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## Abstract

The COVID-19 pandemic has extensively changed the state of psychological science from what research questions psychologists can ask to which methodologies psychologists can use to investigate them. In this article, we offer a perspective on how to optimize new research in the pandemic's wake. Because this pandemic is inherently a social phenomenon—an event that hinges on human-to-human contact—we focus on socially relevant subfields of psychology. We highlight specific psychological phenomena that have likely shifted as a result of the pandemic and discuss theoretical, methodological, and practical considerations of conducting research on these phenomena. After this discussion, we evaluate metascientific issues that have been amplified by the pandemic. We aim to demonstrate how theoretically grounded views on the COVID-19 pandemic can help make psychological science stronger—not weaker—in its wake.

## Keywords

COVID-19, metascience, large-scale collaboration

The COVID-19 pandemic<sup>1</sup> has extensively changed the landscape of psychological science, raising important questions about the conduct of research. Theoretically, in what specific ways will the wake of COVID-19 amplify some psychological dynamics but attenuate others? What individual differences may account for variability? Methodologically, what types of research questions will be harder to answer in the wake of COVID-19? What questions will be easier to answer? And practically, what matters are especially important for psychologists to tackle to understand and address ongoing social issues associated with the pandemic?

In this article, we offer a perspective on how to optimize psychological research in the wake of COVID-19. We define the pandemic's wake as the period of time during which preventing the transmission of COVID-19 remains a salient factor influencing everyday behavior. We acknowledge the high degree of uncertainty in predicting the duration of the pandemic's effects, which can differ across programs of research. Thus, the scope of this article concerns changes that occurred at the onset of the pandemic, changes that have occurred throughout the pandemic, and (to a lesser degree) changes that will endure after the pandemic.

Three aims guide our article. Our first aim is to highlight psychological phenomena that are most likely to have changed as a result of the COVID-19 pandemic. This pandemic is, by definition, a social phenomenon: an event that hinges on human-to-human contact. Pandemic responses disrupt virtually every corner of social life because efforts to prevent interpersonal

transmission involve behavioral restrictions such as stay-at-home orders and widespread social distancing. Therefore, we focus largely on socially driven phenomena (see Table 1). Our second aim is to evaluate theoretical, methodological, and practical considerations of conducting research on these phenomena. Our third aim is to evaluate metascientific issues related to reproducibility, data collection, academia, and media and public engagement.

## The Psychology of Pathogen Threat

Considering the psychology of pathogen threat may elucidate many social phenomena in the wake of COVID-19. Infectious disease is historically among the largest threats to human survival (Wolfe et al., 2007) and thus unsurprisingly has received immense research attention within the biological sciences. But beyond its clear effects on the workings of society, why should psychological scientists care about COVID-19 in day-to-day research? The logic is straightforward: Complementary to our immune systems, another disease-management strategy is to avoid disease-causing objects (and people) whenever possible—a type of “behavioral” immune system (Murray & Schaller, 2016). A fundamental goal of any organism is to protect itself from threat, and humans must navigate both *realistic* (i.e., biological) threats to health and *symbolic* threats to group identity, moral values, and worldviews (Stephan & Stephan, 2000). By posing both realistic and symbolic threats (Kachanoff et al., 2020), pandemics have high potential to influence myriad cognitions and behaviors.

**Table 1.** Topics Reviewed in the Current Article

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The psychology of pathogen threat
Group processes and interpersonal relations
Self and identity
Gender
Intergroup relations
Social inequality
Close relationships
Social comparison
Political and legal psychology
Political ideology
The politics of science
Legal influences
Morality and ethics
Threat and harm
Empathy
Broadening the moral circle
Morality in an increasingly digital world
Behavioral ethics
Human–animal relations
Proenvironmental attitudes and behaviors
Motivations
Self-regulation
Existential threat
Stress and coping
Collective trauma
Purpose in life
Self-compassion
Person–environment interaction
Metascientific considerations
Scientific reproducibility
Data collection (or lack thereof)
Considerations for academia
Media and public engagement

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Until recently, psychologists had largely overlooked the implications of pathogen threat for social cognition and behavior. Much disease avoidance involves little deliberative thought, given that it is motivated by disgust (Oaten et al., 2009) or embedded cultural norms (Murray et al., 2017). However, viewed functionally, virtually all social phenomena have disease-related causes and/or consequences—including relationships, motivations, moral cognition, and even cultural systems and political institutions (Murray & Schaller, 2016). COVID-19 will likely make the disease’s fingerprints on psychology that much more apparent.

Just as considerations of pathogen threat can guide research across the pandemic’s psychological implications, so too can the pandemic inform our understanding of pathogen threat. When it detects threat, the behavioral immune system activates anti-infection behavior, such as by eliciting disgust and promoting social avoidance (Murray & Schaller, 2016). Notably,

however, individuals are likely to transmit COVID-19 when they are presymptomatic (He et al., 2020), meaning that typical cues of infection present throughout evolutionary history—such as abnormal body fluids (Curtis et al., 2004)—are absent. Therefore, COVID-19 has not readily activated anti-infection behavior through the typical channel of disgust (Lieberman & Patrick, 2018). In this sense, COVID-19 alerts psychologists to uncertain conditions of infection risk that, to date, have been underappreciated and understudied. Widespread “social foraging” outside of close social circles entails increased risk of exposure to infection, yet high rates of encounters with novel social partners reap crucial social benefits. Perspectives inspired by evolutionary biology that model variable social motivations and the presence or absence of native cues of disease can help us understand the pandemic’s persistence and the relative successes and failures of interventions to curb it. Even after the pandemic subsides, this line of research can kindle new insights into the behavioral immune system pertinent to other infectious disease outbreaks.

## Group Processes and Interpersonal Relations

### *Self and identity*

**Uncertainty and identity.** How might existential, economic, sociopolitical, and cultural uncertainty brought on by COVID-19 affect one’s sense of identity? According to uncertainty-identity theory (Hogg, 2007, 2012), self-uncertainty makes it difficult to know what to think, feel, and do and obscures people’s perceptions of how others will view and treat them. One way to reduce self-uncertainty is to identify with groups and categories (Choi & Hogg, 2020). Through group identification, one internalizes shared social-identity-defining attributes that prescribe attitudes and behaviors, reduce uncertainty about oneself and others, and consensually validate who one is. Under more extreme self-uncertainty, people identify strongly with groups that most effectively reduce uncertainty. These groups tend to be ethnocentric, xenophobic, and intolerant of diversity and criticism; to have authoritarian leaders; and to subscribe to populist ideologies that nourish conspiracy theories. COVID-19’s wake has potential for uncertainty-induced transformations of society that privilege populism, autocracy, and extremist identities (Hogg, 2014, 2020), injecting new urgency into research on uncertainty-identity phenomena.

**Social-identity threat.** Pandemic-related challenges—unemployment, stay-at-home orders, death/illness of

loved ones, and so on—can create profound social-identity threats that simultaneously erase previous identities and form new ones. Identity threats can worsen academic performance (Steele & Aronson, 1995) and increase in-group favoritism (Marques et al., 1988; Navarrete et al., 2004) and antisocial behavior (Aquino & Douglas, 2003), highlighting the value in studying threats related to COVID-19.

Experiencing an identity-based threat typically yields two main responses: pushing others away to maintain or reaffirm one's own social identity (Twenge et al., 2001) or creating new social bonds to build up one's sense of self (Lakin et al., 2008). For example, threat can activate certain identities as a social resource (Knowles & Gardner, 2008; Williams, 2007), as we saw how higher rates of COVID-19 among communities of color amplified their sense of group unity to ignite needed societal changes (Aubrey, 2020). Psychologists can expand existing identity frameworks by investigating how COVID-19 has increased versus decreased identification with newly gained or diminished identities and whether these changes will be permanent.

In considering implications of identity threat for social and political action, psychologists should attend to the nature of threat across existential (threat of infection and death; Green & Arndt, 2011), epistemic (threat of uncertainty from noisy information; Hogg, 2007), symbolic (threat from scapegoated out-groups; Sears, 1993), and/or systemic (threat to institutional stability; Jost, 2020) dimensions. Coupled with greater sensitivity to people's identity portfolios across race, party, and class, psychologists can better isolate the axis behind social and political responses, thus locating a threat's source and creating more persuasive communications to trigger broader collective action (Pérez et al., 2019).

**Stigma.** Several changes in social stigma are likely to emerge in the pandemic's wake. First, groups perceived to be at higher risk of COVID-19 infection may become targets of stigma (E. E. Jones et al., 1984) because of concerns about pathogen exposure (Murray et al., 2011). Second, people seen to be responsible for their infection (e.g., from failure to socially distance) may experience greater stigma (Corrigan et al., 2003). Third, people may conceal their illness and/or avoid testing/treatment to prevent being a target of stigma (Cook et al., 2017), increasing risks to themselves and others. Fourth, members of historically stigmatized groups are likely to experience even less access to employment, housing, or quality medical care (Link & Phelan, 2006) than they do under typical circumstances.

Longitudinal field-based research offers methodological strengths for understanding changes in stigma by capturing people's lived experiences over time and at

different levels of analysis. It will be important to ensure timely measurement of stigma, concealment, and key outcomes. Interventions to reduce stigma can simultaneously improve people's lives and help provide causal evidence to inform theory (Cook et al., 2014).

**Culture.** Conceptualizing individuals as inseparable from context and culture—ideas and practices that are historically derived yet constantly evolving—can help psychologists conduct more informed research in the wake of COVID-19 (Markus, 2017; Markus & Conner, 2014; Markus & Kitayama, 1991, 2010). Culture is an omnipresent yet often invisible situational factor (Kroeber & Kluckhohn, 1952; Markus & Kitayama, 1991), and this pandemic magnifies the significance of situational explanations for understanding psychological processes at the individual level.

The reality is that people are not separable from a pandemic's effects at the global, national, and community levels. Thus, even experimental psychologists—who, by definition, create and manipulate controlled conditions to isolate causal effects—should consider that the wake of COVID-19 presents an emergent cultural force that may be difficult to eliminate from participants' psychologies. For the foreseeable future, all participants in our studies will be completing procedures and measures within the broader context of a highly visible and salient pandemic, what one might call a shared "culture of COVID-19." COVID-19 has particularly illuminated the importance of intersections through unequal impacts across social-identity lines (e.g., race/ethnicity, social class; Yancy, 2020), and considering what cultural contexts embed psychological processes of interest can improve theories and applications.

The absence of such context-inclusive practices is notably tied to other field-level crises (e.g., replication issues; limitations of samples that are drawn from White, educated, industrialized, rich, and democratic [WEIRD] populations; Greenfield, 2017; Henrich et al., 2010) and critiques (e.g., opportunities to more fully take social identities into account; Brannon et al., 2017; Hester & Gray, 2020). Attending to cultural influences of COVID-19 can broaden normative practices within psychological science and help strengthen its impact even beyond the pandemic's resolution.

## Gender

Beyond being part of identity and characterizing who people *are*, gender is also performative in embodying something that people *do* through roles (Deaux & Major, 1987; West & Zimmerman, 1987)—and the COVID-19 pandemic has the potential to alter gender-role norms. Gender stereotypes and roles prescribe men to prioritize

earning and women to prioritize caregiving (Haines & Stroessner, 2019). In pandemic times, children require homeschooling, older adults require modified services with increased quarantining, unemployment skyrockets, essential workers work overtime, and other workers are home. These factors have pressured renegotiation of home and work expectations.

Having children at home shifts how women manage, organize, and control their daily caregiving and work activities in ways it does not for men. Women have been disproportionately supporting children's distance learning, alleviating children's emotional tedium and anxiety, and managing increased meal planning. The observed gender "leisure gap" (Hochschild & Machung, 1990) may widen, increasing women's burnout. Moreover, women make up the majority of essential health-care workers (Cheeseman-Day & Christnacht, 2019). Women are experiencing higher rates of unemployment than men are (Bureau of Labor Statistics, 2020; Henriques, 2020), undermining their earning. Women essential workers face double and triple binds as they navigate their responsibilities for caring for the sick and risk of infecting family with logistics and feelings of leaving children at home.

Masculine gender roles prescribe daring, risky behavior (Becker & Eagly, 2004; Diekmann & Eagly, 2000; Prentice & Carranza, 2002). Men's felt pressure to enact masculinity may explain why men take COVID-19-related safety directives (e.g., facemask-wearing) less seriously than women (Kahn, 2020). Furthermore, many men experience job insecurity as a manhood threat (Michniewicz et al., 2014), and rises in unemployment from COVID-19 may amplify the precarity of men's gender status (Vandello et al., 2008). Some men may aim to "win back" masculinity by taking more physical health risks or by working longer hours and avoiding domestic labor, thereby increasing gender inequities in labor divisions among heterosexual couples. Research in the wake of COVID-19 might focus on identifying men most vulnerable to manhood threats and examining ways of promoting safer and more egalitarian responses.

A small shift toward more traditional gender-role conformity may have occurred since the pandemic's start (Rosenfeld & Tomiyama, 2021), which can have implications not only for men and women but also for the experiences of nonbinary and transgender individuals and others' attitudes toward them. Although the pandemic could widen gender-role differentiation, it could also enhance egalitarianism. Backlash for gender-atypical behavior may decrease as external attributions for men's caregiving and women's earning are more acceptable (e.g., he's telecommuting, she's essential). Furthermore, atypical gender roles may compel correspondent inferences of men's communion and

women's agency (Eagly, 1987). Because flexible work is compulsory, employers may see its benefits and destigmatize it for all workers. Psychologists are well positioned to investigate how gender-norm changes may inform role theories. A critical aim is to document role changes longitudinally, as well as individual and socio-cultural moderators for use in testing methods to increase gender equality. This research can identify boundary conditions of gender stereotypes and role change.

### **Intergroup relations**

**Prejudice.** Over time, prejudice research has increasingly focused on subtle forms (e.g., implicit attitudes) as individuals become more motivated to at least appear to adhere to egalitarian norms (Pearson et al., 2009). Yet COVID-19 demonstrates how quickly prejudice can become explicitly expressed. Being perceived as "different" becomes justification for discrimination (Danbold & Huo, 2015; Huo, 2002). Associations of COVID-19 with China activate the "Asians as foreign" stereotype (Zou & Cheryan, 2017), leaving Asian Americans vulnerable. In the 2 weeks after COVID-19 was declared a U.S. national emergency, Asian Americans reported more than 1,000 cases of verbal and physical attacks (Jeung, 2020), despite being viewed as a model minority (Takaki, 2012).

COVID-19 has also sparked an outbreak in ageism (Ayalon et al., 2021), and its economic implications may have a notable intergenerational element. The global financial crisis in 2008 did not seem to affect younger people disproportionately, as extensive media coverage highlighted older adults' loss of retirement savings. The economic impact of COVID-19, however, has likely been felt most keenly by the younger generation. Precarious employment resulting from decades of rising casualization along with high debt levels leave younger adults exposed to the brunt of economic hardship. With the economic downturn readily attributable to the attempt to save the lives of the old—given stark age differences in COVID-19 mortality (Mahase, 2020)—intergenerational conflict may rise in the coming years. This conflict may also be fueled by politicians calling on older people to risk their own lives so economies could reopen (e.g., Knodel, 2020). Intergenerational conflict may accordingly pose a worthwhile domain for intergroup-research.

Although the pandemic may increase observations of prejudice generally, some people are more prejudiced than others. A strong individual-difference predictor of prejudice is social-dominance orientation (SDO): an orientation toward supporting group hierarchy and inequality (Altemeyer, 1998; Duckitt, 2005; Sidanius & Pratto, 1999). SDO is associated with a greater endorsement of

legitimizing myths and beliefs maintaining social hierarchy that predict attitudes and behaviors that aim to keep lower-status groups in a lower-status position (Sidanius & Pratto, 1999). In the wake of COVID-19, people with higher scores on measures of SDO may use legitimizing myths related to the pandemic to justify heightened prejudice. For example, beliefs surrounding survival of the fittest or the value of toughness may be used to justify ageism, ableism, or racism.

COVID-19 revitalizes research on explicit prejudice, and a ripe question is whether people are now more willing to openly express intergroup hostility. How might benign, even positive, stereotypes turn into outright hostility overnight? What are the psychosocial consequences on targets? Psychologists can address these questions quickly and safely through online surveys and digital records of behaviors (e.g., racial disparities in illness, hate crimes). Together, these outside-of-the-lab methods can identify factors (e.g., shifting norms, identity threat, fear/anxiety) that unleash hostility toward vulnerable groups.

**Intergroup contact.** With racism and ageism now more salient, the wake of COVID-19 represents a critical time for prejudice-reduction efforts. Social/intergroup contact—the most empirically supported prejudice-reduction strategy (Hodson & Hewstone, 2013; Pettigrew & Tropp, 2006)—is now severely restricted, generating both short- and long-term challenges.

First, interactants must reach a threshold at which contact transitions from generating anxiety/stress to reducing intergroup negativity (MacInnis & Page-Gould, 2015). During a pandemic, this threshold is less attainable. New technologies offer solutions: Interacting online can boost contact opportunities and effectively reduce prejudice (MacInnis & Hodson, 2015; White et al., 2020), although virtual interactions can be less warm and personalized. With friendship being a particularly potent type of prejudice-reducing contact (Davies et al., 2011), the formation and sustainment of online cross-group friendships represents a generative avenue for future research. Second, contact is effective even—or especially—among highly prejudiced persons (Dhont & Van Hiel, 2009; see Turner et al., 2020), mediated by elevated empathy (Hodson, 2008) and trust (Hodson et al., 2015) and decreased threat (Dhont & Van Hiel, 2011; Hodson et al., 2009). Such patterns seem less tenable in the immediate wake of COVID-19; variability in these mediators will become restricted, and prejudiced persons may be sensitive to negative contact (Turner et al., 2020). Therefore, contact's benefits on prejudice may become newly contested as a result of face-to-face intergroup contact reducing in frequency, and contact may become less relevant to

predicting bias and/or contact thresholds becoming less reachable.

### **Social inequality**

The pandemic has affected everyone, but not everyone has been affected equally. Low-income individuals and communities of color have disproportionately shouldered new health and economic burdens, raising a critical question for psychologists: Why do people accept extremely vast social and economic disparities?

Despite the historically high level of inequality in society, most people underestimate economic inequality and overestimate economic mobility (Davidai, 2018; Kraus et al., 2019; Norton & Ariely, 2011). Yet by highlighting how external events influence financial well-being, the economic fallout of COVID-19 may undermine these perceptions. Can such salient situational forces weaken people's beliefs in meritocracy (Jost, 2020), mobility (Day & Fiske, 2017), and the Protestant work ethic (Furnham, 1990)? Can they change attitudes about inequality and redistribution? Alternatively, would the pandemic's economic fallout amplify people's focus on their own personal hardships (Davidai & Gilovich, 2016; Sanchez & Gilovich, 2020), even when these hardships are commonly shared by others? Protests against racial inequality have also been prevalent during the pandemic—will these movements yield an enduring shift in perceptions of inequality, racial or otherwise? Although COVID-19 may not change how psychologists examine these questions, it highlights how urgent it is for psychological science to explore how society is—and should be—structured.

### **Close relationships**

The wake of COVID-19 presents a context for testing boundary conditions of close-relationship theories. Millions of people are now navigating financial precarity, a lack of available childcare, and/or high-stress employment situations. Frameworks such as the vulnerability-stress-adaptation model (Karney & Bradbury, 1995) put forth testable predictions about how couples will handle such unexpected stressors, which will have consequences for relationship quality and well-being. Social-distancing regulations also invite important questions about social-network functioning. For example, how sufficient are digital forms of communication for mitigating feelings of loneliness (Nowland et al., 2018)? Although immediate research efforts are unlikely to progress quickly enough to help people navigate the current crisis, these efforts can provide valuable theoretical insights and help to develop new solutions for tackling similar problems in the future.

COVID-19 may advance our knowledge of some relationship phenomena, but it may also create barriers for studying others. In particular, single people cannot meet new dating partners in face-to-face encounters if they adhere to maximal social-distancing recommendations. There is already a dearth of ecologically valid research on early-relationship formation, in part because fledgling relationships present recruitment challenges even under normal circumstances (Campbell & Stanton, 2014; Joel & Eastwick, 2018). Such challenges will be greatly exacerbated in the coming months—and potentially years—if social distancing remains a norm beyond the pandemic's immediate aftermath.

### ***Social comparison***

Social interactions are a rich source for self-evaluation. Although social interactions often foster positively biased self-perceptions (Dunning et al., 2004), they can also promote self-doubt, insecurity, and anxiety (Leary et al., 1995). In recent years, in-person interactions have been supplemented by online comparisons over social-media platforms. Social distancing has amplified this shift, transforming online comparisons from a secondary to a prominent source of self-evaluation. Psychologists should revisit social-comparison theory to understand how social distancing influences *whom* people compare themselves to and how often they do so.

Can people account for the “curated” aspect of others' online personas, or do such comparisons reinforce self-evaluations against extreme and unreachable standards (Davidai & Deri, 2019; Deri et al., 2017)? Does social distancing lead people to “look inward” for self-evaluation (Kruger, 1999), or does it increase the salience of external benchmarks, causing people to feel they are lagging behind others (Przybylski et al., 2013)? Psychologists can now broaden their perspective on what the “social” in “social comparison” truly means.

## **Political and Legal Psychology**

### ***Political ideology***

Conservative ideology is linked to higher perceptions of threat (Jost et al., 2017; Nail et al., 2009), and system-threatening events such as pandemics can shift social and political attitudes in a conservative direction. For instance, terrorist attacks have recurrently precipitated right-wing shifts (Berrebi & Klor, 2008; Canetti-Nisim et al., 2009; Economou & Kollias, 2015; Schüller, 2015), and polling data from the United States and Canada showed increasing intentions to vote for conservative political candidates immediately after the Ebola outbreak of 2014 (Beall et al., 2016; Schaller, Hofer, &

Beall, 2017). Some evidence already suggests that the COVID-19 pandemic has increased attraction to social conservatism in Poland (Karwowski et al., 2020).

However, there may be important moderators of ideological shifts in the wake of COVID-19. For example, Eadeh and Chang (2020) suggested that public-health crises might contribute to liberal shifts if people believe that liberal politicians are more capable of addressing such crises. As the authors highlighted, threat generally increases support for conservatism, yet less clear are the effects of threat occurring specifically in a liberal domain, such as health care or environmental justice. Could the pandemic increase, for instance, support for public-insurance options in the United States? Moreover, misinformation about COVID-19 spread rapidly through right-wing social-media networks (Motta et al., 2020), and conservatives have been more likely than liberals to downplay COVID-19's problems and to violate social-distancing guidelines (Rothgerber et al., 2020). Can conservatives' higher threat levels at baseline influence their sensitivity to new threats, and to what extent does relying on information from conservative media sources assuage such threat perceptions? Must a conservative leader endorse a threat as highly threatening for conservatives to experience it as such?

Politicized reactions to COVID-19—with conservatives viewing it as less threatening than liberals (Rothgerber et al., 2020)—are a probable case of motivated reasoning (Kunda, 1990). That individuals' preexisting values may influence their construal of new information has important implications for methodology.

For one, researchers should consider how particular wordings of pandemic-related survey items may activate participants' political identities and evoke motivated responses resulting from reactance. At times, such activation may be empirically undesirable because biased responses may undermine construct validity. At other times, however, strategic manipulation of survey design may enable researchers to capitalize on politicized attitudes to generate useful insights into underlying motivated cognition. With the aim of generalizing knowledge beyond the current pandemic, psychologists may attempt to better identify the conditions under which ideologically driven epistemic disagreements are most versus least likely. Manipulating online content in naturalistic settings offers a viable methodology.

### ***The politics of science***

COVID-19 mitigation requires “big-government” mandates, which conservatives traditionally find objectionable (Campbell & Kay, 2014). It is somewhat predictable, then, that political divides have emerged regarding how to manage the virus, which has concerning implications

for public health (Van Bavel, 2020). The politicization of COVID-19 has coincided with a shift in antivaccination attitudes—once considered a liberal bias but now associated with conservatism (Hornsey et al., 2020).

To capture this dynamic—and seek solutions for it—researchers face several challenges. First, multinational samples can help ensure that conclusions are not held hostage to a single sociopolitical context: Consortia are better equipped than individual labs to provide this broad perspective. Second, psychologists would benefit from collaborating with other social-science disciplines that grapple directly with macrofactors such as the media, economic systems, and government. Finally, we must analyze the culture wars without being seen as soldiers within them. This pursuit requires sensitive communication and a willingness to put into practice emerging research on how to anticipate and defuse values-based reasons why people reject science (Hornsey & Fielding, 2017).

### **Legal influences**

External threats to a country may affect citizens' relations to its internal legal system, including beliefs in its legitimacy and willingness to comply. For example, after 9/11 (mostly) unified the United States, the crime rate continued to decrease, and citizens' readiness to serve as jurors increased. However, fears provoked by COVID-19 were not unifying, as federal, state, and local laws (about mask-wearing, congregating, etc.) often conflicted. People typically view laws as more legitimate when they are applied consistently (Tyler, 2006); COVID-19 forces citizens to choose which conflicting laws, generated by which body, to follow.

The choice of which law to follow could depend on peoples' beliefs about societal norms, which may be gleaned not only from peer reference groups but also from leaders and respected institutions (e.g., the U.S. Supreme Court regarding *Obergefell v. Hodges*, 2015; Tankard & Paluck, 2016, 2017). Attitudes toward and compliance with lockdowns and mask-wearing, in addition to willingness to be vaccinated, might be associated with the signals from institutions that citizens believe best represent the social norms most relevant to themselves (e.g., federal vs. local government; religious vs. medical institution).

COVID-19 has notably affected policies regarding incarceration in many U.S. states; however, its effects cannot be separated from those of the preceding push for criminal-justice reform, the concurrent police killings of Black citizens, and countrywide protests. Whether because of justice concerns or COVID-19 fear, some states implemented early-release programs for older-adult or nonviolent prisoners; other states reduced jail entry by adopting no-cash bail policies.

Between-states variability provides quasi-experimental designs for studying attitudes, perceived norms, compliance, beliefs about and outcomes of incarceration reform, and so on. Although such designs contain confounds resulting from nonrandom assignment, they would generate 50 sets of data, useful for theorizing about compliance and evaluating policy changes in the United States.

## **Morality and Ethics**

### ***Threat and harm***

The COVID-19 pandemic has brought much harm and suffering to society, and it may facilitate research on the role of threat and harm in moral cognition. Much research suggests that moral judgments hinge largely on harm, especially for targets who are seen as vulnerable to suffering (Schein & Gray, 2015, 2018). Natural regional variation in COVID-19 prevalence, along with individual differences in perceived threat, provides a quasi-experimental platform from which to further explore the moral importance of harm. To embrace COVID-19 as a catalyst for scientific progress, researchers must carefully measure its threat and variation across region and time (e.g., Gelfand et al., 2020; Kachanoff et al., 2020), as these may be valuable moderating factors underlying moral evaluation.

### ***Empathy***

Empathy has become an area for debate in moral psychology, as scholars question its malleability and moral role (Bloom, 2017; Cameron et al., 2019; Zaki, 2014). Will our understanding of empathy change as a result of COVID-19? In some respects, COVID-19 could reiterate well-known effects. Daily updates of COVID-19 cases/deaths may create “compassion collapse” (Cameron & Payne, 2011), and political polarization about social distancing (Rothgerber et al., 2020) might shape whether and for whom people cultivate empathy. In other respects, the pandemic may reveal boundary conditions. As shared suffering can motivate empathy (Lim & DeSteno, 2016; Zaki, 2020), the pandemic may present a case in which empathy is not innumerate (e.g., Robinson et al., 2015). Therefore, asking about motivated choices to empathize (Cameron et al., 2019) will be important.

It may be harder to study empathy during COVID-19. Respondents may think of different people or pains when completing an empathy measure, and researchers may need to make measures more concrete to improve their utility. Moreover, certain study procedures may be less feasible, such as bystander intervention. Yet even



online, researchers could create empathy measures inspired by pandemic-related examples (e.g., obtaining resources for someone in quarantine). In forcing widespread isolation, the pandemic may especially reveal positive effects of digital prosociality (van der Linden, 2017)—and empathy may be a sound place to start.

### ***Broadening the moral circle***

Clear concerns exist that social distancing is contracting social connectedness, but might distancing counterintuitively *expand* people's concern for others? The "circle of moral concern" (Singer, 1981/2011) describes increasingly broad levels of typical human moral concern, ranging from oneself to all of life. Institutional actors have facilitated bridging group identities in response to natural disasters (Vezzali et al., 2015) after investigations of collective action via social media (e.g., Eltantawy & Wiest, 2011). Could individuals amplifying stories of solidarity do the same?

Psychologists might investigate this question using conceptual models of both the centripetal (e.g., in-group loyalty) and centrifugal (e.g., compassion) forces that affect the breadth of moral concern (Graham et al., 2017). Key individual differences could be captured using Crimston and colleagues' (2016) moral-expansiveness scale. Promising mediators of moral expansion/contraction include the emotions of outrage (Brady et al., 2020; Phoenix, 2019) and elevation (Aquino et al., 2011; Keltner & Haidt, 2003).

### ***Morality in an increasingly digital world***

Social distancing has catalyzed our already accelerating reliance on digitally mediated social interaction. How might reduced in-person observability of behavior affect perceptions of moral norms, particularly in light of temptations to virtue-signal? Consider moral norms as a subset of social norms (Cialdini & Trost, 1998) that govern the tension between self-interested and prosocial behavior (Curry, 2016). To maintain a good reputation, people behave more prosocially when their behavior is observable (Kraft-Todd et al., 2015; Ohtsuki & Iwasa, 2006). Social-media posts causing moral expansion may need to communicate costly behaviors rather than mere speech (Kraft-Todd et al., 2018), given that failing to do so may be perceived as virtue-signaling (Jordan & Rand, 2019; Kraft-Todd et al., 2020). Meanwhile, increasing concern about online virtue-signaling (e.g., Jordan & Rand, 2019; Kristofferson et al., 2013) incites disapproval of moral hypocrites (Jordan et al., 2017). As the majority of social behavior remains online, psychologists may deepen their understanding

of moral cognition by considering how the observability of one's own behavior shapes social desirability (Crowne & Marlowe, 1960) and how perceptions of virtue-signaling may motivate others' behaviors (Kraft-Todd et al., 2020).

### ***Behavioral ethics***

Behavioral ethics—the study of moral decision-making, particularly under everyday circumstances—has traditionally tackled dishonesty, social conformity, and a suite of cognitive biases (Bazerman & Tenbrunsel, 2012). But it has not devoted much effort to the ethical quandaries salient during a pandemic: How do employers decide what to compensate essential workers, and how much risk will workers agree to take on? How do doctors distribute limited resources to patients? Can policymakers protect public health without making citizens believe their privacy has been violated?

These types of decisions are not unique to pandemics. People already bear unequitable health risks at work (Orrenius & Zavodny, 2013), medical treatments are routinely distributed on the basis of wealth rather than need (Simoens & Hurst, 2004), and organizations often trample individual rights in their quest for oversight (Posey et al., 2011). COVID-19 has exposed just how narrow the scope of behavioral-ethics research has been, encouraging psychological science to widen its vision.

### ***Human–animal relations***

Because COVID-19 is most likely a zoonotic disease—one transferred from animals to humans—its outbreak has likely strengthened opposition to the trade and consumption of wild animals and increased recognition of animal contact as a pandemic risk factor (Beggs & Anderson, 2020; Dhont et al., 2021). However, mainstream discussions remain silent about the global pandemic risk posed by industrial factory farming (B. A. Jones et al., 2013), wherein risks can be reduced by lowering mainstream meat production.

Despite experiencing moral discomfort with eating animals (Bastian & Loughnan, 2017), people typically maintain meat-eating habits by psychologically distorting the links between products and their animal origins (Benningstad & Kunst, 2020; Earle et al., 2019) and through rationalizations (Piazza, 2020). The pandemic may have already influenced these processes, better equipping some people to defuse moral discomfort and maintain meat consumption while motivating other people to shift toward plant-based substitutes (as reflected in rising sales of plant-based products; Terazono & Meyer, 2020). Greater consideration of human–animal

relations would not only foster more comprehensive conceptualizations of human intergroup relation processes (Dhont et al., 2016; Salmen & Dhont, 2020) but also—as the pandemic has revealed—contribute to the psychology of human health and well-being.

### ***Proenvironmental attitudes and behaviors***

The pandemic's wake can facilitate research on proenvironmental behavior promotion. Reinforcing proenvironmental values may support behavior change as people make adjustments to changes in their life circumstance (Verplanken & Roy, 2016), particularly when “finite pools of worry” edge out attention to the environment (Huh et al., 2016). Yet for some people, COVID-19 may reinforce proenvironmental values if they cope with social distancing by spending more time in nature. As societies return to normalcy, people may experience grief when previous unsustainable behaviors return and if environmental regulations are removed to jump-start the economy (Competitive Enterprise Institute, 2020). Perhaps particularly among younger generations (Swim et al., 2020), anger and anxiety about COVID-19 may strengthen emotions about climate change, given that both issues can be construed as threats aggravated by government failures to respond to warnings from scientists.

In the pandemic's wake, psychologists may consider the potential for increasingly polarized environmental attitudes. Studying COVID-19 health interventions—specifically among conservatives (Rothgerber et al., 2020)—may guide proenvironmental behavior interventions, given that both issues entail the denial of science and refraining from preventive behaviors. Conceptualizing perceptions of sustainability as balancing distinct but related social, economic, and environmental factors can provide a useful framework for understanding anticipated antagonistic versus synergistic consequences of societal responses to COVID-19 (Geiger & Swim, 2021).

### **Motivations**

Many years ago, Harold Garfinkel advocated for “breaching experiments” that violate people's expectations to expose construals underlying their behavior. COVID-19 is, in essence, a global breaching experiment. By disrupting people's lives, the pandemic may show what *really* matters to people, encouraging psychologists to identify what motives are most implicit and basic (e.g., Fiske, 2008; Maslow, 1943; Murray, 1938; Reiss, 2004; Ryan & Deci, 2000; Schaller, Kenrick, et al., 2017). For example, psychologists have paid relatively little attention to motives involving safety and security

because such motives are not at the forefront of people's concerns when life seems reasonably safe (Carroll et al., 2015). However, when threats such as COVID-19 become salient, people focus on their and their loved ones' health and structure their lives in ways that protect their safety and well-being.

Fear and uncontrollability have been chronically high during the pandemic, which may influence motivated cognition. When people feel minimal control over threat, they work to manage stress in part through motivated cognitions that down-regulate emotions at the expense of protecting oneself against physical harm (Leventhal, 1971). For instance, during the 2016 Ebola outbreak, Ghanaians were aware of transmission means and virus symptoms but also believed that hot saltwater baths were an effective preventive vaccine (Tenkorang, 2018); presumably, threat coupled with uncontrollability increased magical thinking.

However, when people experience threat and simultaneously feel empowered to control its effects, behavioral responding shifts; controllability increases self-protection (Aspinwall & Taylor, 1997; Bandura, 1986; Weisz, 1983). Learning that a disease, for example, is serious but controllable—rather than uncontrollable—increases information-seeking about personal susceptibility (Dawson et al., 2006).

Until societies achieve herd immunity, motivation researchers should recognize the prevailing cognitions individuals experience, including chronic fear and uncontrollability. Researchers should also note within-individual variability because communities differ greatly in their prevalence and management of the virus.

The pandemic has also highlighted the importance of motives for affiliation, acceptance, and belonging (Leary, 2009). Under normal circumstances, we may underestimate the degree to which many motives operate in the service of acceptance and belonging (Leary et al., 2015). People's reactions to the pandemic's constraints illuminate that many everyday activities, even those that ordinarily seem to arise from other motives, are rooted in sociality. By stripping away extraneous activities of prepandemic life, COVID-19 may foster insights into the basic motives that underlie most thought, emotion, and behavior.

### ***Self-regulation***

COVID-19 has important implications for self-regulation, which deals with goals and behavior change in many areas such as consumption. Much of humanity now lives under conditions of increased scarcity, stress, and uncertainty about the future, all of which can disrupt people's efforts to control their behavior (Carver & Scheier, 2001). These states may promote decision-making that favors short-term over long-term goals. For

example, people experiencing food insecurity or stress tend to eat unhealthfully (Leung et al., 2014; Tomiyama, 2019); people experiencing poverty are more readily pushed into taking out high-interest loans (Cook & Sadeqheh, 2018); and when products are scarce, consumers engage in panic-buying (Arafat et al., 2020). Research should now identify how self-regulation operates when the world of next month is unknowable.

There is no shortage of theoretical frameworks to guide the way. Construal-level theory (Fujita et al., 2006) suggests that focusing on the short term can influence the goals people set and their behaviors in goal pursuit. Transactive-goal-dynamics theory predicts that disrupted social connections, particularly between intimate partners, can change the types of goals people pursue and their likelihood of success (Fitzsimons & Finkel, 2018). Some perspectives entertain the idea that self-regulation might improve in certain areas. Radical changes in people's daily lives can make breaking habits easier because cues triggering behavior are altered (Neal et al., 2012). Moreover, threats of upheaval and death may spur people to consider their core values and set goals in a values-directed way (Berkman et al., 2017). With some thoughtful planning, psychologists could emerge from the pandemic with a more comprehensive science of self-regulation.

### ***Existential threat***

Terror-management theory (TMT; Greenberg et al., 1986) can elucidate how people manage pandemic-related anxiety arising from awareness of the inevitability of death. COVID-19 provides a ubiquitous reminder of the fragility of life and undermines major sources of protection from anxiety, including sources of self-esteem, personal safety, and social connection. Death anxiety inherent in COVID-19 may play a central role in responses to it, even (and perhaps especially) among those who believe its dangers are exaggerated.

TMT's distinction between proximal and distal defenses can provide a framework for conceptualizing pandemic responses. Proximal defenses focus directly on the threat and emerge when consciously thinking about death. Examples include disease-avoidant behavior (social distancing, handwashing, mask-wearing), hypervigilance for relevant information (media consumption), and denial of the threat (downplaying its severity). Distal defenses entail maintaining self-esteem, a worldview, and close relationships and emerge when thoughts of death are on the fringes of consciousness. Examples include championing health-promoting behavior, political polarization, blaming out-groups, and seeking comfort in close others. Investigating the conditions under which certain responses emerge could

foster more ecologically valid research in existential psychology and help people manage pandemic-related anxiety in ways that benefit their well-being and reduce virus transmission.

## **Stress and Coping**

### ***Collective trauma***

Community-based traumas such as COVID-19 can profoundly tax individual well-being and societal resources. The pandemic's onset mimicked other collective traumas—it was sudden, unexpected, and uncontrollable. Yet by now, this crisis has become chronic. People are coping with losses both real (e.g., death of loved ones, loss of job) and symbolic (e.g., loss of senior year of high school; Silver, 2020), and social distancing brings isolation and loneliness for many. Identifying who is most vulnerable to the chronic stress and isolating risk factors associated with long-term maladjustment is critical for cost-efficient and effective psychological intervention. Articulating how ambiguous or conflicting communication may amplify perceived risk and stress (N. M. Jones et al., 2017) is essential. Predicting who will engage in self-protective and socially responsible behaviors versus who will resist—and identifying mechanisms to break through their resistance—is vital. Finally, learning from individuals who demonstrate resilience in response to the pandemic and its aftermath is important as the crisis waxes and wanes and in preparation for crises of the future.

To design and implement research on events such as COVID-19 requires overcoming formidable scientific and logistical challenges resulting from their fundamental unpredictability (Schlenger & Silver, 2006). As a result, most studies on the impact of such events are post-only designs, often with retrospective assessments made long after the event's onset. Two challenges are paramount: the rapid attainment of funding and institutional review board approval. Granting agencies and foundations can assist with the former; institutional flexibility and support can assist with the latter. Understanding how individuals have responded—and will continue to respond—to the pandemic and its aftermath also requires collecting data on representative samples. Researchers should note that surveys using snowball sampling or college students and data collection using opt-in survey panels or Amazon Mechanical Turk (MTurk) workers preclude population estimates and limit generalizability.

### ***Purpose in life***

A sense of purpose in life is a coveted resource that is associated with greater stress resilience (Burrow & Hill,

2013), health (Kim et al., 2013), well-being (Ryff, 1989), and longevity (Hill & Turiano, 2014). Although the utility of purpose is apparent, how and whether individuals find, cultivate, and benefit from purpose in the wake of a pandemic remain unclear. These unknowns motivate a novel research agenda designed to clarify the importance of purpose amid environmental uncertainty.

Studying purpose in light of COVID-19 can help adjudicate long-standing theoretical debates. For example, foundational theories contend the value of purpose may be most pronounced amid adversity and hardship (Frankl, 1959; Ryff et al., 2003). A sense of purpose may help individuals navigate difficult times by motivating them to invest in valued activities and consider future goals (Machell et al., 2014). Other perspectives suggest that having a clear purpose, although generally adaptive, may actually increase susceptibility to suffering when opportunities to pursue that purpose are obscured (Haase et al., 2013; McKnight & Kashdan, 2009). As social-distancing policies restrict access to traditional workplaces, educational settings, and recreational spaces, familiar sources of purpose may be obscured and their benefits encumbered. How purpose operates in the pandemic's wake awaits investigation.

### ***Self-compassion***

COVID-19 has introduced challenges across all spheres of life, such as lowered productivity at work and educating one's children at home. What are adaptive ways to respond to such unanticipated challenges? One way may be self-compassion, which entails *self-kindness*, treating the self with a caring—rather than judgmental—attitude; *common humanity*, recognizing it is “only human” to make mistakes; and *mindfulness*, taking a balanced approach to setbacks (Neff, 2011).

Can self-compassion help in coping with pandemic-induced difficulties? For example, does approaching one's lowered productivity with self-compassion breed a healthier emotional profile (e.g., less stress, greater optimism; Neff et al., 2007) and more desire to improve the self (e.g., Breines & Chen, 2012; Zhang & Chen, 2016)? Such questions warrant investigation as COVID-19 challenges continue to reverberate. Cross-sectional surveys are feasible. Daily diary methodologies that examine self-compassion's impact on a day-to-day basis are opportune as well.

### **Person–Environment Interaction**

Considerable research will undoubtedly look for “main effects” of the pandemic among the population as a whole. Yet the pandemic's effects likely depend partly on characteristics of the person, along with their social

and material worlds (Donnellan et al., 2009). The individual differences that make pandemic experiences unique may provide areas well suited for investigation.

Interactionist perspectives offer a framework for understanding mechanisms fostering diverse reactions to COVID-19 (Zayas et al., 2002). Key processes may operate automatically or more deliberately, working alone or in tandem, and in complementary or antagonistic ways. Interactionist frameworks can help identify the “psychological triggers” of the COVID-19 era, whether they are social, economic, health, and/or existential concerns. Other individual differences such as disgust sensitivity, neuroticism, and openness to experience provide a few potential moderators worthy of consideration (Haidt et al., 1994; John & Srivastava, 1999). Using repeated measures within-person designs that collect multiple observations of the same construct (e.g., anxiety) in response to the same situational features (e.g., crowds, economic reminders) would increase statistical power and help identify psychological triggers of the pandemic (e.g., conservatives may be more reactive to economic insecurities, and liberals may be more reactive to health insecurities) as well as key individual-difference factors (Zayas et al., 2019).

### **Metascientific Considerations**

#### ***Scientific reproducibility***

Issues of reproducibility have dogged psychological science, and known risks and remedies remain applicable throughout the pandemic and onward (e.g., Munafò et al., 2017). Given the desire of many psychologists to help in the wake of disaster, we must be diligent about curating reproducible science (IJzerman et al., 2020; Scheel, 2020).

Psychologists should evaluate how pandemic-induced processes may influence effects of interest, including how established effects may have shifted. Such considerations might include a header on study registrations, wherein researchers articulate whether and how underlying theoretical and/or methodological assumptions have changed since COVID-19. The pandemic's wake may concurrently foster more rigorous and ecologically valid theory-testing. For example, predictions of frameworks such as TMT (Greenberg et al., 1986), system-justification theory (Jost, 2020), or the vulnerability-stress-adaptation model (Karney & Bradbury, 1995) are inseparable from considering effects of the pandemic because such predictions concern implications of anxieties, threats, uncertainties, and stress—perceptions of which are likely heightened in everyday life as a result of the pandemic. These efforts can promote empirical backing or adjustments

of theories, complementing controlled lab studies with data that reflect cognitions and behaviors unfolding in the real world.

The pandemic is a textbook example of a research artifact, and thus psychologists should be explicit about the level to which empirical results may generalize. This call is not new (see Simons et al., 2017) but is important to reiterate because data collected during and after the pandemic may be idiosyncratic. Overt acknowledgment of a study's purposes (e.g., prediction vs. description) would facilitate an evaluation of methodological appropriateness (Imai et al., 2008; Shmueli, 2010; Yarkoni & Westfall, 2017). Just as including statements about statistical power, generalizability, and study limitations are common practice, so too might we adopt standardized ways of addressing COVID-19-specific generalizability concerns in the years ahead.

These efforts—especially when paired with increasing support for replication and transparent practices (Chambers, 2013; Martone et al., 2018; Nosek & Errington, 2017), the destigmatization of (self-)correction (Montealegre et al., 2020; Rohrer et al., 2021), and the embrace of multilab collaborations for hard-to-reach populations (e.g., Klein et al., 2014, 2019; the ManyBabies Consortium; Psychological Science Accelerator)—will not only facilitate reproducible psychological science but also help build the community of science we desperately need (Nosek et al., 2015; Stevens et al., 2018).

### ***Data collection (or lack thereof)***

COVID-19 brought nearly all in-person data collection to an abrupt and drawn-out halt. For in-person studies initiated before the pandemic, even once it becomes safe and permissible to resume data collection, researchers must carefully consider whether preexisting data can reasonably be combined with new data. Longitudinal studies may be irreparably disrupted. The intervening months of social distancing, anxiety, and other novel factors may affect responding (particularly for social phenomena).

Publicly available data sets represent a rich resource that can replace primary data collection until in-person studies can restart. The University of Michigan's Inter-university Consortium for Political and Social Research (ICPSR) is one good starting point for identifying which data sets contain relevant variables. For social and cognitive neuroscientists, there are publicly available neuroimaging data sets (Alexander et al., 2017; Hanke et al., 2014; Taylor et al., 2017; Van Essen et al., 2012). Meta-analysis is another high-impact avenue for research that does not rely on new data collection. Agent-based modeling can also enable research without

human participants. Such models exile all extraneous influences by isolating—and formalizing—a small set of essential processes (Jackson et al., 2017). These processes then unfold in an artificial landscape with artificial agents, who fear neither COVID-19 nor death. Although agent-based models are artificial, they can yield useful insights about social identity, social influence, group processes, intergroup relations, and beyond (e.g., Gray et al., 2014; Muthukrishna & Schaller, 2020; Smaldino et al., 2012).

For new data collection, protecting the health of research participants must be a top priority. Until herd immunity is strong, participants will incur risks by coming to high-density university campuses and exposing themselves to study staff. We must redouble efforts to optimize the risk-benefit ratio of our studies and carefully consider our participants' well-being, including stress levels. Research programs that study aversive states (e.g., discrimination, mortality salience) should seek to administer the lowest "dose" required.

The pandemic's dire economic repercussions put potential participants in a vulnerable state. As the Belmont Report's (National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 1979) principle of justice warns, we must be vigilant not to take advantage of financially compromised individuals. Moving studies to online platforms is one way to continue research in the wake of COVID-19, but this online work similarly must not exploit the economic pressures participants face (e.g., avoid unfair wages on Amazon's Mechanical Turk; Hara et al., 2018; Katz, 2017). Moving to online studies, in fact, can improve the generalizability of research that has been criticized for overreliance on student samples (Henry, 2008). Although students may represent ideal samples for testing certain topics (e.g., ageism, job insecurity, identity), online panels (many with no need for individual recruitment—e.g., Prolific, Qualtrics) allow researchers to study more representative samples. Researchers could consider intergroup simulations, which are socially rich and emotionally evocative group experiences in which participants can develop culture, chafe under social subjugation, foment revolt, enact retaliation, and more (Kachanoff et al., 2019). Simulating real social processes helps findings generalize across place and time while removing people from their real-world situations.

### ***Considerations for academia***

The pandemic's adverse effects will likely be most severe for scholars with fewer resources in terms of time, research support, and personal finances. Recession periods force the least privileged students into

more precarious financial situations that are hardly conducive to productivity (Cottom, 2017; Goldrick-Rab, 2006; Long, 2014). Job prospects in higher education are receding, and individuals with less privilege and social capital are the most severely affected (Schwandt & von Wachter, 2019). Faculty with high teaching loads face the brunt of the workload to shift classes online, and those with young children must juggle childcare and education on top of their careers. It is especially important to consider the consequences of these circumstances for trainees, particularly in areas of psychology in which trainees often concentrate their efforts on relatively few studies (e.g., social and cognitive neuroscience) because of the high cost of gathering data and the time required for associated technical training. In addition to these considerations, there are already inequalities in experiences of losing loved ones to COVID-19, at both individual and racial/ethnic levels (Pew Research Center, 2020; Yancy, 2020).

Gender considerations are also important because COVID-19 may differentially affect academics with different gender identities. Given that women are more likely to shoulder childcare and housework responsibilities than men (Lachance-Grzela & Bouchard, 2010; Pew Research Center, 2013), COVID-19 may have a disproportionately threatening impact on women's careers (Flaherty, 2020; Minello, 2020; Spector & Overholser, 2020). These effects may be compounded by the tendency for women (and people of color) to be more excluded from social networks in science (Mickey, 2020), especially if remote work leads scholars to lean on existing social networks when creating new research teams. Moreover, purportedly gender-neutral policies such as "stopping the clock" benefit men and disadvantage women (Antecol et al., 2018); promotion committees should be mindful of this differential impact and should consider creative solutions for supporting and evaluating early-stage women and scholars with fewer resources during and after the pandemic. Academic leaders should implement strong solutions to protect diversity and inclusion (Goodwin & Mitchneck, 2020).

### ***Media and public engagement***

Psychologists carry out fundamental work on how people engage with threat, poverty, and racism and how they react to danger, disappointment, and death, among other topics with timely real-world applicability. The worldwide threats of COVID-19 and populism to democracy heighten the need for research that promotes freedom, open inquiry, and democracy (Crandall, 2019). Psychologists may sensibly be eager to disseminate their research on COVID-19. Nature abhors a vacuum, and if psychologists do not engage with the public

about the pandemic, nonexperts will likely take our place. At the same time, many psychologists do not (yet) have an established process for taking their work step-by-step from basic theoretical principles to large-scale applications in a crisis setting (IJzerman et al., 2020). At a minimum, communications with the public should describe (a) points of consensus across studies, (b) honest assessments of uncertainty, and (c) recognition that areas of consensus and uncertainty may change. Clear communication is essential, whether through speaking with reporters, using social media, or writing for public outlets (e.g., op-eds). We can earn the public's trust and amplify our voices in future crises by continually conveying the complex, incremental nature of the scientific process (Da Silva Frost & Ledgerwood, 2020; Lewis & Wai, 2021; Yong, 2020).

### **Concluding Remarks**

The wake of COVID-19 is marked by a number of inevitable misfortunes for psychological science. For the foreseeable future, conducting research will demand adjusting ingrained habits and considering new influences on the very phenomena we have long studied. Are all studies now "COVID-19 studies," whether we like it or not? For how long will researchers need to take pandemic-related concerns into consideration? Will changes in epidemiological markers (e.g., COVID-19 infection rates), societal functioning (e.g., social-distancing guidelines), and/or individual attitudes (e.g., fear of COVID-19) ultimately signal psychology's escape from the pandemic's grip? Or will the pandemic experience yield a permanent shift in psychological processes even beyond its conclusion? Moreover, people tend to adapt to negative circumstances more readily than they expect (Wilson & Gilbert, 2005): Might we as psychologists be making forecasting errors regarding the intensity and duration of the pandemic's impact on psychological processes and our research endeavors?

These questions remain open, and resolving them will require integrated considerations of theory, policy, epidemiology, public perceptions, and philosophy of science, along with a data-driven focus on tracking change over time. Moreover, as the focus of this pandemic shifts to vaccinations and herd immunity, our field is poised to ask new questions, address new problems, and achieve the ultimate aim of our discipline: to describe, explain, and predict psychological phenomena as they unfold in the real world around us. By engaging in deep reflections and open conversations about research and our field at large, we become empowered to minimize COVID-19's threats and to advance psychological inquiry.

## Transparency

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### Declaration of Conflicting Interests


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## Note

1. Any discussion of COVID-19 is highly time-sensitive, and many points in this article may benefit from contextualization.

Accordingly, we note that final edits were made to this article in January 2021.

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