LETTERS

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Disaster Preparation: Lessons from Japan

ON 11 MARCH 2011, THE EARTHQUAKE AND TSUNAMI IN JAPAN CLAIMED THOUSANDS OF LIVES, disrupted the lives of hundreds of thousands, and destroyed regional power and transportation infrastructure. Backup systems intended to maintain cooling for three operating nuclear reactors and the spent-fuel pools failed. Experts in various technical fields from Japan, the United States, and around the world worked to understand and mitigate the consequences of unplanned releases of radioactivity. As a team of U.S. health and medical subject matter experts deployed to Japan in the early days after the tsunami, we have identified the elements that remain most challenging in preparing for future disasters.

Support. The U.S. Navy delivers relief supplies to an evacuation center in northern Japan.

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Given the reality of the uncertainty in the physical state of the Fukushima reactors, the ability to make accurate predictions based on models was limited. We found that the absence of such information led to suspicion by the public that data were not being reported. Information was being provided by a variety of sources, including international news media. Cultural differences and national sovereignty must be understood and respected when determining how to present, disseminate, and discuss information.

Although the public was justifiably concerned about possible radiation health effects, we believe that lack of understanding of radiation and its effects resulted in unnecessary fear. The misunderstanding extended to the purpose of potassium iodide (KI), which should not be distributed indiscriminately, but rather used to protect those with active thyroids, particularly infants, young adults, and teens who are at risk from the exposure resulting from internal contamination. There was also uncertainty about the best KI dosage and administration schedule, partly because Japanese dosage guidance differed from that provided by the United States. Fortunately, in this case KI prescriptions were reduced to very few people, primarily those working close to the reactors.

We also observed differences in risk tolerance. Compared with those far from the site, a local population may choose to accept a modestly greater risk from low-level radioactive contamination in order to restore their economy and way of life. Cultural differences also may alter the acceptable level of risk (such as the amount of iodine normally contained in the diet) or how to balance risk and benefit. Less stringent requirements can be acceptable for adults, compared with infants and children, although conflicting protective action guidelines create public confusion.

When evacuation is initiated, it is crucial to identify the criteria that must be met before residents are permitted to return. Each decision requires the assessment of competing risks at a time when outcomes are uncertain. For example, initially imposing a travel warning and limiting entry of people and removal of food products from a 50-mile zone around the radiation source were sensible. However, there are risks in mass movements of people, including transportation accidents, trauma from disrupting lives, separating people from their normal support structure (including care for chronic medical conditions), and diverting personnel who might be needed elsewhere. If evacuation is maintained for too long, there can be serious health (including mental health), family, and economic consequences.

In rapidly evolving situations, scientists who advise decision-makers must think like clinicians and make decisions based on the best information available at the time.

C. NORMAN COLEMAN,[1]* STEVEN L. SIMON,[2] MICHAEL A. NOSKA,[3] JANA L. TELFER,[4] THOMAS BOWMAN[5]

[1]National Cancer Institute and Office of Preparedness and Emergency Operations, Assistant Secretary of Preparedness and Response, Department of Health and Human Services, 200 Independence Avenue, SW, Washington, DC 20201, USA. [2]Division of Cancer Epidemiology and Genetics, National Cancer Institute, National Institutes of Health, 6120 Executive Boulevard, Bethesda, MD 20892, USA. [3]U.S. Public Health Service, U.S. Food and Drug Administration, 10903 New Hampshire Avenue, Silver Spring, MD 20993, USA. [4]National Center for Environmental Health/Agency for Toxic Substances and Disease Registry, Centers for Disease Control and Prevention, 4770 Buford Highway, Atlanta, GA 30341, USA. [5]U.S. Public Health Service, Division of Strategic National Stockpile, Office of Public Health Preparedness and Response, Centers for Disease Control and Prevention, 1600 Clifton Road NE, Atlanta, GA 30329, USA.

*To whom correspondence should be addressed. E-mail: ccoleman@mail.nih.gov

Note

1. The contents in this manuscript are from the authors and do not represent U.S. government policy or opinion.

India's Education Commercialization

P. BAGLA'S NEWS & ANALYSIS "FACULTIES wither as higher education system rapidly expands" (29 April, p. 524) spells out the problems with India's expanding higher education system, but it does not identify the root of the problem: India's neglect of the primary and secondary school education systems. Much of India's population can only afford to send their children to government schools, which are mostly in shambles. The children of the wealthiest go to commercial private schools, which are expensive yet still not of high quality relative to truly private schools, such as nonprofit private schools funded by trusts. Perhaps the only exceptions to this rule are the nonprofit,

trust-run private schools, which are few in number and extremely expensive because they do not receive government grants. The low quality of India's primary and secondary education contributes in turn to the low quality of higher education in the country.

The Indian Parliament passed a Right of Children to Free and Compulsory Education Act in August 2009, but it has already proved to be ineffective, acting only as a way to funnel public funds into private, commercial schools. (The act requires 25% of all seats of private schools to be reserved for the poor and requires the government to pay the fees, instead of devoting these government funds to improving public schools.)

Unless India bans commercialization of school education and adopts a public school system similar to that of the United States, France, and other countries, the problem that Bagla describes in the News Focus story will persist. The present education system cannot produce the teachers that India requires.

PUSHPA M. BHARGAVA

Manorama Ghar, Anveshna, Prashanti Nagar, Hyderabad, Uppal 500 039, India. E-mail: bhargava.pm@gmail.com

Letters to the Editor

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Personality's Role in Moral Action

WE ENJOYED THE NEWS FOCUS STORY "Using the psychology of evil to do good" (G. Miller, 29 April, p. 530) about Philip Zimbardo's new Heroic Imagination Project (HIP) for promoting moral action. However, we feel compelled to correct some misleading impressions that could result from the story's perspective.

As noted in the past, Zimbardo often strongly emphasizes situationism, downplaying the importance of individual differences, such as character, in influencing people's behavior (*1*). Ricard *et al*. (*2*) concluded that personality was just as influential with regard to behavioral outcomes in social psychology experiments. Moreover, Miller's story failed to highlight those individuals in Milgram's study who refused to deliver any extreme intensity shocks, let alone the maximal shock (*3*). This percentage (5 out of 40) is roughly equivalent to the percentage of participants in public goods paradigms who continue to contribute when the rest of the group does not (*4*), suggesting that individual differences and exemplary behavior will play a substantial role in understanding morally relevant actions.

Zimbardo claims that there is "almost no research" on moral personality or character. Yet, Samuel and Pearl Oliner interviewed and profiled over 400 Holocaust rescuers from World War II (*5*). Anne Colby and HIP's own William Damon studied exemplars recognized by their local communities (*6*), and work by Kristen Monroe highlighted characteristics shared by Holocaust rescuers (*7*). Quantitative research by Lawrence Walker identified different kinds of exemplars that differ in personality profiles (*8*). Our own work in

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the HABITVS Project (Humane Archetypes: Biology, Intersubjectivity, and Transcendence in Virtue Science) aims to link exemplary behavior in the real world to behavioral and neural data in the laboratory (*9*). Ongoing work in the neuroscience of moral action will require increased attention to reach the worthy goals articulated by HIP (*10*, *11*).

We are appreciative of Zimbardo's new direction, and we look forward to greater understanding of the pathways of development that lead to excellence in moral character.

MICHAEL L. SPEZIO,[1]* GREGORY R. PETERSON,[2] WARREN S. BROWN,[3] KEVIN S. REIMER,[4] JAMES VAN SLYKE[3]

[1]Department of Psychology, Scripps College, Claremont, CA 91711, USA. [2]Department of Philosophy and Religion, South Dakota State University, Brookings, SD 57007, USA. [3]Fuller Graduate School of Psychology, Pasadena, CA 91101, USA. [4]Department of Psychology, Azusa Pacific University, Azusa, CA 91702, USA.

*To whom correspondence should be addressed. E-mail: mspezio@scrippscollege.edu

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CORRECTIONS AND CLARIFICATIONS

Research Articles: "Markets, religion, community size, and the evolution of fairness and punishment" by J. Henrich *et al.* (19 March 2010, p. 1480). Authors' note: Since the publication of our Research Article, we have been preparing a book-length treatment of our comparative project for publication, with a chapter describing the work done in each of our small-scale societies. While preparing the chapter on one of the populations in our sample—the Gusii—the researcher for that group (Laban Gwako) uncovered an anomaly in the household size data for this population. After an extensive investigation, it is now clear that the household data from the Maragoli (another population studied by Gwako) were mistakenly entered for the Gusii, and the Gusii household size data were accidentally destroyed. This investigation also confirmed that to the best of our collective knowledge, the rest of the Gusii data, and the project data more generally, were untainted by this data management error.

Our baseline regression analyses often used household size as a control variable, so losing the household size data for 1 of our 14 populations necessarily changes the precise coefficient estimates drawn from those regressions. To examine the implications of the loss of these data for our conclusions, we studied both (i) the same baseline regressions used in the main text with our Gusii household size data now missing, and (ii) the same regression with household size dropped as a control variable so that the Gusii reenter the analysis. Overall, for our theoretically relevant variables (market integration, participation in world religion, and community size), the largest change by far occurs in predicting Ultimatum Game offers. Here, the coefficient on market integration increases from 0.098 to 0.14 (a 43% increase) when the Gusii are dropped entirely. This means that for an increase of 20% in calories purchased in the market, there is a predicted increase of 28 percentage points in Ultimatum Game offers, compared to only 20% from the prior analysis. The largest change in coefficients that works against the interpretations defended in our original article is a drop in the coefficient on world religion from 5.96 to 5.77 (a decrease of 3%). Our reanalyses, which are available upon request, indicate that this loss makes no change to our interpretations (strengthening the effect of market integration) and has no material impact on significance testing. Our data set is available upon request and is in the process of being publically archived with the Inter-University Consortium for Political and Social Research (ICPSR) at the University of Michigan.