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The distinct associations of ingroup attachment and glorification with responses to the coronavirus pandemic

Citation for published version:

McLamore, Q, Syropoulos, S, Leidner, B, Hirschberger, G, van Bezouw, MJ, Rovenpor, D, Paladino, MP, Baumert, A, Bilewicz, M, Bilgen, A, Chatard, A, Chekroun, P, Chinchilla, J, Choi, H-S, Euh, H, Gomez, A, Kardos, P, Khoo, YH, Li, M, Légal, J-B, Loughnan, S, Mari, S, Tan-Mansukhani, R, Muldoon, O, Noor, M, Petrović, N, Selvanathan, HP, Uluğ, ÖM, Wohl, MJ, Yeung, WL, Young, K & Zein, RA 2022, 'The distinct associations of ingroup attachment and glorification with responses to the coronavirus pandemic: Evidence from a multilevel investigation in 21 countries', *British Journal of Social Psychology*.
<https://doi.org/10.1111/bjso.12614>

Digital Object Identifier (DOI):

[10.1111/bjso.12614](https://doi.org/10.1111/bjso.12614)

Link:

[Link to publication record in Edinburgh Research Explorer](#)

Document Version:

Peer reviewed version

Published In:

British Journal of Social Psychology

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Abstract

While public health crises such as the coronavirus pandemic transcend national borders, practical efforts to combat them are often instantiated at the national level. Thus, national group identities may play key roles in shaping compliance with and support for preventative measures (e.g., hygiene, lockdowns). Using data from 25,159 participants across representative samples from 21 nations, we investigated how different modalities of ingroup identification (attachment and glorification) are linked with reactions to the coronavirus pandemic (compliance and support for lockdown restrictions). We also examined the extent to which the associations of attachment and glorification with responses to the coronavirus pandemic are mediated through trust in information about the coronavirus pandemic from scientific and government sources. Multilevel models suggested that attachment, but not glorification, was associated with increased trust in science and compliance with federal COVID-19 guidelines. However, while both attachment and glorification were associated with trust in government and support for lockdown restrictions, glorification was more strongly associated with trust in government information than attachment. These results suggest that both attachment and glorification can be useful for promoting public health, although glorification's role, while potentially stronger, is restricted to pathways through trust in government information.

Keywords: attachment; glorification; trust in science; trust in government; COVID-19

The Distinct Associations of Ingroup Attachment and Glorification with Responses to the Coronavirus Pandemic: Evidence from a Multilevel Investigation in 21 Countries

The coronavirus (COVID-19) pandemic has caused traumatic disruptions in the lives and livelihoods across the globe (Erikson, 2020). Efforts to mitigate these impacts, both before and after the development of limited vaccine supplies, depend upon both state-level policies and individual changes in behavior known as “non-pharmaceutical interventions” (Lewnard & Lo, 2020). These interventions, ranging from quarantine to travel bans to social distancing and personal hygiene norms, appear to have been most effective where strictly adhered to and enforced (Alfano & Ercolano, 2020; Brauner et al., 2020; Dehning et al., 2020; Haug et al., 2020). Social psychologists have argued that, as far as individual behaviors are concerned, unifying, superordinate group identities are important for shaping such compliance with preventative measures (van Bavel et al., 2022; Jetten et al., 2020). Such identities can be powerful motivators for public health behaviors (McFarland et al., 2019; Jetten et al. 2020), and common identification with humanity as a whole may relate to more engagement in preventative measures during the coronavirus pandemic (Barragan et al., 2021; Deng, 2021).

Yet, it is national governments that instantiate policies and messaging regarding responses to the coronavirus pandemic, and nations dramatically differ in their responses. For this reason, and because national identification can override pan-human identification (Hamer et al., 2019), the current research investigates the role of national identification in shaping coronavirus responses. Further, because national identification itself is generally considered to be multidimensional (Roccas et al., 2006; Roccas et al., 2008; Kosterman & Feshbach, 1989; Triandis & Gelfand, 1998; Schatz et al., 1999; Leach et al., 2008; Golec de Zavala et al., 2009), we investigate how different modes of national identification, namely, *attachment* (commitment

to the ingroup and importance placed on ingroup membership) and *glorification* (deference to ingroup authorities and belief in the ingroup's superiority to outgroups; Roccas et al., 2006) are associated with responses to the coronavirus pandemic.

Building upon preliminary investigations using similar models (e.g., van Bavel et al., 2022; Rugar et al., 2021b), we investigate associations between these modalities of national identification and self-reported reactions to the coronavirus pandemic (e.g., compliance with recommended precautionary behaviors; support for lockdown restrictions). We specifically investigate whether attachment and glorification have differing relationships with trust in scientific information and trust in government information sources, as trust in these sources critically shape responses to the coronavirus pandemic (for a review, see Devine et al., 2020).

Modes of National Identification and the Coronavirus Pandemic

Social identity theory and self-categorization theory hold that people have group-based selves that they contextually categorize themselves into (Tajfel, 1974; Tajfel & Turner, 1979; Turner et al., 1987). These group selves overlap with their individual selfhood to some degree. Within the context of public health, shared social identities (e.g., national identities) can facilitate both health behaviors by increasing cooperation and trust between group members (Haslam et al., 2009; Khan et al., 2015; Levine et al., 2005; for reviews, see Jetten et al., 2014; Steffens et al., 2016). Social identities also influence intentions to engage in collective action intentions (van Zomeren et al., 2008) and changes in behavior over time (Thomas et al., 2020), as well as overall political engagement (Rugar et al., 2021a). Early findings that forms of national identification have associations with responses during the coronavirus pandemic (e.g., Rugar et al., 2021b; van Bavel et al., 2022) thus have precedent. In particular, van Bavel and colleagues' (2022) findings that national identification plays a stronger role in shaping individual differences in public health

behaviors across many countries than political ideology hint at a general importance for collective identities.

These studies rest upon a wealth of theoretical and empirical work that describes identification with national groups as multimodal and associate different modes of identification with different collective-level behaviors (Roccas et al., 2006; Roccas et al., 2008; Leach et al., 2008; Golec de Zavala et al., 2009; Cichocka, 2016; Sagiv et al., 2012; Cichocka & Cislak, 2020). Broadly, these multimodal models distinguish between “secure” forms of ingroup identification which satisfy needs for belonging and promote collective well-being (e.g., conventional or constructive patriotism, attachment) from “defensive” forms of group identification that generate hypersensitivity to, and defensiveness against, threats to the image and status of the ingroup (e.g., nationalism, blind patriotism, glorification; for a review, see Cichocka, 2016).

We utilize a model distinguishing between national *attachment* and *glorification*, in order to examine relationships between forms of group identification, responses to the coronavirus pandemic, and trust in information sources. Glorification, comprising the sub-dimensions of *superiority* (belief in superiority to other groups) and *deference* (honoring, revering, and submitting to ingroup norms, symbols, and authorities), is often associated with negative intergroup processes. Prior research associates glorification, controlling for attachment, with greater demands for retributive justice against outgroups (Selvanathan & Leidner, 2020), defensiveness of ingroup-perpetrated harm upon outgroup members in the form of moral disengagement (Berndsen et al., 2018; Klar & Baram, 2016; Leidner et al., 2010, Leidner and Castano, 2012; Leidner et al., 2018; Li et al., 2018), increased anti-immigration attitudes (Kende et al., 2019; Steele et al., 2015), greater support for future violence against outgroups (Li et al.,

2016; Rovenpor et al., 2016; Rovenpor et al., 2019), and dehumanization of outgroups (Leidner et al., 2010; Leidner & Castano, 2012). In contrast, attachment is rarely associated with negative intergroup attitudes or behaviors (Leidner et al., 2010; Leidner et al., 2015) and is sometimes associated with ingroup-critical and even outgroup-friendly behaviors instead (Leidner et al., 2010; Leidner et al., 2012; Selvanathan et al., 2020; Li et al., 2018). Attachment, comprising importance placed on ingroup membership and commitment to the ingroup's wellbeing (Roccas et al., 2006; 2008) may generally motivate people toward solidarity and social cohesion in times of crisis (Leidner et al., 2015; Abrams et al., 2021; Ntontis & Rocha, 2020).

Crucially, attachment and glorification are not mutually exclusive. They can exhibit both joint effects and competing effects upon subsequent beliefs and behaviors (Leidner et al., 2015). Further, attachment and glorification are modestly correlated with, but distinct from, political ideology (see Roccas et al., 2008; Roccas & Berlin, 2016). Attachment and glorification are also conceptually distinct from horizontal and vertical individualism and collectivism, in that these cultural orientations describe a tendency to identify with cultural groups at all, rather than either the strength or modality of specific group identification (Roccas et al., 2008).

This model compliments, but is distinct from, the approach of van Bavel and colleagues (2022), who distinguished between attachment to national identity and commitment to ingroup wellbeing and a specific defensive form of group identification known as *collective narcissism* (van Bavel et al., 2022; Golec de Zavala, 2009; Cichocka & Cislak, 2020). Collective, or *national*, narcissism represents a belief that the nation is entitled to supremacy, recognition, and prestige, irrespective of their actual status (Cichocka, 2016). While collective narcissism is modestly correlated with glorification (particularly its superiority sub-dimension; Golec de Zavala, 2009; Cichocka, 2016), glorification is distinct in that (a) its superiority dimension

reflects whether people believe their group actually *is* superior, not whether they believe it should be perceived as such, and (b) it also encompasses deference to ingroup leadership and authorities (Roccas et al., 2008; Roccas & Berlin, 2016; Golec de Zavala et al., 2019).

Thus, while collective narcissism is unlikely to be associated with pandemic responses (van Bavel et al., 2022), there are theoretical pathways by which the more general *glorification* might be. Despite its deleterious consequences, there is evidence that glorification can foster ingroup unity during times of conflict (Bar-Tal, 2007; Klar & Baram, 2016), and Rugar and colleagues (2021b) have argued that the deference component of glorification could be relevant for how people high in glorification would respond to government mandates. People high in glorification may still comply with recommended behaviors and support lockdown restrictions. We theorize that when national leaders call upon citizens to take action against the coronavirus and characterize the pandemic response as a type of war, both the superiority and deference dimensions of glorification may be activated (see Benziman, 2020). Thus, “beating” the coronavirus thus becomes a component of national image and pride. Further, Rugar and colleagues (2021b) found evidence that, at least among Polish samples, glorification was positively associated with lockdown restrictions aimed at minimizing the likelihood of the infection arriving from outside the nation. However, Rugar and colleagues (2021b) also found that glorification was inconsistently related with support for internal measures or individual changes in behavior—suggesting boundaries on its utility for crisis response in Polish participants.

In contrast, there are clear and unambiguous theoretical reasons to expect that attachment would promote support for, and engagement in, all types of coronavirus response measures. National attachment, and related forms of ingroup identification (e.g., constructive patriotism)

motivates people to help other members of their group, which leads people to prioritize national contributions and ingroup well-being above individual self-interest (Roccas et al., 2006; 2008; Sekerdej & Roccas, 2016; Cichoka, 2016). Attachment, and similar constructs, are related to greater civic engagement and adherence to individual behaviors aimed at helping the group (Sekerdej & Roccas, 2016; Cichoka, 2016; Rugar et al., 2021a). Both van Bavel and colleagues (2022) and Rugar and colleagues (2021b) have found evidence that national attachment (simply called “national identification” by van Bavel and colleagues) or related constructs (i.e., constructive patriotism) does indeed promote individual compliance with preventative measures such as hygiene upkeep and social distancing during the coronavirus pandemic, even controlling for political ideology.

Both van Bavel and colleagues (2022) and Rugar and colleagues (2021b) argue that the associations between secure forms of group identification and coronavirus responses ultimately derive from motivation to promote the well-being of the group. In order for that to be true, however, participants would logically need to believe that complying with recommendations that they change their behavior during the coronavirus pandemic *would* help their group in the first place. Rugar and colleagues (2021b) point out that the measure of constructive patriotism was associated with measures that were explicitly recommended by official scientific and medical sources, such as maintaining one’s personal hygiene and social distancing. Expanding upon this point, we hypothesize that trust in these sources should logically play a key role in the association between secure forms of national identification and coronavirus responses.

The Role of Trust in Information about the Coronavirus

Trust in scientific information about the coronavirus pandemic is among the strongest worldwide predictors of compliance with preventative behaviors (Bicchieri et al., 2021; Pagliaro

et al., 2021; Plohl & Musil, 2021) and vaccination intentions (Hromatko et al., 2021). Further, while a proliferation of fake news and conspiracy theories have emerged that undermine scientific and governmental information efforts (Douglas, 2021), trust in science and scientific authorities appears to lessen susceptibility to such misinformation (Constantinou et al., 2020; Roozenbeek et al., 2020).

In a similar vein, trust in the government also exhibits similar associations and effects with the caveat being that this trust is contingent on who is the agent delivering these recommendations (Goldstein & Widermann, 2020; Han et al., 2021; Olsen & Hjorth, 2020). A positive correlation between trust in government and compliance with non-pharmaceutical interventions has also been noted (Bicchieri et al., 2021; Pagliaro et al., 2021). Further, a study conducted in the European Union found that greater trust in the government was associated with a lower COVID-19 mortality rate, lending further support to the argument that institutional trust plays an important role in shaping responses to COVID-19 (Oksanen et al., 2020). In fact, an early review of this literature within the context of COVID-19 has emerged and highlights increased trust in political institutions as a key mechanism for increasing adherence to COVID-19 recommendations (Devine et al., 2020). Thus, it is clear that both political trust and trust in scientific sources are critical for individual differences in public health responses—although trust in science appears to be the stronger predictor (Plohl & Musil, 2021).

The Current Study

Given the influence of trust in scientific information and trust in government information about the coronavirus in shaping individual pandemic responses and given that attachment (or analogous forms of identification) appears to only be related to compliance with officially

recommended policies (Rupar et al., 2021b), we hypothesize that trust in scientific and government information may play important roles in transmitting such relationships.

We hypothesized that both attachment (controlling for glorification) and glorification (controlling for attachment) would be associated with trust in information from ingroup government authorities, based upon importance placed upon group identity (attachment) and deference to ingroup authorities (glorification). We have no evidence to suggest that glorification would be linked with trust in scientific information, particularly as the related (but distinct) construct of collective narcissism has been associated with scientific *distrust* when the scientific consensus threatens the nation's image (Cislak et al., 2021). Further, scientific and medical efforts against the coronavirus pandemic that enabled rapid vaccine development were international (Ball, 2020), alongside supranational action by the World Health Organization (WHO, 2021). In fact, Bump and colleagues (2021) argue that collaborative international approaches (such as those recommended by international collaborations of scientists and the WHO) and multilateral international reforms are needed in order to effectively combat the pandemic—and provide evidence that competitive attitudes toward the pandemic have “undermined the international response.” As such, glorification (and the competitiveness it may engender) would not be expected to influence trust in scientific information if that information is owed to an international (or supranational) scientific consensus.

In contrast, attachment may be associated with greater trust in scientific information. While there is no direct evidence of such a link in previous literature, Rupar and colleagues (2021b) have argued that their findings can be explained in part by the existence of such a link. Attachment, unlike glorification, is also frequently linked with willingness to work with outgroups, even hostile outgroups, for the benefit of the ingroup (Leidner et al., 2010; Leidner et

al., 2012; Selvanathan et al., 2020; Li et al., 2018)—as such, the security and trust fostered by attachment may extend to scientists irrespective of whether they are perceived as ingroup or outgroup members. Further, Pagliaro and colleagues (2021) found that valuing concern for others (values associated with attachment; see Roccas et al., 2006; 2008; Sagiv et al., 2012), but not valuing loyalty and authority, was associated with greater trust in scientific information.

Here, our goals were threefold. First, we aimed to replicate and extend other findings that link different modes of national identification to different types of pandemic responses (van Bavel et al., 2022; Rugar et al., 2021b), using robust, representative, cross-sectional samples across multiple different countries. Secondly, because trust in scientific and government information about the coronavirus are among the strongest influences on public health behaviors (Plohl & Musil, 2021; Devine et al., 2020), and because attachment and glorification may differentially influence these types of trust, we investigated trust in these information sources might transmit relationships between modes of identification and compliance with preventative behaviors (as well as support for lockdown restrictions). Lastly, we aimed to account for the influence of nation-level differences in attachment and glorification when assessing these relationships. It has been argued that patterns of national identification (i.e., attachment and glorification) are shaped in part by national rhetoric and narratives, leading high (or low) levels of attachment and glorification to be differently normative in different countries (Castano, 2008; Leidner et al., 2015; McLamore et al., 2019). Thus, in our cross-national investigation, we aim to investigate how attachment and glorification are linked with coronavirus responses in individuals while accounting for these differences.

We conducted a multinational investigation with data collected in 21 nations across three cross-sectional waves between June and August of 2020. We specifically investigated links

between attachment and glorification with: (1) self-reported compliance with preventative behaviors to inhibit the spread of COVID-19, (2) support for lockdown restrictions, and (3) trust in information from scientific and government sources about the coronavirus (COVID-19) pandemic. We specifically hypothesized that while attachment would be associated with greater trust in both scientific and government information sources, thereby indirectly promoting both compliance and support for lockdown restrictions, glorification would only be associated with trust in government information sources, and thereby, support for lockdown restrictions.

Method

Participants

Data were obtained from 21 countries: Australia, Canada, China, France, Germany, Hong Kong, Hungary, Indonesia, Ireland, Israel, Italy, Malaysia, Netherlands, Philippines, Poland, Serbia, South Korea, Spain, Turkey, United Kingdom, and United States (see Table 1). In total, 25,159 participants were recruited. Participants were recruited across three cross-sectional waves, with Wave 1 conducted May 4th, 2020 - May 21st, 2020, Wave 2 conducted June 15th, 2020 - June 23rd, 2020, and Wave 3 conducted July 20th, 2020- July 28th, 2020. This resulted in three separate samples collected in each country, allowing us to test our hypothesis in three separate waves each with a new sample. To collect samples from each country, we utilized CloudResearch (Chandler et al., 2019; Litman et al., 2017) in an effort to recruit participants who fit demographic quotas with regards to age, ethnicity, income, and education level.¹ A *a-priori* power analysis, with the aim of detecting interactions between time-point comparisons and

¹ For race/ethnicity, religion, and urbanization, we relied on country-level reports from the CIA World Factbook (<https://www.cia.gov/the-world-factbook/references/one-page-country-summaries/>). For age, we relied on the same source but computed age categories from the raw data. For income, we utilized percentiles using the latest available data for each country from the Luxembourg Income Study (LIS) Database (Luxembourg Income Study (LIS) Database): <http://www.lisdatacenter.org> (multiple countries; 2020-2021) Luxembourg: LIS

cross-country comparisons for small-to-medium effect sizes (Cohen's $f=.160$), suggested a sample of at least 300 participants per time point per country. For the U.S. and China, we recruited at least 1,200 participants per wave to ensure our samples could be truly representative of the larger populations in these countries. While our hypotheses in this study were not pre-registered, the process for recruiting participants was pre-determined in the pre-registration for this dataset (see https://osf.io/msae2/?view_only=ffcd3e272f694fb69678cbda31b6e65b). As all participants were recruited indirectly via panel sampling, participants were anonymous to the researchers.

Procedure

Participants provided consent and then completed a questionnaire with measures focusing on group identity, cultural perceptions, Coronavirus recommendation compliance and information sources, endorsement of human and political values, and other relevant demographic variables (see full questionnaire available here: https://osf.io/g29z4/?view_only=b705a1eb081843dabe931fdfa9727527). After completing the demographics section, participants were asked questions focusing on recent or upcoming elections in their country and were subsequently debriefed and compensated.

Materials and Measures

All measures were first written in American English and were then subjected to translation and back-translation into applicable languages for each country included in our investigation. Scale descriptive statistics and reliabilities presented here represent reliabilities across all waves and countries. All measures were captured on a 1-9 slider scale.

The measured detailed below were first subjected to tests of measurement invariance to test whether all measures of interest performed similarly for participants across the 21 different

nations. With some modifications (detailed in *Supplementary Materials*), we achieved configural and metric invariance for all relevant measures except for attitudes towards lockdown restrictions, for which only configural invariance was achieved.

Attachment and Glorification

Attachment (4 items, e.g., “It is important for me to contribute to my nation,” “Being [country demonym] is an important part of my identity”), $M=7.03$, $SD=1.66$, $\alpha=.87$, $\omega=.88^2$, and glorification (3 items, e.g., “It is disloyal for [demonym]s to criticize [country],” “Relative to other nations, we are a very moral nation”) $M=5.70$, $SD=2.05$, $\alpha=.78$, $\omega=.78$, were measured using items adapted from Roccas and colleagues (2006). These abridged versions of these scales have also been used elsewhere (McLamore et al., 2019).

In order to distinguish attachment and glorification across our entire sample from related, but distinct, variables that the broader project also measured (e.g., individualism and collectivism) a confirmatory factor analysis was conducted which provided evidence to consider attachment and glorification as distinct from measures of individualism and collectivism (see *Supplementary Materials* for details).

Trust in Science

Trust in information about the coronavirus pandemic from scientific sources ($M=7.21$, $SD=1.57$, $\alpha=.77$) was captured by two items created by the research team (“Scientific authorities and professionals (e.g., epidemiologists, virologists)” and “Medical professionals (e.g., doctors, nurses, surgeons, EMTs)”). The following stem was used to introduce the items: “To what extent

² While testing for invariance suggested that attachment should be comprised as two factors, to calculate McDonald’s omega we used the four items rather than the two factors for our calculations, as for the latter no estimation is plausible.

do you trust information about Coronavirus if it comes from each of the following information sources?”

Trust in Government

Trust in information about the coronavirus from government sources ($M=5.80$, $SD=2.18$, $\alpha=.78$) was captured by two items created by the research team (“Government agencies” and “Elected government officials”). The same stem used to introduce the items capturing trust in science was shown.³

Compliance with Coronavirus Guidelines

We created a four-item measure ($M=7.49$, $SD=1.44$, $\alpha=.76$, $\omega=.77$) of self-reported participant compliance with scientifically-recommended guidelines to prevent the spread of the Coronavirus (COVID-19) pandemic (“How often do you wash your hands with soap and water for at least 20 seconds when you enter or exit your home?”; “How often do you stay at least 6 feet (or 2 meters) away from anyone who is not a member of your household when you are outside your home (e.g., social distancing?)”; “Do you avoid social gatherings due to the Coronavirus?”; “Have you been cancelling, and are you avoiding, any non-essential travel?”).

Support for Lockdown Restrictions

We generated a five-item measure ($M=6.39$, $SD=1.77$, $\alpha=.80$, $\omega=.80$) to capture how much participants supported lockdown restrictions (e.g., “National intelligence services should track and collect data from people suspected to be infected with Coronavirus;” “The military should be used domestically in order to assist with responses to the Coronavirus”).

³ These variables appeared to be distinguishable based on the correlation observed between them. The average correlation, calculated by conducting a mini meta-analysis (Goh et al., 2016) across countries, was $r=.485$, $SE=.01$, $Z=45.56$, $p<.001$, 95% C.I. [.467, .502]; range: .207-.704. For correlations-by-country, see *Supplementary Materials*.

Demographic Measures

Several demographic questions were included. In the current investigation, we included the following measures as covariates in our analysis: age, subjective SES, and gender (male=1; not male=-1).

Country-Level Measures

Two indexes were integrated into our dataset to account for their effect at the country level: (1) the Freedom House Democracy index (accessible here: <https://freedomhouse.org/explore-the-map?type=fiw&year=2020>); (2) The 2019 GINI World Bank Estimate (accessible here: <https://data.worldbank.org/indicator/SI.POV.GINI>).⁴

Results

Data Analysis Plan

The syntax files for the current project are available upon request will be made publicly available on OSF here: https://osf.io/8efzd/?view_only=905b747ad51f4c92b02a41e9be3dc89b.

While changes over time in measured variables were not the main focus of the study, and variables were relatively stable, figures are provided indicating means across samples in Supplementary Materials. We conducted all analyses on Mplus version 8 (Muthén & Muthén, 1998-2017). We employed a multilevel design to test for our hypotheses while accounting for differences between nations. Such a multilevel design accounts for the significant between country variability (τ_{00}), and a relatively high Intraclass Correlation Coefficient (ICC) (greater or

⁴ The number of new COVID-19 cases per million people at the beginning of each month of data collection was also accounted for, retrieved from <https://ourworldindata.org/coronavirus> (Roser et al., 2020). We averaged these numbers across waves. No differences emerged in our results with and without this variable, as such, analyses with this covariate are included in Supplementary Materials. We were not able to obtain COVID-19 statistics for Hong-Kong (which resulted in it being removed from this analysis).

equal to .05) (Raudenbush & Bryk, 2002).⁵ In detail for each variable: trust in science: $ICC=.054$, $\tau_{00}=.132$, $SE=.04$, $p=.001$; trust in government: $ICC=.135$, $\tau_{00}=.620$, $SE=.19$, $p=.001$; support for lockdown restrictions: $ICC=.156$, $\tau_{00}=.491$, $SE=.15$, $p=.001$; compliance with COVID-19 guidelines: $ICC=.061$, $\tau_{00}=.127$, $SE=.04$, $p=.001$.⁶ Further, significant between-country variability was observed for both attachment, $ICC=.109$, $\tau_{00}=.304$, $SE=.094$, $p=.001$, and glorification, $ICC=.115$, $\tau_{00}=.462$, $SE=.144$, $p=.001$.

Our first model was an intercept-only model used to calculate the between-country variability and intraclass correlation coefficient. We then estimated a second model where the random intercept, as well as the random slopes of attachment and glorification were estimated, with the two variables being the sole predictors of the outcome, so that we could calculate the percentage of reduction in variance in each outcome variable (i.e., percentage of variance explained by attachment and glorification). Importantly, these preliminary models were estimated in order to give us a better understanding about the nature of the data. Model 1 tested whether a multilevel approach is appropriate, and Model 2 gave us an estimate of how much variance in the outcome the inclusion of the two main predictors explained. Since these models are preliminary, we do not present results for them here, but we do so in the Supplementary Materials, see Table S7. To test our hypothesis in the most comprehensive manner we included several covariates in our analysis. In this third and final model, we controlled for the associations of relevant covariates as well as country-level (i.e., level 2) attachment and glorification, to meaningfully disentangle the individual and country variability (see Table 2). Finally, for the

⁵ A post-hoc power analysis using a Monte Carlo simulation (5000 samples) indicated high power for all significant hypothesized random slopes. For more details, see the Supplementary Materials.

⁶ A relatively high ICC and significant between-country variability was observed for both attachment ($ICC=.109$, $\tau_{00}=.304$, $SE=.09$, $p=.001$), and glorification ($ICC=.115$, $\tau_{00}=.462$, $SE=.14$, $p=.001$), supporting aggregation of these scores at the country level.

models for compliance to COVID-19 guidelines and support for lockdown restrictions we also included trust in science and the government as additional covariates. For each of the analyses reported below, participants (i) were nested in countries (j). All continuous predictors were grand-mean centered, to reflect scores at the average value across the 21 nations. Grand-mean centering was selected over group-mean centering so as to ensure that the first level coefficients are meaningfully disambiguated from the level 2 effects for continuous predictors (i.e., attachment and glorification)⁷. For any nation-level scores, values were aggregated automatically in Mplus. However, for ease of interpretation, we are providing the mean score of each country for all variables of interest in Table 1. The equation for the final model of each outcome variable were as follows:

Equation for Trust in Science and Government

$$\begin{aligned} \text{Outcome}_{ij} = & \gamma_{00} + \gamma_{10} * \text{Attachment}_{ij} + \gamma_{20} * \text{Glorification}_{ij} + \gamma_{30} * \text{Gender}_{ij} + \gamma_{40} * \text{Age}_{ij} + \gamma_{50} * \text{SES}_{ij} + \gamma_{60} \\ & * \text{Wave2}_{ij} + \gamma_{70} * \text{Wave3}_{ij} + \gamma_{01} * \text{Attachment}_j + \gamma_{02} * \text{Glorification}_j + \gamma_{03} * \text{GINI}_j + \gamma_{04} * \text{Democracy}_j + u_0 \\ & + u_{1j} + u_{2j} + r_{ij} \end{aligned}$$

Equation for Support for Lockdown Restrictions and Compliance with COVID-19 Guidelines

$$\begin{aligned} \text{Outcome}_{ij} = & \gamma_{00} + \gamma_{10} * \text{Attachment}_{ij} + \gamma_{20} * \text{Glorification}_{ij} + \gamma_{30} * \text{Gender}_{ij} + \gamma_{40} * \text{Age}_{ij} + \gamma_{50} * \text{SES}_{ij} + \gamma_{60} * \text{Wave} \\ & 2_{ij} + \gamma_{70} * \text{Wave3}_{ij} + \gamma_{80} * \text{TrustScience}_{ij} + \gamma_{90} * \text{TrustGovernment}_{ij} + \gamma_{01} * \text{Attachment}_j + \gamma_{02} * \text{Glorification}_j + \\ & \gamma_{03} * \text{GINI}_j + \gamma_{04} * \text{Democracy}_j + u_{0j} + u_{1j} + u_{2j} + r_{ij} \end{aligned}$$

⁷ This choice was made as previous simulations (Enders & Tofghi, 2007) suggest that either group-mean or grand-mean centering can be applied when “to examine the differential influence of a variable at Level 1 and Level 2.” Since our focus was on examining the association of attachment and glorification with each outcome, while controlling for potential variability in these measures across nations, we opted to grand-mean center these variables. We also posited that such a choice is easier to interpret, as it present the associations of attachment and glorification with the outcome, at the average of each of the two construct across all countries.

Trust in Science

In the final model, controlling for all covariates at both levels of analysis, across all participants, national attachment, $\gamma_{10}=.30$, $SE=.02$, $p<.001$, but not glorification, $\gamma_{20}=.002$, $SE=.01$, $p=.892$, was significantly associated with greater trust in scientific information about the coronavirus. Attachment and glorification explained 65.1% of the variance in trust in science. At the second level of analysis, glorification exhibited a positive association with trust in science $\gamma_{02}=.185$, $SE=.09$, $p=.047$.

Trust in Government

Across all participants, both attachment, $\gamma_{10}=.17$, $SE=.04$, $p<.001$, and glorification, $\gamma_{20}=.38$, $SE=.03$, $p<.001$, were significantly associated with greater trust in government information about the coronavirus. Attachment and glorification explained 53.4% of the variance in trust in government. No significant association at the second level of analysis was observed.

Compliance with COVID-19 Guidelines

Across all participants, attachment positively, $\gamma_{10}=.17$, $SE=.05$, $p<.001$, and glorification negatively, $\gamma_{20}=-.03$, $SE=.01$, $p=.014$, related with compliance with COVID-19 guidelines. Attachment and glorification explained 29.9% of the variance in compliance with COVID-19 guidelines attributable to between nation differences. No significant association at the second level of analysis was observed.

Support for Lockdown Restrictions

Across all participants, both attachment, $\gamma_{10}=.13$, $SE=.02$, $p<.001$, and glorification, $\gamma_{20}=.13$, $SE=.02$, $p<.001$, were significantly associated with increased support for lockdown restrictions. Attachment and glorification explained 56.2% of the variance in compliance with

COVID-19 guidelines attributable to between nation differences. National-level attachment also related to increased support for lockdown restrictions, $\gamma_{01}=.38, SE=.11, p=.001$.

Multilevel Mediation Analysis

A multilevel mediation model was estimated by modelling the indirect association of attachment and glorification with support for lockdown restrictions and compliance with coronavirus guidelines through the mediating mechanism of trust in science and the government (as two separate parallel mediators), controlling for the same covariates (at both levels of analysis). Mplus allows for the estimation of multilevel mediation models through the use of a Bayesian estimator. Thus, we are reporting results based on 95% Credible Intervals and not on p values in the analyses that follow. Given our relatively small number of countries ($N=21$), we only estimated between person (level 1) association (i.e., 1-1-1 model with fixed associations). The direct associations are summarized in Figure 1, while all indirect effects are displayed in Table 3. Overall, both attachment and glorification were positively related to both the mediators and the outcomes. Both trust in science and the government were positively related to compliance with COVID-19 guidelines and support for lockdown restrictions. All indirect effects were significant.

Discussion

Our study had three goals—the first being to replicate and extend existing research that differentially associates multimodal group identification with modal effects on compliance and support for lockdown restrictions (Rupar et al., 2021b; Van Bavel et al., 2022). The patterns that we observed act as additional emerging evidence that—at least within the context of the coronavirus pandemic—“secure” forms of national identification are associated with individual compliance with preventative behaviors (Cichocka, 2016; Rupar et al., 2021b) using

representative, cross-sectional samples across multiple different countries. Our findings further replicate van Bavel and colleagues' (2022) associations between national attachment and individual preventative measures, while also providing support for Ruper and colleagues' (2021b) contention that glorification can promote support for state-mandated lockdown restrictions to control the spread of the pandemic while simultaneously inhibiting personal compliance with preventative measures. Our finding that (within individuals) glorification was positively associated with support for lockdown restrictions, but negatively associated with compliance aligns with these observations, while internationally generalizing the relationships Ruper and colleagues (2021b) observed.

Our second goal was to expand upon findings (Ruper et al., 2021b; van Bavel et al., 2022) which implied that trust in information about the coronavirus from government sources and scientific sources might differentially transmit relationships between modes of group identification (i.e., attachment and glorification) and our outcome variables. The patterns that we observed advance previous work on multimodal ingroup identification (e.g., Roccas et al., 2006; 2008) in that these patterns add support for the idea that the differing motivations associated with different modes of identification (see Cichoka, 2016) help explain why the secure modes (e.g., constructive patriotism and attachment) are more associated with compliance than more image-defensive modes (e.g., collective narcissism, glorification). Like collective narcissism, glorification motivates concern about the national ingroup's symbolic image (Roccas et al., 2006; Castano, 2008; Cichoka, 2016), but unlike collective narcissism, glorification motivates unconditional support for national symbols, norms, and authority figures (Roccas et al., 2006; Roccas et al., 2008; Leidner et al., 2010).

As glorification is correlated with, but distinct from political ideology (Roccas et al., 2008), these motivations could logically lead to trust in information from government authorities simply because they *are* authorities. That we found a medium-sized association between glorification and trust in government information about the coronavirus pandemic, and that trust transmitted an indirect relationship with both compliance and support for lockdown restrictions, supports this idea. While such uncritical trust of authorities may prove deleterious within the context of intergroup conflict (Klar & Baram, 2016; McLamore et al., 2019; Leidner et al., 2015), there may be some beneficial effects for promoting public health, if only because of unified responses and mobilization to protect the ingroup's image (Rupar et al., 2021b). However, that glorification, unlike attachment, had no relationship with trust in scientific information suggests that there are limitations for how useful this link might be in situations where governmental and scientific information are in disagreement. This may have been particularly important within the context of the coronavirus pandemic, when sources of scientific information crossed national boundaries and often came from supranational organizations (see WHO, 2021) and where international competition ran counter to scientific recommendations (Bump et al., 2021).

In contrast, attachment is generally associated with more concrete concerns about the wellbeing of the ingroup and a commitment to individual action on behalf of the group (Roccas et al., 2006; 2008). Both van Bavel and colleagues (2022) and Rupar and colleagues (2021b) suggest that these motivations are why secure forms of identification promote individual compliance with preventative measures. In investigating a possible role for trust in this process, we argue that in order for this theoretical explanation to be sound, people high in attachment would logically need to trust the scientific information sources which informed them that these

behaviors would help the ingroup. Such a claim is supported by findings that moral prerogatives to care for and support people are associated with trust in scientific information within the context of the coronavirus pandemic (Pagliaro et al., 2021).

If attachment promotes such motivations, as it appears to (Leidner et al., 2015; Roccas et al., 2006; 2008; see also van Bavel et al., 2022), then it stands to reason that it would also be associated with trust in scientific information, at least within this context. That this trust in science appears to transmit indirect associations that help explain observations in existing research (i.e., van Bavel et al., 2022; Rugar et al., 2021b) only solidifies the importance of this novel link. Such a link is particularly important because it suggests a pathway by which compliance with scientifically evidenced measures can be promoted if government sources run counter to scientific sources, as has routinely happened in the U.S. under Donald Trump (Tollefson, 2020), or if there are social identities that, absent ingroup attachment, would lead people to distrust scientific expertise (Rekker, 2021).

Lastly, we aimed at to account for the influence of nation-level differences in attachment and glorification across these analyses. It has been argued that patterns of national identification (i.e., attachment and glorification) are shaped in part by national rhetoric and narratives, leading high (or low) levels of attachment and glorification to be differently normative in different countries (Castano, 2008; Leidner et al., 2015; McLamore et al., 2019). Our multilevel mediation model suggested that the associations between attachment and attitudes towards COVID-19 were potentially transmitted by trust in scientific and government sources of information about the coronavirus, whereas the same associations for glorification were only transmitted by trust in the government sources. Given the nested structure of our analyses, our results further suggest that these associations occur irrespective of the normative levels of attachment and glorification in a

particular country, although this finding should be weighed carefully given the relatively low number of countries for our analyses. Beyond the context of the coronavirus pandemic, these results suggest that trust in particular information sources may be motivated in part by different modalities of national identification. This possibility matters because while polarized party identities may facilitate group-based distrust in science (Rekker, 2022), overarching national identities can overcome these lower-order group identities (Roccas et al., 2008).

Limitations and Future Directions

One key limitation was that the relatively small number of countries for our second-level analyses prevented interpretation of second-level relationships (even if significant). For example, we lacked the power to be confident in the positive country-level relationship between glorification and trust in science. While this unexpected relationship could imply that nation-level glorification and individual-level glorification relate to trust in science differently, future research with a wider pool of countries is necessary to interrogate that possibility. We restricted ourselves to controlling for second-level associations while interpreting first-level relationships. This small country pool also likely inflated the proportion reduction of variance that attachment and glorification explained for our outcomes (i.e., 30.7%-64.4% of the variance attributable to national differences). This statistic would likely be much smaller if more countries could be included at the second level of analysis as in other multilevel findings with larger numbers of countries included (e.g., Van Bavel et al., 2022). The reduction of variance test may represent an indicator of the importance of ingroup identification as a psychological factor that, targeted successfully, could increase collective efforts to deal with public health crises. A related limitation is the lack of samples from certain geographical regions (e.g., African, Central and

Southern American countries). Thus, while not all of our samples were WEIRD (see Henrich et al., 2010), they do not encompass a truly global analysis.

Further, the nature of this study was correlational, which prevents us from establishing a causal relationship between the variables of interest. With regard to our indirect effect models, the structure of our cross-sectional data, and its non-causal nature, constitutes a limitation. Reliance upon non-causal data for regression-based mediation models can bias effect sizes (e.g., see Bullock et al., 2010), and although we relied on Bayesian estimators in our analyses rather than traditional mediation, the data structure still remains a limitation in that the directionality of our effects cannot be established for a certainty. A related limitation of the data structure is that we collected cross-sectional data with relatively small time-lags between samples (i.e., one month). This relatively short time-lag was selected because during the first phase of the pandemic, drastic week-by-week and month-by-month changes in public opinion, public attitudes, and even democratic values were not unheard of across the globe (Deane et al., 2021; Krastev & Leonard, 2020; Hamid, 2020; Repucci & Slipowitz, 2020), and we believed it possible that such shifts could affect our findings. While this was not ultimately the case, the relatively small time-lags would have let us account for such shifts if they had occurred. However, because of this structure, we cannot infer from this data whether these patterns held in later stages of the pandemic.

Despite these limitations, the directionality used in our model is consistent with theoretical arguments made both in other recent contributions (e.g., Rugar et al., 2021a; Van Bavel et al., 2022), in that attachment is thought to lead to compliance owing to motivations to protect other group members, while Pagliaro and colleagues (2021) find that such motivations are themselves associated with trust in science. Meanwhile, Rugar and colleagues (2021b) argue

that support for lockdown measures may be driven by glorification in some circumstances, whereas Pagliaro and colleagues (2021) found that values and motivations associated with glorification (see Leidner et al., 2012) were themselves linked with trust in government sources. As such, there are theoretical arguments for the directions that we model for both modes of identification. However, the same cannot be said for reverse-causality: while there are some arguments that government trust might lead to glorification, we are unaware of any theoretical precedent whereby trust in science might lead to national attachment.

Future research should endeavor to disentangle (a) whether attachment and glorification cause shifts in these types of trust in information sources and (b) if so, *why*. While attachment and glorification are generally stable, they (particularly glorification) have both state and trait components (McLamore et al., 2019). Further, while attachment and glorification were generally stable across our samples (see Tables S1-S3), there is evidence that (unidimensional) national identification might strengthen over the course of the pandemic due to the threat the pandemic represents (see Maher et al., 2022). Thus, future research should also consider how *shifts* in national identification might qualify the relationships we observed. In a similar vein, even though attachment and glorification are distinct from conservatism and its dimensions, reactions to the COVID-19 pandemic have been notably polarized in many countries, and as such, future research should not only examine why the relationships we observe occur, but whether political polarization affects them. It is a critical next step to investigate what occurs when political party identification and national identification come into conflict with respect to trust in scientific information.

Conclusion

Emergent research (e.g., Rugar et al., 2021a; 2021b; van Bavel et al., 2022, Benziman, 2020) and theoretical perspectives (Neville et al., 2021) suggest that making individuals' national identity salient could be useful for mobilizing collective action against public health crises like the coronavirus pandemic. This literature, in aggregate, positions national identity and social norms among the most effective tools for increasing normative compliance with preventative measures—so long as the norms communicated by messengers are not contradictory, and a support system exists to help promote these measures (Neville et al., 2021). Our results align with and extend such work, suggesting that different modalities of national identity (i.e., attachment and glorification) are differentially related to trust in different sources of information (i.e., government and scientific sources) and that through these, both modalities can reflect greater engagement in and support for preventative measures.

The coronavirus pandemic—characterized as a stress test for science (The Lancet, 2020)—might be also be described as a stress test for public trust generally, be it in political leaders, scientific authorities, or otherwise. We expanded upon evidence linking attachment with more support for personal and governmental efforts to prevent the spread of COVID-19, and glorification with support for government-enforced lockdowns. We found novel evidence that attachment (not glorification) may be linked with trust in science as well as trust in ingroup authorities, indirectly promoting public health efforts, whereas glorification only has indirect links via the latter. This cross-national, multi-level evidence hints that national identity may help address a collective threat which transcends the national borders—while also cautioning that this may be best achieved if there is a consensus in scientific and government information about the public health crisis in question.

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Tables and Figures

Table 1.

Sample characteristics and descriptive statistics for the main variables of the study for each country.

Country	N	Gender		Age	Trust in Science	Trust in Government	Compliance	Lockdown restrictions	Attachment	Glorification
		Male	Female	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)
United States	3541	1787	1754	47.35 (17.56)	7.12 (1.63)	5.48 (1.94)	7.51 (1.55)	5.99 (1.75)	6.87 (1.66)	5.43 (2.10)
United Kingdom	899	449	450	48.1 (17.36)	6.21 (1.43)	5.58 (1.91)	7.81 (1.33)	6.39 (1.58)	6.39 (1.72)	5.28 (1.88)
Turkey	894	446	448	36.49 (11.82)	7.34 (1.69)	5.80 (2.54)	8.03 (1.20)	6.75 (1.66)	7.78 (1.67)	5.89 (2.57)
Serbia	1189	570	619	43.91 (12.63)	6.27 (2.18)	4.81 (2.53)	7.22 (1.72)	5.43 (2.21)	6.50 (2.00)	4.36 (2.26)
Poland	886	434	452	47.09 (16.29)	6.90 (1.69)	4.51 (2.26)	7.18 (1.76)	6.06 (2.03)	6.98 (1.78)	4.87 (2.15)
Philippines	883	432	451	36.66 (14.07)	7.94 (1.34)	5.90 (2.34)	8.27 (1.09)	7.74 (1.42)	8.02 (1.37)	6.13 (2.15)
Netherlands	896	476	420	49.95 (17.65)	6.99 (1.58)	6.11 (1.92)	6.89 (1.14)	5.66 (1.77)	6.35 (1.54)	5.25 (1.70)
Malaysia	896	457	439	39.63 (13.44)	7.51 (1.34)	6.77 (1.71)	7.61 (1.28)	7.63 (1.22)	7.80 (1.28)	6.66 (1.76)
South Korea	910	482	428	46.44 (15.02)	7.09 (1.28)	5.62 (1.59)	7.20 (1.32)	5.72 (1.51)	6.38 (1.54)	5.62 (1.56)
Italy	890	436	454	48.64 (15.80)	6.87 (1.62)	5.76 (2.17)	7.51 (1.46)	5.97 (1.82)	6.98 (1.70)	5.64 (2.06)
Israel	1000	445	555	38.46 (15.14)	6.89 (1.62)	4.67 (2.05)	6.99 (1.62)	6.05 (1.78)	6.86 (1.76)	5.32 (2.04)
Ireland	890	443	447	45.79 (15.93)	7.40 (1.53)	6.55 (2.03)	7.86 (1.31)	6.39 (1.74)	7.00 (1.67)	5.55 (1.77)
Indonesia	882	467	415	38.81 (13.31)	7.52 (1.33)	5.96 (1.88)	7.84 (1.27)	7.41 (1.29)	7.86 (1.24)	5.68 (1.93)
Hungary	890	424	466	40.05 (16.11)	6.76 (1.75)	4.32 (2.34)	7.04 (1.27)	5.43 (1.95)	6.45 (1.96)	4.17 (2.22)
Hong Kong	922	454	468	36.71 (11.46)	7.02 (1.44)	4.98 (2.16)	7.03 (1.27)	6.11 (1.73)	6.80 (1.44)	5.37 (1.66)
Germany	897	449	448	47.04 (17.22)	6.86 (1.77)	5.88 (2.14)	7.19 (1.61)	5.21 (1.90)	6.04 (1.86)	4.87 (1.88)
France	889	448	441	49.47 (16.24)	6.85 (1.55)	5.00 (2.19)	7.44 (1.46)	6.14 (1.64)	6.72 (1.64)	5.36 (1.73)
Spain	901	459	442	47.27 (15.04)	7.31 (1.58)	4.66 (2.55)	7.73 (1.34)	6.39 (1.66)	6.69 (1.94)	5.35 (2.07)
China	3601	1856	1745	41.18 (11.20)	7.79 (0.94)	7.34 (1.17)	7.59 (0.90)	7.33 (0.97)	7.72 (0.84)	7.24 (1.11)
Canada	894	438	456	46.86 (17.00)	7.28 (1.48)	6.28 (1.91)	7.67 (1.41)	6.32 (1.66)	7.03 (1.57)	6.02 (1.64)
Australia	871	422	449	46.80 (17.54)	7.33 (1.43)	6.47 (1.85)	7.43 (1.48)	6.60 (1.58)	7.00 (1.51)	6.17 (1.68)

Table 2.

Multilevel models for the association of national attachment and glorification with the four outcomes controlling for key covariates.

Parameter	Trust in Science		Trust in Government		COVID-19 Compliance		Support for Lockdown Restrictions	
	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE
<i>Within level</i>								
Intercept _{ij} γ_{10}	7.207***	.024	5.783***	.113	7.640***	.056	6.608***	.063
Attachment _{ij} γ_{10}	.304***	.024	.169***	.036	.166***	.014	.128***	.017
Glorification _{ij} γ_{20}	.002	.018	.376***	.035	-.031*	.013	.128***	.018
Gender _{ij} γ_{30}	-.041***	.009	-.055***	.011	-.122***	.008	-.038***	.009
Age _{ij} γ_{40}	.006***	.001	-.002**	.001	.010***	.001	-.005***	.001
SES _{ij} γ_{50}	.041***	.005	.078***	.006	-.007	.004	.005	.005
Wave 2 dummy _{ij} γ_{60}	-.090***	.022	-.070*	.028	-.194***	.020	-.279***	.023
Wave 3 dummy _{ij} γ_{70}	-.029	.022	-.081**	.027	-.231***	.020	-.322***	.023
Trust in Science _{ij} γ_{80}	--	--	--	--	.265***	.006	.180***	.007
Trust in Government _{ij} γ_{90}	--	--	--	--	.030***	.005	.129***	.006
<i>Between level</i>								
Attachment _j γ_{01}	.083	.099	-.143	.182	.259	.158	.384**	.111
Glorification _j γ_{02}	.185*	.093	.173	.150	.130	.144	.150	.087
GINI _j γ_{03}	.015	.012	.017	.021	.021	.015	-.007	.011
Democracy _j γ_{04}	.006	.003	.007	.005	.006	.004	<.001	.002
<i>Variances</i>								
Within level r_{ij}	2.007***	.018	3.048***	.028	1.558***	.014	2.122***	.019
Between level u_{0j}	.027**	.010	.250**	.086	.058*	.023	.075**	.028
Attachment slope u_{1j}	.011**	.004	.026**	.002	.003*	.001	.005*	.002
Glorification slope u_{2j}	.006**	.002	.024**	.002	.003**	.001	.005**	.002
<i>Model Comparisons</i>								
$\Delta\chi^2$	$df=6$		$df=6$		$df=19$		$df=19$	
	8866.75***		12075.62***		17672.80***		17549.46***	

Note. * $p < .05$, ** $p < .01$, *** $p < .001$. Values for all -2Log Likelihood comparisons were relative to the unconditional intercept-only model and evaluated with a $\Delta\chi^2$ test.

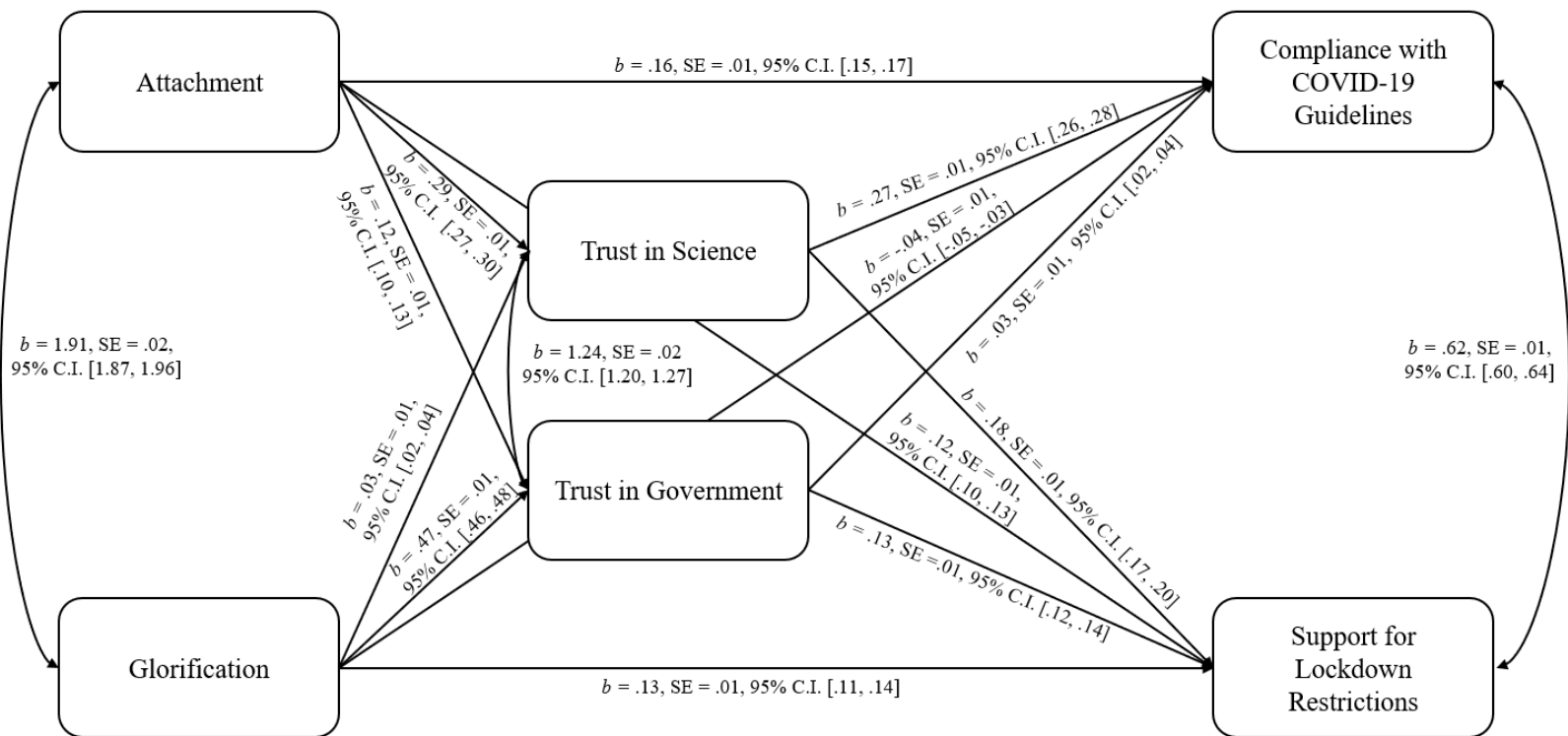
Table 3.*Indirect effects for the multilevel mediation model (1-1-1) depicted in Figure 1.*

Indirect Effect	<i>b</i>	95% Cr.I.	
Attachment → Trust Science → Support for Lockdown Restrictions	.053	.048	.058
Attachment → Trust Science → Compliance with COVID-19 Guidelines	.079	.074	.084
Attachment → Trust Government → Support for Lockdown Restrictions	.015	.013	.018
Attachment → Trust Government → Compliance with COVID-19 Guidelines	.003	.002	.005
Glorification → Trust Science → Support for Lockdown Restrictions	.006	.004	.008
Glorification → Trust Science → Compliance with COVID-19 Guidelines	.009	.006	.012
Glorification → Trust Government → Support for Lockdown Restrictions	.060	.055	.066
Glorification → Trust Government → Compliance with COVID-19 Guidelines	.013	.009	.018

Note. Cr.I. = Credible Interval. For all indirect effects, $SE \leq .01$.

Figure 1.

Multilevel mediation model (1-1-1) for the association of national attachment and glorification with the compliance to COVID-19 guidelines and support for lockdown restrictions, through the mediating mechanism of trust in science and trust in government as sources of information.



Note. In these models, age, SES, gender (male = 1, not male = -1), and the two dummy coded wave variables were included as covariates at level 1 (individuals) and Democracy and levels of economic inequality were included as covariates at level 2 (nations). Parallel arrows depict covariances. Dashed arrows depict non-significant associations.