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Commentary

Using Persuasion science to improve COVID-19 contact tracing

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In the battle against the spread of COVID-19, contract tracing is widely seen as a crucial requirement (www.preventepidemics.org) to reopen society. Since its first call with a COVID-19 patient ("case") on March 27, the Contact Tracing program at Penn State Health, previously described in this journal,[1] has completed calls with 87% of all cases. In the past few weeks, as the performance of other programs has been reported, it appears that our contact tracers are unusually successful. In neighboring Lancaster County, with demographics similar to ours, calls with only 48% of cases are being completed.[2] In Massachusetts, which has one of the country's most established tracing programs, only 60% of attempted calls are answered.[3] In New York City, only 42% of people with COVID-19 gave information about close contacts to tracers,[3] whereas Penn State Health's success rate in this regard is 62.5% since its inception.

While we recognize there may be other factors that can impact these rates, such as racial, ethic, and other demographic differences in the callers and call recipients, we believe that part of performance difference stems from the scripting tactics we have used. We based our calling script on evidence from randomized trials in the fields of behavioral economics and persuasion science. We present them here for use by others as we are concerned that, as contact tracing is scaled nationwide, it may be significantly less effective than it could otherwise be. Below, we highlight in italics how our script differs from one suggested for use nationally by The Association of State and Territorial Health Officials (ASTHO), and briefly explain how incorporating each persuasion-relevant tactic may explain the difference in performance.

ASTHO SCRIPT

Hello, my name is _____ and I'm calling from _____. I am calling today because we are closely monitoring the outbreak of respiratory illness caused by the new coronavirus (called COVID-19). We have identified you as potentially being sick. Can you first please confirm the following information? [Confirm name matches] Thank you. Can you please assist in providing some

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additional information so that we may understand your risk and potentially enroll you in public health monitoring? I am going to ask you to think back over each day while you have been sick to remember what you did each day. This will help us figure out who you may have been around, and who else might get sick. If you are having a hard time remembering, sometimes it is helpful to look back at a calendar, or on your phone for messages sent on each day, or even at your credit card receipts.

REVISED SCRIPT

Hi, this is _____ calling from Penn State Health (*Designed to incorporate the tactics of conveying expertise and trustworthiness of a health care provider and University, on the one hand, which increases a communicator's influence and enhancing feelings of unity of place, on the other, which increases survey participation[4]*). I'm not sure if you've been told before but unfortunately, the results of your COVID or Coronavirus test were positive, meaning that you were infected with the virus at some point. Can I ask, how are you doing? How are you holding out in this crisis? (*Designed to incorporate the tactic of enhancing rapport, which increases compliance with medical professionals requests[5]*).

I'm not sure if someone told you that other people will be calling, but I work with infection control and my team's job is to talk to people who have been diagnosed with COVID and find out all of the people who they have been in contact with, so we can get those people to quarantine themselves.

This is not mandated by law, so you are free not to be involved in this (*Designed to incorporate the tactic of reducing perceived threats to personal autonomy that, using similar wording, doubled request compliance over 32 studies[6]*), but this process is very important to help us stop the disease from spreading and has been used to stop many outbreaks in the past (*Designed to incorporate the tactic of demonstrating social proof, in which people follow the lead of multiple successful others[7]*). This process is one of the only things we can do to stop the spread of this virus, so your help is essential. Most importantly, your privacy is our high priority and your

information is completely confidential. If you agree to help, we will reach out to people and places you've been in contact with and just tell them that they have been exposed to someone without telling them who. Most people contact many people each day so it's very unlikely they'll identify you (*Designed to incorporate the tactic of reducing privacy concerns which, if not addressed, appear to undercut compliance with contact tracing*[3]).

If you agree to help, we will reach out to the people and places you've been in contact with to tell them they were exposed and help them get testing and a doctor's note, if needed. We would also like to talk to you about your own quarantining measures and ways that we may be able to help (*Designed to incorporate the tactic of reciprocity, in which people feel obligated to help to those who seek to help them and their close others*[8]). Do you have any questions so far?

Ok, the next step is for us to talk about the people and places you may have been in contact with. I know the questions will feel invasive, like a police investigation. But this detective work is essential for doing all we can to stop the spread of this virus, so I really appreciate your help (*Designed to incorporate the tactic of enhancing source credibility, in which a communicator points to a drawback before advancing to a request*[9]). Is that okay with you?

We fully recognize that we have not tested our scripting, in a randomized controlled trial, against the ASTHO script or any other script, so it is possible that our script is not actually superior. However, the ASTHO script includes only information, though decades of behavioral economics and persuasion science research suggest that specific additions to an information-only script can markedly improve performance. These behavioral strategies are summarized in a recent report, co-authored by Dr. Cialdini, published by the Societal Experts Action Network, an activity of the National Academies of Sciences, Engineering, and Medicine, entitled "Encouraging Adoption of Protective Behaviors to Mitigate the Spread of COVID-19: Strategies for Behavior Change (2020)."[10] Given how simple these changes are to

make and the strength of the underlying science, incorporating these tactics into existing scripts, or formally testing these and similarly proven scripting tactics, should be given serious consideration.

We present this in the spirit of quality improvement. The Institute of Medicine's *Crossing the Quality Chasm* noted that it takes 17 years, on average, for new knowledge generated by randomized controlled trials to be incorporated into practice[11]. Given the urgency of limiting morbidity and mortality from COVID-19 while simultaneously reopening society, along with the widely agreed impact that contact tracing may have, we are hopeful that these scientifically grounded insights can be implemented much more quickly.

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