A research agenda for the post-COVID-19 world: Theory and research in social psychology

Dolores Albarracin, [iD] and Haesung Jung
Department of Psychology and Gies College of Business, University of Illinois at Urbana Champaign, Champaign, Illinois, USA

The novel coronavirus SARS-CoV-2 has likely been circulating around the globe since November 2019. At the time of writing in January 2020, the *New York Times* COVID-19 tracker documented 90.3 million+ cases and 1.9 million+ deaths ("Coronavirus World Map,"). In addition to the sky-high morbidity and mortality rates brought by the pandemic, the global and local outbreaks have dislocated economies and social conditions. As reviewed by Dennis (2020), the Asian Development Bank announced that COVID-19 could cost the global economy between $5.8 and $8.8 trillion. The estimated number of jobs lost has been 81 million in the Asian Pacific region (International Labour Organization, 2020a), 30 million in Latin America and the Caribbean 2020 (International Labour Organization, 2020), and 22 million in the United States (Ponciano, 2020).

Unprecedented devastation reinstates old scientific questions and brings new ones. For social psychologists who study attitudes, persuasion, self-regulation, or behavioural change, these questions are inspired by the need to systematically identify the content of persuasive messages, the self-regulatory consequences of the pandemic, the processing of prevalence and incidence information, and changes to prosocial behaviour and group identities brought about by the pandemic.

Developing and Selecting Public Health Messages

The pandemic has brought the imperative of producing a rapid and flexible public health response to address rapidly evolving risks. It underscores the lack of evidence-based guidelines on how to select message and intervention contents to change attitudes and behaviours. Traditionally, the approach to selecting beliefs or themes for a health-promotion campaign has been to rely on (a) intuition and loosely designed market probes or (b) theory with identification of salient beliefs.

Creative ad agencies illustrate the use of intuition and fairly informal market research such as focus groups. An iconic example of a health campaign designed by advertisers is *Truth*. Some of the *Truth* efforts have been documented in academic publications. For example, Hicks (2001) wrote an article explaining some of the decisions made in the campaign as implemented in the state of Florida (Sly et al., 2001). He related that they designed the campaign by interacting with young people, including through focus groups, and considering products that had been successfully marketed with youth. The main breakthrough concerned the realisation that young people smoked to feel "in control." Therefore, the designers reasoned that making young people rebel against manipulation from the tobacco industry could be a successful approach. The team also went for surprise in the ad executions. In Hick's words: "Like any engaging brand, the creative work had to surprise and lead the target rather than be based on images they expected" (p. 4).

Theory can act as a guide for campaign or intervention design as well. For example, one could use a reasoned action approach (Ajzen & Albarracín, 2007; Ajzen et al., 2018) or the information-motivation-behavioral skills model (Fisher et al., 2006) to make decisions about what behavioural precursors to target. Messages can create new norms or make health behaviours appear more desirable. They may increase self-efficacy or provide training in behavioural skills. Once research establishes if a behaviour is controlled by attitudes, norms, and/or self-efficacy, there are methods to elicit underlying salient beliefs. For example, one may ask questions about the positive and negative outcomes of performing a behaviour, and outcomes listed by at least 10% of the population would be deemed salient (Ajzen & Fishbein, 1980).

The COVID-19 pandemic has required and will continue to require designing campaigns and other interventions to encourage health behaviours such as mask-wearing and vaccination. Social psychologists facing this daunting task, however, will find both the intuitive and theoretical approaches only partially satisfying. Let us assume that we determine a possible belief or emotional reaction to address. At this point, the following questions arise: (a) Of multiple candidate beliefs, how should we decide which ones to choose? (b) How many of these beliefs could we address? (c) Can these beliefs be additively combined without detriment? (d) Should we prioritise beliefs based on theory or intuition?

Correspondence: Dolores Albarracin, University of Illinois at Urbana Champaign, 603 E. Daniel St., Champaign, Illinois 61820, USA. E-mail: dalbarra@illinois.edu

We believe that social psychologists are ideally poised to address these questions and to design methods to design messages in a systematic fashion. One approach would be to integrate theory and data-driven methods. As an illustration, one could gather data on salient beliefs from an elicitation study, from health personnel who have direct contact with those who need to be encouraged to perform preventive behaviours, and from experts who can provide solutions based on theory. However, this procedure could lead to six beliefs from an elicitation study, four additional thematic recommendations from health personnel, and a number of variables from theory. Threat models like the protection motivation theory (Floyd et al., 2000; Maddux & Rogers, 1983; Tannenbaum et al., 2015) incorporate threat, which includes perceptions of risk or susceptibility as well as perceptions of severity, and efficacy perceptions, which comprise the sense that the recommended behaviour will avert the threat. Normative approaches such as those by Cialdini and colleagues (Cialdini, 2003; Cialdini et al., 1991) would prescribe highlighting approval for and actual performance of the recommended behaviour in the population. The reasoned action approach (Ajzen & Albarracín, 2007) would recommend addressing norms as well as the outcomes of the behaviour, with the caveat that the importance of norms and attitudes should be first verified in the population under study. Social-cognitive theory (Bandura, 2001), as well as the reasoned action approach (Ajzen & Albarracín, 2007), would recommend inducing perceptions of control over the behaviour. Integrative models such as the information-motivation-behavioral skills model (Fisher et al., 2006) and the health belief model (Janz & Becker, 1984) would incorporate norms, attitudes, self-efficacy, and behavioural skills.

The review of possible theory-based recommendations up to this point includes six theories and six possible themes to address in an intervention. Reactance theory (Brehm, 1966) would further suggest a strategy that emphasises people's freedom to engage in the behaviour, particularly for those who do not oppose the recommended measures. Social determination theory (Deci & Ryan, 2012; Ryan & Deci, 2006) would also highlight the opposition between intrinsic and extrinsic motivation, recommending that interventions promote a sense of autonomy (Hagger & Chatzisarantis, 2014). Together, the reactance and social determination theories suggest autonomy as an additional theme to introduce in an intervention.

Action goal theory (Albarracin, 2021) provides further themes for intervention. In particular, people can confront a challenge by setting general goals for action or setting more specific goals and plans. Because the pandemic has forced people to be inactive, instilling a general goal for action may be beneficial. However, general action goals are insufficient guides for behaviour and thus require setting specific goals as well. Consequently, additional intervention themes include a general appeal to action and the benefits of combining such an appeal with more specific goals.

Altruism is also relevant to health behaviours that have benefits not only for the self but also for the community at-large (Alessandri et al., 2009; Grant & Gino, 2010). In the context of the pandemic, people report greater intentions to wash their hands and practice social distancing to prevent the coronavirus when public (vs. private) benefits of doing so are emphasised (Jordan et al., 2020). People also report higher intentions to vaccinate when considering its benefit to others than its benefit to themselves (Betsch et al., 2013). Altruisic motivation alone may not always produce desirable health behaviours, however. For example, Jung and Albarracín (2021) showed that highlighting the social benefits of vaccination is more effective in encouraging vaccination when people believe that their actions will make a personal impact on others. Even a subtle contextual cue like social density can affect perceptions of personal impact, such that people living in less (vs. more) crowded areas are more responsive to prosocial appeals for vaccination because they expect their behaviour to have a greater community impact.

Other important themes may also be inferred from the altruism literature. For example, because people often attach more value to activities that require more pain and effort (Festinger & Carlsmith, 1959; Olivola & Shafir, 2013), contributing time to a charitable cause is considered more valuable than contributing money (Reed et al., 2007, 2016). When it comes to vaccine development, investments of time and effort may also be more appreciated than investments of money, conferring more trust in vaccine developers. Trust may also increase by merely providing information about the rigor of the vaccine development process.

In addition, political psychology has uncovered different values associated with conservative and liberal ideology (Albarracin & Shavitt, 2018). Individualising values, defining of liberal ideology, include concern about caring, nurturing, and protecting vulnerable individuals from harm (Graham et al., 2009). Binding values, defining of conservative ideology, involve ingroup loyalty, authority, respect, and purity (Graham et al., 2009). Research on value-based persuasion has compared two messages: "Show your love for all of humanity and the world in which we live by helping to care for our vulnerable natural environment," and "Show your love for your country by joining the fight to protect the purity of America's natural environment" (Wolsko et al., 2016). Although liberals supported environmental conservation

regardless of the appeal, conservatives were more persuaded by the binding message than they were by either the individualising message or a control message (Wolsko et al., 2016).

A review of just eight theories would provide at least eight themes to explore, but how are researchers and practitioners to make these decisions? To begin, designing interventions should go beyond one preferred theory and incorporate all of the factors that will maximise recipients' benefits. Thus, a method of empirically reducing these themes seems necessary. To demonstrate, we conducted a study to test a possible method to select promising combinations of messages by implementing a factorial design and then estimating the size of the effects of particular combinations of message themes. The design was a 2 (autonomy) × 3 (goals) × 3 (values) × 4 (investment) × 2 (prosociality) × 2 (vaccine development) × 4 (norms), which resulted in 2,304 combinations. To reduce the number of dimensions, we randomly assigned a group of 507 participants (recruited from Amazon's Mechanical Turk, 258 females, $M_{age} = 41.18$, $SD_{age} = 12.29$) to the cells of this factorial design. They were presented with one message and then reported their intentions to receive the vaccine. The measures of intention included "Will you get vaccinated once the COVID-19 vaccine is available to you?" (0 = *no*, 1 = *not sure*, 2 = *yes*); "Do you plan to get vaccinated with the COVID-19 vaccine as soon as you can?" (1 = *very unlikely*, 2 = *unlikely*, 3 = *likely*, 4 = *very likely*). The items demonstrated a high internal consistency (α = .89). These items were first standardised and then were averaged to create a single score of vaccination intention. This score was then used to estimate the average impact of combinations of two or three factors, thus obtaining the means for the cells of all of the two- and three-way interactions. This procedure allowed us to select two groups of messages, one with means between 1 *z* and 2 *z*, and another with means above 2 *z*. We are currently testing this method's efficacy for the selection of message contents.

Mental Health Impacts and Self-Regulation

The COVID-19 pandemic has raised concerns about its impact on mental health (Farkhad & Albarracín, 2020; Riehm et al., 2020). However, we believe that the most insidious psychological problems during the pandemic concern inability to regulate behaviour and protect oneself from infection with the SARS-CoV-2 virus. Research on collective forms of self-regulation is thus critical to illuminate the dynamic of behaviours such as mask wearing and social distancing within the population. For example, what is the impact of isolation on

loneliness and, in turn, the inability to avoid social gatherings? What is the impact of fear on similar processes, and does promoting the idea that the pandemic causes mental health problems increase people's tendency to ignore preventive recommendations?

Research on how isolation and social networks affect the regulation of specific behaviours is critical. Typically, social support has been studied in relation to mental health, with research showing that having emotional and instrumental help decreases the risk of depression and other symptoms (Kessler & McLeod, 1985; Lakey & Orehek, 2011; Turner et al., 1983). However, the effect of others on self-regulation goes beyond soothing to affect our planning, long-term orientation and selection of beneficial courses of action. Thus, when a pandemic cuts social links, it may deprive individuals from the mechanisms of social regulation of behaviour. This is an important area of research for the future.

How People Use Risk Information: Impact of Prevalence and Incidence

Health statistics have dominated the news and public health communications since the beginning of the pandemic. Curves representing accumulation of cases are displayed daily, mainly in interactive forms. These curves present two key epidemiological metrics: (a) prevalence and (b) incidence. Prevalence is the number of people who have a disease per 100,000 inhabitants at any given time; incidence is the rate of occurrence of new cases for a given time period, such as the number of new cases per 100,000 inhabitants per day, month, or year.

Although prevalence and incidence are important markers of the course of a pandemic, how people interpret and use each type of information is not clear. In theory, prevalence could signal the level of infectivity of a population and thus the potential to contract the disease within a geographic area. Correspondingly, incidence allows for both inferences about undiagnosed cases as well as inferences about the behavioural norm of a population. For example, if incidence is low, we may conclude that prevalence may be the tip of the iceberg, signalling a large rate of yet-undiagnosed infections. However, if incidence is high, we may conclude that people are currently not following the recommended behaviours, which may lead us to follow suit and ignore public health recommendations.

Despite their importance for both understanding human behaviour during a pandemic and designing public health communications, these issues have not been addressed in past research. Therefore, social psychologists could investigate the degree to which people pay attention to prevalence and incidence, and their naïve

interpretations of the meaning of these indexes. It would also be important to examine if these determinations are made in an elaborative or a spontaneous fashion, and whether and when they inform behavioural decisions.

Dissemination of Information Within Networks

Even though public policy to address the COVID-19 pandemic has focused on individuals staying at home, exercising social distance, or seeking care when necessary, pandemics, by definition, go beyond individuals. People make decisions about how to behave on the basis of not only their individual interpretation of public health communications and mandates but also their observations of what others are doing. Up to this point, however, scientific understanding of those observations is limited in two ways. First, even though there is a rich and important literature on normative influences (Becker et al., 2017; Centola, 2019b; Watts, 2004), our theories and evidence base about normative influences within digital networks have only scratched the surface. Second, surprisingly, the literature on norms (Albarracín & Shavitt, 2018; Cialdini & Goldstein, 2004; Schultz et al., 2019) has not been integrated with the literature on behavioural influences on attitudes, leading to an absence of a lens to study contexts where people are both observers and actors.

Prior work has examined diffusion of information and behaviour as a function of network properties, including tie-strength (Granovetter, 1973, 1983), tie-asymmetry (Almaatouq et al., 2016), and homophily (Becker et al., 2017; Centola, 2010, 2019a), among other factors. Despite its great advances, this prior work has not studied generalisation processes (Albarracín & Handley, 2011; Albarracín et al., 2008, 2018, 2019; Hepler & Albarracín, 2013, 2014; Jiang et al., 2014) or the reciprocal influences of attitude (i.e., evaluation) on behaviour (overt actions including, in our case, posting a badge) and of behaviour on attitudes (Albarracin, 2021; Albarracín & Wyer, 2000; Glasman & Albarracín, 2006). Although behaviours that make use of our automatic, reflexive processes (e.g., posture) may easily be adopted by mimicry (Albarracin, 2021), understanding how attitudes influence collective adoption of behaviours that require deliberation (e.g., violating social distancing) is key in public health contexts.

When a person posts an image or a badge on social media, it can lead to the emergence of additional posts that set an agenda (i.e., the central topic of the posts). The agenda is naturally set to be general if one views (a) a post like the ones in the top of Figure 1. In contrast, the agenda is naturally set to be specific if one views (b) one of the specific posts in the bottom of Figure 1. This agenda in turn can lead people in this network to form general attitudes (e.g., toward support for COVID-19 efforts) or specific attitudes (e.g., toward taking vitamin C to prevent infection with SARS-CoV-2). When the agenda is general, the presence of risky behaviours within the network poses the risk of producing a general risky attitude than does the presence of health behaviours within the network. Thus, a general agenda can amplify risk via generalisation of this risk.

Human Prosociality

Because all behaviours designed to prevent infections protect not only the actor but also society at large, the pandemic serves as a reminder that our decisions have consequences for other people. Accordingly, a considerable body of research has highlighted how prosocial (i.e., self-transcendent) concerns can motivate COVID-19 prevention behaviours (Jordan et al., 2020; Pfattheicher et al., 2020) and vaccination (Jung & Albarracin, 2021). Less is known, however, about the implications of the COVID-19 pandemic itself on people's prosociality. We discuss several hypotheses that warrant attention.
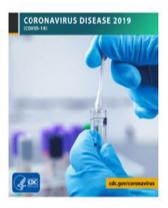
The restrictions imposed by the pandemic have brought considerable losses in terms of social contact, jobs, and other elements of one's safety net. These personal adversities may impair people's ability to attend to others' needs because individuals need cognitive and motivational resources to implement actions in the service of the common good (DeWall et al., 2008; Xu et al., 2012). An important question is then how to encourage concern for others while helping individuals deal with their own hardships. We propose that shifting people's focus from the impact of the pandemic on them personally onto similar impacts on other people may simultaneously increase the ability to find solutions for one's personal problems while also heightening concern for other people. The rationale is that people are more sympathetic toward others who share similar experiences (Loewenstein & Small, 2007) and that merely perceiving that others are going through similar difficulties as one's own can increase intentions to seek help (Gage-Bouchard et al., 2017) and promote personal resilience (Walsh, 2007).

In addition, cultures vary in the extent to which they primarily construe the pandemic as an individual experience (e.g., how it has impacted me) or a collective/shared experience (e.g., how it has impacted us). This difference could in turn yield different prosocial outcomes across cultures during and postpandemic. Indeed, collectivistic (vs. individualistic) cultures, which are more likely to view the pandemic as a shared experience, cooperate more to perform COVID-19 preventive
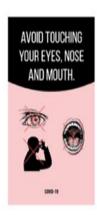
Figure 1 Examples of social media posts on preventing COVID-19. [Colour figure can be viewed at wileyonlinelibrary.com]

behaviours (Huang et al., 2020; Pei et al., 2020). What is not known, however, is whether, because of the pandemic, those in collectivistic cultures also engage in more mutual support in other domains (e.g., social isolation, economic challenges) and therefore are less negatively impacted by the pandemic psychologically (e.g., less COVID-19 related depression) compared to those in individualistic cultures.

The pandemic also has highlighted new ways in which people can help others. Prepandemic, large charity networks (e.g., United Nations Childre's Fund) served as a primary vehicle to coordinate donations and volunteering (givingusa.org). During the pandemic, however, communities created new solutions to support people in need, such as ordering more takeout from local restaurants, continuing to pay for local services they could not use during lockdowns, and paying for COVID-19 tests for neighbours with limited financial means ("How individuals in the U.S. helped their neighbors through Covid-19," CNBC News, 2020; "Italians pay it forward by collecting donations for COVID tests," CBS News, 2021). Importantly, these smaller community-based efforts were able to address the challenges posed by the pandemic more quickly and more effectively than were big charity

networks (Ward, 2020). New research questions could thus involve how the pandemic has changed people's philanthropic priorities. For example, the pandemic may have increased people's preference to give through local rather than national or global community organisations, Moreover, people may also be more attentive to those who are spatially closer (e.g., their neighbours) and prefer to help them more than people who are farther away. Alternatively, cooperation in smaller community networks could have a ripple effect on large-scale cooperation, with local experiences of mutual support within their own communities extending to other communities and countries as well.

Changes to Group Identity

One of the most noticeable restrictions of the pandemic has been on physical boundaries, including reduced ability and motivation to travel to other countries and bans to the entry of foreign nationals into countries. An important question for social psychologists is whether these measures have increased or decreased the salience of national identities. At least three possible mechanisms could increase nationalism. First, the restrictions may

simply amplify the distance between one's nation and others (Tajfel, 1981). Second, the restrictions are signals that excluding other groups is the norm and may model xenophobia (Tankard & Paluck, 2016). Third, travel restrictions that reduce globalisation and immigration may limit exposure to social diversity and lead to the perception that one's own group is the norm (Briley et al., 2013; Gerbner et al., 1980, 1982). The decline in social diversity is likely to be more prominent in regions that were less ethnically diverse to begin with, including South Korea and Hong Kong.

Decreases in the salience of group boundaries are possible as well, given that most communications during the pandemic were conducted online. Physical location has currently little influence on how people go about doing work, attending workshops, or connecting with others. Therefore, during the pandemic, people may have increasingly relied on individuating characteristics (e.g., personality) when evaluating and interacting with others, and correspondingly less on characteristics associated with their physical location, such as nationality, race, and ethnicity. Indeed, focusing on individuating information has been shown to reduce stereotyping in implicit and explicit person perception (Rubinstein et al., 2018). However, whether indeed the pandemic has magnified or minimised perceived differences among groups, and its consequences for intergroup cooperation, should be systematically addressed in future research.

Final Note

The extraordinary circumstances of the COVID-19 pandemic have raised a number of theoretical and practical challenges for traditional fields within social psychology. One challenge will be identifying and testing systematic methods to develop and integrate contents for health campaigns and interventions. Even though a number of theories can inspire these decisions, contents are population-specific and must be combined in a meaningful and efficacious way. Another challenge is defining and investigating the pandemic's impacts on not only depression and anxiety but also externalizing behaviours. The COVID-19 pandemic has created a new spectrum of impulsive behaviour. In addition to traditional manifestations such as substance use, the new behaviours involve risky socialisation and ignoring fairly nuanced health recommendations.

The pandemic has also introduced a number of questions about social networks and cooperative behaviour. irstSocial media networks have become in many cases the only way in which people have social contact; therefore, the mechanisms of transmission of behavioural norms and attitudes are key and need to be investigated in new ways. We propose to research generalisation

processes and methods of encapsulating risky behaviours while amplifying healthy ones. Furthermore, explicating the forms in which people might seek prosocial goals while they also satisfy individual ones will be important, as will investigating generalisation of specific prosocial goals to new arenas. Finally, the pandemic has highlighted the possible impact of travel restrictions on group and other forms of national identity.

Conflict of Interest

The authors declare that they have no conflicts of interest with respect to their authorship or the publication of this article.

References

Ajzen, I., & Albarracín, D. (2007). Prediction and change behaviour: A reasoned action approach. In *Predicting and change of health behaviour* (pp. 3–21). Lawrence Erlbaum Associates Publishers.

Ajzen, I., & Fishbein, M. (1980). *Understanding attitudes and predicting social behavior* (Vol. *278*). Prentice-Hall.

Ajzen, I., Fishbein, M., Lohmann, S., & Albarracín, D. (2018). The influence of attitudes on behavior. In D. Albarracín & B. T. Johnson (Eds.), *The handbook of attitudes, Volume 1: Basic principles* (2nd ed., pp. 361–381). Springer. https://doi.org/10.1007/BF02294218

Albarracin, D. (2021). *Action and inaction in a social world: Predicting and changing attitudes and behaviors*. Cambridge University Press.

Albarracín, D., & Handley, I. M. (2011). The time for doing is not the time for change: Effects of general action and inaction goals on attitude retrieval and attitude change. *Journal of Personality and Social Psychology*, *100*, 983. https://doi.org/10.1037/a0023245

Albarracín, D., Handley, I. M., Noguchi, K., McCulloch, K. C., Li, H., Leeper, J., Brown, R. D., Earl, A., & Hart, W. P. (2008). Increasing and decreasing motor and cognitive output: A model of general action and inaction goals. *Journal of Personality and Social Psychology*, *95*, 510–523. https://doi.org/10.1037/a0012833

Albarracín, D., & Shavitt, S. (2018). Attitudes and attitude change. *Annual Review of Psychology*, *69*(1), 299–327. https://doi.org/10.1146/annurev-psych-122216-011911

Albarracín, D., Sunderrajan, A., & Dai, W. (2018). Action, inaction, and actionability: Definitions and implications for communications and interventions to change behaviors. In R. A. Bevins & D. Hope (Eds.), *The 65th annual Nebraska Symposium on Motivation–Change and Maintaining Change* (Vol. *65*, pp. 75–99). Springer.

Albarracín, D., Sunderrajan, A., Dai, W., & White, B. X. (2019). The social creation of action and inaction: From concepts to goals to behaviors. *Advances in Experimental Social Psychology*, *60*, 223–271. https://doi.org/10.1016/bs.aesp.2019.04.001

Albarracín, D., & Wyer, R. S., Jr. (2000). The cognitive impact of past behavior: Influences on beliefs, attitudes, and future behavioral decisions. *Journal of Personality and Social Psychology*, *79*(1), 5–22. https://doi.org/10.1037//0022-3514.79.1.5

Alessandri, G., Caprara, G. V., Eisenberg, N., & Steca, P. (2009). Reciprocal relations among self-efficacy beliefs and prosociality

across time. *Journal of Personality*, 77, 1229–1259. https://doi.org/10.1111/j.1467-6494.2009.00580.x

Almaatouq, A., Radaelli, L., Pentland, A., & Shmueli, E. (2016). Are you your friends' friend? Poor perception of friendship ties limits the ability to promote behavioral change. *PLOS ONE*, 11(3), 1–13. https://doi.org/10.1371/journal.pone.0151588

Arciniegas, Y. (2020). OIT: América Latina es la región con más empleos perdidos por cuenta de la pandemia [Latin American is the region with most jobs lost to the pandemic]. https://www.france24.com/es/20200701-oit-latinoamerica-desempleo-economia-pandemia-covid19

Bandura, A. (2001). Social cognitive theory: An agentic perspective. *Annual Review of Psychology*, 6, 1–26. https://doi.org/10.1146/annurev.psych.52.1.1

Becker, J., Brackbill, D., & Centola, D. (2017). Network dynamics of social influence in the wisdom of crowds. *Proceedings of the National Academy of Sciences, USA*, 114, E5070–E5076. https://doi.org/10.1073/pnas.1615978114

Betsch, C., Böhm, R., & Korn, L. (2013). Inviting free-riders or appealing to prosocial behavior? Game-theoretical reflections on communicating herd immunity in vaccine advocacy. *Health Psychology*, 32, 978–985. https://doi.org/10.1037/a0031590

Brehm, J. W. (1966). *A theory of psychological reactance*. Academic Press.

Briley, D. A., Shrum, L. J., & Wyer, R. S., Jr. (2013). Factors affecting judgments of prevalence and representation: Implications for public policy and marketing. *Journal of Public Policy and Marketing*, 32(SI), 112–118. https://doi.org/10.1509/jppm.12.045

CBS News (2021, January 16). Italians pay it forward by collecting donations for COVID tests. https://www.cbsnews.com/video/italians-pay-it-forward-by-collecting-donations-for-covid-tests/

Centola, D. (2010). The spread of behavior in an online social network experiment. *Science*, 329, 1194–1197. https://doi.org/10.1126/science.1185231

Centola, D. (2019a). Influential networks. *Nature Human Behaviour*, 3, 664–665. https://doi.org/10.1038/s41562-019-0607-5

Centola, D. (2019b). The truth about behavioral change. *MIT Sloan Management Review*, 60(2), 50–55.

Cialdini, R. B. (2003). Crafting normative messages to protect the environment. *Current Directions in Psychological Science*, 12(4), 105–109. https://doi.org/10.1111/1467-8721.01242

Cialdini, R. B., & Goldstein, N. J. (2004). Social influence: Compliance and conformity. *Annual Review of Psychology*, 55, 591–621. https://doi.org/10.1146/annurev.psych.55.090902.142015

Cialdini, R. B., Kallgren, C. A., & Reno, R. R. (1991). A focus theory of normative conduct: A theoretical refinement and reevaluation of the role of norms in human behavior. *Advances in Experimental Social Psychology*, 24(C), 201–234. https://doi.org/10.1016/S0065-2601(08)60330-5

CNBC News (2020, September 15). Americans are generous in their charitable giving during Covid-19, but how they donate changed. https://www.cnbc.com/2020/09/15/how-individuals-in-the-us-helped-theirneighbors-through-covid-19.html

Coronavirus world map: Tracking the global outbreak. *The New York Times*. https://www.nytimes.com/interactive/2020/world/coronavirus-maps.html

Deci, E. L., & Ryan, R. M. (2012). Self-determination theory. In P. A. M. Van Lange, A. W. Kruglanski, & E. T. Higgins (Eds.), *Handbook*

of theories of social psychology (pp. 416–436). Sage Publications Ltd. https://doi.org/10.4135/9781446249215.n21

Dennis, M. J. (2020). The impact of COVID-19 on the world economy and higher education. *Enrollment Management Report*, 24(9), 3. https://doi.org/10.1002/emt.30720

DeWall, C. N., Baumeister, R. F., Gailliot, M. T., & Maner, J. K. (2008). Depletion makes the heart grow less helpful: Helping as a function of self-regulatory energy and genetic relatedness. *Personality and Social Psychology Bulletin*, 34, 1653–1662. https://doi.org/10.1177/0146167208323981

Farkhad, B. F., & Albarracín, D. (2020). Insights on the implications of COVID-19 mitigation measures for mental health. *Economics & Human Biology*, 40, 100963. https://doi.org/10.1016/j.ehb.2020.100963

Festinger, L.L., & Carlsmith, J. M. (1959). Cognitive consequences of forced compliance. *The Journal of Abnormal and Social Psychology*, 58(2), 203–210.

Fisher, J. D., Fisher, W. A., Amico, K. R., & Harman, J. J. (2006). An information-motivation-behavioral skills model of adherence to antiretroviral therapy. *Health Psychology*, 25, 462–473. https://doi.org/10.1037/0278-6133.25.4.462

Floyd, D. L., Prentice-Dunn, S., & Rogers, R. W. (2000). A meta-analysis of research on protection motivation theory. *Journal of Applied Social Psychology*, 30, 407–429. https://doi.org/10.1111/j.1559-1816.2000.tb02323.x

Gage-Bouchard, E. A., LaValley, S., Mollica, M., & Beaupin, L. K. (2017). Communication and exchange of specialized health-related support among people with experiential similarity on Facebook. *Health Communication*, 32, 1233–1240. https://doi.org/10.1080/10410236.2016.1196518

Gerbner, G., Gross, L., Morgan, M., & Signorielli, N. (1980). The manistreaming of America: Violence profile No. 11. *Journal of Communication*, 30(3), 10–29. https://doi.org/10.1111/j.1460-2466.1980.tb01987.x

Gerbner, G., Gross, L., Morgan, M., & SignorielliI, N. (1982). Charting the mainstream: Television's contributions to political orientations. *Journal of Communication*, 32(2), 100–127. https://doi.org/10.1111/j.1460-2466.1982.tb00500.x

Glasman, L. R., & Albarracín, D. (2006). Forming attitudes that predict future behavior: A meta-analysis of the attitude-behavior relation. *Psychological Bulletin*, 132, 778–822. https://doi.org/10.1037/0033-2909.132.5.778

Graham, J., Haidt, J., & Nosek, B. A. (2009). Liberals and conservatives rely on different sets of moral foundations. *Journal of Personality and Social Psychology*, 96, 1029–1046. https://doi.org/10.1037/a0015141

Granovetter, M. S. (1973). The strength of weak ties. *American Journal of Sociology*, 78(6), 1360–1380.

Granovetter, M. S. (1983). The strength of weak ties: A network theory revisited. *Sociological Theory*, 1, 201–233. https://doi.org/10.2307/202051

Grant, A. M., & Gino, F. (2010). A little thanks goes a long way: Explaining why gratitude expressions motivate prosocial behavior. *Journal of Personality and Social Psychology*, 98, 946–955. https://doi.org/10.1037/a0017935

Hagger, M. S., & Chatzisarantis, N. L. D. (2014). An integrated behavior change model for physical activity. In *Exercise and sport sciences reviews*, 42(2), 62–69. https://doi.org/10.1249/JES.0000000000000008

Hepler, J., & Albarracín, D. (2013). Attitudes without objects: Evidence for a dispositional attitude, its measurement, and its consequences. *Journal of Personality and Social Psychology*, *104*, 1060–1076. https://doi.org/10.1037/a0032282

Hepler, J., & Albarracín, D. (2014). Liking more means doing more. *Social Psychology*, *45*(5), 391–398. https://doi.org/10.1027/1864-9335/a000198

Hicks, J. J. (2001). The strategy behind Florida's "truth" campaign. *Tobacco Control*, *10*(1), 3–5. https://doi.org/10.1136/tc.10.1.3

Huang, F., Ding, H., Liu, Z., Wu, P., Zhu, M., Li, A., & Zhu, T. (2020). How fear and collectivism influence public's preventive intention towards COVID-19 infection: A study based on big data from the social media. *BMC Public Health*, *20*(1), 1–9. https://doi.org/10.1186/s12889-020-09674-6

Janz, N. K., & Becker, M. H. (1984). The health belief model: A decade later. *Health Education & Behavior*, *11*(1), 1–47. https://doi.org/10.1177/109019818401100101

Jiang, D., Albarracin, D., & Jiang, D. (2014). The embodied psychology of time limits: How unrelated motion states shape intentions to act by a deadline. *ACR North American Advances*, *42*, 531–532. https://doi.org/10.2139/ssrn.429963

Jordan, J., Yoeli, E., & Rand, D. G. (2020). Don't get it or don't spread it? Comparing self-interested versus prosocial motivations for COVID-19 prevention behaviors. https://doi.org/10.31234/osf.io/yuq7x

Jung, H., & Albarracín, D. (2021). Concerns for others increases the likelihood of vaccination against influenza and COVID-19 more in sparsely rather than densely populated areas. *Proceedings of the National Academy of Sciences*, *118*(1), e2007538118. https://doi.org/10.1073/pnas.2007538118

Kessler, R. C., & McLeod, J. D. (1985). *Social support and mental health in community samples* (pp. 219–240). Academic Press.

Lakey, B., & Orehek, E. (2011). Relational regulation theory: A new approach to explain the link between perceived social support and mental health. *Psychological Review*, *118*, 482–495. https://doi.org/10.1037/a0023477

Loewenstein, G., & Small, D. A. (2007). The scarecrow and the tin man: The vicissitudes of human sympathy and caring. *Review of General Psychology*, *11*(2), 112–126. https://doi.org/10.1037/1089-2680.11.2.112

Maddux, J. E., & Rogers, R. W. (1983). Protection motivation and self-efficacy: A revised theory of fear appeals and attitude change. *Journal of Experimental Social Psychology*, *19*, 469–479. https://doi.org/10.1016/0022-1031(83)90023-9

Olivola, C. Y., & Shafir, E. (2013). The martyrdom effect: When pain and effort increase prosocial contributions. *Journal of Behavioral Decision Making*, *26*(1), 9191–105.

Pei, R., Cosme, D., Andrews, M. E., Mattan, B. D., & Falk, E. (2020). Cultural influence on COVID-19 cognitions and growth speed: The role of cultural collectivism. https://doi.org/10.31234/OSF.IO/FET6Z

Pfattheicher, S., Nockur, L., Böhm, R., Sassenrath, C., & Petersen, M. B. (2020). The emotional path to action: Empathy promotes physical distancing and wearing of face masks during the COVID-19 pandemic. *Psychological Science*, *31*(11), 1363–1373.

Ponciano, J. (2020). It could take 4 years to recover the 22 million jobs lost during COVID-19 pandemic, Moody's warns. *Forbes*. https://www.forbes.com/sites/jonathanponciano/2020/11/30/it-could-take-4-years-to-regain-the-22-million-jobs-lost-during-covid-19-pandemic-moodys-warns/?sh=4053c9af4332

Reed, A., Aquino, K., & Levy, E. (2007). Moral identity and judgments of charitable behaviors. *Journal of Marketing*, *71*(1), 178–193.

Reed, A., II, Kay, A., Finnel, S., Aquino, K., & Levy, E. (2016). I don't want the money, I just want your time: How moral identity overcomes the aversion to giving time to prosocial causes. *Journal of Personality and Social Psychology*, *110*(3), 435.

Riehm, K. E., Holingue, C., Kalb, L. G., Bennett, D., Kapteyn, A., Jiang, Q., Veldhuis, C. B., Johnson, R. M., Fallin, M. D., Kreuter, F., Stuart, E. A., & Thrul, J. (2020). Associations between media exposure and mental distress among U.S. adults at the beginning of the COVID-19 pandemic. *American Journal of Preventive Medicine*, *59*, 630–638. https://doi.org/10.1016/j.amepre.2020.06.008

Rubinstein, R. S., Jussim, L., & Stevens, S. T. (2018). Reliance on individuating information and stereotypes in implicit and explicit person perception. *Journal of Experimental Social Psychology*, *75*, 54–70. https://doi.org/10.1016/j.jesp.2017.11.009

Ryan, R. M., & Deci, E. L. (2006). Self-regulation and the problem of human autonomy: Does psychology need choice, self-determination, and will?. *Journal of Personality*, *74*(6), 1557–1586. https://doi.org/10.1111/j.1467-6494.2006.00420.x

Schultz, P. W., Nolan, J. M., Cialdini, R. B., Goldstein, N. J., Schultz, P. W., Nolan, J. M., & Griskevicius, V. (2019). The constructive, destructive, and reconstructive power of social norms. *Psychological Science*, *18*, 429–434. https://doi.org/10.1111/j.1467-9280.2007.01917.x

Sly, D. F., Hopkins, R. S., Trapido, E., & Ray, S. (2001). Influence of a counteradvertising media campaign on initiation of smoking: The Florida "truth" campaign. *American Journal of Public Health*, *91*(2), 233–238. https://doi.org/10.2105/AJPH.91.2.233

Tajfel, H. (1981). *Human groups and social categories: Studies in social psychology*. Cambridge University Press.

Tankard, M. E., & Paluck, E. L. (2016). Norm perception as a vehicle for social change. *Social Issues and Policy Review*, *10*(1), 181–211. https://doi.org/10.1111/sipr.12022

Tannenbaum, M. B., Hepler, J., Zimmerman, R. S. R. S., Saul, L., Jacobs, S., Wilson, K., & Albarracín, D. (2015). Appealing to fear: A meta-analysis of fear appeal effectiveness and theories. *Psychological Bulletin*, *141*, 1178–1204. https://doi.org/10.1037/a0039729

Turner, R. J., Frankel, B. G., & Levin, D. M. (1983). Social support: Conceptualization, measurement, and implications for mental health. *Research in Community & Mental Health* (Vol. *3*, pp. 67–111). JAI Press.

Walsh, F. (2007). Traumatic loss and major disasters: Strengthening family and community resilience. *Family Process*, *46*(2), 207–227. https://doi.org/10.1111/j.1545-5300.2007.00205.x

Ward, L. (2020). How the Coronavirus Pandemic Is Changing Philanthropy – WSJ.

Watts, D. J. (2004). The "new" science of networks. *Annual Review of Sociology*, *30*(1), 243–270. https://doi.org/10.1146/annurev.soc.30.020404.104342

Wolsko, C., Ariceaga, H., & Seiden, J. (2016). Red, white, and blue enough to be green: Effects of moral framing on climate change attitudes and conservation behaviors. *Journal of Experimental Social Psychology*, *65*, 7–19. https://doi.org/10.1016/j.jesp.2016.02.005

Xu, H., Bègue, L., & Bushman, B. J. (2012). Too fatigued to care: Ego depletion, guilt, and prosocial behavior. *Journal of Experimental Social Psychology*, *48*, 1183–1186. https://doi.org/10.1016/j.jesp.2012.03.007