)

The ideological subfactors in combination predicted 6% (Sample 1) and 10% (Sample 2) more variance in support for government restrictions, and 8% (Sample 1) and 15% (Sample 2) more variance in reactance to government restrictions, than in COVID-19 threat. This supports findings indicating that right-wing adherents are more concerned with system-level threat than personal threat (Onraet et al., 2013), as government restrictions represent a shift in the socio-political status quo and social behavioural norms. It also highlights the political nature of restrictions when compared to the relatively less polarised nature (at least thus far) of perceptions of personal threat from COVID-19 in Australia. Government restrictions may represent a more fundamental challenge to certain political beliefs, and therefore may prompt a subsequent negative reaction (Taber & Lodge, 2006).

Conventionalism negatively predicted support for restrictions and positively predicted reactance to restrictions in Sample 2 but not in Sample 1. Once again, Conventionalism was only a significant unique predictor of these outcomes in Sample 2. The length of time in which social restrictions have been in place likely prevented people from engaging in traditional and socially normative practices, namely family events, and Christmas holidays later in the year. This may have threatened high Conventionalists, who value social order and traditional practices, and therefore resulted in lowered support for, and frustration with, COVID-19 restrictions as the year progressed. Submission predicted higher support for COVID-19 restrictions, and lower reactance, in

both samples. Those high in submission believe that governments are often correct in their judgements, and that society is better off if we listen to our leaders and act according to their directions (Altemeyer, 1998). This tendency to be less questioning of governments may lead them to support social distancing restrictions. This is despite Aggression not predicting support for, or reactance to, restrictions in either samples. This suggests that beliefs regarding submission to authority can lead to different outcomes compared to distinct but related ideological types. In support of this, an aforementioned study found that those high in Submission believe climate change to exist, if they are in a nation with a pro-environmental government (Reese, 2012). This is despite the general tendency for right-wing adherents to be more likely to deny climate change.

With respect to the differential direction of prediction between Submission and Conventionalism and attitudes to restrictions, people higher in Submission are likely to obey all authorities irrespective of ideological congruence between them and the authority, whereas high Conventionalists believe it moral to only obey right-wing authorities (Mallinas et al., 2020). Although the right-wing Liberal-National Coalition forms the Federal Government in Australia, many state governments are Labor-held, centre-left governments. Indeed, the Victorian government, where the largest community outbreak occurred resulting in the most severe lockdowns and restrictions, is centre-left ideologically. High Conventionalists within Labor states may display lower support and higher reactance in response to the restrictions, thereby contributing to a positive relationship between Conventionalism and attitudes toward government restrictions.

Both SDO subfactors of Dominance and Anti-egalitarianism predicted lower support for restrictions and higher reactance in either one of or both Samples 1 and 2. The individualist nature of Anti-egalitarianism, and the view that the world is a competitive jungle (Duckitt & Sibley, 2010), might result in a belief that it is an individual's responsibility to look after their own health rather than relying on government. Furthermore, as SDO correlates with economic conservatism (Van Hiel & Kossowska, 2007), there could also be concern that restrictions are negatively affecting economic growth.

5.3. Conclusion and recommendations

These findings demonstrate that many of the right-wing ideological subfactors of RWA and SDO contribute to reactions to the COVID-19 pandemic and resultant government restrictions, in the Australian socio-political context. People high in Submission may react favourably to government restrictions and may continue to be favourable to further restrictions should more outbreaks eventuate. On the other hand, people higher in the two SDO subfactors of Dominance and Anti-egalitarianism, and people higher in Conventionalism, seem to be less convinced of the need for these government restrictions and may be more likely to be hostile to the future reintroduction of restrictions.

It should be noted that the correlational nature of this study limits the strength of the conclusions presented. For example, it is possible that the causal direction of at least some of these relationships could be the opposite to what we have implied in these models. The threat of the COVID-19 pandemic could have increased compliance to government restrictions in some, thereby driving their general tendency to believe that submitting to authorities is appropriate. Past research suggests that threats can result in right-wing ideological shifts (Thórisdóttir & Jost, 2011), especially in authoritarianism (Duckitt & Fisher, 2003). This should be considered in future research aiming to determine any causal relationships between these ideological subfactors and COVID-19 threat perception and support for government restrictions. Nonetheless, our findings provide a description of the interplay between these subfactors and responses to the pandemic, and highlight the value of using the RWA and SDO subfactors to examine socio-political attitudes to government restrictions and interventions. Although RWA and SDO, and their subfactors, are often correlated, our findings demonstrate that they can still

produce opposing effects in certain socio-political contexts.

CRedit authorship contribution statement

Edward J.R. Clarke: Conceptualization, Methodology, Resources, Formal analysis, Investigation, Data curation, Writing – original draft, Writing – review & editing, Funding acquisition. **Anna Klas:** Conceptualization, Methodology, Investigation, Resources, Writing – original draft, Writing – review & editing, Funding acquisition. **Emily Dyos:** Conceptualization, Writing – original draft.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.paid.2021.110734>.

References

- Altemeyer, B. (1981). *Right-wing authoritarianism*. Winnipeg: University of Manitoba Press.
- Altemeyer, B. (1998). The other "authoritarian personality". In P. Z. Mark (Ed.), *Advances in experimental social psychology* (Vol. volume 30, pp. 47–92). Academic Press. [https://doi.org/10.1016/S0065-2601\(08\)60382-2](https://doi.org/10.1016/S0065-2601(08)60382-2).
- Anderson, R. M., Heesterbeek, H., Klinkenberg, D., & Hollingsworth, T. D. (2020). How will country-based mitigation measures influence the course of the COVID-19 epidemic? *The Lancet*, 395(10228), 931–934. [https://doi.org/10.1016/S0140-6736\(20\)30567-5](https://doi.org/10.1016/S0140-6736(20)30567-5).
- Austin, D. E. J., & Jackson, M. (2019). Benevolent and hostile sexism differentially predicted by facets of right-wing authoritarianism and social dominance orientation. *Personality and Individual Differences*, 139, 34–38. <https://doi.org/10.1016/j.paid.2018.11.002>.
- Calvillo, D. P., Ross, B. J., Garcia, R. J. B., Smelter, T. J., & Rutchick, A. M. (2020). Political ideology predicts perceptions of the threat of COVID-19 (and susceptibility to fake news about it). *Social Psychological and Personality Science*, 11(8), 1119–1128. <https://doi.org/10.1177/1948550620940539>.
- Campbell, T. H., & Kay, A. C. (2014). Solution aversion: On the relation between ideology and motivated disbelief. *Journal of Personality and Social Psychology*, 107(5), 809–824. <https://doi.org/10.1037/a0037963>.
- Clarke, E. J. R., Ling, M., Kothe, E. J., Klas, A., & Richardson, B. (2019). Mitigation system threat partially mediates the effects of right-wing ideologies on climate change beliefs. *Journal of Applied Social Psychology*, 49(6), 349–360. <https://doi.org/10.1111/jasp.12585>.
- Conway, L. G., III, Woodard, S. R., & Zubrod, A. (2020). Social Psychological Measurements of COVID-19: Coronavirus Perceived Threat, Government Response, Impacts, and Experiences Questionnaires. [10.31234/osf.io/z2x9a](https://doi.org/10.31234/osf.io/z2x9a).
- Crowson, H. M., & Brandes, J. A. (2017). Differentiating between Donald Trump and Hillary Clinton voters using facets of right-wing authoritarianism and social-dominance orientation: A brief report. *Psychological Reports*, 120(3), 364–373. <https://doi.org/10.1177/0033294117697089>.
- Duckitt, J., & Fisher, K. (2003). The impact of social threat on worldview and ideological attitudes [article]. *Political Psychology*, 24(1), 199–222.
- Duckitt, J., & Sibley, C. G. (2010). Personality, ideology, prejudice, and politics: A dual-process motivational model. *Journal of Personality*, 78(6), 1861–1894. <https://doi.org/10.1111/j.1467-6494.2010.00672.x>.
- Dunwoody, P. T., & Funke, F. (2016). The aggression-submission-conventionalism scale: Testing a new three factor measure of authoritarianism [anti-democratic attitudes/policies; fascism; right-wing authoritarianism; social dominance orientation; prejudice; political tolerance/intolerance]. *Journal of Social and Political Psychology*, 4(2). <http://jspp.psychopen.eu/article/view/168>.
- Goldfinch, S., Taplin, R., & Gauld, R. (2021). Trust in government increased during the Covid-19 pandemic in Australia and New Zealand. *Australian Journal of Public Administration*. <https://doi.org/10.1111/1467-8500.12459>. n/a(n/a).
- Hart, P. S., Chinn, S., & Soroka, S. (2020). Politicization and polarization in COVID-19 news coverage. *Science Communication*, 42(5), 679–697. <https://doi.org/10.1177/1075547020950735>.
- Health, D.O. (2020, 30 May 2020). Physical distancing for coronavirus (COVID-19) Department of Health. Retrieved 19th June from <https://www.health.gov.au/news/health-alerts/novel-coronavirus-2019-ncov-health-alert/how-to-protect-yourself-and-others-from-coronavirus-covid-19/physical-distancing-for-coronavirus-covid-19>.
- Ho, A. K., Sidanius, J., Kteily, N., Sheehy-Skeffington, J., Pratto, F., Henkel, K. E., ... Stewart, A. L. (2015). The nature of social dominance orientation: Theorizing and measuring preferences for intergroup inequality using the new SDO_r scale. *Journal of Personality and Social Psychology*, 109(6), 1003–1028. <https://doi.org/10.1037/pspi0000033>.
- Jost, J. T., Glaser, J., Kruglanski, A. W., & Sulloway, F. J. (2003). Political conservatism as motivated social cognition. *Psychological Bulletin*, 129(3), 339–375. <https://doi.org/10.1037/0033-2909.129.3.339>.
- Kassam, N. (2020). COVIDpoll: Lowy Institute Polling on Australian attitudes to the coronavirus pandemic. Lowy Institute. Retrieved 19 June from <https://www.>

- lowyinstitute.org/publications/covidpoll-lowy-institute-polling-australian-attitudes-coronavirus-pandemic.
- Kozoi, M. (2020). Inside the failed efforts to dismantle Australia's coronavirus response. The age. Retrieved 21st January 2021 from <https://www.smh.com.au/national/inside-the-failed-efforts-to-dismantle-australia-s-coronavirus-response-20200423-p54mjb.html>.
- Latkin, C. A., Dayton, L., Moran, M., Strickland, J. C., & Collins, K. (2021). Behavioral and psychosocial factors associated with COVID-19 skepticism in the United States. *Current Psychology*. <https://doi.org/10.1007/s12144-020-01211-3>.
- Mallinas, S. R., Crawford, J. T., & Frimer, J. A. (2020). Subcomponents of right-wing authoritarianism differentially predict attitudes toward obeying authorities. *Social Psychological and Personality Science*, 11(1), 134–143. <https://doi.org/10.1177/1948550619843926>.
- Martin, P. (2020). Coronavirus isolation is hurting the economy, so should we keep social distancing? Top economists have answers. Retrieved June 19 from <https://www.abc.net.au/news/2020-05-18/coronavirus-isolation-economy-social-distancing-cost-and-benefit/12258364>.
- McGowan, M. (2020, 19th September). How Victoria's Covid lockdown protests are galvanising Australia's right. The Guardian. <https://www.theguardian.com/australia-news/2020/sep/19/how-victorias-covid-lockdown-protests-are-galvanising-australia-right>.
- Nisbet, E. C., Cooper, K. E., & Garrett, R. K. (2015). The partisan brain: How dissonant science messages lead conservatives and liberals to (dis)trust science. *The Annals of the American Academy of Political and Social Science*, 658(1), 36–66. <https://doi.org/10.1177/0002716214555474>.
- Onraet, E., Van Hiel, A., Dhont, K., & Pattyn, S. (2013). Internal and external threat in relationship with right-wing attitudes. *Journal of Personality*, 81(3), 233–248. <https://doi.org/10.1111/jopy.12011>.
- Reese, G. (2012). When authoritarians protect the earth—Authoritarian submission and Proenvironmental beliefs: A pilot study in Germany. *Ecopsychology*, 4(3), 232–236. <https://doi.org/10.1089/eco.2012.0035>.
- Stanley, D. (2018). apaTables: Create American Psychological Association (APA) Style Tables. R package version 2.0.5. <https://CRAN.R-project.org/package=apaTables>.
- Stanley, S. K., Wilson, M. S., Sibley, C. G., & Milfont, T. L. (2017). Dimensions of social dominance and their associations with environmentalism. *Personality and Individual Differences*, 107, 228. <https://doi.org/10.1016/j.paid.2016.11.051>.
- Taber, C. S., & Lodge, M. (2006). Motivated skepticism in the evaluation of political beliefs. *American Journal of Political Science*, 50(3), 755–769. <https://doi.org/10.1111/j.1540-5907.2006.00214.x>.
- Thórisdóttir, H., & Jost, J. T. (2011). Motivated closed-mindedness mediates the effect of threat on political conservatism. *Political Psychology*, 32(5), 785–811. <https://doi.org/10.1111/j.1467-9221.2011.00840.x>.
- Tybur, J. M., Inbar, Y., Aarøe, L., Barclay, P., Barlow, F. K., de Barra, M., ... Žeželj, I. (2016). Parasite stress and pathogen avoidance relate to distinct dimensions of political ideology across 30 nations. *Proceedings of the National Academy of Sciences of the United States of America*, 113(44), 12408–12413. <https://doi.org/10.1073/pnas.1607398113>.
- Van Green, T., & Tyson, A. (2020). 5 facts about partisan reactions to COVID-19 in the U. S. Pew Research. Retrieved June 19 from <https://www.pewresearch.org/fact-tank/2020/04/02/5-facts-about-partisan-reactions-to-covid-19-in-the-u-s/>.
- Van Hiel, A., & Kossowska, M. (2007). Contemporary attitudes and their ideological representation in Flanders (Belgium), Poland, and the Ukraine. *International Journal of Psychology*, 42(1), 16–26. <https://doi.org/10.1080/00207590500411443>.