American Psychological Association

American Psychologist

© 2020 American Psychological Association
ISSN: 0003-066X

http://dx.doi.org/10.1037/amp0000662

Effects of the COVID-19 Pandemic and Nationwide Lockdown on Trust, Attitudes Toward Government, and Well-Being

Chris G. Sibley, Lara M. Greaves, and Nicole Satherley
University of Auckland

Marc S. Wilson
Victoria University of Wellington

Nickola C. Overall, Carol H. J. Lee, Petar Milojev, Joseph Bulbulia, and Danny Osborne
University of Auckland

Taciano L. Milfont
Victoria University of Wellington

Carla A. Houkamau
University of Auckland

Isabelle M. Duck
Silverdale Medical, Auckland, New Zealand

Raine Vickers-Jones and Fiona Kate Barlow
University of Queensland

The contagiousness and deadliness of COVID-19 have necessitated drastic social management to halt transmission. The immediate effects of a nationwide lockdown were investigated by comparing matched samples of New Zealanders assessed before ($N_{\text{prelockdown}}$ = 1,003) and during the first 18 days of lockdown (N_{lockdown} = 1,003). Two categories of outcomes were examined: (a) institutional trust and attitudes toward the nation and government and (b) health and well-being. Applying propensity score matching to approximate the conditions of a randomized controlled experiment, the study found that people in the pandemic/lockdown group reported higher trust in science, politicians, and police, higher levels of patriotism, and higher rates of mental distress compared to people in the prelockdown prepandemic group. Results were confirmed in within-subjects analyses. The study highlights social connectedness, resilience, and vulnerability in the face of adversity and has applied implications for how countries face this global challenge.

Chris G. Sibley, School of Psychology, University of Auckland; Lara M. Greaves, School of Social Sciences, University of Auckland; Nicole Satherley, School of Psychology, University of Auckland; Marc S. Wilson, School of Psychology, Victoria University of Wellington; Nickola C. Overall and Carol H. J. Lee, School of Psychology, University of Auckland; Petar Milojev and Joseph Bulbulia, School of Humanities, University of Auckland; Danny Osborne, School of Psychology, University of Auckland; Taciano L. Milfont, School of Psychology, Victoria University of Wellington; Carla A. Houkamau, Department of Management and International Business, University of Auckland; Isabelle M. Duck, Silverdale Medical, Auckland, New Zealand; Raine Vickers-Jones and Fiona Kate Barlow, School of Psychology, University of Queensland.

Taciano L. Milfont is now at School of Psychology, University of Waikato.

The New Zealand Attitudes and Values Study is supported by a grant from the Templeton Religion Trust (TRT0196). The funders had no role in the preparation of the article or the decision to publish. Fiona Kate Barlow is supported by an Australian Research Council Future Fellowship Grant (FT150100147). Chris G. Sibley and Fiona Kate Barlow contributed equally to the article; they conceptualized and designed the study and planned the preregistration. Chris G. Sibley processed the data and conducted the analyses. Fiona Kate Barlow with Lara M. Greaves and Nickola C. Overall conducted the literature review and drafted the manuscript, with significant input from Chris G. Sibley, Nicole Satherley, Marc S. Wilson, Carol H. J. Lee, Petar Milojev, Joseph Bulbulia, Danny Osborne, Taciano L. Milfont, Carla A. Houkamau, Isabelle M. Duck, and Raine Vickers-Jones. Nicole Satherley and Lara M. Greaves prepared the figures. The authors have no competing interests.

Correspondence concerning this article should be addressed to Chris G. Sibley, School of Psychology, University of Auckland, Private Bag 92019, Auckland 1142, New Zealand or to Fiona Kate Barlow, School of Psychology, University of Queensland, St. Lucia, Queensland 4072, Australia. E-mail: c.sibley@auckland.ac.nz or f.barlow@psy.uq.edu.au

Public Significance Statement
This study describes the immediate effects of the COVID-19 pandemic and nationwide lockdown on levels of institutional trust and attitudes toward the nation and government and health and well-being in New Zealand, with implications for other nations. Our results suggest that a strong national response to COVID-19 may bolster national attachment and increase trust in the bodies determining and enforcing lockdown guidelines. Against a backdrop of general resilience, small increases in psychological distress serve as a warning about potential psychological consequences of lockdown and isolation.

Keywords: COVID-19, trust in government, business confidence, trust in science, mental health

Supplemental materials: http://dx.doi.org/10.1037/amp0000662.supp

In late 2019, the first cases of a novel pneumonia were reported in Wuhan, China; on January 7, 2020, the novel coronavirus was genetically sequenced and linked to the respiratory disease COVID-19 (World Health Organization, 2020). Four months after its emergence, the virus has spread to 210 countries and territories, officially infecting over 3 million people and claiming more than 225,000 lives (as of April 30, 2020; Worldometers, 2020). The virus represents a unique global challenge due to its contagiousness and lethality (World Health Organization, 2018). In response to the rapid spread of the virus, thousands of deaths, and expected exponential growth, many countries have entered "lockdown" (Frank & Grady, 2020). Lockdowns typically mandate staying at home, shutting businesses or working from home, and avoiding physical contact with others. The consequences of the virus are thus not only physical (e.g., illness, hospitalization) and financial (e.g., redundancy, financial insecurity; McKibbin & Fernando, 2020), but also likely psychological (e.g., fear, loneliness). At present, however, little information is available to assess the psychological effects of responses to COVID-19 in the immediate to short term.

Answering recent calls for social scientific responses to the pandemic (Van Bavel et al., 2020), this article presents a comprehensive analysis of data collected during the first 18 days of a nationwide lockdown in New Zealand. Participants report on their institutional trust, attitudes toward the nation and government, physical and psychological health, and subjective well-being. The responses of participants in lockdown are then compared to those of propensity-matched participants surveyed in October to December 2019 (before the global pandemic began), as well as their own (within-person) responses approximately a year earlier. In making these comparisons, this article aims to provide both practical information and theoretical insight into the ways in which complex crises immediately affect people's feelings about themselves, and their social world.

The Context

On March 23, 2020, 24 days after the first case of COVID-19 was identified in New Zealand, the government declared that the country would go into lockdown (after 48 hours; Ardern, 2020). This lockdown required New Zealanders to stay within household-level isolation "bubbles." People could only leave their homes if they needed groceries, medical supplies or treatment, and exercise within their immediate neighborhood, with a few exceptions for personal safety, blended families, single individual households, and "essential workers" such as health care and grocery workers (Bloomfield, 2020).

To assess the psychological effects of lockdown during the COVID-19 pandemic, this article uses data from a longitudinal national probability panel survey (the New Zealand Attitudes and Values Study; NZAVS). A total of 1,003 New Zealanders answered the survey, which collects data on a rolling basis, during the first 18 days of lockdown. Comparing their responses with those of a propensity-matched control sample who completed the NZAVS late in 2019 (before the pandemic emerged) provides the conditions of a natural experiment to compare the immediate effects of the lockdown on how participants felt about the nation, the government, and their own lives. Confirmatory within-subjects analyses are also reported.

Institutional Trust and Attitudes Toward Nation and Government

In countries where citizen surveillance and control is limited, the success of lockdown to reduce COVID-19 depends on a complicated voluntary process of information processing and institutional compliance. Specifically, individuals and communities need to trust and adhere to advice from scientists, politicians, and law enforcement, while ignoring disinformation and conspiracy theories. It is possible, however, that the pandemic itself (and subsequent lockdown) not only relies on, but may change, the extent to which people trust institutions (Van Bavel et al., 2020). On the one hand, people facing a shared external threat might reflexively increase their trust in institutions partly because they have few other options. The source model of group threat suggests that when groups (e.g., nations) face external threats, they respond by tightening ingroup ties (Greenaway

& Cruwys, 2019). Consistent with this idea, panel data shows that societal trust increases following natural disasters, perhaps due to the shared need to work together as a society to overcome the disaster (Toya & Skidmore, 2014). On the other hand, people often respond to threatening events with suspicion, developing conspiracy theories about their nature and cause (Dussaillant & Guzmán, 2014; van Prooijen & van Dijk, 2014; Wilson & Rose, 2014).

Work conducted during previous pandemics also yields mixed findings. Research from the United States during the H1N1 pandemic suggests that people largely trust public health officials (Paek, Hilyard, Freimuth, Barge, & Mindlin, 2008; Quinn et al., 2013). Longitudinal data collected in Switzerland also showed that people displayed high levels of trust in government and industry during the initial stages of the H1N1 pandemic, but that trust declined over time (Bangerter et al., 2012; see also Quinn et al., 2013). Similarly, longitudinal United States work as the H1N1 pandemic developed reveals that people's perceptions of risk from the virus increased over time, while their interest in becoming vaccinated (and engaging in precautionary behaviors) decreased (Ibuka, Chapman, Meyers, Li, & Galvani, 2010).

In the present article, several indices of institutional trust are included: trust in police, engagement with police (i.e., intentions to report suspicious activity to police; adapted from Tyler, 2005), trust in politicians, trust in science (Hartman, Dieckmann, Sprenger, Stastny, & DeMarree, 2017; Nisbet, Cooper, & Garrett, 2015), beliefs about the safety of vaccinations (Lee, Duck, & Sibley, 2017), and belief in conspiracy theories (a measure of mistrust; Lantian, Muller, Nurra, & Douglas, 2016). Each of these indices is relevant to the COVID-19 lockdown. Politicians and scientists are cooperating to plan a response and communicate the reasons behind the response to the public, the police are tasked with enforcement, and beliefs in vaccinations and conspiracy theories relate to how people might understand the causes and nature of COVID-19.

Broader attitudes toward the nation and government were also considered. As suggested above, the sense of common fate instilled by national events such as the COVID-19 lockdown may increase focus on intragroup (vs. intergroup) considerations, including identification with, and positive feelings about, one's nation (Greenaway & Cruwys, 2019; Li & Brewer, 2004). For example, Americans responded to 9/11 with heightened feelings of patriotism and identification with fellow citizens (Skitka, 2005). However, although satisfaction with the government and society might increase during the early stages of a pandemic and lockdown, the financial ramifications of both (e.g., unemployment, recession; Meltzer, Cox, & Fukuda, 1999; Smith, Keogh-Brown, Barnett, & Tait, 2009) may reduce satisfaction with national business and economic conditions. These possibilities were assessed by comparing people's broad perceptions of the well-being of government, business, and social and economic conditions (Tiliouine, Cummins, & Davern, 2006), as well as their identification with their nation (Postmes, Haslam, & Jans, 2013) and patriotism (Kosterman & Feshbach, 1989).

Mental and Physical Health and Subjective Well-Being

The lived reality of watching the pandemic unfold, coupled with social isolation and financial insecurity resulting from the lockdown, is also likely to affect people's mental and physical health. A large related literature reveals that living through community-wide disasters (e.g., natural disasters, war, fires, terrorist attacks) results in immediate risk to people's mental and physical health and social relationships (e.g., Bonanno, Brewin, Kaniasty, & Greca, 2010; Norris, Friedman, & Watson, 2002). Rapid research from China confirms relatively high levels of anxiety and depression as a result of the COVID-19 pandemic, particularly among those who perceived themselves to be in poor health prior to the outbreak (Qiu et al., 2020; Wang et al., 2020). In a sample of residents of the Wuhan area, 7% of participants reported posttraumatic stress symptoms, with some evidence that women were more affected than men (Liu et al., 2020). These initial findings are consistent with the high levels of fear and anxiety in the wake of the 2003 global SARS outbreak (Kan et al., 2003; Yu, Ho, So, & Lo, 2005).

To assess pre- and postpandemic/lockdown health, a clinically validated measure of mental distress (Kessler et al., 2010) was employed. Indices of rumination (adapted from Nolen-Hoeksema & Morrow, 1993), physical health (Ware & Sherbourne, 1992), self-perceived access to health care, and fatigue were also included. Moreover, because health includes the presence of positive well-being rather than simply the absence of disease or infirmity (World Health Organization, n.d.), two indicators of subjective well-being were analyzed: satisfaction with life (Diener, Emmons, Larsen, & Griffin, 1985) and personal well-being (construed broadly, and involving satisfaction with standard of living, future security, personal relationships, and health; Cummins, Eckersley, Pallant, van Vugt, & Misajon, 2003).

Indicators of social well-being were also compared, including perceived social support (Cutrona & Russell, 1987), felt belongingness (Hagerty & Patusky, 1995), and sense of community (Sengupta et al., 2013). Given the lockdown has reduced face-to-face social contact and broader connections with others, and that large-scale social threats (e.g., disasters) typically undermine social well-being, a uniform drop in these indices might be expected (Kaniasty & Norris, 1993). However, common threats also provide an opportunity for people to increase social cohesion and connection (Bonanno et al., 2010; Kessler, Galea, Jones, & Parker, 2006). Understanding the social effects of the pandemic and

lockdown is necessary because social belonging and support are critical to people's ability to cope and remain resilient in the face of shared threat (e.g., natural disasters; Bonanno et al., 2008; Kaniasty & Norris, 1993).

Finally, although disasters may increase support within the immediate family, there are increasing concerns that lockdown conditions (e.g., increased financial strain, alcohol consumption, stress) are likely to increase domestic violence (Capaldi, Knoble, Shortt, & Kim, 2012; Peterman, 2020; Taub, 2020). Pre- and postpandemic/lockdown attitudes toward investment in domestic violence initiatives were therefore compared.

Overview of the Present Study

To elucidate the immediate effects of the drastic social management required to contain the spread of COVID-19, propensity-matched samples of New Zealanders who completed the NZAVS before the beginning of the global COVID-19 pandemic (October 1 to December 31, 2019) and immediately after the New Zealand government's nationwide lockdown in response were compared (refer to Figure 1). Propensity score matching uses data in a way that approximates a randomized controlled experiment (Rosenbaum & Rubin, 1983; Thoemmes & Kim, 2011), increasing the ability to make causal inferences (Austin, 2011; Foster, 2010; Stuart, 2010). Specifically, people who completed the NZAVS during the first 18 days of lockdown (n = 1,003) were compared with an equally sized control group (n = 1,003) matched on a range of key variables. Results were then replicated with supplementary within-subjects analyses (ns = 918–940), comparing the responses of people in lockdown to their own responses approximately a year earlier. Two categories of outcomes were examined: (a) institutional trust and attitudes toward the nation and government and (b) health and subjective well-being.

Method

Participants

Sampling procedure. The NZAVS is an ongoing national longitudinal panel study of social attitudes, personality, and health outcomes that began in 2009 (Ns = 4,441–47,951). Commencing in October 2019, data collection for the 11th wave of the study was underway during the COVID-19 crisis. Participants were originally sampled from the New Zealand electoral roll, which contains contact details of all registered voters. In terms of representativeness, participants in the NZAVS closely reflect the New Zealand population on socioeconomic status, region of residence, and age. Small deviations are evident, however. Women are overrepresented by approximately 10%, as are Europeans; Māori (indigenous peoples) are overrepresented by 5%, and Asians are underrepresented by 5% (for further

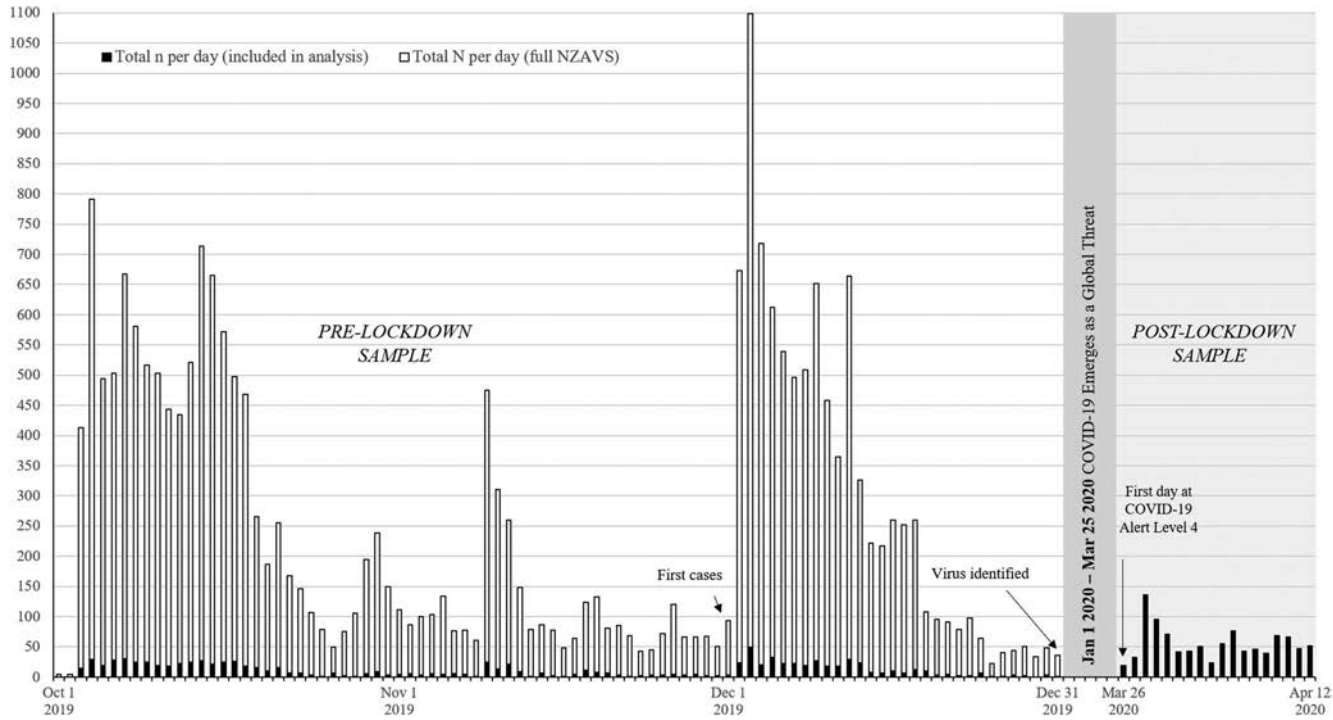

Figure 1. A day-by-day timeline of the response rate to the New Zealand Attitudes and Values Study for both the pre- and postlockdown samples.

sampling information, see the Detailed Method section in the online supplemental materials). All participants provided informed consent. Although the NZAVS accepts opt-in responses, all of the participants in the current article were completing at least their second annual wave of the survey (i.e., were recruited before the lockdown).

Propensity score matching. Given that the NZAVS started surveying participants for the current wave in October 2019, thousands more people had completed the questionnaire prior to the implementation of the lockdown than after it. Therefore, propensity score matching (using the propensity score matching algorithm in SPSS Version 26) was used to match the 1,003 postlockdown (March 26 to April 12, 2020) respondents with 1,003 respondents from the pool of 23,351 prelockdown "controls." These controls had completed the questionnaire from October 1 to December 31, 2019, well before the threat of COVID-19 became known (see Figure 1). Note that these time periods were determined a priori as stated in our preregistration (see https://osf.io/e765a/). The 18-day window for postlockdown data collection was chosen for practical reasons, to ensure that data processing, coding, and analysis could be performed quickly, to provide rapid information.

The goal of propensity score matching is to allow valid comparisons between a treatment group and a matched control group when random allocation to condition is not possible (as is the case with experiences of a pandemic). This is achieved by matching participants in the treatment group to similar participants drawn from a larger control sample on demographic (or other "third-variable" factors). In the present article, participants were matched on ethnicity, gender, age, place of birth, New Zealand citizenship (vs. permanent residency), diagnosis with depression or an anxiety disorder in the last 5 years, smoking status, disability status, education, socioeconomic status, rural (vs. urban) location, having a partner or children, and religiosity (the match tolerance was .01 without any failures to match). Thus, any observed differences between the treatment and control group are more likely to be due to the treatment effect (being in the COVID-19 lockdown period) rather than other confounding factors. The full list and description of demographic variables on which propensity score matching was based are presented in Table 1 and in full in Table S1 in the online supplemental materials. We complemented these between-groups comparisons with within-person analyses.

Conditions of the treatment group. The full timeline of the response rate by date for both the pre- and postlockdown groups is provided in Figure 1. On March 23, 2020, it was announced that New Zealanders had 48 hours to prepare for a nationwide lockdown. The vast majority of New Zealanders have obeyed the lockdown, with opinion polling

Table 1
Descriptive Statistics for Both Pre- and Postlockdown Samples Across Demographics

Variable	Prelockdown controls (October 1 to December 31, 2019)	Postlockdown (March 26 to April 12, 2020)
Ethnicity (yes)		
European	94.2% (945)	94.1% (944)
Māori	9.7% (97)	11.8% (118)
Pacific	3.3% (33)	3.7% (37)
Asian	3.4% (34)	3.6% (36)
Gender (yes)		
Women	66.6% (668)	64.9% (651)
Gender diverse	0.2% (2)	0.3% (3)
Men	33.2% (333)	34.8% (349)
Year of birth, *M* (*SD*)	1967.7 (13.0)	1967.7 (13.4)
Age, *M* (*SD*)	51.7 (13.0)	51.5 (13.4)
Born in New Zealand (yes)	80.3% (805)	78.9% (791)
Citizen of New Zealand (yes)	94.7% (950)	94.5% (948)
Diagnosis (yes)		
Depression	15.2% (152)	15.7% (157)
Anxiety	11.7% (117)	11.6% (116)
Smoker (yes)	4.0% (40)	5.0% (50)
Disability (yes)	22.6% (227)	25.3% (254)
Education (0 = low to 10 = high), *M* (*SD*)	5.5 (2.7)	5.5 (2.8)
New Zealand Deprivation Index (1 = low to 10 = high), *M* (*SD*)	4.6 (2.8)	4.6 (2.7)
New Zealand Socioeconomic Index (10 = low to 90 = high), *M* (*SD*)	56.5 (15.5)	56.7 (15.5)
Major urban area (yes)	47.5% (476)	49.1% (492)
Partner (yes)	75.6% (758)	74.6% (748)
Parent (yes)	73.6% (738)	73.6% (738)
Religious (yes)	33.5% (336)	32.7% (328)

Note. Data are presented as % (*n*) unless otherwise indicated.

suggesting that upward of 80–90% agree with the action (Crothers, 2020). All data for participants in the treatment group were collected after March 26, and thus, all participants in the treatment group were in lockdown.

Materials

Full descriptions of the dependent variables are presented in Table S2 in the online supplemental materials.

Institutional trust and attitudes toward the nation and government. Participants were asked about their trust in the police, general police engagement (i.e., intentions to report suspicious activity; Tyler, 2005), trust in politicians, trust in science (Hartman et al., 2017; Nisbet et al., 2015), vaccination attitudes (Lee et al., 2017), and belief in conspiracy theories (Lantian et al., 2016). Participants also rated their satisfaction with the economy, business, social conditions, the current government (Tiliouine et al., 2006), and access to health care (Lee & Sibley, 2017); level of identification with New Zealand (Postmes et al., 2013); and patriotism (Kosterman & Feshbach, 1989).

Mental and physical health and subjective well-being. Measures included the Kessler-6, a short-form scale of psychological distress (Kessler et al., 2010); rumination (Nolen-Hoeksema & Morrow, 1993); and subjective fatigue. Participants' subjective health (Ware & Sherbourne, 1992) and satisfaction with their own health (Cummins et al., 2003) were also assessed. Three other scales assessed perceived social support (Cutrona & Russell, 1987), felt belongingness (Hagerty & Patusky, 1995), and satisfaction with life (Diener et al., 1985). Other questions assessed participants' sense of community with others in their neighborhood (Sengupta et al., 2013); attitudes toward increasing funding for domestic violence prevention; and personal satisfaction with their standard of living, future security, and personal relationships (Cummins et al., 2003).

Results

Full descriptions of the demographic variables, the dependent variables, bivariate correlations among the dependent variables, and sample sizes and confidence intervals for the estimated means are presented in Tables S1–S4 in the online supplemental materials. Means for the prelockdown and the postlockdown groups across variables within the two broad categories of outcomes are presented in Tables 2 and 3. Given low levels of missing data (<5% on any variable), listwise deletion was employed in all analyses.

Institutional Trust and Attitudes Toward Nation and Government

A multivariate analysis of variance (MANOVA) was first conducted to assess whether the linear combination of all outcome variables relating to trust and attitudes toward the nation and government differed between the pre- and postlockdown groups. The overall model was statistically significant, suggesting that, broadly speaking, levels of trust and attitudes toward the nation and government changed following lockdown (Wilks' $\Lambda = .851$, $F_{13,1891} = 25.44$, $p < .001$, $\eta^2 = .15$; refer to Table S5 in the online supplemental materials for all results from the between-subjects tests using only participants who completed all measures). Within-cell correlations ranged from −.02 to .64 (refer to Table S7 in the online supplemental materials for the residual correlation matrices [adjusted for the effects of pre- vs.

Table 2
Descriptive Statistics and Mean Differences Between the Pre- and Postlockdown Samples Across Measures of Institutional Trust and Attitudes Toward Nation and Government

Scale/Item	Range	Prelockdown group,[a] *M* (*SD*)	Postlockdown group,[b] *M* (*SD*)	M_{diff}	99% CI	*t*	*df*	*p*	Cohen's *d*
Trust in science (2 items)	1–7	5.39 (1.26)	5.60 (1.20)	0.21	[0.07, 0.35]	3.80	1,995	<.001	0.17
Vaccination attitudes	1–7	6.27 (1.27)	6.25 (1.26)	−0.02	[−0.17, 0.13]	0.35	1,987	.726	0.02
Trust in police (3 items)	1–7	4.59 (1.22)	4.79 (1.22)	0.20	[0.06, 0.34]	3.63	2,004	<.001	0.16
Police engagement (2 items)	1–7	5.75 (1.09)	5.71 (1.19)	−0.03	[−0.17, 0.10]	0.68	2,004	.499	0.03
Trust in politicians	1–7	3.69 (1.40)	4.14 (1.41)	0.44	[0.28, 0.61]	7.01	1,978	<.001	0.32
Belief in conspiracies	1–7	4.35 (1.55)	4.18 (1.61)	−0.17	[−0.36, 0.01]	2.42	1,969	.016	0.11
National Well-being Index									
Satisfaction with the economy	0–10	5.42 (2.18)	5.39 (2.25)	−0.02	[−0.28, 0.23]	0.24	1,989	.814	0.02
Satisfaction with social conditions	0–10	4.59 (2.23)	4.78 (2.23)	0.19	[−0.06, 0.45]	1.95	1,996	.052	0.09
Satisfaction with business in New Zealand	0–10	5.67 (1.93)	5.48 (2.18)	−0.19	[−0.43, 0.05]	2.48	1,993	.041	0.10
Satisfaction with government performance	0–10	5.35 (2.69)	7.14 (2.54)	1.79	[1.49, 2.88]	15.28	1,999	<.001	0.68
Access to healthcare	0–10	7.80 (2.28)	8.00 (2.26)	0.20	[–0.06, 0.46]	1.94	1,998	.052	0.09
National identity	1–7	6.30 (1.05)	6.39 (0.96)	0.09	[–0.02, 0.21]	2.07	1,997	.039	0.09
Patriotism (2 items)	1–7	5.93 (1.02)	6.10 (0.96)	0.17	[0.06, 0.29]	3.91	2,004	<.001	0.17

Note. diff = difference; CI = confidence interval.
[a] Prelockdown data were collected October 1 to December 31, 2019, $n = 1{,}003$. [b] Postlockdown data were collected March 26 to April 12, 2020, $n = 1{,}003$.

Table 3
Descriptive Statistics and Mean Differences Between the Pre- and Postlockdown Samples Across Measures of Mental and Physical Health and Subjective Well-being

Scale/Item	Range	Prelockdown group,[a] *M* (*SD*)	Postlockdown group,[b] *M* (*SD*)	M_{diff}	99% CI	*t*	*df*	*p*	Cohen's *d*
Kessler-6 (6 items)	0–4	0.86 (0.67)	0.94 (0.63)	0.08	[0.00, 0.153]	2.71	1,995	.007	0.12
Rumination	0–4	0.79 (1.00)	0.77 (0.93)	−0.02	[−0.13, 0.09]	0.44	1,993	.658	0.02
Fatigue	0–4	1.63 (1.05)	1.52 (1.04)	−0.11	[−0.23, 0.01]	2.28	1,994	.023	0.09
Short-Form Subjective Health Scale (3 items)	1–7	5.05 (1.15)	4.97 (1.19)	−0.08	[−0.22, 0.06]	1.52	2,004	.128	0.07
Perceived social support (3 items)	1–7	5.93 (1.16)	5.99 (1.14)	0.06	[−0.07, 0.19]	1.20	2,003	.229	0.05
Felt belongingness (3 items)	1–7	5.10 (1.05)	5.07 (1.10)	−0.03	[−0.16, 0.09]	0.67	1,995	.506	0.03
Sense of community	1–7	4.15 (1.60)	4.45 (1.59)	0.30	[0.13, 0.48]	4.16	2,002	<.001	0.19
Satisfaction with life (2 items)	1–7	5.31 (1.23)	5.24 (1.64)	−0.07	[−0.12, 0.16]	0.33	1,995	.742	0.01
Support for domestic violence prevention	1–7	6.05 (1.14)	6.19 (1.03)	0.13	[0.01, 0.26]	2.74	1,990	.006	0.12
Personal Well-being Index									
Satisfaction with health	0–10	6.65 (2.29)	6.52 (2.39)	−0.13	[−0.39, 0.15]	1.19	1,995	.235	0.05
Satisfaction with your standard of living	0–10	7.68 (2.06)	7.63 (1.27)	−0.05	[−0.29, 0.19]	0.50	1,986	.619	0.02
Satisfaction with your future security	0–10	6.17 (2.30)	6.20 (2.52)	0.03	[−0.25, 0.31]	0.27	1,997	.785	0.01
Satisfaction with your personal relationships	0–10	7.59 (2.27)	7.59 (2.34)	0.00	[−0.26, 0.27]	0.00	2,000	.999	0.00

Note. diff = difference; CI = confidence interval.
[a] Prelockdown data were collected October 1 to December 31, 2019, n = 1,003. [b] Postlockdown data were collected March 26 to April 12, 2020, n = 1,003.

postlockdown]). Inspection of the residuals indicated they were normally distributed with no extreme values, or values with substantial leverage or Cook's distance. No outliers were deleted. Levene's tests of equality of variances indicated that the variances in specific outcome measures did not differ significantly, with the exception of levels of satisfaction with government, which had less variance in the lockdown condition, $F(1, 1903) = 7.66$, $p = .006$.

To maximize sample retention, the MANOVA was followed-up with paired-sample *t* tests (as per the preregistration). Comparison of means across measures of institutional trust and attitudes toward the nation and government for pre- and postlockdown groups are displayed in Table 2 and Figure S1. The postlockdown group reported slightly greater trust in science, trust in politicians, and trust in police, compared to the prelockdown group. The postlockdown group also reported higher levels of patriotism as well as higher levels of satisfaction with the performance of the New Zealand government compared to the prelockdown group.

Three differences did not meet our preregistered criteria of $p < .01$ for comparing across groups: The postlockdown group reported greater national identification ($p = .039$), lower belief in conspiracy theories ($p = .016$), and lower satisfaction with business in New Zealand ($p = .041$). No differences between the two groups were observed in reported satisfaction with health care, social conditions, and the economy, engagement with the police, or vaccination attitudes.

Mental and Physical Health and Subjective Well-Being

Again, a MANOVA was first conducted to assess whether the linear combination of all outcome variables relating to mental and physical health and subjective well-being differed between the pre- and postlockdown groups. This overall model was significant, Wilks' $\Lambda = .958$, $F(13, 1925) = 6.42$, $p < .001$, $\eta^2 = .04$ (refer to Table S6 for all results from the between-subjects tests using only participants who completed all measures). Within-cell correlations ranged from −.50 to .72 (refer to Table S7 for the residual correlation matrices [adjusted for the effects of pre- vs. postlockdown]). Inspection of the residuals indicated they were normally distributed with no extreme values, or values with substantial leverage or Cook's distance. No outliers were deleted. Levene's tests of equality of variances indicated that the variances in specific outcomes measures did not differ significantly, with the exception of satisfaction with future security, which had more variance in the lockdown condition, $F(1, 1937) = 12.95$, $p < .001$.

Again, following preregistered plans, paired-sample *t* tests were employed to examine these differences. Means across measures of mental and physical health and subjective well-being for pre- and postlockdown groups are displayed in Table 3 and Figure S2 in the online supplemental materials. The postlockdown group reported slightly higher levels of mental distress, as assessed by the Kessler-6, than did the prelockdown group. The distribution of mental distress across the two conditions was then tabulated, as per the cut-off criteria recommended for the Kessler-6 (Kessler et al., 2006). The proportion of participants in the "mild or moderate distress" category was greater in the postlockdown group than in the prelockdown group, but the overall chi-square was not significant as per our predetermined criteria (see Table 4), $\chi^2(2, n = 1{,}970) = 7.85$, $p = .020$.

Table 4
Differences Between the Pre- and Postlockdown Groups in the Distribution of Kessler-6 Scores Across the Three Levels of Mental Distress Severity

	Group/Condition	
Level of distress	Prelockdown (n = 979)	Postlockdown (n = 991)
No distress	77.1% (n = 755)	73.5% (n = 725)
Mild or moderate distress	16.2% (n = 159)	21.1% (n = 209)
Serious distress	6.6% (n = 65)	5.8% (n = 57)

In addition, the postlockdown group reported a greater sense of community than did the prelockdown group. Of interest, higher levels of sense of community were associated with lower levels of psychological distress postlockdown (as well as prelockdown; rs = −.21 and −.24, respectively; refer to Table S3 in the online supplemental materials).

Returning to the main analyses, the postlockdown group reported higher levels of support for investment in reducing domestic violence than did the prelockdown group. In addition, one difference did not meet the predetermined significance criteria: people in the postlockdown group reported less fatigue (p = .023). There were no other significant differences between the two groups in the other indicators of mental and physical health and subjective well-being: rumination, felt belongingness, perceived social support, satisfaction with life, one's standard of living, future security, personal relationships, or health, and subjective health assessment.

Follow-Up Within-Subjects Analyses

Complementary analyses that were not part of the preregistered plan were performed to assess within-person comparisons for those participants who were in the postlockdown group. Because of the longitudinal nature of the data collection, a large number of these participants had filled out questionnaires approximately a year earlier (Ns = 918–940). All measures reported in this article were included in the previous wave except trust in science and belief in conspiracy theories.

The results of paired sample t tests for the within-subjects comparisons largely mirror those from the propensity-matched samples (refer to Tables S8 and S9 in the online supplemental materials for the full results). In terms of institutional trust and attitudes toward the nation and government, trust in police and politicians increased within-subjects from pre- to postlockdown (ps ≤ .001, Cohen's ds = .22 and .27, respectively). Similarly, patriotism and satisfaction with government also increased (ps ≤ .001, Cohen's ds = .24 and .58, respectively). Moreover, additional significant effects emerged. National identification and assessment of vaccination safety both increased (ps ≤ .003, Cohen's ds = .08 and .19, respectively), whereas satisfaction with business and intentions to engage with the police both decreased (ps ≤ .001, Cohen's ds = .16 and .13, respectively). No other differences were significant (ps ≥ .053).

Turning to health and subjective well-being, again similar patterns emerged to those reported in the analyses of propensity-matched samples. Sense of community increased (p < .001, Cohen's d = .17), as did mental distress (p = .027, Cohen's d = .06). Finally, the drop in fatigue during lockdown was more apparent in these analyses compared to the comparisons across matched groups (p < .001, Cohen's d = .20). No other significant differences were observed (ps ≥ .076).

Discussion

Countries across the world are implementing measures to fight COVID-19, and their efforts will be enhanced by understanding the psychological effects of the pandemic, lockdowns, and social distancing (Van Bavel et al., 2020). The present article aims to provide rapid and reliable high-quality data on the immediate effects of the pandemic, and lockdown efforts, on social attitudes and health and well-being. In addition to theoretical and scientific implications, these results provide useful information to governments who are quickly needing to devise and adapt policies to manage COVID-19, and useful information to people across the world who are collectively facing this challenge.

Institutional Trust and Attitudes Toward the Nation and Government

Understanding how the pandemic and lockdown might affect institutional trust and attitudes toward the nation and government is important for several reasons. First, research from previous pandemics reveals that trust in government is strongly associated with adherence to health guidelines (Gilles et al., 2011; Prati, Pietrantoni, & Zani, 2011; Quinn et al., 2013). There are also competing theoretical possibilities. Facing a shared threat could foster a greater sense of community by binding people to local and national identities and strengthening affective ties (Greenaway & Cruwys, 2019; Li & Brewer, 2004). Alternatively, threat could prompt the uptake of conspiracy theories and the spread of misinformation (Dussaillant & Guzmán, 2014; van Prooijen & van Dijk, 2014; Wilson & Rose, 2014). At a practical level, politicians may be reluctant to adopt strict measures for fear of reprisal from voters. Refuting this concern, results suggest that in the short term, bold and decisive action—even that which puts the economy at risk—has the potential to bring people together at the national or state level. Consistent with theoretical models highlighting that

external threats motivate people to band together (Greenaway & Cruwys, 2019), in the early stages of the nationwide lockdown in New Zealand, people reported increased trust in politicians and police, increased satisfaction with the government's performance, and increased patriotism, as well as within-person increases in national identification (Postmes et al., 2013).

The conditions of lockdown provide a threat to the economy, with an impending recession meaning increased unemployment, changes to the future of many sectors of the economy, and other uncertainties (McKibbin & Fernando, 2020; New Zealand Treasury, 2020). In the early stages of lockdown, however, there were no effects on broad satisfaction with the economy, although small within-person decreases in satisfaction with business were observed. Moving onto other indices, satisfaction with access to health care and general social conditions did not decrease, indicating that the unprecedented restrictions were not immediately affecting participants' perceptions of society.

There has been concern that conspiracy theories will increasingly take hold during the COVID-19 pandemic (Ellis, 2020). Indeed, the pandemic has seen the proliferation of conspiracies and misinformation about the origin and nature of the virus, as well as governments' initiatives to combat it. The present data provides a positive counterpoint to these fears—relative to the prelockdown group, the postlockdown group reported significantly greater trust in science and lower conspiracist ideation (albeit nonsignificantly, $p = .016$). Thus, the data indicate that conspiracist ideation has not increased, perhaps because such ideation is being suppressed by increased trust in government and institutions. Additionally, it may be that small subsections of the population are showing increased attraction to conspiracy theories, while the broader population has moved to reject conspiracies. Finally, results were mixed for support for vaccinations: no difference was found in the propensity-matched samples, whereas within-subjects analysis suggests that support for vaccines increased postlockdown. These inconclusive results will need to be followed up.

In sum, in the early stages of the pandemic and a nationwide lockdown in New Zealand, people displayed none of the negative threat effects that might be feared. Instead, the effects are consistent with the concept of "rallying around the flag," a phenomenon also observed by researchers investigating responses to disasters and terrorism (Skitka, 2005; Toya & Skidmore, 2014).

Mental and Physical Health and Subjective Well-Being

There has been much public and academic discussion of the possible negative effects of lockdown, and fears are well founded. Decades of research demonstrate that social connections are vital to well-being and coping with difficult situations (Holt-Lunstad, Smith, Baker, Harris, & Stephenson, 2015; Jetten, Haslam, & Haslam, 2011; Muldoon et al., 2017; Putnam, 2001; Valtorta, Kanaan, Gilbody, Ronzi, & Hanratty, 2016). Furthermore, there is manifold evidence that societal threats negatively affect people's health and well-being (Bonanno et al., 2010; Bonanno et al., 2008; Kessler et al., 2006; Norris et al., 2002). Promisingly, in the immediate term at least, there were no significant differences for rumination, felt belongingness, and perceived social support. There were also no differences in reported satisfaction with life, standard of living, future security, personal relationships, and health. Interestingly, there was one potentially positive effect: participants in lockdown reported slightly less fatigue than those prelockdown ($p = .041$ in the propensity-matched samples; $p < .001$ in within-person analyses). Perhaps reduced commuting and out-of-home commitments have given the average person more time to sleep, warding off fatigue.

In the context of this general picture of resilience, two findings highlight the dual effects of the lockdown and the pandemic. First, the postlockdown group reported a small increase in psychological distress ($p = .007$ in the propensity-matched samples, $p = .027$ in within-person analyses). The Kessler-6 is the only validated measure of psychological distress in this study, and has been shown to be clinically relevant: Established cut-offs for levels of mental distress on this measure can be used to indicate low, moderate, and serious mental distress (Andrews & Slade, 2001; Kessler et al., 2010; Prochaska, Sung, Max, Shi, & Ong, 2012). Although serious levels of mental distress usually indicate mental illness, moderate levels of distress also warrant intervention (Kessler et al., 2010; Prochaska et al., 2012). Closer examination of scores show that 16.2% of those in the prelockdown group reported moderate mental distress, but this increased to 21.1% in the treatment group (see Table 4; note that the chi-square was not significant, $p = .020$, so results should be interpreted with caution). Thus, even in the very early stages of the pandemic and lockdown, the risk for mental health issues may have increased. Moreover, given that immediate changes can predict longer term distress (Bonanno et al., 2008), it is critical to act quickly to support people who are struggling (see Van Bavel et al., 2020, for suggestions).

Second, however, dovetailing with the increased trust and satisfaction at the national level, people currently in lockdown reported a greater sense of community than did those prelockdown. As stated earlier, sense of community and broader social connectedness have been shown to buffer the effects of stress and help people cope with challenges at both a psychological and physical level (Jetten et al., 2011). In fact, it is possible that mental distress may have worsened substantially more in response to the pandemic and lockdown, were it not for the added effects of community and national connectedness and trust. In line with this sugges-

tion, higher levels of a sense of community were associated with lower levels of psychological distress postlockdown (as well as prelockdown). Finally, results revealed that, compared to the prelockdown group, support for funding efforts to reduce domestic violence was slightly higher postlockdown. These results may reflect media attention to domestic violence, align with the widening of a sense of social community, and/or an increased awareness of domestic violence as people live through or witness the struggles of being contained in close quarters (Taub, 2020).

In sum, the general picture for health and well-being was one of resilience. The findings indicate that the initial stages of the pandemic and lockdown had minimal short-term detrimental effects on physical health and subjective well-being, perhaps in part because of increases in community connectedness. Nonetheless, slightly greater mental distress was evident post lockdown, consistent with prior research showing that crises negatively affect mental health (Bolin & Kurtz, 2018; Bonanno, Galea, Bucciarelli, & Vlahov, 2007, 2010; Jetten et al., 2011).

Strengths and Limitations

It is not ethically or practically possible to have a tightly controlled experiment in which one group is subjected to a pandemic and another not. The propensity scoring method, however, uses data in a way that approximates a randomized controlled experiment (Rosenbaum & Rubin, 1983; Thoemmes & Kim, 2011). This method was chosen as it allowed for the comparison of similar people at similar times (i.e., separated by only a few months), that differed mainly on whether they were experiencing the lockdown and pandemic. This method is not perfect, however. It is possible, for example, that unmeasured and/or matched variables could account for between group differences, rather than the conditions of the pandemic and lockdown. To account for this concern, supplementary within-subjects analyses were performed, and largely confirmed the results of the propensity matched analyses, increasing confidence in the results.

The pandemic is currently unfolding, and solid, reliable information about how people are responding to this crisis is needed now—information that this article uniquely provides. Nevertheless, the results should be interpreted in light of their temporality. Immediate increases in national trust and patriotism, for example, may wane over time, as the economic effects of lockdown worsen and the lived reality of social distancing becomes starker. However, initial compliance with lockdown restrictions requires people to have an immediate trust in government. Likewise, the small effects on mental distress may increase; note that many of our participants were completing surveys only days into the lockdown. Thus, despite a general picture of resilience, with only a small percentage of people becoming moderately distressed, early increases in mental distress must serve as a warning. Continuous efforts must be made to track people throughout the pandemic and varying lockdown measures; steps should be taken to flatten the curve of mental distress as well as viral spread.

Other strengths of this contribution include the measures of particular theoretical and practical relevance to understanding and responding to the effects of COVID-19. The national sample is also a considerable strength. Yet, some of these results may be specific to New Zealand, where strong measures to combat COVID-19 were introduced early (Baker & Wilson, 2020). However, international data showing that many leaders have enjoyed increased approval ratings during the pandemic (Bowe, 2020) allay concerns that these patterns are not relevant to other countries where the response to COVID-19 has been less swift, decisive, or effective. Instead, understanding the effects of different responses to COVID-19 provides unique insights into the widespread effects lockdown efforts may have at a national level; insights needed to make key decisions in combating COVID-19 in countries across the world.

Future Directions

The ongoing social and economic problems arising from the (necessary) COVID-19 response leave open a growing number of important questions. Will increases in patriotism and governmental trust continue? Who will recover from loneliness and loss? Longitudinal work conducted after 9/11 in the United States found that the majority of people were resilient, but a sizable minority went on to develop post-traumatic stress disorder (Bonanno et al., 2007). Future work will need to look at people's trajectories during and after the pandemic, with a focus on factors that are protective or present risk. For example, although the general picture of resilience across multiple indices may represent many people's experiences, those without social connections and with preexisting vulnerabilities may be more at risk (Bonanno et al., 2007; Jetten et al., 2011; Putnam, 2001). Likewise, compound stressors, such as unemployment or relationship instability, may exacerbate or modify the impact of COVID-19. Multiple potential moderators of the effects reported in this article should be examined, including gender, ethnicity, preexisting health condition or disability, and employment status. Such analyses require large samples (e.g., of unemployed, as well as employed people) and should ideally be longitudinal.

One particularly important focus of future work should be efforts to understand how the virus, social distancing, and lockdown is experienced by people from different ethnic and socioeconomic groups (Van Bavel et al., 2020). In New Zealand, Māori (indigenous) academics and community leaders have expressed concerns over the potential for COVID-19 to reinforce the existing structural inequalities

brought about by colonization (Te Rōpū Whakakaupapa Urutā, n.d.). Moreover, because Māori have less access to health care, stable housing, and economic opportunities, COVID-19 outbreaks and associated lockdowns are more likely to affect Māori communities (Te Rōpū Whakakaupapa Urutā, n.d.). Similar patterns emerge elsewhere in the world. In the United States, the virus is disproportionately affecting Black Americans who are overrepresented in hospital admissions and fatalities (Garg et al., 2020). This inequality is unlikely to end with the pandemic. Past work reveals that minority ethnicity is a risk factor for ongoing health problems following disasters and terrorist attacks (Bolin & Kurtz, 2018; DiGrande et al., 2008; Fothergill, Maestas, & Darlington, 1999). Beyond ethnicity, economic inequality will likely emerge as a robust predictor of both mortality and recovery; wealth confers privileges on both national and individual levels, including the capacity to engage in social distancing, and the ability to do so in a comfortable location with adequate food and safety (Ayyub, 2020). Gathering larger samples that provide more in-depth information about these risk factors will be important in engaging with how inequality, disadvantage, and privilege produce differential outcomes from the COVID-19 pandemic.

Conclusion

This article provides information about what can happen in the face of a shared threat and a national lockdown. The results suggest that, under the conditions of a strong and cohesive national response, people are likely to lean on and trust their politicians, scientists, police, and communities. The results also offer insight into how to leverage these responses in different countries, where decisions are less cohesive and governing bodies are divided on the course of action to take. Research indicates that compliance with leaders is more likely when they build a shared social identity and are seen as acting for collective interest to foster engaged followership (Haslam & Reicher, 2017; Van Bavel et al., 2020). Given that trust in government is strongly associated with adherence to health guidelines during pandemics (Gilles et al., 2011; Prati et al., 2011; Quinn et al., 2013), our results raise the possibility that a strong national response to COVID-19, bolstering national attachment, may serve to promote adherence to lockdown and health guidelines. The absence of such a response, however, may provide fertile ground for division, lack of adherence to guidelines, and conspiracy theories.

Turning to health and well-being, participants in the present research displayed resilience, with one important exception: days into lockdown, participants reported a small increase in mental distress relative to controls. Coming together in the face of adversity is necessary, especially when the threat can only be defeated through a collective response. But even as people work to protect their communities (and stay home to save lives), they may pay a cost in mental well-being. Continued efforts to monitor responses to COVID-19 and social efforts to contain the disease will be important, as well as early intervention that promotes societal and psychological health, even as physical health is prioritized.

References

Andrews, G., & Slade, T. (2001). Interpreting scores on the Kessler Psychological Distress Scale (K10). *Australian and New Zealand Journal of Public Health, 25,* 494–497. http://dx.doi.org/10.1111/j.1467-842X.2001.tb00310.x

Ardern, J. (2020, March 23). *COVID-19 alert level increased*. Retrieved from https://www.beehive.govt.nz/speech/prime-minister-covid-19-alert-level-increased

Austin, P. C. (2011). An introduction to propensity score methods for reducing the effects of confounding in observational studies. *Multivariate Behavioral Research, 46,* 399–424. http://dx.doi.org/10.1080/00273171.2011.568786

Ayyub, R. (2020, March 28). *Social distancing is a privilege*. Retrieved from https://foreignpolicy.com/2020/03/28/social-distancing-is-a-privilege/

Baker, M., & Wilson, N. (2020, April 10). Elimination: What New Zealand's coronavirus response can teach the world. *The Guardian*. Retrieved from https://www.theguardian.com/world/2020/apr/10/elimination-what-new-zealands-coronavirus-response-can-teach-the-world

Bangerter, A., Krings, F., Mouton, A., Gilles, I., Green, E. G. T., & Clémence, A. (2012). Longitudinal investigation of public trust in institutions relative to the 2009 H1N1 pandemic in Switzerland. *PLoS ONE, 7,* e49806. http://dx.doi.org/10.1371/journal.pone.0049806

Bloomfield, A. (2020). *Section 70 (1) (f) Health Act order*. Retrieved from https://www.health.govt.nz/system/files/documents/pages/covid-19-section-701f-notice-to-all-persons-in-new-zealand-3-april-2020-v2.pdf

Bolin, B., & Kurtz, L. C. (2018). Race, class, ethnicity, and disaster vulnerability. In H. Rodríguez, W. Donner, & J. E. Trainor (Eds.), *Handbook of disaster research* (pp. 181–203). Berlin, Germany: Springer International. http://dx.doi.org/10.1007/978-3-319-63254-4_10

Bonanno, G. A., Brewin, C. R., Kaniasty, K., & Greca, A. M. L. (2010). Weighing the costs of disaster: Consequences, risks, and resilience in individuals, families, and communities. *Psychological Science in the Public Interest, 11,* 1–49. http://dx.doi.org/10.1177/1529100610387086

Bonanno, G. A., Galea, S., Bucciarelli, A., & Vlahov, D. (2007). What predicts psychological resilience after disaster? The role of demographics, resources, and life stress. *Journal of Consulting and Clinical Psychology, 75,* 671–682. http://dx.doi.org/10.1037/0022-006X.75.5.671

Bonanno, G. A., Ho, S. M. Y., Chan, J. C. K., Kwong, R. S. Y., Cheung, C. K. Y., Wong, C. P. Y., & Wong, V. C. W. (2008). Psychological resilience and dysfunction among hospitalized survivors of the SARS epidemic in Hong Kong: A latent class approach. *Health Psychology, 27,* 659–667. http://dx.doi.org/10.1037/0278-6133.27.5.659

Bowe, A. W. (2020, April 3). *Something for the weekend*. Retrieved from https://www.pollbludger.net/2020/04/03/something-for-the-weekend-2/

Capaldi, D. M., Knoble, N. B., Shortt, J. W., & Kim, H. K. (2012). A systematic review of risk factors for intimate partner violence. *Partner Abuse, 3,* 231–280. http://dx.doi.org/10.1891/1946-6560.3.2.231

Crothers, C. (2020). *CV-19 Related Surveys in New Zealand, early April 2020: Research Note 1*. Auckland, New Zealand: Auckland University of Technology. Retrieved from https://thepolicyobservatory.aut.ac.nz/__data/assets/pdf_file/0010/366292/Covid19-Survey-Research-Note-1.pdf

Cummins, R. A., Eckersley, R., Pallant, J., van Vugt, J., & Misajon, R. (2003). Developing a national index of subjective wellbeing: The Australian Unity wellbeing Index. *Social Indicators Research, 64,* 159–190. http://dx.doi.org/10.1023/A:1024704320683

Cutrona, C. E., & Russell, D. W. (1987). The provisions of social relationships and adaptation to stress. *Advances in Personal Relationships, 1,* 37–67.

Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The satisfaction with life scale. *Journal of Personality Assessment, 49,* 71–75. http://dx.doi.org/10.1207/s15327752jpa4901_13

DiGrande, L., Perrin, M. A., Thorpe, L. E., Thalji, L., Murphy, J., Wu, D., . . . Brackbill, R. M. (2008). Posttraumatic stress symptoms, PTSD, and risk factors among lower Manhattan residents 2–3 years after the September 11, 2001 terrorist attacks. *Journal of Traumatic Stress, 21,* 264–273. http://dx.doi.org/10.1002/jts.20345

Dussaillant, F., & Guzmán, E. (2014). Trust via disasters: The case of Chile's 2010 earthquake. *Disasters, 38,* 808–832. http://dx.doi.org/10.1111/disa.12077

Ellis, E. G. (2020, April 2). The coronavirus outbreak is a petri dish for conspiracy theories. *WIRED*. Retrieved from https://www.wired.com/story/coronavirus-conspiracy-theories/

Foster, E. M. (2010). Causal inference and developmental psychology. *Developmental Psychology, 46,* 1454–1480. http://dx.doi.org/10.1037/a0020204

Fothergill, A., Maestas, E. G. M., & Darlington, J. D. (1999). Race, ethnicity and disasters in the United States: A review of the literature. *Disasters, 23,* 156–173. http://dx.doi.org/10.1111/1467-7717.00111

Frank, A., & Grady, C. (2020, March 22). Phone booths, parades, and 10-minute test kits: How countries worldwide are fighting Covid-19. *Vox*. Retrieved from https://www.vox.com/science-and-health/2020/3/22/21189889/coronavirus-covid-19-pandemic-response-south-korea-phillipines-italy-nicaragua-senegal-hong-kong

Garg, S., Kim, L., Whitaker, M., O'Halloran, A., Cummings, C., Holstein, R., . . . Fry, A. (2020). Hospitalization rates and characteristics of patients hospitalized with laboratory-confirmed coronavirus disease 2019—COVID-NET, 14 states, March 1–30, 2020. *Morbidity and Mortality Weekly Report, 69,* 458–464. http://dx.doi.org/10.15585/mmwr.mm6915e3

Gilles, I., Bangerter, A., Clémence, A., Green, E. G. T., Krings, F., Staerklé, C., & Wagner-Egger, P. (2011). Trust in medical organizations predicts pandemic (H1N1) 2009 vaccination behavior and perceived efficacy of protection measures in the Swiss public. *European Journal of Epidemiology, 26,* 203–210. http://dx.doi.org/10.1007/s10654-011-9577-2

Greenaway, K. H., & Cruwys, T. (2019). The source model of group threat: Responding to internal and external threats. *American Psychologist, 74,* 218–231. http://dx.doi.org/10.1037/amp0000321

Hagerty, B. M. K., & Patusky, K. (1995). Developing a measure of sense of belonging. *Nursing Research, 44,* 9–13. http://dx.doi.org/10.1097/00006199-199501000-00003

Hartman, R. O., Dieckmann, N. F., Sprenger, A. M., Stastny, B. J., & DeMarree, K. G. (2017). Modeling attitudes toward science: Development and validation of the credibility of science scale. *Basic and Applied Social Psychology, 39,* 358–371. http://dx.doi.org/10.1080/01973533.2017.1372284

Haslam, S. A., & Reicher, S. D. (2017). 50 years of "obedience to authority": From blind conformity to engaged followership. *Annual Review of Law and Social Science, 13,* 59–78. http://dx.doi.org/10.1146/annurev-lawsocsci-110316-113710

Holt-Lunstad, J., Smith, T. B., Baker, M., Harris, T., & Stephenson, D. (2015). Loneliness and social isolation as risk factors for mortality: A meta-analytic review. *Perspectives on Psychological Science, 10,* 227–237. http://dx.doi.org/10.1177/1745691614568352

Ibuka, Y., Chapman, G. B., Meyers, L. A., Li, M., & Galvani, A. P. (2010). The dynamics of risk perceptions and precautionary behavior in response to 2009 (H1N1) pandemic influenza. *BMC Infectious Diseases, 10,* 296. http://dx.doi.org/10.1186/1471-2334-10-296

Jetten, J., Haslam, C., & Haslam, S. A. (2011). *The social cure: Identity, health and wellbeing*. Oxford, United Kingdom: Taylor and Francis.

Kan, S., Hongxia, F., Jianming, J., Wendong, L., Zhaoli, S., Jing, G., . . . Weipeng, H. (2003). The risk perceptions of SARS and socio-psychological behaviors of urban people in China. *Acta Psychologica Sinica, 35,* 546–554.

Kaniasty, K., & Norris, F. H. (1993). A test of the social support deterioration model in the context of natural disaster. *Journal of Personality and Social Psychology, 64,* 395–408. http://dx.doi.org/10.1037/0022-3514.64.3.395

Kessler, R. C., Galea, S., Jones, R. T., Parker, H. A., & the Hurricane Katrina Community Advisory Group. (2006). Mental illness and suicidality after Hurricane Katrina. *Bulletin of the World Health Organization, 84,* 930–939. http://dx.doi.org/10.2471/BLT.06.033019

Kessler, R. C., Green, J. G., Gruber, M. J., Sampson, N. A., Bromet, E., Cuitan, M., . . . Zaslavsky, A. M. (2010). Screening for serious mental illness in the general population with the K6 screening scale: Results from the WHO World Mental Health (WMH) survey initiative. *International Journal of Methods in Psychiatric Research, 19,* 4–22. http://dx.doi.org/10.1002/mpr.310

Kosterman, R., & Feshbach, S. (1989). Toward a measure of patriotic and nationalistic attitudes. *Political Psychology, 10,* 257. http://dx.doi.org/10.2307/3791647

Lantian, A., Muller, D., Nurra, C., & Douglas, K. M. (2016). Measuring belief in conspiracy theories: Validation of a French and English single-item scale. *Revue Internationale de Psychologie Sociale, 29,* 1–14. http://dx.doi.org/10.5334/irsp.8

Lee, C. H. J., Duck, I. M., & Sibley, C. G. (2017). Personality and demographic correlates of New Zealanders' confidence in the safety of childhood vaccinations. *Vaccine, 35,* 6089–6095. http://dx.doi.org/10.1016/j.vaccine.2017.09.061

Lee, C. H. J., & Sibley, C. G. (2017). Demographic and psychological correlates of satisfaction with healthcare access in New Zealand. *The New Zealand Medical Journal, 130,* 11–24.

Li, Q., & Brewer, M. B. (2004). What does it mean to be an American? Patriotism, nationalism, and American identity after 9/11. *Political Psychology, 25,* 727–739. http://dx.doi.org/10.1111/j.1467-9221.2004.00395.x

Liu, N., Zhang, F., Wei, C., Jia, Y., Shang, Z., Sun, L., . . . Liu, W. (2020). Prevalence and predictors of PTSS during COVID-19 outbreak in China hardest-hit areas: Gender differences matter. *Psychiatry Research, 287,* 112921. http://dx.doi.org/10.1016/j.psychres.2020.112921

McKibbin, W., & Fernando, R. (2020). *The global macroeconomic impacts of COVID-19: Seven scenarios*. Canberra, Australia: Centre for Applied Macroeconomic Analysis, The Australian National University. Retrieved from https://cama.crawford.anu.edu.au/publication/cama-working-paper-series/16221/global-macroeconomic-impacts-covid-19-seven-scenarios

Meltzer, M. I., Cox, N. J., & Fukuda, K. (1999). The economic impact of pandemic influenza in the United States: Priorities for intervention. *Emerging Infectious Diseases, 5,* 659–671. http://dx.doi.org/10.3201/eid0505.990507

Muldoon, O. T., Acharya, K., Jay, S., Adhikari, K., Pettigrew, J., & Lowe, R. D. (2017). Community identity and collective efficacy: A social cure for traumatic stress in post-earthquake Nepal. *European Journal of Social Psychology, 47,* 904–915. http://dx.doi.org/10.1002/ejsp.2330

New Zealand Treasury. (2020, April 14). *Treasury Report T2020/973: Economic scenarios – 13 April 2020*. Retrieved from https://treasury.govt.nz/publications/tr/treasury-report-t2020-973-economic-scenarios-13-april-2020

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,* 36–66. http://dx.doi.org/10.1177/0002716214555474

Nolen-Hoeksema, S., & Morrow, J. (1993). Effects of rumination and distraction on naturally occurring depressed mood. *Cognition and Emotion, 7,* 561–570. http://dx.doi.org/10.1080/02699939308409206

Norris, F. H., Friedman, M. J., Watson, P. J., & the Summary and Implications of the Disaster Mental Health Research. (2002). 60,000 Disaster victims speak: Part II. Summary and implications of the disaster mental health research. *Psychiatry, 65,* 240–260. http://dx.doi.org/10.1521/psyc.65.3.240.20169

Paek, H.-J., Hilyard, K., Freimuth, V. S., Barge, J. K., & Mindlin, M. (2008). Public support for government actions during a flu pandemic: Lessons learned from a statewide survey. *Health Promotion Practice, 9,* 60S–72S. http://dx.doi.org/10.1177/1524839908322114

Peterman, A. (2020, April). *Pandemics and violence against women and children* (Working Paper No. 528). Washington, DC: Center for Global Development. Retrieved from https://www.cgdev.org/publication/pandemics-and-violence-against-women-and-children

Postmes, T., Haslam, S. A., & Jans, L. (2013). A single-item measure of social identification: Reliability, validity, and utility. *British Journal of Social Psychology, 52,* 597–617. http://dx.doi.org/10.1111/bjso.12006

Prati, G., Pietrantoni, L., & Zani, B. (2011). Compliance with recommendations for pandemic influenza H1N1 2009: The role of trust and personal beliefs. *Health Education Research, 26,* 761–769. http://dx.doi.org/10.1093/her/cyr035

Prochaska, J. J., Sung, H.-Y., Max, W., Shi, Y., & Ong, M. (2012). Validity study of the K6 scale as a measure of moderate mental distress based on mental health treatment need and utilization. *International Journal of Methods in Psychiatric Research, 21,* 88–97. http://dx.doi.org/10.1002/mpr.1349

Putnam, R. (2001, December 19). The prosperous community: Social capital and public life. *The American Prospect.* Retrieved from https://prospect.org/infrastructure/prosperous-community-social-capital-public-life/

Qiu, J., Shen, B., Zhao, M., Wang, Z., Xie, B., & Xu, Y. (2020). A nationwide survey of psychological distress among Chinese people in the COVID-19 epidemic: Implications and policy recommendations. *General Psychiatry, 33,* e100213. http://dx.doi.org/10.1136/gpsych-2020-100213

Quinn, S. C., Parmer, J., Freimuth, V. S., Hilyard, K. M., Musa, D., & Kim, K. H. (2013). Exploring communication, trust in government, and vaccination intention later in the 2009 H1N1 pandemic: Results of a national survey. *Biosecurity and Bioterrorism, 11,* 96–106. http://dx.doi.org/10.1089/bsp.2012.0048

Rosenbaum, P. R., & Rubin, D. B. (1983). The central role of the propensity score in observational studies for causal effects. *Biometrika, 70,* 41–55. http://dx.doi.org/10.1093/biomet/70.1.41

Sengupta, N. K., Luyten, N., Greaves, L. M., Osborne, D., Robertson, A., Brunton, C., . . . Sibley, C. G. (2013). Sense of community in New Zealand neighbourhoods: A multi-level model predicting social capital. *New Zealand Journal of Psychology, 42,* 36–45.

Skitka, L. J. (2005). Patriotism or nationalism? Understanding post-September 11, 2001, flag-display behavior. *Journal of Applied Social Psychology, 35,* 1995–2011. http://dx.doi.org/10.1111/j.1559-1816.2005.tb02206.x

Smith, R. D., Keogh-Brown, M. R., Barnett, T., & Tait, J. (2009). The economy-wide impact of pandemic influenza on the U.K.: A computable general equilibrium modelling experiment. *British Medical Journal, 339,* b4571. http://dx.doi.org/10.1136/bmj.b4571

Stuart, E. A. (2010). Matching methods for causal inference: A review and a look forward. *Statistical Science, 25,* 1–21. http://dx.doi.org/10.1214/09-STS313

Taub, A. (2020, April 6). A new COVID-19 crisis: Domestic abuse rises worldwide. *The New York Times.* Retrieved from https://www.nytimes.com/2020/04/06/world/coronavirus-domestic-violence.html

Te Rōpū Whakakaupapa Urutā. (n.d.). *COVID-19 advice for Māori.* Retrieved from https://www.uruta.maori.nz/

Thoemmes, F. J., & Kim, E. S. (2011). A systematic review of propensity score methods in the social sciences. *Multivariate Behavioral Research, 46,* 90–118. http://dx.doi.org/10.1080/00273171.2011.540475

Tiliouine, H., Cummins, R. A., & Davern, M. (2006). Measuring wellbeing in developing countries: The case of Algeria. *Social Indicators Research, 75,* 1–30. http://dx.doi.org/10.1007/s11205-004-2012-2

Toya, H., & Skidmore, M. (2014). Do natural disasters enhance societal trust? *Kyklos, 67,* 255–279. http://dx.doi.org/10.1111/kykl.12053

Tyler, T. R. (2005). Policing in Black and White: Ethnic group differences in trust and confidence in the police. *Police Quarterly, 8,* 322–342. http://dx.doi.org/10.1177/1098611104271105

Valtorta, N. K., Kanaan, M., Gilbody, S., Ronzi, S., & Hanratty, B. (2016). Loneliness and social isolation as risk factors for coronary heart disease and stroke: Systematic review and meta-analysis of longitudinal observational studies. *Heart, 102,* 1009–1016. http://dx.doi.org/10.1136/heartjnl-2015-308790

Van Bavel, J. J., Baicker, K., Boggio, P., Capraro, V., Cichocka, A., Crockett, M., . . . Willer, R. (2020). Using social and behavioural science to support COVID-19 pandemic response. *Nature Human Behaviour*. Advance online publication. http://dx.doi.org/10.31234/osf.io/y38m9

van Prooijen, J.-W., & van Dijk, E. (2014). When consequence size predicts belief in conspiracy theories: The moderating role of perspective taking. *Journal of Experimental Social Psychology, 55,* 63–73. http://dx.doi.org/10.1016/j.jesp.2014.06.006

Wang, C., Pan, R., Wan, X., Tan, Y., Xu, L., Ho, C. S., & Ho, R. C. (2020). Immediate psychological responses and associated factors during the initial stage of the 2019 coronavirus disease (COVID-19) epidemic among the general population in China. *International Journal of Environmental Research and Public Health, 17,* 1729. http://dx.doi.org/10.3390/ijerph17051729

Ware, J. E., Jr., & Sherbourne, C. D. (1992). The MOS 36-ltem short-form health survey (SF-36). *Medical Care, 30,* 473–483. http://dx.doi.org/10.1097/00005650-199206000-00002

Wilson, M. S., & Rose, C. (2014). The role of paranoia in a dual-process motivational model of conspiracy belief. In J.-W. van Prooijen & P. A. M. van Lange (Eds.), *Power, politics, and paranoia* (pp. 273–291). New York, NY: Cambridge University Press; http://dx.doi.org/10.1017/CBO9781139565417.019

World Health Organization. (2018, November 6), *Influenza (seasonal)*. Retrieved from https://www.who.int/news-room/fact-sheets/detail/influenza-(seasonal)

World Health Organization. (2020, January 21), *Novel coronavirus (2019-nCoV) Situation Report – 1, 21 January 2020*. Retrieved from https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200121-sitrep-1-2019-ncov.pdf

World Health Organization. (n.d.). *Constitution of the World Health Organization*. Retrieved from https://www.who.int/about/who-we-are/constitution

Worldometers. (2020). *COVID-19 coronavirus pandemic*. Retrieved from https://www.worldometers.info/coronavirus/#countries

Yu, H. Y. R., Ho, S. C., So, K. F. E., & Lo, Y. L. (2005). The psychological burden experienced by Hong Kong midlife women during the SARS epidemic. *Stress and Health, 21,* 177–184. http://dx.doi.org/10.1002/smi.1051

Received April 18, 2020
Revision received May 5, 2020
Accepted May 7, 2020 ■