
Peter H. Huang

University of Colorado Law School

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Peter H. Huang

ABSTRACT

Pandemics lead to emotions that can be good, bad, and unconscious. This Article offers an interdisciplinary analysis of how emotions during pandemics affect people’s responses to pandemics, public health, financial economics, law, and leadership. Pandemics are heart-breaking health crises. Crises produce emotions that impact decision-making. This Article analyzes how fear and anger over COVID-19 fueled anti-Asian and anti-Asian American hatred and racism. COVID-19 caused massive tragic economic, emotional, mental, physical, and psychological suffering. These difficulties are interconnected and lead to vicious cycles. Fear distorts people’s decision readiness, deliberation, information acquisition, risk perception, and thinking. Distortions affect people’s financial, health, and political decisions, causing additional fears. Emotions have direct health impacts and indirect behavioral impacts, which in turn have their own health impacts. People differ vastly in whether, how much, and when they experience anxiety, complacency, and panic during pandemics. A common path is to feel some anxiety initially, then panic, and finally become complacent. This Article advocates these responses to pandemics:

(1) paying people directly monthly pandemic financial assistance,
(2) encouraging people to practice mindfulness,
(3) gently enforcing Non-Pharmaceutical Interventions,
(4) fostering accurate information acquisition about pandemics, and
(5) applying psychological game theory to better understand emotions that depend on beliefs about leadership.

Keywords: Pandemic emotions, racism, cognitive economics, information avoidance, monthly pandemic financial assistance, gentle enforcement, mindfulness, information acquisition, psychological games of leadership

* Professor and Laurence W. DeMuth Chair of Business Law, University of Colorado Law School: J.D., Stanford Law School; Ph.D., Harvard University; A.B., Princeton University. Thanks to the University of Colorado Office of the Chancellor and Center for Leadership for a leadership research seed grant. Thanks to the University of Colorado Law School for summer research support. Thanks to Ido Erev for helpful discussions. Thanks to Samuel I. Becher, Emily Gleichert, Paul L. Huang, Alana Paris, and Karl Schellscheidt for helpful suggestions.
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I. INTRODUCTION

Pandemics are heart-breaking global biopsychosocial health crises. COVID-19 has caused and continues to cause massive tragic economic, emotional, mental, physical, and psychological suffering. The central theme of this Article is that pandemics such as COVID-19 can lead to emotions that can be good, bad, and unconscious. This Article analyzes how fear and anger over COVID-19 has fueled anti-Asian racism. Emotions or the lack thereof during pandemics, and societal responses to pandemics, have implications
for public health, financial economics, and law. This Article introduces an interdisciplinary analysis of these implications and ultimately advocates addressing COVID-19 and any future pandemics by:

(1) directly paying people monthly pandemic financial assistance,
(2) encouraging people to practice mindfulness,
(3) gently enforcing Non-Pharmaceutical Interventions (NPIs),
(4) fostering accurate information acquisition about COVID-19, and
(5) applying psychological game theory to better understand emotions that depend on beliefs about leadership.1

On January 30, 2020, the World Health Organization (WHO) declared the novel coronavirus infectious disease (COVID-19) caused by the Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) a Public Health Emergency of International Concern (PHEIC).2 International Health Regulations3 define a PHEIC to be “an extraordinary event which is determined . . . to constitute a public health risk to other States through the international spread of disease; and to potentially require a coordinated international response.”4 On March 11, 2020, the WHO declared COVID-19 a pandemic,5 meaning “the worldwide spread of a new disease.”6 COVID-19 is the first pandemic the WHO declared since the H1N1 “swine flu” in 2009 and the first pandemic due to a coronavirus.7

The American death toll from COVID-19 is and may always be unclear because of the politicization of death statistics.8 Robert Anderson, chief of the mortality statistics branch of the National Center for Health Statistics Centers for Disease Control and Prevention (CDC), cautioned that “[u]p to 1 in 3 death certificates nationwide were wrong before COVID-19.”9 Dr. Maria Danilychev, a San Diego physician,10 utilized

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7 Chappell, supra note 5.
Worldometer\textsuperscript{11} COVID-19 data\textsuperscript{12} and extrapolations from the latest CDC data to create a moving bar graph showing how quickly COVID-19 became the leading cause of United States deaths per day.\textsuperscript{13} Danilychev also created an infographic showing daily changes in total COVID-19 cases across ten countries visualizing how rapidly and by how much COVID-19 cases in the United States overtook cases in other countries.\textsuperscript{14} These numbers are staggering. Because people are unable to process this vast amount of sorrow,\textsuperscript{15} seeing such figures daily produced mass compassion fatigue,\textsuperscript{16} psychological or psychic numbing,\textsuperscript{17} psychophysical numbing,\textsuperscript{18} and pseudoinfficacy.\textsuperscript{19}

Danilychev’s statistics reflect an initial period of substantial compliance with NPIs, such as physical distancing, self-quarantining, and wearing face masks, to flatten the curve of infection and not overwhelm health care system capacity. Differences in compliance rates with NPIs may be related to variations in cultural variations in our fifty United States.\textsuperscript{20} The first major study utilizing data from two other coronaviruses, OC43 and HKU1, which cause most cases of the common cold, suggests some form of physical distancing might be necessary until 2022, not factoring vaccines into account.\textsuperscript{21} Evolutionary game-theoretic models help explain how NPI compliance norms change over time.\textsuperscript{22}

COVID-19 can have unexpected impacts on different cultures based on social norms and traditional behaviors. For example, COVID-19 may spread less in China where people utilize chopsticks and do not share food, whereas Americans use spoons and forks and

\begin{itemize}
\item \textsuperscript{11} WORLDOMETER, About, https://www.worldometers.info/about/ (last visited Nov. 19, 2020).
\item \textsuperscript{12} WORLDOMETER, Coronavirus, https://www.worldometers.info/coronavirus/country/us/ (last visited Nov. 19, 2020).
\item \textsuperscript{15} Teju Cole, \textit{We Can’t Comprehend This Much Sorrow}, N.Y. TIMES (May 22, 2020), https://www.nytimes.com/interactive/2020/05/18/magazine/covid-quarantine-sorrow.html.
\item \textsuperscript{17} Paul Slovic, \textit{“If I Look at the Mass I Will Never Act”: Psychic Numbing and Genocide}, 2 JUDGMENT & DECISION MAKING 79 (2007).
\item \textsuperscript{19} Daniel Vastfjall et al., \textit{Pseudoinfficacy: Negative Feelings From Children Who Cannot Be Helped Reduce Warm Glow for Children Who Can Be Helped}, 6 FRONTIERS PSYCHOL. 616 (2015).
\item \textsuperscript{20} MICHELE J. GELFAND, RULE MAKERS, RULE BREAKERS: HOW TIGHT AND LOOSE CULTURES WIRE OUR WORLD 79-111 (2018); Jesse R. Harrington & Michele J. Gelfand, \textit{Tightness-Looseness Across the 50 United States}, 111 PROC. NAT’L ACADEM. SCI. 7990 (2014).
\item \textsuperscript{21} Stephen M. Kissler et al., \textit{Projecting the Transmission Dynamics of SARS-CoV-2 Through the Postpandemic Period}, 368 SCI 860 (2020).
\item \textsuperscript{22} Soham De et al., \textit{Understanding Norm Change: An Evolutionary Game-Theoretic Approach}, 1 PROC. OF THE INT’L CONF. ON AUTONOMOUS AGENTS & MULTIAGENT SYS. 1433 (2017).
\end{itemize}
share food as part of a gesture of affection, love, respect, or magnanimity at family-style meals. COVID-19 also impacts people differently based on gendered parenting roles. For example, more mothers hold themselves, and are held by society, to higher standards than men in the division of parental responsibilities.

Furthermore, many groups are experiencing communication fatigue based on societal changes adapted during COVID-19. COVID-19 impacts the deaf, Deaf (the capital “D” refers to those individuals who are members of the deaf community and active participants in deaf culture), and hard-of-hearing who rely on lip reading or facial expressions in American Sign Language (ASL) because opaque face masks frustrate communication by lip reading. One study found that “interpreters at the United Nations and at European Union institutions [] reported similar feelings of burnout, fogginess and alienation when translating proceedings via video feed.” People teleworking may experience videotelephony fatigue from engaging in unconscious facial mimicry, which is critical to empathy, having to “process non-verbal cues like facial expressions, tone, pitch, and body language,” feeling discomfort over silences and knowing they are being watched as if they are performing “on stage.” Performance anxiety can also be “nerve-wracking and more stressful” over video. Video psychotherapy studies found patients and therapists “also often feel fatigued, disaffected and uncomfortable.” Video chatting is also not

30 Murphy, supra note 26.
34 Id.; Katrin Schoenenberg et al., Why Are You So Slow?–Misattribution of Transmission Delay to Attributes of the Conversation Partner at the Far-End, 72 INT’L J. HUM.-COMPUTER STUDY 477 (2014).
35 Jiang, supra note 33 (quoting Marissa Shuffler, a Clemson University industrial-organizational Psychology associate professor, who conducts research about workplace well-being and teamwork effectiveness).
36 Id.
37 Sheryl Brahnam, Comparison of In-Person and Screen-Based Analysis Using Communication Models: A First Step Toward the Psychoanalysis of Telecommunications and Its Noise, 14 PSYCHOANALYTIC MGRS. 138 (2017).
38 Murphy, supra note 26.
Conducive to trust formation. These different impacts demonstrate how the burdens of NPI compliance can be non-obvious and unevenly distributed across populations.

The rest of this Article is organized as follows. Part II analyzes how pandemics cause individuals to feel positive valenced emotions, such as hope; negative valenced emotions, such as anger, health anxieties, economic/financial anxieties, fear, hate, panic; and complacency. Part II explains how pandemic emotions can lead some individuals to seek expert opinions and the corresponding need for experts to portray the scientific and numerical risks of COVID-19 in an accurate way to lessen fear or complacency during the pandemic. Part II also describes how COVID-19-induced emotions fuel racism. Part III considers how pandemics and emotions associated with pandemics create massive global economic and financial shocks by reducing production, consumption, and expectations, leading to recessions and unemployment. Part IV discusses why individuals may seek to acquire or avoid information about pandemics in part due to emotional reasons. Part V offers policy responses to the many pandemic harms that Parts II-IV covered. The proposed policies include paying monthly pandemic financial assistance, encouraging practicing mindfulness, gentle enforcement of NPIs, and fostering acquisition of accurate pandemic information. The conclusion discusses general lessons and insights pandemics offer about human behavior. An appendix advocates formulating psychological game-theoretic models to better understand emotions that depend on beliefs about leadership.

II. PANDEMIC EMOTIONS

Crises produce emotions that impact decision-making. Pandemics can cause certain emotions, or the lack thereof, which can in turn lead to outcomes with their own emotional consequences. These difficulties are interconnected and can lead to a vicious cycle. Emotions can distort risk estimates, risk perception, decision readiness, decision-making, deliberation, thinking, judgment, and information acquisition. These

41 Jennifer Lerner et al., Effects of Fear and Anger on Perceived Risks of Terrorism: A National Field Experiment, 14 PSYCHOL. SCI. 144, 148, 149 tbl.3 (2003).
45 George Loewenstein et al., Modeling the Interplay Between Affect and Deliberation, 2 DECISION 55 (2015).
distortions can lead people to make unfortunate eating,\(^{49}\) economic,\(^{50}\) ethical,\(^{51}\) exercise,\(^{52}\) financial,\(^{53}\) interpersonal,\(^{54}\) health,\(^{55}\) political,\(^{56}\) public policy,\(^{57}\) and sleeping decisions,\(^{58}\) which can in turn cause additional anxieties. Emotions have direct and indirect impacts on economic\(^ {59}\) and financial\(^ {60}\) decision-making\(^ {61}\) and


behavior. Societies can and should care about the health and decision-making consequences of emotions.

A. Positive Emotions and Negative Emotions

Positive valence and negative valence emotions are a part of life and, therefore, a part of pandemics. Positive valence emotions due to COVID-19 and NPIs include empathy, gratitude, hope, and love. These positive emotions enable caring, collaboration, compliance with NPIs, cooperation, kindness, and optimism. Negative valence emotions due to COVID-19 and NPIs include anger, annoyance, fear, hate, and panic. These negative emotions fuel hate crimes, hoarding, protests, violence, and xenophobia.

Exposure to discourse about infectious diseases can increase people’s susceptibility to rumors, activate latent xenophobic tendencies, and spur ethnic violence. Contagious diseases trigger contamination concerns eliciting a pair of emotions, namely disgust and fear, which motivate comfort with the familiar, avoidance of the unfamiliar, distrust of and vigilance toward strangers, and perceptions of “others” as mortal threats. Not only can fear be inefficient, but there can also be inequality in the distribution of fear across demographic groups.

Negative emotions can be bad, like anger leading to violence or self-harm. Positive emotions can be good, like love motivating care for others or self. However, anger can also motivate positive reform, while love can also lead to negative acts of jealousy. Moreover,

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64 Courtney E. Ackerman, What are Positive and Negative Emotions and Do We Need Both? POSITIVEPSYCHOLOGY.COM (Apr. 29, 2020), https://positivepsychology.com/positive-negative-emotions/.
70 See infra Section II.F.
71 See infra Section II.H.
73 Chelsea Galoni et al., Pathogen Fear and the Familiar, 45 ADV. CONS. RES. 605 (2017).
there are cross-cultural differences in how positive and negative valences may co-exist in emotions.\textsuperscript{75}

Negative emotions often result from experiencing actual or perceived injustices and violations of accepted social or other norms. For example, romantic couples, non-romantic partnerships, and siblings often involve the dynamics of emotions related to doing one’s fair share of work or getting one’s fair share of scarce desired items. Essential workers have likely experienced a variety of emotions related to issues of equity or fairness of scarce resources throughout the COVID-19 pandemic. Natural questions that arise for medical professionals include whether they should work on the COVID-19 floors to help fight COVID. But, this raises the concern that they get sick, or that they go home and infect their partners, kids, and other family members. Even if they recover, their loved ones may not. This has led to COVID-19 guilt about not doing enough, or at least a conflict between doing more (for the sake of altruism, or self-image), and doing less (for the sake of self-preservation, or protecting those that they love). If there is a zero-sum conflict, there will always by definition be a winner and a loser. For the person who is weighing these options, it becomes a lose-lose situation. COVID-19 has exacerbated the hazard of health caregiver burnout to crisis levels.\textsuperscript{76}

Because COVID-19 unexpectedly overwhelmed hospitals, there was heroic and unprecedented medical improvisation, as well as inevitable, deadly, and ultimately avoidable medical errors and mistakes.\textsuperscript{77} COVID-19 forced hospitals to perform massive reallocation of medical resources and personnel in a very short time under intense pressure.\textsuperscript{78} Inexperienced, scared, and shocked junior residents were frantically reassigned, sometimes from psychiatry and family medicine to intensive care units, where they often fumbled over unfamiliar ventilators without guidance from overstretched supervisors who had to be putting out fires in another part of the hospital.\textsuperscript{79} Societies, including health care sectors, must learn how to do things better for the predicted third wave of COVID-19 and the foreseeable next pandemic. Positive and negative emotions will undoubtedly be recurring features in all future waves of COVID-19 and future pandemics.

\textit{B. Anger and Health Anxieties}

Pandemics and NPIs in response to pandemics can fuel anger and anxiety. Psychological research experiments found that people who feel anger are less likely to accept advice compared to people in a neutral emotional state.\textsuperscript{80} This finding may explain why some people who are angry about being unable to work (because they are complying with Stay At Home (SAH orders) will often not heed the advice to comply with other


\textsuperscript{78} Id.


\textsuperscript{80} Francesca Gino & Maurice E. Schweitzer, \textit{Blinded by Anger or Feeling the Love: How Emotions Influence Advice Taking}, 93 J. APPLIED PSYCHOL. 1165 (2008).
NPIs, such as to wear facemasks or physically distance. Other psychological research experiments found that anxious people also seek and take more advice, have impaired information processing and lower self-confidence, fail to differentiate between advisors with and without conflicts of interest, and fail to discern good from bad advice.\textsuperscript{81} This finding may also explain why some people who are anxious about having to comply with NPIs (such as orders to stay at home, wear facemasks, or distance) are more primed to heed the bad advice to “liberate” their states from their governors by violating NPIs and protesting in public offices or on government properties with visible displays of firearms.\textsuperscript{82}

Anxiety and depression rates skyrocket after viral infections.\textsuperscript{83} Pandemics also adversely impact mental health.\textsuperscript{84} In just a month, Americans’ fears over COVID-19 exploded.\textsuperscript{85} Mental health experts publicly expressed concerns that anxiety over COVID-19 spread faster than COVID-19.\textsuperscript{86} Polls during the COVID-19 pandemic found Americans

\textsuperscript{81} Francesca Gino et al., \textit{Anxiety, Advice, and the Ability to Discern: Feeling Anxious Motivates Individuals to Seek and Use Advice}, 102 J. PERSONALITY & SOC. PSYCHOL. 497 (2012).


\textsuperscript{83} Shawn D. Gale et al., \textit{Association Between Virus Exposure and Depression in US Adults}, 261 PSYCHIATRY REV. 73, 73 (2018); Leigh van den Heuvel et al., \textit{Frequency and Correlates of Anxiety and Mood Disorders Among TB- and HIV-Infected Zambians}, 25 AIDS CARE 1527 (2013).


concerned about their emotional well-being.\textsuperscript{87} Health,\textsuperscript{88} healthcare,\textsuperscript{89} and healthcare costs.\textsuperscript{90} Scientists even developed a seven-item Fear of COVID-19 Scale.\textsuperscript{91}

Mask anxiety provides a typical manifestation of this COVID-19 anxiety and fear documented by scientists and polls. Some people may experience mask anxiety from feeling unable to breathe due to a snug or tight-fitting face covering, or a pre-existing condition like asthma.\textsuperscript{92} Both possibilities may trigger people to remove their masks unsafely and risk COVID-19 transmission.\textsuperscript{93} Anxieties that cause people to remove their masks in public may also lead people to remove or store their masks in unsafe ways (there is a safe way to remove a facemask in public,\textsuperscript{94} including carrying a brown paper bag to safely store a mask when outside of the home.\textsuperscript{95}). It is important for individuals to understand that there are ways to manage anxiety about wearing a mask so that they do not improperly remove or store their masks and risk causing harm to others.\textsuperscript{96}

Anxiety about COVID-19 is partly due to people’s fear of the uncertain.\textsuperscript{97} By definition, pandemics involve the uncertain. The basic human desire for cognitive closure\textsuperscript{98} explains why people seek out constant media coverage of and engage in social media discussion about COVID-19. Such a plethora of information and misinformation can trigger anxiousness. For example, constant stalking of COVID-19 statistics may itself fuel

\begin{thebibliography}{99}
\footnotesize
\bibitem{91} Daniel Kwasi Ahorsu et al., \textit{The Fear of COVID-19 Scale: Development and Initial Validation}, INT’L J. MENTAL HEALTH & ADDICTION, 1, 8 (2020).
\bibitem{93} Id.
\bibitem{94} Id.
\bibitem{96} Abramson, supra note 92; Kate Mooney, \textit{11 Tips From Therapists on Coping With Anxiety During the Novel Coronavirus Pandemic}, ALLURE (Mar. 23, 2020), https://www.allure.com/story/therapist-tips-anxiety-coronavirus.
\end{thebibliography}
anxiety.99 While it is crucial for people to be informed, people often seek out and then misuse useless information.100 People may also avoid information they believe will be negative.101

C. Seeking Expert Opinions

Some people will crave and seek out expert opinion, especially during times of radical uncertainty.102 In pandemics, humility about our and others’ knowledge is worth remembering103 because “[n]o one can easily predict an unknowable future.”104 There is effectively an inexhaustible demand by the public and media for a non-existent supply of infallible predictions by experts and politicians. Infallible predictions by experts and politicians are impossible because the future course will depend on people’s actions and governmental policy.105

Because the public turns to media/experts in uncertain times, scientific literacy,106 numeracy,107 and risk or statistical literacy108 among the press, public, and policymakers is important in lessening anxiety, panic, or complacency during the COVID-19 pandemic. Numeracy can be objective (understanding and utilization of mathematical concepts) or subjective (feeling confident and comfortable with numbers).109 Some people may find it difficult to assess the unfamiliar mortality risks from COVID-19 relative to some more common and familiar risks, such as commuting, skydiving, or being a soldier in wartime.110 For example, an experiment demonstrated that even mere data framing in terms of whether

101 Russell Golman et al., Information Avoidance, 55 J. ECON. LIT. 96 (2017); Emily H. Ho et al., Measuring Information Preferences, MGMT. SCI. (forthcoming); Niklas Karlsson et al., The Ostrich Effect: Selective Attention to Information, 38 J. RISK & UNCERTAINTY 95 (2009); George Loewenstein, The Pleasures and Pain of Information, 312 SCI. 704 (2006).
the mass media and policymakers choose to present the evolution of COVID-19 deaths on a linear or logarithmic scale affects individuals’ understanding of the history of COVID-19 deaths, predictions about likely future time paths of COVID-19 deaths, and policy preferences over NPIs.\textsuperscript{111}

In the early stages of COVID-19, some reporters, private individuals, and politicians claimed epidemiological models were flawed because their worst-case scenario predictions failed to materialize.\textsuperscript{112} By definition, however, worst-case scenario forecasts often become self-unfulfilling because, “[w]hen an epidemiological model is believed and acted on, it can look like it was false.”\textsuperscript{113} When that happens, it is not a mistake in the model. Another way to understand this is to consider counterfactuals and multiple equilibria in a strategic interaction between humans and the coronavirus.\textsuperscript{114} If people take sufficient precautions, such as compliance with NPIs, and estimated worst-case outcomes do not come to be, that is a success story about how those precautions prevented a far worse reality. This phenomenon is an example of what is often referred to as a self-defeating prophecy or self-negating prediction, a prophecy or prediction that causes people to choose to behave in ways that produce an outcome that is the opposite of what they expected.\textsuperscript{115}

Unfortunately, “democracy amplifies the human bias for visible actions. Voters can’t evaluate what they don’t know. So voters reward the party of the president when it spends after a disaster. But they seem not to know or care at all what government does before disaster.”\textsuperscript{116} In the United States, “$1 spent on preparedness is worth about $15 in terms of the future damage it mitigates.”\textsuperscript{117} In spite of this, our “federal government typically spends five cents on preparedness for every dollar it spends on relief.”\textsuperscript{118} Bureaucracy and political manipulation of disaster declarations explain the American federal government’s cost-ineffective underinvestment in disaster preparedness.\textsuperscript{119} American voters provide little incentive for presidents and members of Congress to engage in spending on cost-effective preparedness.\textsuperscript{120} Instead, our political system incentivizes elected officials to engage in


\textsuperscript{113} Id.


\textsuperscript{117} Andrew Healy & Neil Malhotra, Myopic Voters and Natural Disaster Policy, 103 AM. POL. SCI. REV. 387 (2009).

\textsuperscript{118} Mendelberg, supra note 116.


visible mass spending for damage control largely after disasters cause visible harms, such as deaths.\footnote{Suzanne Mettler, The Submerged State: How Invisible Government Policies Undermine American Democracy (2011).}

\section*{D. Economic and Financial Anxieties}


\section*{E. Irrational Anxieties}

testing and tracing. Irrational anxiety similarly can be the psychological basis underlying financial panics, asset market crashes, and global economic crises in the form of recessions or depressions. Irrational anxiety and irrational exuberance may trigger such well-known cognitive biases as anchoring, availability bias, and confirmation bias.

Like stress, not all anxiety is bad or inappropriate. In other words, the individual and the socially optimal levels of anxiety are not zero, because anxiety may motivate individuals to be more careful. By its definition, “rational” anxiety is a level of anxiety that is appropriate for the situation and instrumentally helpful. It is rational to be anxious about pandemics, and a helpful level of anxiety spurs individuals to take precautions to stay safe. This type of defensive pessimism is a form of rational anxiety.

F. From Anxiety to Panic to Complacency

Pandemics can also trigger panics, defined as “sudden extreme anxiety or fear that may cause irrational thoughts or actions.” Panic behavior includes hoarding food and selling of stocks. Ironically, if matters improve or do not worsen over time, pandemics can lead to complacency, defined as “a feeling of contentment or self-satisfaction, especially when coupled with an unawareness of danger, trouble, or controversy.” Complacent behavior includes not following CDC recommendations to wear face coverings, practice physical distancing, self-quarantine, and self-isolate. Degrees of complacency may vary depending on people’s different experiences with COVID-19, as with one’s political affiliation.

If anxiety lies along a continuum, panic lies on the far right of that continuum with an excessive amount of anxiety, while complacency lies on the far left of that continuum with too little or no anxiety. Irrational anxiety is a level of anxiety that is too high, like panic, or too low like complacency. Panic is unhealthy for individuals because of the

unnecessary stress it causes and is unhelpful for decision-making because, by definition, panic causes overestimation about relevant probabilities. Complacency is unhealthy for individuals because of the recklessness it causes and is unhelpful for decision-making because it leads to underestimation about relevant probabilities.

People differ vastly in how much, when, and even whether they experience anxiety, complacency, and panic in pandemics. Further, the same individual may start by feeling some anxiety, then panic upon seeing empty grocery shelves in-person or on social media, and finally develop complacency upon settling into the routine of a new normal. Decision-making research experiments find the majority of humans display such a pattern of risk overestimation followed by risk underestimation, though a significant minority continue to exhibit risk overestimation and continue to engage in panic behaviors. A cross-cultural study found little consistency of individuals’ reactions across different types of rare events. People may differ in whether their anxiety rises to panic or falls to complacency if they rely on small samples of their experiences, and such experiences vary across individuals.

Ido Erev, the President of the European Association for Decision Making, Ori Plonsky, and Yefim Roth analyze how the simultaneity of panic and complacency exacerbates the consequences of pandemics. Erev, Plonsky, and Roth focus on three reasons underlying the coexistence of contradictory emotional reactions and behavioral responses to pandemics: (1) description-experience gap, (2) individual differences, and (3) role of experience on social interactions.

G. Description-Experience Gap

Ido Erev and Alvin E. Roth, Craig and Susan McCaw Professor of Economics at Stanford University (and Gund Professor of Economics and Business Administration Emeritus at Harvard) and a 2012 economics Nobel laureate, found that humans tend

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150 Id. at 2.
to underweight rare events when making decisions from experience.  

Erev, along with Ralph Hertwig, director of the Center for Adaptive Rationality at the Max Planck Institute for Human Development, reviewed a variety of studies to similarly find that decisions based on experience accord rare events less weight than their objective probabilities. These findings across three non-redundant experiential paradigms (sampling, full-feedback, and partial feedback) documented a robust and systematic description-experience gap, meaning that in experience-based decision-making people underweight rare events, while in description-based decision-making people overweight rare events. In other words, what decision an individual makes depends on whether that decision is based on prior experience or is based instead on a description of the decision problem facing that individual. Because people’s personal experiences influence their risk perceptions and behaviors, when risks are rare, people mostly experience the event’s non-occurrence, and underperceive such risks and behave accordingly. Non-human animals underweight rare events and overweight common ones because they can only make decisions based on experience as they are not able to process symbolic descriptive representations of risky choices.

The description-experience gap explains why people initially overestimate pandemic risks, including death, infection, severe disease, and transmission, when they first learn of a pandemic through descriptions of that pandemic in the media, social media, and by word-of-mouth. The description-experience gap also explains why people subsequently underestimate pandemic risks when they have first-hand experiences with a pandemic that are not immediately and visibly life-threatening. The description-experience gap thus explains the time course of most people’s risk perception and behavior during pandemics. Many people’s responses to terrorism displayed a similar temporal pattern. There are many behavioral reasons why well-intentioned people, including hard-working physicians, do not wash their hands, and among these reasons is the description-experience gap.

Erev predicts that analogous phenomena will occur for COVID-19 with people self-isolating initially, after which those who don’t get sick will feel nothing bad is happening.

156 Id. at 518.
157 Id. at 522.
159 Carey, supra note 141; Ido Erev, On the Weighting of Rare Events and the Economics of Small Decisions, in DEVELOPMENTS ON EXPERIMENTAL ECONOMICS: NEW APPROACHES TO SOLVING REAL-WORLD PROBLEMS 59, 70-71 (Sobei H. Oda ed., 2007); Eldad Yechiam et al., The Role of Personal Experience in Contributing to Different Patterns of Response to Rare Terrorist Attacks, 49 J. CONFLICT RESOL. 430, 430 (2005).
160 Ido Erev et. al., The Value of ‘Gentle Reminders’ on Safe Medical Behavior, 24 QUALITY SAFETY HEALTH CARE e49, e49 (2010).
Computer simulations of a simple Panic (hoarding groceries) or Trust (normal buying) game found that individuals relying on a small number of observations leads everyone to panic. Computer simulations of a simple Safe (staying home) or Reckless (running errands) game found individuals relying on a small number of observations leads everyone to recklessness. The simulations show that over time, the same person may undergo oscillations of panic and complacency as they base decisions on descriptions versus experiences. Different people may feel anxiety and complacency at different rates and times. At any one moment in pandemics, most of society will be anxious, with some complacent, and some panicked. Hoarding can be an individually rational response to seeing others have hoarded in the past. If an individual buys responsibly, that individual may find that some necessity in nearby stores and online is temporarily out of stock. So, once that individual sees that necessity in stock again, that individual may buy more than immediately necessary the second time because that individual may buy more than immediately necessary the second time because that individual becomes concerned about future shortages. There is a difference in motivation between irrational panic versus precautionary purchasing, though both can be self-fulfilling in terms of creating the very shortage desired to be avoided.

Any policy that decreases complacency runs the risk of stirring up panic. Reducing complacency without inciting panic is a difficult balancing act. For example, psychologists have found evidence of an identifiable victim effect, whereby people are willing to do more to save the life of an identified than unidentified or statistical victim. Most official government press conferences and media coverage about COVID-19 have been framed in terms of numerical data or statistical visualizations. In contrast, we have not seen a lot of unfiltered photos and videos of the anguish, deaths, and suffering from COVID-19.

Oregon Health & Science University emergency physician Dr. Esther Choo argued for revisiting medical privacy laws to allow the American public to see the hellish conditions in hospital emergency rooms. The New York City police department seized a $1500 drone of photojournalist George Steinmetz and issued him a misdemeanor summons for violating an avigation law after the drone photographed mass burials of COVID-19 victims on Hart Island, a New York City public cemetery. If people had seen such horrific, unsettling images, they would have been more likely to comply with NPIs.

Former Associate Justice of the Supreme Court of the United States Oliver Wendell Holmes Jr. wrote this about photographs of the carnage during the Civil War: “Let him

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162 Carey, supra note 141.
163 Erev et al., supra note 146, at 3, 4 tbl.1, 10.
164 Id. at 4, 5 tbl.2, 10.
who wishes to know what war is look at this series of illustrations.” Harvard University professor Sarah Lewis observed,

Images that emerge as an emblem of sacrifice or consequence have often moved masses to act. Yet without these pictures, the virus is harder to combat…. I will remain focused on the absence of something else—a representative, visual archive of the staggering human toll of the crisis from which might emerge, in time, our emblematic pictures. For society to respond in ways commensurate with the importance of this pandemic, we have to see it. For us to be transformed by it, it has to penetrate our hearts as well as our minds.

Images force us to contend with the unspeakable. They help humanize clinical statistics, to make them comprehensible. They step unto the breach.

Pictures make descriptions more vivid and close the description-experience gap by showing experiences that other individuals have had.

H. Emotions, Anti-Asian Racism, and Anti-Asian American Racism

During COVID-19, fears about health and finances led to anger over NPIs and life disruptions, which in turn led to hatred and hate crimes against Asian Americans and Asian immigrants. A Pew Research Center survey found about 40% of Asian and Black Americans in addition to 27% of Hispanics had adverse experiences due to their ethnicity since COVID-19. This Part of the Article analyzes how COVID-19-related emotions

171 Oliver Wendell Holmes, Soundings from the Atlantic 266-67 (1864).
such as fear, anger, and hate have fueled anti-Asian racism and anti-Asian American racism.

Robert P. Jones, CEO and founder of the Public Religion Research Institute, wrote, “If history has a lesson for us here, it is this: Where there is a massive wave of suffering and death, a second wave of racism and xenophobia is typically not far behind. Experiences of mass grief and economic stress easily generate a desire for someone to blame.” Jones recounted, an “outbreak of smallpox in San Francisco in 1876 was blamed on the Chinese population, sentiment that fueled the passage of the Chinese Exclusion Act in 1882.” Jones also cited how “Nazi Germany propaganda associated Jews living in poorer sections of German cities with being disease vectors for the broader population and metaphorically talked of Jews as being themselves a disease that had infected Europe.”

Unfortunately, in crises, people have a strong propensity to crave scapegoats to blame for the failures of their (possibly hapless) leaders, who sometimes are all too willing to provide a never-ending supply of potential scapegoats for their followers to hate. Shared anger amongst an in-group against an out-group, real or imagined, is unifying and psychologically satisfying. Political scientist Steven W. Webster utilizes novel datasets, experiments, and surveys to demonstrate that anger has become the central emotion ruling current American political behavior and public opinion. Webster notes that while anger has the beneficial potential to motivate political interest and involvement, anger also causes the harmful political results of decreased trust in government, reduced commitments to democratic norms and values, and negative partisanship. Webster presents evidence that political elites strategically stoke anger among their supporters because voter anger causes voter loyalty. Political scientist Davin L. Phoenix utilizes experiments, rhetoric analysis, and survey data to demonstrate that Asian Americans, just like African Americans and Hispanic Americans, display significantly less anger than white Americans, and that anger is weaker than pride in mobilizing political participation for these groups.

Psychologists found that college students who watched a video of the 9/11 attacks, compared to those who did not, had significantly more favorable attitudes toward the American president, more positive reactions toward such patriotic symbols as the


About PRRI, PUB. RELIGION RES. INST., https://www.prri.org/about/.


Id.

Id.


See generally STEVEN W. WEBSTER, AMERICAN RAGE: HOW ANGER SHAPES OUR POLITICS (2020).

Id. at 4-22, 74-121.

Id. at 26-27, 28-57, 122-45.

American flag and the Statue of Liberty, and more pro-conservative political views.\textsuperscript{187} Interestingly, the increases were largest among students who felt anger, as opposed to anxiety.\textsuperscript{188} This research suggests that anger directed toward a shared enemy may be stronger than fear in unifying followers behind their leaders.

Even early on, COVID-19 led to scrutiny of Asian Americans.\textsuperscript{189} As COVID-19 continued, some socially irresponsible political leaders used inflammatory rhetoric about the coronavirus to—perhaps intentionally—institute racial and ethnic anger, frustration, and hatred towards Asian Americans and Asian immigrants.\textsuperscript{190} An on-again and off-again war of words against China by some American politicians during COVID-19 had the effect of inciting harassment toward,\textsuperscript{191} hate crimes against,\textsuperscript{192} scapegoating of,\textsuperscript{193} and slurs about\textsuperscript{194} Asian Americans and Asian immigrants. The animus was often even directed at Asian Americans and Asian immigrants who were not Chinese American or Chinese.\textsuperscript{195}

Microaggressions can lead to aggressions and even macroaggressions.\textsuperscript{196} For example, in April 2020 a man wearing a facemask, gloves, and a black hooded sweater, light colored sweatpants and light colored sneakers can be seen in photos, released by the New York City police department, sitting on a stoop outside a building in Dyker Heights, Brooklyn.\textsuperscript{197} This man was apparently waiting for an Asian woman to exit that building to take out her trash, at which point he stood up without any interaction between them, walked up behind her carrying a bottle in his right hand, and proceeded to douse her with some unknown liquid that caused her to suffer chemical burns on her face, back, and neck, before he ran away.

\begin{thebibliography}{9}
\bibitem{phillips2020} Kristine Phillips, \textit{‘We Just Want to be Safe’: Hate Crimes, Harassment of Asian Americans Rise Amid Coronavirus Pandemic}, \textit{USA TODAY} (May 21, 2020, 6:00 AM), https://www.usatoday.com/story/news/politics/2020/05/20/coronavirus-hate-crimes-against-asian-americans-continue-rise/5212123002/.
\end{thebibliography}
Anxiety over death from pandemics, such as swine flu, have been found to boost patriotic identities and may promote intolerance, greater stereotyping, and prejudice toward foreigners.\(^{198}\) COVID-19 thus led Asian Americans to suffer anxieties about being victimized by hate crimes and racist incidents.\(^{199}\) Some Asian-American leaders denounced the hate and violence to little avail.\(^{200}\) Asian-American actors, advocates, and creatives offered ways to foster compassion, inclusivity, and love during COVID-19.\(^{201}\)

Despite the dominant, popular narrative about Asian Americans being the so-called model minority (for example, studious, hard-working, and good at mathematics), there is an unfortunate history of anti-Asian American racism in America.\(^{202}\) Even before COVID-19, many Asian Americans felt that American media portrayed them—and other Americans saw them—as perpetual foreigners.\(^{203}\) Korean-American actor John Cho wrote an opinion piece about how COVID-19 reminds Asian Americans, like himself, of the conditional nature of their belonging in America.\(^{204}\) The Los Angeles Times produced a thoughtful video titled, *Epidemic of Hate: Anti-Asian Xenophobia Amid Coronavirus.*\(^{205}\) Ironically, the targets of misplaced Asian-American anger, bigotry, fear, and frustration included some Asian-American physicians assisting COVID-19 patients.\(^{206}\) Asian Americans represent 6% of the United States population, 10% of nurse practitioners, and 18% of physicians.\(^{207}\) Some COVID-19 patients have refused being treated by Asian Americans.\(^{208}\)

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III. ECONOMIC SHOCKS

COVID-19 disrupted economies globally through three shocks: (1) medical shocks from the sick and dead neither working nor consuming; (2) economic impacts from medical containment measures, such as pausing economic activities and travel bans; and (3) reduced economic expectations leading businesses and consumers to adopt wait-and-see attitudes and postpone spending. These aggregate supply and demand shocks led to massive, sudden unemployment for many people.

A. Unemployment

During three weeks “from March 16 to April 3, 16 million [United States] workers lost their jobs – more losses than the Great Recession produced over two years.” Over one month, United States unemployment applications reached over twenty-two million, “roughly the net number of jobs created in a nine-and-a-half-year stretch that began after the last recession and ended with the pandemic’s arrival.” Over five weeks, the number of United States jobs lost approximated the working populations of twenty-five states. These sobering statistics underestimate the actual jobless numbers, as states are overwhelmed by unemployment claims. Unemployment also creates lingering productivity losses of about 2% per quarter, or equivalently 8% per year.


216 Walsh, supra note 212, (interviewing economist Edward Lazear, Davies Family Professor of Economics at Stanford University Graduate School of Business, who served as chief economic advisor to President George W. Bush during the economic crisis of 2007–2008).
Additionally, the distribution of economic hardships and financial suffering from unemployment was unevenly distributed across the population and exacerbated existing economic inequities, gender inequalities, and racial disparities. Around half of lower-income Americans reported job or wage loss; women were the majority of those applying for unemployment insurance claims; and among the most severely impacted by pay and job cuts were African Americans, Hispanic Americans, and Asian Americans.

Survey data from repeated cross-sections of Americans from June 2020 to October 2020 found “evidence of a building ‘second wave’ of negative shocks to household finances and of growing inequality in financial fragility by household income, educational attainment, and gender from August to September/October of 2020.” Even those who remain employed, who are mostly wealthier, white-collar, and predominantly Caucasian, experienced such forms of cognitive taxation as balancing childcare with job tasks, hurriedly designing acoustically separate, functional, and healthy at-home workspaces, and other psychological stressors.

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B. A False Trade-off

The severe global economic recession caused by COVID-19 and NPIs in response to COVID-19\textsuperscript{230} led to understandable concerns about how societies can and should trade off public health versus economic wealth. The concerns centered on whether the side-effects of NPIs were worse than COVID-19 in terms of some metric, be that dollars, lives lost, quality-adjusted life years, or subjective well-being.\textsuperscript{231} A survey asked academic economic experts whether discontinuing severe lockdowns when the likelihood of a resurgence in infections remained high would lead to more total economic harm than maintaining lockdowns to prevent resurgence.\textsuperscript{232} All forty-four respondents responded yes.\textsuperscript{233} A pair of economists also found states that implemented SAH NPIs did not have greater job losses than states that did not implement SAH NPIs.\textsuperscript{234}

Even if businesses open up, many customers are likely to stay away initially.\textsuperscript{235} As Betsy Stevenson, University of Michigan professor of economics and public policy,\textsuperscript{236} observed, "If we open tomorrow, few are going to be willing to take the risk of engaging fully in the economy. Who wants to be the guinea pig who tests how dangerous going to a crowded restaurant still is?"\textsuperscript{237} A field study found restaurant air conditioning ventilation systems can cause air currents and complex patterns of airflow to keep virus particles airborne to spread COVID-19.\textsuperscript{238} Other studies suggested the possibility of airborne


\textsuperscript{233}Id. at Question B.


\textsuperscript{236}Betsey Stevenson, \textit{Professor of Public Policy, Professor of Economics (by courtesy)}, U. OF MICH. GERALD R. FORD SCH. OF PUB. POL’Y, http://fordschool.umich.edu/faculty/betsey-stevenson.

\textsuperscript{237}Carroll, supra note 235, at 27.

transmission of COVID-19 in hospitals, medical centers, air pollution, and from loud speech.

Dr. David L. Katz, who has “expertise in nutrition, health promotion, and the prevention of chronic disease,” wrote an opinion piece arguing that Americans, except for the most vulnerable to COVID-19, should return to their pre-COVID-19 lives in order for the United States to develop natural herd immunity and preserve the American economy. Katz’s editorial generated controversy among public health experts. Dr. Sten H. Vermund, infectious disease epidemiologist, and three epidemiology professors

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248 Sten H. Vermund, MD, PhD, Dean and Anna M.R. Lauder Professor of Public Health, Professor of Pediatrics, Yale School of Medicine, YALE SCH. OF PUB. HEALTH, https://publichealth.yale.edu/profile/sten_vermund/.
at the Yale School of Medicine, Dr. Gregg Gonsalves,249 Dr. Becca Levy,250 and Dr. Saad Omer;251 took issue with Katz’s editorial and responded with their own,252 noting that who is most vulnerable to COVID-19 is currently unknown. Two physicians, Dr. David S. Ludwig253 and Dr. Richard Malley,254 wrote another opinion piece,255 stating that Katz offers a false choice because many Americans live with such chronic health issues as cardiovascular disease, diabetes, and obesity, making them vulnerable to COVID-19.

The CDC considered people with severe obesity, defined to be a body mass index (BMI) over 40, to be at risk of developing serious conditions from COVID-19.256 Preliminary data suggests obesity, defined as BMI over 30, is a risk factor for COVID-19.257 Roughly 42% of Americans, or about 80 million people, are obese.258 Around 88%

249 Gregg Gonsalves, PhD, Assistant Professor of Epidemiology (Microbial Diseases); Associate (Adjunct) Professor of Law, Yale Law School; Co-Director, Global Health Justice Partnership; Co-Director, Collaboration for Research Integrity and Transparency, YALE SCH. OF MED., https://medicine.yale.edu/profile/gregg_gonsalves.

250 Becca Levy, PhD, Professor of Public Health (Social and Behavioral Sciences) and Psychology, YALE SCH. OF MED., https://medicine.yale.edu/profile/becca_levy/.

251 Saad Omer, Director, Yale Institute for Global Health; Associate Dean (Global Health Research), Yale School of Medicine; Professor of Medicine (Infectious Diseases), Yale School of Medicine; Susan Dwight Bliss Professor of Epidemiology of Microbial Diseases, Yale School of Public Health YALE SCH. OF MED., https://medicine.yale.edu/profile/saad_omer/.


253 David S. Ludwig, MD, PhD, Co-director, New Balance Foundation Obesity Prevention Center; Attending Physician, Division of Endocrinology Professor of Nutrition, Harvard School of Public Health; Professor of Pediatrics, Harvard Medical Schoo Professor of Nutrition, Harvard T.H. Chan School of Public Health, and Professor of Pediatrics, BOS. CHILD. HOSP., http://www.childrenshospital.org/research/researchers/l/david-ludwig.

254 Richard Malley, Senior Physician in Pediatrics, Division of Infectious Diseases, Professor of Pediatrics, Harvard Medical School, BOS. CHILD. HOSP., http://www.childrenshospital.org/directory/physicians/m/richard-malley.


of Americans live with high blood pressure, high cholesterol, diabetes or pre-diabetes, which are all big risk factors for COVID-19 illness and death.\textsuperscript{259}

Economist Joshua Gans integrates a canonical epidemiological model\textsuperscript{260} and the basic economic notion of a set of production possibilities.\textsuperscript{261} Gans’ analysis provides two reasons why a government’s optimal response to a pandemic should be to prioritize public health over economic wealth.\textsuperscript{262} First, considering small trade-offs between public health and economic wealth does not work in pandemics.\textsuperscript{263} Second, prioritizing economic wealth is an irreversible decision because doing so fails to preserve valuable public health options.\textsuperscript{264}

Economists also modified the canonical epidemiological model to incorporate household economic activity.\textsuperscript{265} Economic models demonstrate people’s mitigation incentives are not socially optimal because consumption and work choices not only have infection rate and health care congestion, those choices also exhibit fatalism about future infection.\textsuperscript{266} A calibrated model that assumes people mitigate by working from home and improve their productivity by learning by doing,\textsuperscript{267} generates quantitatively meaningful reductions in disease spread and economic costs.\textsuperscript{268} Economists analyzed NPIs in response to the 1918 flu pandemic and found United States cities that enacted NPIs sooner and more aggressively reduced mortality and better mitigated adverse economic consequences.\textsuperscript{269} Behavioral and social science research provide insights on how to achieve large-scale behavior changes that NPIs aspire to accomplish.\textsuperscript{270} Reducing anxiety is one way to do this.

Irrational anxiety is anxiety that leads to misestimation of probabilities about risks.\textsuperscript{271} For example, non-COVID-19 patients may delay or even refuse critical care such as organ transplants during COVID-19 due to irrational anxiety.\textsuperscript{272} Similar to many cognitive


\textsuperscript{261} JOSHUA GANS, \textit{ECONOMICS IN THE AGE OF COVID-19} (2020).

\textsuperscript{262} \textit{Id.} at 4, 11, 23 fig. 1-3.

\textsuperscript{263} \textit{Id.} at 11, n.10. \textit{See also} Tiberiu Harko et al., \textit{Exact Analytical Solutions of the Susceptible-Infected-Recovered (SIR) Epidemic Model and of the SIR Model with Equal Death and Birth Rates}, 236 APPLIED MATHEMATICS & COMPUTATION 184 (2014).

\textsuperscript{264} GANS, supra note 261, at 5-6, 12, 25 fig.1-4.


\textsuperscript{266} \textit{Id.}


\textsuperscript{268} When “a private agent knows that she is likely to be infected in the future, this reduces her incentives to be careful today.” Jones et al., supra note 265, at 3.


\textsuperscript{271} See generally Huang, supra note 128.

\textsuperscript{272} Katie Hafner, \textit{Fear of Covid Leads Other Patients to Decline Critical Treatment}, N.Y. TIMES (May 20, 2020), https://www.nytimes.com/2020/05/25/health/coronavirus-cancer-heart-treatment.html; Denise Lu, \textit{There Has been an Increase in Other Causes of Deaths, Not Just Coronavirus}, N.Y. TIMES (June 1, 2020),
biases, irrational anxiety reflects a particular type of inattention that inhibits rational estimates of relevant probabilities. In this sense, irrational anxiety is a form of mindlessness. Not surprisingly then, practicing mindfulness is one way to lessen anxiety.

Part III demonstrates the COVID-19 pandemic was not just a health crisis. COVID-19 precipitated economic and financial crises in terms of massive unemployment and global recessions. Unfortunately, COVID-19 also led to belief in a false tradeoff between public health versus economic wealth.

IV. COVID-19 INFORMATION ACQUISITION OR AVOIDANCE

Why do some people, including some leaders, actively seek information about COVID-19, while others just as actively avoid information about COVID-19? This question is an important, timely, and special case of the more general question as to how people decide what information to acquire and what information to avoid. These epistemological questions exemplify the field of cognitive economics, which has been defined as “the economics of what’s in people’s minds.”

A traditional perspective towards information is that people value and therefore demand information to improve their decision-making processes. This conventional viewpoint about information underlies policies of mandatory disclosure in many areas of law, including consumer credit, health, and securities regulation. Another source of information demand rests on the motivation of satisfying curiosity, interpreted as a type of cognitively induced deprivation due to a perceived gap about knowledge or understanding.

Recent research addresses the related issues of information acquisition and avoidance. Behavioral economists Russell Golman and George Loewenstein introduce a novel theory about preferences for acquiring or avoiding information. Their theory builds on Loewenstein’s notion of information gaps, defined as questions a person is aware of, yet remains uncertain of the correct answers. Their information preference theory simultaneously explains why people seek to acquire decision-irrelevant information (e.g., answers to trivia questions) and seek to avoid possibly decision-relevant information (e.g., medical diagnostic test results). This theory also accounts for people seeking...
information they enjoy thinking about (“savoring effect”) and avoiding information they do not enjoy thinking about (“ostrich effect”).

This information preference theory rests on an economic model where people’s utilities depend on their beliefs, weighted by how much attention people devote to those beliefs. Information can improve decision-making and affect utilities directly by changing beliefs and redirecting upon which beliefs people focus attention. Experimental evidence supports the three principal hypotheses of this theory, namely that people are willing to spend more resources (effort and time) to acquire information that (1) seems more important, (2) is more salient, and (3) is more pleasurable.

The three principal hypotheses of this theory imply people are more willing to acquire information about COVID-19 if they believe such information is more important, salient, and pleasurable. Because most information about COVID-19 is not pleasurable but highly salient, the remaining factor that effectively determines whether people seek to acquire or avoid information about COVID-19 is whether people believe the information is important. People who believe that COVID-19 is a serious public health threat likely believe information about COVID-19 is important. People who believe that COVID-19 is a hoax presumably believe that information about COVID-19 is not important. This information preference theory also implies that some people’s avoidance of information about COVID-19 is intensified by such non-instrumental motivations as expected negative valence of emotional reactions to certain information.

In the United States, political affiliations also motivate the avoidance or seeking of information about COVID-19. Relatedly, people who hold one set of beliefs, for example concerning the incompetency or competency of American presidential leadership, often dislike people holding different beliefs. The United States is unfortunately exceptional in having its individual and leadership responses to COVID-19 become highly partisan and politicized. For example, whether K-12 schools, as well as colleges and universities, should open in fall 2020 became politically contentious topics of debate. A question that COVID-19 raises is how to motivate people to acquire, instead of avoid, scientifically accurate information.

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284 Id.
285 Id.
286 Id.
287 Russell Golman et al., The Preference for Belief Consonance, J. ECON. PERSP. 165 (2016).
291 Peter H. Huang & Debra S. Austin, Unsafe at Any Campus: Don’t Let Colleges Become the Next Cruise Ships, Nursing Homes, and Food Processing Plants, 96 IND. L.J. SUPPLEMENT 25 (2020).
V. POLICY RESPONSES TO PANDEMIC HAMRS

Pandemics cause massive tragic economic, emotional, mental, physical, and psychological suffering. These harms are interconnected and lead to vicious cycles. Fear distorts people’s decision readiness, deliberation, information acquisition, risk perception, and thinking. Distortions affect people’s financial, health, and political decisions, causing additional fears. Emotions have direct health impacts and indirect behavioral impacts, which in turn have their own health impacts. This Article advocates policy responses to pandemics: directly paying people monthly financial assistance, encouraging people to practice mindfulness, and gentle enforcement of NPIs.

A. Monthly Pandemic Financial Assistance

American voters supported a financial stimulus package of money paid directly to people, instead of to large corporations, by a 94% margin. Yet, the United States Congress and President chose the indirect and cumbersome route of requiring small businesses to apply through banks for loans that will be forgiven if: the proceeds are used to cover payroll costs, and most mortgage interest, rent, and utility costs over the two month period after the loan is made, and if the small business maintains employee and compensation levels. The first round of the Paycheck Protection Program (PPP) of the United States Coronavirus Aid, Relief, and Economic Security (CARES) Act authorized $349 billion dollars for loans. The PPP ran out of money within only two weeks, in addition to experiencing access problems, technological delays, and loopholes permitting large corporate chains and companies with accounting problems or legal troubles with the federal government to benefit over small businesses. Small business owners filed class action lawsuits alleging JPMorgan Chase, Wells Fargo, Bank of America, and US Bank engaged in unfair lending practices in order to earn higher commissions from the federal government. The second round of the PPP authorized an additional $310 billion for loans and an additional $10 billion for administrative costs.

If the goal of the PPP is to protect people’s paychecks, involving banks is unnecessary, and the government should instead pay people directly the amount of their

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293 U.S. DEP’T OF THE TREASURY, PAYCHECK PROTECTION PROGRAM (PPP) INFORMATION SHEET.
298 Editorial Board, supra note 296.
paychecks as reported on their monthly pay stubs. Many countries, like Denmark and Germany, paid employers to continue paying employees and preserve jobs. Such policies are economically sensible. The already burdensome United States’ policy requiring people to apply for unemployment insurance was more cumbersome as the United States’ technologically antiquated unemployment system was overwhelmed. Further, for most individuals, health insurance is an employment fringe benefit, so unemployment means no employer-subsidized health insurance.

Policies that make economic sense are also psychologically sound because unemployment has long-term psychological effects. Conversely, employment provides people with many psychological benefits. At its best, work offers people identity, meaning, and structure to life. Work provides people financial benefits (such as money and livelihoods) and psychological benefits (such as meaning and purpose). Paying employers to pay employees throughout the pandemic maintains financial and psychological benefits by preserving work in addition to income.

To reduce financial anxieties and cushion economic hardships caused by pandemics and NPIs, governments can and should pay people pandemic monthly financial assistance until unemployment figures fall back to their pre-COVID-19 levels. Continuing pandemic monthly financial assistance as long as unemployment remains high is an example of what

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306 Id.


308 Lucchesi, supra note 229.


macroeconomists call an automatic stabilizer, a fiscal policy that automatically stabilizes incomes, consumption, and business spending. This stabilizer is automatic because it does not require any explicit further government action.

United States congresswoman Tulsi Gabbard proposed pandemic financial assistance of $1000 per month. Representatives Ro Khanna (California) and Tim Ryan (Ohio) proposed the Emergency Money for the People Act to provide income-qualified Americans at least sixteen years of age with a $2,000 monthly check guaranteed for six months or until “employment returns to pre-COVID-19 levels.” Numerous political leaders proposed similar monthly payments to cover workers’ lost salaries.

Such payments are essentially an income-qualified, interim form of universal basic income (UBI). Andrew Yang wrote a book advocating a UBI to mitigate great structural job displacement due to automation, financialization, globalization, and technological change, and made UBI, in the form of a freedom dividend, a centerpiece of his 2020 Democratic presidential campaign. A recent symposium considered theoretical aspects of UBI and the potential role of UBI in the United States, other developed countries, and developing countries. There is enough evidence to suggest UBI can help reduce

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health inequities around the world.\textsuperscript{324} Chris Hughes, a co-founder of the Economic Security Project,\textsuperscript{325} argues for a UBI to address fundamental economic inequality, injustice, and precariousness by making the American economy resilient in facing adversity, change, and disruption.\textsuperscript{326}

Law professors Miranda Perry Fleischer\textsuperscript{327} and Daniel Hemel\textsuperscript{328} have made a libertarian case for UBI\textsuperscript{329} and identified practical building blocks of a UBI.\textsuperscript{330} As Fleischer and Hemel note, the notion of a UBI dates back to sixteenth century English Catholic thinker Thomas More, and UBI supporters included English-born American revolutionary writer Thomas Paine, civil rights leader Martin Luther King Jr., conservative economist Milton Friedman, and President Richard Nixon.\textsuperscript{331} Hemel and Fleischer advocated in response to COVID-19 that “A program of monthly payments to all Americans—with the same amount per child and per adult, and without unnecessarily complicated eligibility cutoffs—is the best way to get cash out the door and to sustain support throughout a crisis with no end in sight.”\textsuperscript{332}

To justify equal payments to adults and children, Fleischer and Hemel cited three studies suggesting that increasing a family’s income can generate positive long-run consequences for children.\textsuperscript{333} Paying uniform monthly financial assistance to everyone in the United States without income or other qualifications eliminates administrative

\textsuperscript{325} *Who We Are*, ECONOMIC SECURITY PROJECT (Oct. 20, 2020), https://www.economicsecurityproject.org/team/.
\textsuperscript{332} Id.
complexities, removes incentives to earn below the income-eligibility threshold, and addresses moral worthiness debates and outrage.  

The Stanford Basic Income Lab, an initiative of the McCoy Family Center for Ethics in Society, asked six partners in its research community whether and why cash transfers should be targeted or universal in responding to pandemics, financial crises, or natural disasters. All respondents provided reasons for universal cash transfers, including access, efficiency, equity, reduction of administrative error, and inclusivity.  

Research about the psychology of scarcity provides additional support for paying monthly financial assistance. Princeton University psychology and public affairs professor Eldar Shafir, and University of Chicago professor of computation and behavioral science Sendhil Mullainathan, wrote a book drawing on psychology of scarcity research to explain how a scarcity mindset imposes cognitive loads and reduces cognitive bandwidth and capacity, leading to compromised decision-making in domains including finance and health. Shafir marshals psychology of scarcity research to support President Franklin Delano Roosevelt’s aspiration of a society with “freedom from want.” Poverty, of finances, time, and social companionship, has adverse mental health and behavioral consequences. Paying monthly financial assistance addresses financial poverty.

To encourage immediate consumer spending, the government could pay financial assistance in the form of a universally accepted debit card that expires after some time. Lower income people would likely spend their monthly financial assistance on such necessities as groceries, rent, utilities, and other essential bills. Because money is fungible, it facilitates access to and efficiency of these necessities.

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338 Id.
it is an open empirical question whether monthly financial assistance would merely crowd out other spending by wealthier people.

How could the federal government afford to pay for such monthly financial assistance? Concerns about large United States federal government deficits burdening future generations are economically flawed because real interest rates are negative, and large deficits can be and have been financed by economic growth. The new consensus among many economists, including some economists concerned about running a budget deficit, is that the federal government is not spending nearly enough to help Americans financially. Stephanie Kelton, professor of economics and public policy at Stony Brook University, is a leading proponent of modern monetary theory, which discredits federal deficit myths and explains “the monetary power of a currency-issuing government.”

Central banks can fund monthly financial assistance to individuals by simply printing money. This would be an example of what economists and some journalists refer to as “helicopter money,” a concept made famous by then Federal Reserve Board Governor Ben Bernanke in a speech. In discussing the CARES Act, former businessperson Wolf Richter pointed out, “If the Fed had sent that $1.77 trillion to the 130 million households in the US, each household would have received $13,600. But no, this was helicopter money exclusively for Wall Street and for asset holders.” The CARES Act also embedded $174 billion of temporary tax breaks primarily for large corporations and rich people. Tax law professor Victor Fleischer observed that many tax benefits in the CARES Act amount to “shoveling money to rich people.”

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358 Drucker, supra note 356.
B. Practicing Mindfulness

Prolonged physical distancing, self-isolation, and self-quarantine can cause loneliness, which is linked to adverse mental health, morbidity, and mortality.\(^{359}\) Loneliness is a palpable, uncomfortable emotion\(^ {360}\) with adverse physical health consequences, distressing mental health impacts, and potential for harmful substance abuse as a self-coping mechanism.\(^ {361}\) A related paper analyzes loneliness during COVID-19 and evidence-based interventions to mitigate loneliness, including practicing mindfulness, talk therapy (cognitive behavioral therapy) and inclusion.\(^ {362}\) Reducing anxiety produces important health benefits.\(^ {363}\) It also generates positive externalities, such as improving ethical decision-making\(^ {364}\) and reducing loneliness\(^ {365}\) produced by self-quarantining or self-isolation.

It is well-documented that practicing mindfulness can reduce anxiety.\(^ {366}\) An app-delivered awareness training reduced physician anxiety by 57% in one study.\(^ {367}\) There are many free, online guided mindfulness exercises.\(^ {368}\) Mindfulness practice also directly helps


\(^{365}\) Emily K. Lindsay et al., Mindfulness Training Reduces Loneliness and Increases Social Contact in a Randomized Controlled Trial, 116 PROC. NAT’L ACAD. SCI. 3488 (2019).


people make better decisions about eating, financial literacy, health, politics, and sleep. Mindfulness can mitigate implicit racial bias. Because implicit bias is not the same as discrimination, mindfulness importantly also reduces racially discriminative behavior. Rhonda V. Magee, University of San Francisco School of Law professor, offers practical research-grounded mindfulness-based contemplative practices to enhance what she calls color insight: an understanding of race and its pervasive operation in our lives and in the law.

Dr. Donald A. Redelmeier, University of Toronto internist and researcher, and Eldar Shafir analyze eight behavioral pitfalls about judgment under uncertainty posing challenges to compliance with NPIs in response to COVID-19: fear of the unknown, personal embarrassment, lack of clear and timely feedback, neglect of competing risk, hindsight bias, ingrained social norms, invisible diseases, and status quo bias. They conclude their analysis by noting practicing mindfulness helps to develop awareness.

Mindfulness also increases compassion and empathy. Practicing a specific form of meditation, known as “loving kindness” mindfulness meditation, can foster compassion,
empathy, and gray brain matter, while decreasing implicit intergroup bias, negative symptoms of schizophrenia spectrum disorders, posttraumatic stress disorder, self-criticism, and even the aging process. Practicing gratitude can increase pro-social behavior, reduce competitive behavior in threatening interactions, and promote risk-aversion. Gratitude also reduces economic impatience, which can result from sadness.

People’s emotions may also be implicit, occurring without attention or intention and if not unconscious, occurring below awareness. Practicing mindfulness helps people become more aware of the underlying sources of their emotions. Awareness of the sources of emotions can help individuals regulate their emotions and reduce the duration and impact of negative emotions.

This Article advocates encouraging people to practice mindfulness. Leaders and the government can encourage mindfulness in many forms including verbal suggestions, subsidizing those mindfulness apps that are currently not free, and role modelling. Similarly, there are numerous ways to engage in mindfulness, including being aware and focusing while washing one’s hands. A crucial NPI can thus be reformulated as merely an exercise in mindfulness.

This Article is not suggesting that society mandate practicing mindfulness because that is neither possible nor desirable. Mindfulness can have negative effects for some people. It also is an open question whether practicing mindfulness is more effective for

384 Huang & Poore supra note 27, at 263-65.
386 Eri Sasaki et al., Gratitude Inhibits Competitive Behavior in Threatening Interactions, COGNITION & EMOTION (forthcoming).
394 Thanks to Mary Mulligan for this timely suggestion!
reducing anxiety or complacency than engaging in aerobic physical activity, practicing gratitude, or minimizing solitude and social isolation. The United States already has a President's Council on Sports, Fitness & Nutrition, which aims to encourage sports participation and foster active, healthy lifestyles. Because physical health, mental health, and spiritual health are interdependent, it stands to reason that the federal government should also encourage mental health and spiritual health through mindfulness exercise.

C. Gentle Enforcement

Erev, Plonsky, and Roth propose achieving physical distancing and self-quarantining during COVID-19 through gentle rule enforcement involving high probability detection and prosecution of violations of rules that are clear and easy to follow. Erev and co-authors believe high probability warnings would deter most people, reserving less gentle enforcement for repeated violators who are easier to detect when most people comply. Gentle enforcement causes people relying on small samples to behave socially optimally by changing their probabilities of regret. Erev sums up gentle enforcement as steady enforcement with small penalties. For example, gentle continuous punishment by proctors, like direct glances, moving suspected cheaters to the front row, or verbal warnings, decreased students’ perceptions of cheating. Gentle reminders by physicians and nurses increased adherence to sterile procedure during blood sample withdrawals and insertion of intravenous lines from approximately 55% to 95%. And, gentle enforcement


401 Erev et al., supra note 149, at 2.

402 Id. at 6.

403 Id. at 5; Erev & Roth, supra note 153, at 10822.

404 Carey, supra note 141.

405 Erev, supra note 159, at 69-70; Erev & Roth, supra note 153, at 108; Ido Erev et al., Continuous Punishment and the Potential of Gentle Rule Enforcement, 84 BEHAV. PROCESSES 366, 370 (2010); Erev & Haruvy, supra note 161, at 691.

406 Ido Erev et al., The Value of ‘Gentle Reminder’ on Safe Medical Behavior, 19 QUALITY & SAFETY IN HEALTH CARE 1, 1-2 (2010); Ido Erev & Dotan Rodensky, Gentle Rule Enforcement, in AROUND THE
of safety rules increased utilization of protective gear such as ear plugs, gloves, and safety goggles from about 60% to over 90% in factories.\textsuperscript{407}

Erev, Plonsky, and Roth suggest employing such technology as drones and cellular signal tracking to facilitate gentle enforcement of NPIs.\textsuperscript{408} China employed tracking software to estimate in real time people’s contagion risk\textsuperscript{409} and enforce NPIs through a social credit system.\textsuperscript{410} Cell-phone based location tracking would facilitate contact tracing and monitoring of self-isolating and self-quarantining.\textsuperscript{411} However, digital data tracing also raises fundamental and serious civil liberty and privacy concerns.\textsuperscript{412} An anonymized and voluntary app-based system offers a potential compromise that balances concerns about public health versus civil liberties and privacy.\textsuperscript{413} Many people understandably fear when governments expand their powers to gain more access to information about people during a crisis because that expansion becomes a precedent and new norm.\textsuperscript{414}

D. Accurate Pandemic Information Acquisition

A novel framework about information acquisition and avoidance rests on the observation that information can positively and negatively change people’s action, affect, and cognition.\textsuperscript{415} This theory involves an assessment of three impacts of information: (1) decision-making, instrumental, or usefulness; (2) affective, emotional, or hedonic; and (3)

\begin{flushleft}
\textbf{PATIENT BED: HUMAN FACTORS AND SAFETY IN HEALTH CARE} 271, 271-76 (Yoel Donchin & Daniel Gopher eds., 2010).
\textsuperscript{407} Erev et al., supra note 149, at 5; Amos Schurr et al., \textit{The Effect of Unpleasant Experiences on Evaluation and Behavior}, 106 J. ECON. BEHAV. & ORG. 1, 1, 7-8 (2014); Amos Schurr et al., \textit{The Peak and Freq Effects}, http://fbm.bgu.ac.il/amos/Peak.html.
\textsuperscript{408} Carey, supra note 141, at 5-6.
\textsuperscript{415} Tali Sharot & Cass R. Sunstein, \textit{How People Decide What They Want to Know}, 4 NATURE HUM. BEHAV. 14 (2020).
\end{flushleft}
cognitive, mental model, or sense-making.\textsuperscript{416} After making these component assessments, the theory requires combining or integrating them by forming a weighted sum of the three individual assessments, and, based on the sign of that weighted sum, to decide whether to acquire positive, avoid negative, or show indifference to neutral information.\textsuperscript{417} People place different weights on these three consequences of information, reflecting how much they care about each of the categories of informational impacts. This theory assumes people form a weighted average of these three influences in choosing to acquire or avoid information.\textsuperscript{418} This theory suggests that sometimes, people seek too little or too much information.\textsuperscript{419}

Related neuroscience experiments further suggest that mesolimbic reward circuitry in human brains values information based on its valence, while the orbitofrontal cortex values information independent of its valence.\textsuperscript{420} A clever experimental design found that people were willing to pay more to learn their stock portfolio value during bull markets and pay more to remain ignorant of their stock portfolio value during bear markets.\textsuperscript{421} This study replicates the real-world phenomenon of American and Scandinavian investors monitoring their portfolios more when stock markets are rising than when they are falling or flat.\textsuperscript{422} Because people sometimes place non-zero weight on hedonic and cognitive aspects of information value, this theory also implies that sometimes people will seek qualities or types of information that are suboptimal from the perspective of instrumental decision-making. In the case of information about COVID-19 and NPIs, people will consider whether that information would help them decide to comply with NPIs, be pleasant, and have meaning consistent with their understanding of reality. Each of these three component influences can be positive, negative, or zero. Each can also be large or small. This theory suggests that leaders should consider increasing the positive valence of information about COVID-19 and NPIs, perhaps learning from airlines that utilize humor, music, or pleasurable vacation destination images.\textsuperscript{423} This theory also suggests framing information about such values as personal autonomy, choice, and freedom.\textsuperscript{424} Instead of emphasizing what people cannot do and triggering the psychological phenomenon of reactance,\textsuperscript{425} leaders should focus on what compliance with NPIs allows people to do in the future when they help flatten the curve of COVID-19. As Lawrence Durell, the celebrated British novelist, wrote, “prohibitions create the desire they were intended to cure.”\textsuperscript{426} Perhaps, in lieu of contemplating being temporarily unable to watch in person

\textsuperscript{416} Id.
\textsuperscript{417} Id. at 14.
\textsuperscript{418} Id.
\textsuperscript{421} Id. at E7263-E7264.
\textsuperscript{422} Niklas Karlsson et al., \textit{The Ostrich Effect: Selective Attention to Information}, 38 J. RISK & UNCERTAINTY 95 (2009).
\textsuperscript{423} Sharot & Sunstein, \textit{supra} note 415, at 18.
\textsuperscript{424} Id. at 18.
\textsuperscript{426} LAWRENCE DURRELL, THE ALEXANDRIA QUARTET 85 (1968).
professional or college sports, people can redirect their attention to how NPIs can hasten the return of being able to spectate in person at sports and other fun pastimes.\textsuperscript{427}

CONCLUSION

Economist Brigitte Madrian\textsuperscript{428} discussed the fundamentals of behavior change by posing a series of thought-provoking and foundational questions about whether people and organizations want to change their behavior.\textsuperscript{429} If yes, why don’t they?\textsuperscript{430} What are the barriers?\textsuperscript{431} If no, then can we change what people want, through financial incentives, information, or behavioral interventions?\textsuperscript{432} Is there one barrier for everybody?\textsuperscript{433} Are there multiple barriers for everybody?\textsuperscript{434} Are there different barriers for different people?\textsuperscript{435} What barriers can we address through cost-effective interventions?\textsuperscript{436} Is there one intervention or many interventions?\textsuperscript{437} Should there be targeted interventions or one blanket intervention?\textsuperscript{438} What types of interventions generalize across multiple decision-making domains?\textsuperscript{439} Which interventions are more context-specific?\textsuperscript{440} These questions are helpful in thinking about how to achieve compliance with NPIs.

Lessening anger, anxiety, frustration, panic, and complacency in pandemics improves mental health and affects the social outcomes and time paths of pandemics by influencing the critical individual decisions of whether people choose to comply with NPIs. People may not comply with NPIs because they (1) cannot, (2) do not want to, or (3) want to and can, yet do not.\textsuperscript{441}

Policies, such as ensuring people have face masks,\textsuperscript{442} enough money,\textsuperscript{443} jobs to return to,\textsuperscript{444} and enough space to physical distance,\textsuperscript{445} lessen anxiety and address individuals’...
inability to comply with NPIs. Monthly financial assistance is a policy that mitigates financial anger, frustration, anxiety, and panic. Policies changing people’s preferences, such as practicing mindfulness and the social media campaign #IStayHomeFor challenge, remind people viscerally and vividly how their individual, private actions have social and public health consequences in terms of infection and healthcare congestion externalities, and in so doing, lessen anger, frustration, and anxiety and address individuals not wanting to comply with NPIs. Leadership that is effective lessens anger, frustration, anxiety, outrage, panic, and complacency and addresses individuals who can and want to, yet do not comply with NPIs.

For many of us, COVID-19 will be the most stressful event we face and must overcome in our lifetimes. How we choose to adapt and respond to COVID-19 determines not only our individual well-being, but also society’s future. We can grow to become better versions of ourselves, developing greater levels of compassion, empathy, humanity, kindness, and resilience. Or, we can react mindlessly to COVID-19 and shrink to become worse versions of ourselves. For better or worse, our feelings, thoughts, and behaviors in response to COVID-19 may define our legacies in the history of our species.

For our own sake and those of future generations, we must learn to be more caring, mindful, and thoughtful in our individual and social decision-making. COVID-19 is unlikely to eradicate humanity, the inevitable next pandemic may. Besides pandemics, our species faces the challenges of global climate change and many other important crises. Pandemics provide valuable lessons about why some people underestimate the climate change crisis. Unfortunately, pressures for speedy economic growth to help societies financially recover from COVID-19 may exacerbate climate change. The coronavirus offers an opportunity to spark the resurgence of public interest and government financial support of STEM (Science, Technology, Engineering, and Mathematics), much as Sputnik

447 Gang Wu et al., Understanding Resilience, 7 BEHAV. NEUROSCIENCE Art. 10 (2013).
COVID-19 may also prove to be a watershed moment for achieving a carbon neutral world.\(^{453}\)

To survive these existential challenges, individuals must come to appreciate our mutual social interdependence and become willing to learn to become more caring and responsible towards each other. As a society, we must learn to practice intelligent kindness.\(^{454}\) I conclude this Article on a personal note,\(^ {455}\) and with the sincere hope that its readers will find some part of this Article helpful in a small way.

Postscript: This Article was completed before the hurried introduction of COVID-19 vaccines and the resurgence of the hope that COVID-19 will be mostly controlled sometime in late 2021. But, many of the same pandemic emotions this Article analyzes are also relevant for vaccines. In particular, anxiety over the accelerated development and testing of COVID-19 vaccines has led some individuals to distrust the efficacy and safety of COVID-19 vaccines.\(^ {456}\) The novel messenger ribonucleic acid (mRNA) technology that made the rapid production of some COVID-19 vaccines possible has unique and unknown long-run risks.\(^ {457}\) Additionally, vaccinated individuals will still have to wear face masks.\(^ {458}\)


\(^{455}\) I live with obesity, insomnia, sleep apnea, and clinical diagnoses of prediabetes, Generalized Anxiety Disorder (GAD), Obsessive Compulsive Disorder (OCD), and Circadian Rhythm Sleep Disorder, Delayed Sleep-wake Phase (DSP) disorder. Luckily, neither my GAD nor OCD got more severe from COVID-19 (to my therapist’s surprise). My DSP and insomnia did worsen quite a bit due partly to ruminating about COVID-19. Such an epidemic of insomnia occurred because of COVID-19 that Dr. Alon Y. Avidan, a professor and vice chair in the department of neurology at the David Geffen School of Medicine at the University of California, Los Angeles, and director of the U.C.L.A. Sleep Disorders Center, called it “Covid-somnia.” Writing this Article helped me to stay busy, engaged, and focused during COVID-19. A daily regimen of aerobic physical exercising, watching Cuomo press briefings live, practicing mindfulness meditation, teaching or preparing for two classes, and working on this Article in a large study with windows that overlook nature in the form of a rolling grass hill and majestic tall green trees helped me to mitigate and reduce negative emotions and foster positive emotions.


The understandable desire many individuals have for COVID-19 to be gone and for life to return to pre-COVID-19 normal is unrealistic. Many individuals find change hard, especially when that change is bothersome, imposed, and involuntary. Most individuals are creatures of habit, who therefore fear the unknown and unknowable. When and whether COVID-19 will be mostly managed in 2021 depends partly on whether, when, how many, and which individuals get vaccinated.\textsuperscript{459} If America’s historical experience with vaccination is a reliable guide,\textsuperscript{460} many adults are unlikely to voluntarily get vaccinated or let their children get vaccinated.\textsuperscript{461} If enough people refuse vaccination,\textsuperscript{462} herd immunity will not be achieved.\textsuperscript{463} Additionally, several new, more contagious, and more deadly mutated variants of COVID-19\textsuperscript{464} are appearing across the globe, including the United States,\textsuperscript{465} complicating predictions\textsuperscript{466} about how life will unfold in 2021.\textsuperscript{467} COVID-19 has definitively hastened technological innovations transforming legal practice and increasing access to justice,\textsuperscript{468} to become more remote, self-assisted, and virtual.\textsuperscript{469}

What is certain is the pandemic and pandemic vaccine uncertainty will be parts of life for the foreseeable future. All five responses to pandemics this Article advocates also apply to pandemic vaccines, appropriately modified; namely, directly paying people financial assistance, encouraging people to practice mindfulness, gently enforcing NPIs, fostering acquisition of accurate scientific evidence-based information about pandemic vaccines, and applying psychological game theory to better understand emotions that depend on beliefs about leadership regarding pandemic vaccines.


\textsuperscript{462} Yoko Ikuta et al., \textit{Free-Riding Behavior in Vaccination Decisions: An Experimental Study}, 9 PLOS ONE e87164 (2014).


\textsuperscript{466} \textit{What’s Ahead in the Second Year of COVID-19?}, KNOWLEDGE@WHARTON (Mar. 08, 2021), https://knowledge.wharton.upenn.edu/article/whats-ahead-second-year-covid-19/.

\textsuperscript{467} Joshua S. Weitz et al., \textit{Awareness-Driven Behavior Changes Can Shift the Shape of Epidemics away from Peaks and Toward Plateaus, Shoulders, and Oscillations}, 117 PROC. NAT’L ACAD. SCI. 32764 (2020), https://www.pnas.org/content/117/51/32764.


APPENDIX: PSYCHOLOGICAL GAME MODELS OF LEADERSHIP

Due to differences in assumptions, central variables, methodologies, theories, and topics of interest, “mainstream leadership and economics have rarely conversed.” The appendix of this Article advocates building formal, rigorous, theoretical economic models to analyze how leaders and leadership communications in pandemics can reduce anger, anxiety, and frustration, prevent panic, inhibit complacency, and foster compliance with NPIs. Such models can build on economic models of decision-making impacts of anticipatory emotions, anxiety, depression, positive affect, and skewness preferences.

Andrew Caplin and John Leahy developed psychological expected utility theory to model situations where people experience feelings of anticipation before uncertainty resolves. They analyzed how anxiety impacts a number of important areas, including AIDS testing, asset pricing, genetic testing, supplying information about stressful medical procedures, and wishful thinking. Caplin analyzed fear appeals in health communications. Koszegi studied how anxiety can influence patient behavior and choices over intimidating decisions. The research in this area thus proves that fear and anxiety, among other emotions, can influence decision-making processes.

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anxiety can influence individual decision-making processes and the choices that individuals make. This Article recommends applying the research methodologies of psychological game theory to model emotions that depend on beliefs about leadership. Chris Smith wrote that New York State Governor Andrew Cuomo was playing a psychological game when Cuomo used his daily press conferences to “create an image of reassuring leadership,” in contrast with the chaotic volatility of Trump’s dueling press briefings. People form beliefs about leaders and feel emotions that depend on those beliefs. To succeed at leadership entails understanding people’s belief-dependent emotions about leaders.

John Geanakoplos, David Pearce, and Ennio Stacchetti developed what they termed psychological game theory (PGT) to incorporate emotions that depend on beliefs about actions and beliefs into strategic analysis. PGT can model belief-dependent anger and surprise. PGT models are an actively growing area of applied economics research. There are PGT models of belief-dependent emotions in these important areas: decisions about filing a lawsuit, settlement, and going to trial; belief-dependent embarrassment, guilt, and remorse in maintaining informal social norms; individuals cooperating in a one-shot PGT prisoner’s dilemma being sustained by sufficiently averse guilt from violating compliance norms; expressive voting; reciprocity in social interactions; and the notion of sequential reciprocity. Experimental play in one-shot public goods games supports PGT models of guilt aversion and reciprocity. Experimental play in sequential public goods games supports PGT models of leaders not free riding to avoid guilt from not living up to expectations of being a “good leader,” and followers not free riding to avoid guilt from not living up to expectations of being a “good follower.”

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Extending PGT to allow emotions to depend on beliefs about actions, others’ beliefs, and states of nature, permits development of these theories: a general theory of guilt aversion, incomplete information models of guilt aversion in “the trust game,” incorporation of image concerns and self-esteem in economic analysis, models of how anger and frustration through aggression and blame influence outcomes in leader-follower games, the study of public administration corruption due to collusion between a bureaucrat and lobbyist, examination of embezzlement by intermediaries between donors and recipients, and analysis of kindness. This list of important economic, policy, and social areas that extensions of PGT models have been able to successfully address suggests how PGT can provide insights about leadership, particularly during such crises as COVID-19 and future pandemics.

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