MISDIRECTING PERSUASIVE EFFORTS DURING THE COVID-19 PANDEMIC:
THE TARGETS PEOPLE CHOOSE MAY NOT BE THE MOST LIKELY TO CHANGE

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ABSTRACT

Persuading people to engage in specific health behaviors is critical to prevent the spread of and mitigate the harm caused by COVID-19. Most of the research and practice around this issue focuses on developing effective message content. Importantly, though, persuasion is often critically dependent on choosing appropriate targets—that is, on selecting the best audience for one’s message. Three experiments conducted during the COVID-19 pandemic explore this target selection process and demonstrate misalignment between who persuaders target and who will display the greatest attitude and behavior change. Although people prefer to send messages encouraging COVID-19 prevention behaviors to targets with slightly negative attitudes toward the behaviors in question, their messages can often have more impact when sent to targets whose attitudes are slightly favorable. Recent insights in categorical perception and message positioning effects in persuasion help explain this misalignment.

Keywords: COVID-19, Targeting, Persuasion, Attitude Change
Communication among consumers has important implications. Much social influence is driven by everyday people persuading others to adopt new views or new behaviors. Thus, it is not surprising that marketers, psychologists, and journalists exert great effort studying and trying to influence consumer-to-consumer communication. In the midst of a public health crisis, such as the COVID-19 pandemic, these efforts can grow in intensity and narrow in focus. Because any change in health-related behaviors during a pandemic can be consequential, many researchers and much of the mainstream media are striving to help everyday people encourage and ultimately persuade others to practice specific health behaviors.

By and large, these specialists focus their advice on message content. For instance, Yoeli and Rand (2020) suggest that people communicate benefits, make unambiguous asks, and harness the power of norms to craft effective messages encouraging COVID-19 prevention behaviors. Other experts similarly draw from behavioral science to suggest tactics that include posing questions and reducing the ask (Berger 2020), framing coronavirus as a collective threat (Perry 2020), personalizing messages and making them positive (Henriques 2020), and using “I statements” (Compton 2020), short words (Gallo 2020), and humor (Cherry 2020). Importantly, though, impactful persuasion often requires more than just compelling message content. Choosing appropriate targets for one’s persuasive efforts can also play a crucial role. However, there appears to be little or no consideration given to who people are targeting—or should be targeting—with messages that encourage COVID-19 prevention behaviors.

The current research explores this target selection process. Specifically, we assess consumer-to-consumer persuasion during the COVID-19 pandemic to examine (1) who individuals choose to target with health-related messages, and (2) whether persuaders might actually have greater impact by choosing other targets. We posit that people equipped with messages encouraging health-related behaviors generally prefer to send those messages to targets whose attitudes are slightly negative toward the behaviors in question, and thus who persuaders believe they can shift in valence. However, this targeting decision is frequently at odds with the message’s persuasive impact, which is often greater among targets whose attitudes are already slightly favorable toward the message position. In short, we submit that there can be misalignment between who persuaders target and who will display the greatest attitude and behavior change.
This hypothesis draws from research on categorical perception of attitudes (Bechler, Tormala, and Rucker 2019), message positioning effects in persuasion (e.g., Clark and Wegener 2013), and recent research that integrates the two (Bechler, Tormala, and Rucker 2020). Together, this work suggests that persuaders prefer to direct messages to people whose attitudes they might change in valence, because shifts of valence (e.g., from negative to positive) are perceived as greater in magnitude and behavioral impact than shifts within valence (e.g., from slightly positive to more positive). At the same time, recipients tend to be more resistant to counterattitudinal than proattitudinal messages. This means persuaders might have less impact when they target people who are negative toward the message position (whose attitudes they hope to shift in valence) than when they target people who are already slightly positive but can be shifted to more extreme levels of support.

**HEALTH-BEHAVIOR MESSAGING**

The importance of healthy behaviors is incredibly high during a pandemic such as COVID-19. Likewise, the importance of effectively persuading people to engage in these behaviors is enormous. On a micro-level, the degree to which any individual practices a health behavior can be the difference between life and death for that individual. However, health behaviors in this context are unique in that they have implications not only for the individual practicing the behavior, but also for proximate individuals. On a macro-level, the efficacy of many of the health behaviors that are being promoted during the COVID-19 pandemic—such as wearing masks, social distancing, and refraining from nonessential travel—increases as more people practice the behavior. In short, the stakes are high and the expected benefits associated with behavior change in a single individual generalize to those in the individual’s proximity. Thus, the efficient spending of resources—time, effort, money—to persuade others whose attitudes and behaviors are most likely to change is critical.

Researchers have only just begun studying the influence of information and messaging on COVID-19 prevention behaviors. Initial results show that the information people receive from the news (Simonov et al. 2020) and from experts (Akesson et al. 2020) affects their willingness to practice specific behaviors such as social distancing. Importantly, however, early work has not studied the impact of information transmitted at the consumer-to-consumer level. This void is notable because there exists substantial evidence documenting that word-of-mouth—that is, communication among consumers—can frequently be more impactful and have longer-lasting
effects than expert-to-consumer or company-to-consumer messaging (e.g., Berger 2013). In fact, consumer word-of-mouth can be especially influential in health-related domains, such as choosing doctors (Tu and Lauer 2008) and medicines or treatments (Yeoh, Othman, and Ahmad 2013). To our knowledge, the current research is the first to study consumer-to-consumer persuasion in the context of COVID-19 prevention behaviors.

**TARGET SELECTION AND PERSUASIVE IMPACT**

As stated already, our interest is in how people select persuasion targets. First, we predict that when people select targets, they are more likely to target others whose attitudes seem poised to change across (e.g., from negative to positive) rather than within (e.g., from positive to more positive) valence. This prediction is based on recent research on categorical perception and attitudes. Bechler et al. (2019) found that people perceived attitude change as larger and more impactful when attitudes shifted qualitatively (or categorically) from negative to positive, compared to when they shifted non-qualitatively (or non-categorically) from negative to less negative or positive to more positive. The same authors also found that this perception influences persuasion target selection (Bechler et al. 2020). Because qualitative change seems greater than non-qualitative change, people are more likely to target others if those others seem poised to shift in attitude valence. For instance, Bechler et al. (2020) found that strong supporters of Joe Biden’s presidential candidacy were more likely to send a pro-Biden message to people who were slightly opposed rather than extremely opposed or slightly in favor, because they were drawn to the possibility of shifting targets in valence.

Second, we predict that people’s targeting decisions might misalign with where they can have the most impact. Specifically, we hypothesize that targets who already slightly agree with a message’s position will often be most receptive to and impacted by the message. This prediction is based on research on message positioning and persuasion. People are often more open to and persuaded by messages endorsing positions that more closely match their own—that is, that are proattitudinal (see Clark and Wegener 2013). Interestingly, these findings align well with conventional marketing wisdom that marketers get the greatest “bang for their buck” by targeting existing customers, or individuals who are already favorable toward their brand (e.g., Reichheld and Schefter 2000). The rationale is that because people who already like a brand are more open to the brand’s messaging, persuading these individuals to make a purchase is frequently less costly than acquiring a new customer whose initial attitude toward the brand is unfavorable.
Notably, Bechler et al. (2020) uncovered initial evidence for this prediction as well. In the aforementioned Biden study, Bechler et al. found that although Biden supporters sent the pro-Biden message to individuals with slightly negative attitudes, those with slightly favorable attitudes were more impacted. Specifically, they reported greater attitude and behavior change upon receiving the message.

The goal of this research is to test whether there is misalignment between persuaders’ targeting decisions and targets’ actual receptiveness to persuasion in the context of messages encouraging COVID-19 prevention behaviors. Documenting whether misalignment occurs in medical or health persuasion could be critically important as the stakes associated with engaging or not engaging in specific health behaviors are extremely high. If the predicted results obtain, this research would highlight an important asymmetry in persuasion with substantial public health implications, and offer initial guidance to consumers and public and private sector decision-makers on how to make their persuasive efforts in this context more impactful.

**EXPERIMENT 1**

Experiment 1 tested who individuals preferred to target with a message about COVID-19 health behaviors, and assessed whether targeting someone else might be more impactful. The behavior we focused on was wearing masks/face coverings in public. Participants who were strongly in favor of wearing masks/face coverings in public (“persuaders”) were equipped with a message encouraging people to do so, and chose another participant to whom they would send this message. Simultaneously, we sent the message to other participants (“targets”) who were either slightly against or slightly in favor of wearing masks, and we measured the message’s persuasive impact. We expected that persuaders would be most likely to select targets who were slightly against wearing masks, but that participants who were already slightly in favor would be more impacted and report greater attitude and behavior change.

Wearing masks in public was a topic of importance and debate among U.S. participants when this experiment was conducted (early April, 2020). On the dates of our study, wearing masks/face coverings had only recently been recommended by some health agencies (the CDC first recommended that the public wear masks on April 3, 2020), and was not recommended by all agencies (e.g., WHO). Speaking even further to the timeliness of the topic, New York Governor Andrew Cuomo announced that he would soon require people in his state to wear
masks/face coverings in public settings on the exact date that we terminated data collection (April 15, 2020).

Method

Participants and Design. The experimental design was adapted from Bechler et al. (2020, Experiment 4) and included two parts. First, we surveyed 1,001 Amazon Mechanical Turk participants’ attitudes toward a wide range of coronavirus-related behaviors, including the focal behavior of wearing masks/face coverings in public (survey conducted April 7, 2020). Attitudes were assessed on a scale ranging from 1 (extremely negative) to 9 (extremely positive), with a neutral midpoint of 5. Participants who reported a slightly negative (either 3 or 4) or any positive (from 6 to 9) attitude toward wearing masks/face coverings in Part 1 were eligible for Part 2. Only 53 participants in our initial survey reported very negative attitudes (either 1 or 2), so these participants were not included in Part 2. A total of 815 participants qualified for Part 2 and 554 participants completed it. Our recruitment plan, conditions, hypotheses, and analytic strategy were preregistered (https://aspredicted.org/sj9rq.pdf). Experiment materials are available in the Web Appendix. Data are available at https://osf.io/zg3w8/.

Procedure. The experimental procedure varied based on participants’ initial attitudes. Participants with highly favorable attitudes (attitudes of 8 or 9) were assigned to be persuaders. These participants were informed that our survey indicated a wide range of attitudes among Mechanical Turkers toward wearing masks/face coverings. Persuaders then learned that they would have an opportunity to send a message to another participant that encouraged people to wear masks/face coverings. They then read the message, which was an opinion letter recently published in The New York Times arguing that “one of the most self-protective and altruistic things we can do now is to wear a face mask while in public” (Kavanagh and Winter 2020). After reading the message, persuaders chose between two targets to send the message they had read: a participant leaning somewhat against wearing masks/coverings or a participant leaning somewhat in favor of wearing masks/coverings.

Participants who were not already highly favorable toward wearing masks/face coverings in public (i.e., those with attitudes in the 3-4 [slightly against] or 6-7 [slightly in favor] range in the initial survey) were assigned as targets. These participants were informed that they would read a message that was sent to them by another Mechanical Turker about why people should wear masks/face coverings. After reading the same message as persuaders, targets completed
measures assessing the message’s impact: “How much did reading that message change your attitude toward wearing masks/face coverings when out in public?” and, “How much did reading that message impact the likelihood that you will wear a mask/face covering when out in public?” Responses were provided on scales ranging from 1 (not at all) to 9 (a great deal), and averaged to create a composite index ($r[249] = .78, p < .001$). As in Bechler et al. (2020), we measured self-reported change and impact—rather than calculating differences between attitudes and behavior before and after reading the message—to equate the total amount of change and impact targets could display (i.e., to circumvent the problem that slightly negative participants had more room to change on the attitude scale than did slightly positive participants).

**Results and Discussion**

A chi-square goodness-of-fit test demonstrated that the targeting distribution significantly differed from chance, $\chi^2(1) = 48.32, p < .001$. As predicted, a clear majority (69.97%) of persuaders chose to target the participant leaning somewhat against rather than somewhat in favor of wearing masks. As illustrated in Figure 1, though, in contrast to persuaders’ targeting decisions, targets who initially leaned somewhat in favor of wearing masks reported being more impacted by the message ($M = 5.31, SD = 2.11$) than did targets who initially leaned somewhat against ($M = 4.47, SD = 2.12$), $t(249) = -2.78, p = .006$. Thus, using a health behavior of central relevance to the coronavirus pandemic and a real persuasive message taken from current media, we found the predicted misalignment: Strong supporters of wearing masks or face coverings in public were more likely to try to persuade others with somewhat negative rather than positive attitudes. However, these supporters could have had more impact by targeting people who already leaned in their direction—those with slightly favorable initial attitudes, who could be shifted to more solid support.

**EXPERIMENT 2**

Experiment 2 had three main goals. First, we examined whether the findings from Experiment 1 would generalize to another health behavior. In Experiment 2, we assessed attitudes toward participating in medical studies testing experimental COVID-19 vaccines. Although recruitment for these types of medical studies is crucial to fighting the spread of COVID-19 and re-opening public spaces, it can be difficult, especially given that uncertainty surrounding the disease is high and potential vaccines are permitted to bypass the usual safety standards (e.g., animal trials; Gupta 2020).
Second, we assessed targeting decisions in a setting in which persuaders could target individuals who were extremely negative, slightly negative, or slightly positive toward the behavior in question. Because few participants in Experiment 1 reported extremely negative attitudes (i.e., 1 or 2 on the scale) toward wearing masks or face coverings, we excluded extremely negative targets from our design. Participating in experimental COVID-19 vaccine trials is more daunting or polarizing than wearing masks, so we hoped this behavior would permit us to test our prediction when targets with extremely negative attitudes were also available.

Third, we specified the exact attitude positions of the targets when persuaders made their targeting decisions. In Experiment 1, we used colloquial language when describing potential targets’ attitudes. That is, we made no reference to the numerical attitude responses that targets had reported in the initial survey. Because we used verbal descriptions without specifying precise numerical positions, there is potential ambiguity in how persuaders interpreted the language and where they thought potential targets stood. In case persuaders somehow interpreted our language as implying that slightly negative targets were more or less extreme than slightly positive targets, we used numbers to specify attitude positions in Experiment 2. Despite these modifications, we expected results consistent with those from Experiment 1, such that persuaders would be most likely to target slightly negative participants, but that participants who were already slightly positive would report the greatest attitude and behavior change.

Method

Participants and Design. Experiment 2 was conducted on Amazon Mechanical Turk at the same time as Experiment 1 and had a similar procedure. Participants’ attitudes toward participating in a medical study testing an experimental COVID-19 vaccine were collected in the same initial survey described earlier, and were measured on a scale from 1 (extremely negative) to 9 (extremely positive), with a neutral midpoint of 5. Again, we tested our hypotheses in the second part of the experiment. Any participant reporting a negative (from 1-4) or positive (6-9) initial attitude toward participating in a medical study testing an experimental COVID-19 vaccine was eligible for Part 2. A total of 795 participants qualified for Part 2 and 550 participants completed it. Our recruitment plan, conditions, hypotheses, and analytic strategy were preregistered (https://aspredicted.org/gb9qb.pdf). Experiment materials are available in the Web Appendix. Data are available at https://osf.io/zg3w8/.
**Procedure.** As in Experiment 1, participants with extremely favorable initial attitudes (8 or 9 on the scale) were assigned as persuaders. Persuaders read a message that contained arguments for participating in COVID-19 vaccine trials (adapted from multiple health websites; e.g., Acurian, Inc. 2020; Lopienski 2014) and selected someone to target with the message. The possible targets were three participants with different attitudes toward participating in COVID-19 vaccine trials: a participant with an attitude of 1 or 2, a participant with an attitude of 3 or 4, and a participant with an attitude of 6 or 7. Persuaders had access to the scale on which these participants had indicated their attitudes so that the numbers associated with each potential target could be easily interpreted.

Participants who were not already highly favorable toward participating in a COVID-19 vaccine study (those with initial attitudes between 1-4 or 6-7) were assigned as targets. Targets read the message that was sent by persuaders, and completed the two-item measure of message impact described in Experiment 1, modified for the new behavior of participating in a medical study testing an experimental COVID-19 vaccine ($r[384] = .86, p < .001$).

**Results and Discussion**

A chi-square goodness-of-fit test demonstrated that the targeting distribution significantly differed from chance, $\chi^2(2) = 34.11, p < .001$. A majority of the persuaders (52.44%) chose to target a participant with an attitude of 3 or 4 (i.e., who was slightly unfavorable). As illustrated in Figure 2, however, a one-way ANOVA with initial attitude (1 or 2, 3 or 4, and 6 or 7) as the independent variable and the persuasive impact measure as the dependent variable revealed a different pattern, $F(2, 383) = 47.94, p < .001$. Targets whose initial attitudes were 6 or 7 (slightly favorable) reported being more impacted by the message ($M = 5.15, SD = 1.91$) than did targets whose initial attitudes were 3 or 4 (slightly unfavorable; $M = 3.82, SD = 2.21$), $t(383) = -5.44, p < .001$, or 1 or 2 (extremely unfavorable; $M = 2.62, SD = 2.14$), $t(383) = -9.57, p < .001$. Targets whose initial attitudes were 3 or 4 (slightly unfavorable) also reported being more impacted by the message than targets whose initial attitudes were 1 or 2 (extremely unfavorable), $t(383) = -4.19, p < .001$.

In short, despite numerous design and procedural changes, Experiment 2 replicated the core finding that persuaders prefer to target others with slightly negative initial attitudes toward the behavior in question. Again, though, targets who were already slightly favorable reported greater attitude and behavior change upon receiving the message.
EXPERIMENT 3

Experiments 1-2 provided consistent evidence for our central hypotheses: Persuaders tend to target people who are slightly against a health behavior, but could have more impact by targeting people who are already slightly favorable. Of course, we obtained this evidence using measures of self-reported attitude and behavior change. Would we observe the same misalignment using a measure of real behavior—for example, a binary choice reflecting an actual behavioral decision? We addressed this question in Experiment 3. This experiment employed a similar paradigm as before, but in this case we assessed donations to a charity assisting with COVID-19 relief (Direct Relief, a real organization that delivers equipment and medication to health workers). Donating to this charity is not itself a health behavior, but it is a consequential decision that affects the health of others involved in COVID-19 prevention efforts. Experiment materials are available in the Web Appendix. Data are available at https://osf.io/zg3w8/.

Participants (N = 491, recruited from Amazon Mechanical Turk) began by reporting their attitudes toward donating their wages from the study to Direct Relief to assist with the charity’s COVID-19 relief efforts. We used the same attitude scale as in the other experiments. As in Experiment 2, those with attitudes of 8 or 9 were assigned as persuaders and those with attitudes of 1-4 or 6-7 were assigned as targets. Persuaders (n = 75) were shown a message adapted from an article titled, “5 Reasons You Should Donate to Direct Relief” (Guest 2019), and chose to target a participant with an attitude of 1 or 2, 3 or 4, or 6 or 7 with the message. Replicating our earlier findings, persuaders were more likely to target the participant with an attitude of 3 or 4 (52.00%) than participants with an attitude of 1 or 2 (18.67%) or 6 or 7 (29.33%), $\chi^2(2) = 13.04, p = .001$ (see Figure 3).

Targets—those with initial attitudes of 1 or 2 (n = 134), 3 or 4 (n = 70), or 6 or 7 (n = 90)—had a different experience. After reporting their initial attitudes, they were asked to indicate how much of their wages from the study ($0.24) they were willing to donate to Direct Relief (they could donate up to $0.23). Then, targets read the message that was sent by persuaders and reported how much reading the message changed their attitude toward donating their wages to Direct Relief (1 [not at all] to 9 [a great deal]). Most critically, they also made a binary choice: whether they would like to increase their donation (yes/no). If participants clicked yes, they were prompted to indicate how much they would like to increase their donation (up to the $0.24 limit).
On each measure, we found evidence for the predicted results. First, a one-way ANOVA with initial attitude (1 or 2, 3 or 4, and 6 or 7) as the independent variable and the attitude change measure as the dependent variable produced a significant effect, $F(2, 291) = 92.82, p < .001$. Targets whose initial attitudes were 6 or 7 (slightly favorable) reported greater attitude change ($M = 5.83, SD = 2.18$) than did targets whose initial attitudes were 3 or 4 (slightly unfavorable; $M = 3.37, SD = 1.93$), $t(291) = -7.71, p < .001$, or 1 or 2 (extremely unfavorable; $M = 2.12, SD = 1.92$), $t(291) = -13.60, p < .001$. Targets whose initial attitudes were 3 or 4 (slightly unfavorable) also reported greater attitude change than did targets whose initial attitudes were 1 or 2 (extremely unfavorable), $t(291) = -4.24, p < .001$.

Our measures of actual behavior change followed the same pattern. Targets’ decisions to increase their donations, $\chi^2(2) = 45.43, p < .001$, and the amount they increased them, $F(2, 291) = 23.48, p < .001$, both varied depending on targets’ initial attitudes. Most germane to our primary concerns, targets whose initial attitudes were 6 or 7 were more likely to choose to increase their donation (41.11%) and on average increased their donation by more (2.92 cents) than targets whose initial attitudes were 3 or 4 (11.43%, $\chi^2(1) = 15.72, p < .001$; 0.57 cents, $t(291) = -5.12, p < .001$), or 1 or 2 (6.72%, $\chi^2(1) = 36.95, p < .001$; 0.36 cents, $t(291) = -6.53, p < .001$). Targets whose initial attitudes were 3 or 4 were also directionally more likely to increase their donation, $\chi^2(1) = 0.79, p = .37$, and increase it by more, $t(291) = -0.50, p = .62$, than targets whose initial attitudes were 1 or 2, but these latter differences were not statistically significant.

In short, this experiment provides further evidence of the predicted misalignment between targeting decisions and persuasive impact surrounding COVID-19 behaviors. Using ostensibly real donation decisions in a consequential setting, persuaders continued to target individuals slightly against the behavior in question, but would have had more impact—in terms of both decisions to increase donations and the amount of money donated—if they had targeted individuals already leaning in favor. Given the context of Experiment 3, this misalignment could affect actual medical relief efforts for COVID-19 health workers.

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1 For exploratory purposes, we also measured attitude and behavior change for participants with neutral initial attitudes in this experiment (see Web Appendix).
2 We did not deduct participants’ donations from their payment. Participants were debriefed at the end of the experiment that they would receive full payment regardless of their donation decisions.
GENERAL DISCUSSION

In three experiments conducted during the COVID-19 pandemic, we found misalignment between who persuaders targeted with health-relevant messages and who displayed the greatest attitude and behavior change upon receiving the messages. Persuaders preferred to send messages to targets with slightly negative attitudes toward the behavior in question, but these messages had greater impact on targets with slightly positive attitudes. This asymmetry can be explained from the perspective of categorical perception and message positioning. Persuaders perceive attitude change from negative to positive as greater in magnitude and impact due to the categorical shift it involves, but targets are more open to positive messages when they already lean in a positive direction, which facilitates message impact.

It is noteworthy that Experiments 1 and 2 drew from the same pool of participants—that is, respondents to the same initial attitude survey. Assignment to persuader or target roles depended on participants’ initial attitudes toward the health behaviors in question. As such, it was possible that participants could be eligible for both of our studies. Indeed, there was considerable overlap in the participants who were recruited for Experiments 1 and 2; 65.6% of the participants in Experiment 2 also completed Experiment 1. Interestingly, though, because there was a relatively low correlation ($r[999] = .19, p < .001$) between attitudes toward wearing masks and toward participating in vaccine trials in our initial survey, 43.2% of participants who completed both experiments played the role of persuader in one and target in the other. In the Web Appendix, we summarize the results for the subset of participants in Experiment 2 who completed Experiment 1 in a different role ($N = 156$). Notably, these results replicate those from Experiment 2 in both pattern and significance, suggesting that persuaders might disproportionately select slightly negative targets despite the fact that they themselves are more receptive to persuasion when slightly positive toward the behavior in question.

Much social influence and persuasion occurs during communication between everyday people and their peers, and during the COVID-19 pandemic persuasion experts have exerted great effort toward informing people about how they can tune the content of their messages to increase their persuasive impact. Taking a different tack, our research examines persuasive target selection as another crucial element in the persuasion process. We find that another way persuaders can boost their impact is to select the best target. In many cases, this will be someone already leaning in the desired direction, but who has room to shift to even stronger support.
In addition to providing insight that could help in the fight against COVID-19, this research also sparks new questions for future work. One potentially important question is whether marketers and policymakers display the same propensity to target people who are leaning slightly against the behavior in question. Do marketers, policymakers, and other decision makers show the same targeting preference, or are they more attuned to target receptiveness? Stated differently, are persuasion experts more apt to choose targets who already lean in their direction? Marketers have been known to overspend on customer acquisition at the expense of customer retention (e.g., Reichheld and Schefter 2000), which suggests that maybe they are not more likely than laypeople to choose the most receptive targets for their appeals. Perhaps inattentiveness to the receptiveness of targets is one reason why. Exploring whether experts and laypeople differ in their targeting strategies—and if so, why—would be a valuable direction for future research in this area.

In sum, selecting an appropriate target, or audience, is a critical part of making a persuasive appeal effective. The current research highlights a reliable feature of persuasive target selection that may frequently limit its effectiveness. Specifically, people tend to select persuasion targets who are not the most receptive targets available. In the context of COVID-19, this gap, or asymmetry, could have important public health implications. We hope our findings inspire future research on persuasive targeting and help everyday people and public and private sector decision-makers enhance the persuasive impact of their health-relevant messages both during and beyond the COVID-19 pandemic.
REFERENCES


FIGURE CAPTIONS

Figure 1: Results from Experiment 1.

Figure 2: Results from Experiment 2.

Figure 3: Percent of persuaders choosing each target and percent of targets increasing their donation in Experiment 3.
Figure 3
WEB APPENDIX

This web appendix contains the detailed experimental materials for the initial attitude survey and Experiments 1-3. It also contains the results for the subset of participants in Experiment 2 who also completed Experiment 1 in a different role, as well as the results for participants who reported neutral initial attitudes in Experiment 3.
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INITIAL ATTITUDE SURVEY MATERIALS

Introduction

Welcome to the study. We appreciate your help with our research. The whole session should take approximately 1 minute.

Thanks again!

The spread of the novel coronavirus across the world has greatly impacted how people live their daily lives. Compared to just weeks ago, people are much less likely to engage in some behaviors and much more likely to engage in others.

In this study, we seek to better understand people's attitudes toward various coronavirus-related behaviors. There are no right or wrong answers. We are interested in your personal reactions.

Questions

What is your attitude toward $\text{lm://Field/1}$?

$\text{lm://Field/2}$

<table>
<thead>
<tr>
<th>Extremely negative</th>
<th>Neutral</th>
<th>Extremely positive</th>
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<tbody>
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<td>2</td>
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<td>9</td>
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</tbody>
</table>
Values

<table>
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<th><strong>Clarification (if necessary)</strong> (${$lm://Field/2$})</th>
</tr>
</thead>
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<tr>
<td>wearing masks/face coverings when out in public</td>
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</tr>
<tr>
<td>social distancing</td>
<td>By social distancing, we mean generally self-isolating and staying at least 6 feet away from others while out in public.</td>
</tr>
<tr>
<td>stocking up on food at the grocery store</td>
<td>By stocking up, we mean purchasing more than you need right now to have back up food in case you need it.</td>
</tr>
<tr>
<td>stocking up on toiletries and cleaning supplies</td>
<td>By stocking up, we mean purchasing more than you need right now to have back up supplies in case you need them.</td>
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<tr>
<td>donating blood plasma to treat COVID-19 patients (if you contract and recover from the disease)</td>
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<tr>
<td>participating in a medical study testing an experimental COVID-19 vaccine</td>
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<td>participating in virtual yoga, meditation, and workout classes</td>
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<td>canceling summer travel</td>
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<tr>
<td>socializing via videochat</td>
<td>In other words, we're interested in your attitude toward using online video platforms for casual social interactions (meeting up with friends for happy hour, etc.).</td>
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<tr>
<td>using the Zoom video communications platform</td>
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<td>wearing gloves when out in public</td>
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<tr>
<td>participating in online academic classes</td>
<td>By social distancing, we mean generally self-isolating and staying at least 6 feet away from others while out in public.</td>
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EXPERIMENT 1 MATERIALS

Introduction for all participants

Welcome to the study. We appreciate your help with our research.

Thank you for your response to our recent survey measuring attitudes toward various coronavirus-related behaviors.

Message for all participants

MESSAGE -- PLEASE READ CAREFULLY

Prospects for beating this pandemic were boosted Thursday when our leaders finally embraced face masks for the public.

Wearing a face mask in public can be a jarring experience. “Am I overreacting?” and “Am I needlessly terrifying others?” are thoughts inevitably made worse by negative reactions from our neighbors.

As psychiatrists, we commonly see how psychological factors and stigma can prevent us from making healthy, even lifesaving decisions. Nowhere does this seem more evident than in our current reluctance to embrace universal mask wearing.

The early recommendations not to wear masks were rooted in the scarcity of medical masks around the world. But do-it-yourself masks, especially washable ones, will have no impact on medical supplies and may slow the spread of this virus, which helps us all.

In "It's Time to Make Your Own Face Mask," Farhad Manjoo clearly shows that face masks function not only as personal protective equipment but also as what we might call “others' protective equipment” by reducing airborne viral spread from sneezes and coughs. One of the most self-protective and altruistic things we can do now is to wear a face mask while in public because asymptomatic people with Covid-19 can still transmit the illness.

Eileen Kavanagh
Dirk Winter
New York
The writers are psychiatrists at Columbia University Medical Center.
Materials for participants with attitudes of 3, 4, 6, or 7 toward wearing masks

In this survey, we are going to have you read a brief message that was sent to you by another worker on Mechanical Turk.

The message is an opinion letter that was recently published in The New York Times and it encourages people to wear masks/face coverings when out in public.

After you read the message, we are going to ask you some questions about your reactions.

[Message Presented]

How much did reading that message change your attitude toward wearing masks/face coverings when out in public?

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How much did reading that message impact the likelihood that you will wear a mask/face covering when out in public?

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Materials for participants with attitudes of 8 or 9 toward wearing masks

You might be interested to know that while many workers on Mechanical Turk shared similar attitudes toward some of the coronavirus-related behaviors, we saw a wide range opinions toward each behavior.

We particularly saw a wide range of attitudes toward **wearing masks/face coverings when out in public**. Some people were in favor and some were against for a variety of reasons.

In the recent survey, you reported that you were strongly in favor of **wearing masks/face coverings when out in public**. While many participants share your view, other participants reported attitudes that differ. For example, we commonly see participants who are **just leaning somewhat against** or **just leaning somewhat in favor** of wearing masks/coverings in public.

In this session, you will have an opportunity to send a brief message to one of these other participants. We will provide you with the message on the next screen. The message is an opinion letter that was recently published in The New York Times and it **encourages people to wear masks/face coverings when out in public**.

Click ">>" to see the message.
Now you have the opportunity to send the message you just read to one participant who has a different view than you:

- A participant who is leaning somewhat **against** wearing masks/coverings in public or
- A participant who is leaning somewhat **in favor of** wearing masks/coverings in public.

If you could send this message **to try to persuade one of these participants**, to whom would you send the message you just read?

- A participant who is leaning somewhat **against** wearing masks/coverings
- A participant who is leaning somewhat **in favor of** wearing masks/coverings
EXPERIMENT 2 MATERIALS

Introduction for all participants

Welcome to the study. We appreciate your help with our research.

Thank you for your response to our recent survey measuring attitudes toward various coronavirus-related behaviors.

Message for all participants

MESSAGE -- PLEASE READ CAREFULLY

Medical advances, including the development of a COVID-19 vaccine, depend on participation.

Often, people may not enroll in vaccine-related clinical trials because they are afraid of uncertain and unknown outcomes. This uncertainty might be particularly salient for COVID-19 vaccine trials given the great uncertainty associated with the disease itself. While fear of uncertainty is an understandable and justifiable reason to refrain from participating, concerns about the potential unknowns associated with clinical trials are often overweighted. Even though researchers cannot guarantee outcomes, patient safety is a top priority. Each trial has enforced oversight, and patients also have rights that help protect them.

On the flip side, there are many reasons to volunteer to participate in COVID-19 vaccine clinical trials, including a few reasons that people sometimes do not fully appreciate. These reasons include:
- The opportunity to help others who currently suffer from medical conditions and those who may be exposed to COVID-19 in the future
- Access to investigational COVID-19 vaccines before they become widely available
- Ability to play a more active role in your own healthcare
- Access to free physical examinations and diagnostic tests
- Compensation for time and travel related to the COVID-19 clinical trial
Materials for participants with attitudes of 1, 2, 3, 4, 6, or 7 toward participating in medical studies testing experimental COVID-19 vaccines

In this survey, we are going to have you read a brief message that was sent to you by another worker on Mechanical Turk.

**The message encourages people to volunteer to participate in medical studies testing experimental COVID-19 vaccines.**

After you read the message, we are going to ask you some questions about your reactions.

[Message Presented]

How much did reading that message change your attitude toward participating in a medical study testing an experimental COVID-19 vaccine?

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How much did reading that message impact the likelihood that you would participate in a study testing an experimental COVID-19 vaccine if an opportunity to do so becomes available in your area?

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Materials for participants with attitudes of 8 or 9 toward participating in medical studies testing experimental COVID-19 vaccines

You might be interested to know that while many workers on Mechanical Turk shared similar attitudes toward some of the coronavirus-related behaviors, we saw a wide range opinions toward each behavior.

We particularly saw a wide range of attitudes toward participating in a medical study testing an experimental COVID-19 vaccine. Some people were in favor and some were against for a variety of reasons.

What is your attitude toward participating in a medical study testing an experimental COVID-19 vaccine?

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In the recent survey, you reported that your attitude toward participating in a medical study testing an experimental COVID-19 vaccine was a S{e://Field/persuader_att} on the scale above. While many participants share your view, other participants reported attitudes that differ.

In this session, you will have an opportunity to send a brief message to one of these other participants. We will provide you with the message on the next screen. The message encourages people to volunteer to participate in medical studies testing experimental COVID-19 vaccines.

Click ">>" to see the message.
Now you have the opportunity to send the message you just read to one participant who has a different view than you (i.e., someone who has an attitude of 1 or 2, 3 or 4, or 6 or 7 toward participating in a medical study testing an experimental COVID-19 vaccine based on the scale shown below).

What is your attitude toward participating in a medical study testing an experimental COVID-19 vaccine?

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If you could send this message to try to persuade someone, to whom would you send the message you just read?

- A participant with an attitude of 1 or 2
- A participant with an attitude of 3 or 4
- A participant with an attitude of 6 or 7
EXPERIMENT 3 MATERIALS

Introduction and attitude measure for all participants

Welcome to the study. We appreciate your help with our research.

There are no right or wrong answers in this study. We are merely interested in your personal reactions.

What is your attitude toward donating your wages from this study to Direct Relief to assist with their COVID-19 relief efforts?

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Conditional on a “Neutral (5)” response, the measure below appeared

If you had to choose, would you say your attitude toward donating your wages from this study to Direct Relief leans negative (closer to a 4 on the scale below) or leans positive (closer to a 6 on the scale below)?

Leans negative

Leans positive
Message for all participants

MESSAGE -- PLEASE READ CAREFULLY

Thankfully, even with so many so-called charities misusing donations, the good news is, there are still so many well-run, honest charities out there that deserve your donations. One such charity is emergency relief organization Direct Relief.

According to their website, Direct Relief is on a mission “to improve the health and lives of people affected by poverty or emergency situations by mobilizing and providing essential medical resources needed for their care.”

If you’re considering making a charitable donation this year, here are five strong reasons you should consider donating to Direct Relief:

1. Direct Relief comes highly recommended. Charity Navigator, which is widely regarded as the top watchdog in the charity industry, rated Direct Relief as the number-one “Charity Everyone’s Heard Of” for having the lowest percentage of funds spent on administrative and fundraising costs. Your donation won’t be wasted on lavish fundraisers or executive retreats; it will be used more wisely than at any other charity out there.

2. Direct Relief is absolutely transparent in how they use donations. One of the things this charity does best is keeping donors updated on how their donations are being used. One outstanding example of this is their website’s interactive “Aid Map,” which lets visitors see which countries Direct Relief has provided services in, how much they’ve spent in those countries, and how many facilities they have there, and then view specific stories about the work being done there. Features like this one demonstrate the charity’s commitment to not only raising funds, but keeping their donors in the loop about the good generated by their donations.

3. Direct Relief has all the right licenses, memberships, and credentials. Direct Relief is a member of all the leading charity associations, including NetHope, InterAction, and The Healthcare Distribution Management Association. In addition, Direct Relief is approved by the U.S. Government and the Government of India to provide humanitarian assistance, registered with every U.S. state where such registration is required, compliant with the standards of the Council for Better Business Bureaus (CBBB) Standards for Charitable Solicitations, and a member of the Better Business Bureau’s Wise Giving Alliance.

4. Direct Relief is constantly seeking more effective ways to use donations. This year, Fast Company ranked Direct Relief among “the world’s most innovative nonprofits.” Direct Relief was also recognized recently for its ongoing partnership with FedEx to get supplies to people in crisis faster.

5. Direct Relief is a relief from shady charities. In a world filled with too many fraudulent charities, Direct Relief is an organization where donors can place their trust. By looking for signs like reputation, licenses, and memberships, you can identify those trustworthy charities and ignore those that aren’t.
**Materials for participants with attitudes of 1-7 toward donating their wages from the study to Direct Relief**

Please indicate how much of your wages from this study (up to 23 cents) you are willing to donate to Direct Relief.

0  1  2  3  4  5  6  7  8  9  10  11  12  13  14  15  16  17  18  19  20  21  22  23

Thank you for your response!

Now, we are going to have you read a brief message that was sent to you by another worker on Mechanical Turk.

The message includes excerpts from an article published on bestcompany.com titled "5 Reasons You Should Donate to Direct Relief."

After you read the message, we are going to ask you some questions about your reactions.

---

[Message Presented]

---

How much did reading that message change your attitude toward donating your wages from this study to Direct Relief to assist with their COVID-19 health relief efforts?

Not At All        A Great Deal
1  2  3  4  5  6  7  8  9
○  ○  ○  ○  ○  ○  ○  ○  ○
Earlier, you indicated that you would like to donate $\{q://QID455/ChoiceNumericEntryValue/1\}$ cents to Direct Relief to assist with their COVID-19 health relief efforts.

Would you like to increase your donation?

☐ Yes
☐ No

---

**Conditional on a “Yes” response, the measure below appeared**

Please indicate the amount by which you would like to increase your donation.

*Note that you must increase more than 0 cents and cannot donate more than 24 cents total. This means the maximum that you can increase your donation by is $\{e://Field/max increase\}$ cents.*

☐ 0 cents

---

Thank you for your responses.

We recognize that financial times are tough right now, and so you’re going to get your full pay contingent on completing this experiment, regardless of how you answered the questions above.

We (the researchers funding this study) will fund donations to Direct Relief ourselves.
Materials for participants with attitudes of 8 or 9 toward donating their wages from the study to Direct Relief

Thank you for your response!

You might be interested to know that while many workers on Mechanical Turk share similar attitudes toward donating wages from this study to Direct Relief, we saw a wide range of opinions. Some people were in favor and some were against for a variety of reasons.

What is your attitude toward donating your wages from this study to Direct Relief to assist with their COVID-19 relief efforts?

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You reported that your attitude toward donating wages from this study to Direct Relief was a $\text{persuader}_\text{att}$ on the scale above. While many participants share your view, other participants reported attitudes that differ.

In this session, you will have an opportunity to send a brief message to one of these other participants. We will provide you with the message on the next screen. The message includes excerpts from an article published on bestcompany.com titled "5 Reasons You Should Donate to Direct Relief."

Click ">>" to see the message.

[Message Presented]

Now you have the opportunity to send the message you just read to one participant who has a different view than you (i.e., someone who has an attitude of 1 or 2, 3 or 4, or 6 or 7 toward donating wages from this study to Direct Relief based on the scale shown below).

What is your attitude toward donating your wages from this study to Direct Relief to assist with their COVID-19 relief efforts?

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If you could send this message to try to persuade someone, to whom would you send the message you just read?

A participant with an attitude of 1 or 2

A participant with an attitude of 3 or 4

A participant with an attitude of 6 or 7
EXPERIMENT 2 RESULTS FOR PARTICIPANTS IN NEW ROLES

As indicated in the General Discussion, 156 participants in Experiment 2 also completed Experiment 1 in a different role. This included 23 participants who were extremely against participating in vaccine trials (attitudes of 1 or 2 on the initial 9-point attitude scale), 40 participants who were slightly against participating in vaccine trials (attitudes of 3 or 4), 59 participants who were slightly in favor of participating in vaccine trials (attitudes of 6 or 7), and 34 participants who were extremely in favor of participating in vaccine trials (attitudes of 8 or 9). Thus, this subset of participants consisted of 34 persuaders and 122 targets.

As shown in Supplemental Figure 1, the targeting distribution among these 34 persuaders significantly differed from chance, $\chi^2(2) = 12.77, p = .002$, such that a majority of the persuaders (58.82%) chose to target a participant with an attitude of 3 or 4 (i.e., who was slightly negative). Again, however, this targeting decision did not align with the targets most impacted by the message (Supplemental Figure 1). Consistent with the results from Experiments 1 and 2, targets were differentially impacted by the message, $F(2, 119) = 14.11, p < .001$. Targets whose
initial attitudes were slightly favorable (i.e., 6 or 7) reported being more impacted by the message \(M = 4.82, SD = 1.99\) than did targets whose initial attitudes were slightly unfavorable (i.e., 3 or 4; \(M = 3.89, SD = 2.01\)), \(t(119) = -2.33, p = .021\), or very unfavorable (i.e., 1 or 2; \(M = 2.28, SD = 1.76\)), \(t(119) = -5.28, p < .001\). Targets with slightly unfavorable initial attitudes also reported being more impacted by the message than targets with very unfavorable initial attitudes, \(t(119) = -3.14, p = .002\).
EXPERIMENT 3 RESULTS FOR NEUTRAL PARTICIPANTS

As indicated in the main text, we also measured attitude and behavior change for participants with neutral initial attitudes (attitude = 5 on the 1-9 scale; $n = 122$) in Experiment 3. As expected, these participants’ attitude and behavior change fell in between that of participants who reported attitudes of 3 or 4 (slightly against) and participants who reported attitudes 6 or 7 (slightly in favor) toward donating their wages from the study to Direct Relief. Targets with neutral initial attitudes reported less attitude change ($M = 4.05$, $SD = 2.20$) than targets whose initial attitudes were 6 or 7, $t(412) = 6.13$, $p < .001$, but more attitude change than targets whose initial attitudes were 3 or 4, $t(412) = -2.16$, $p = .032$. Targets with neutral initial attitudes also were less likely to increase their donation (14.75%) and changed their donation amount by smaller magnitudes on average (0.98 cents) than targets whose initial attitudes were 6 or 7 ($\chi^2(1) = 17.38$, $p < .001$; $t(412) = 4.71$, $p < .001$). Targets with neutral initial attitudes also were directionally more likely to increase their donation and on average changed their donation amount by a larger magnitude than targets whose initial attitudes were 3 or 4, but neither of these analyses reached significance ($\chi^2(1) = 0.18$, $p = .67$; $t(412) = -0.93$, $p = .35$).

It is also worth noting that participants with neutral attitudes toward donating their wages from the study to Direct Relief also responded to an additional measure in our study, which asked whether their attitude leaned negative (i.e., closer to a 4 on the 9-point scale) or leaned positive (i.e., closer to a 6 on the 9-point scale) toward donating if they had to choose. Of the participants reporting neutral initial attitudes, 65 reported that they leaned negative and 57 reported that they leaned positive. Adding the participants who reported leaning negative into the group of targets reporting attitudes of 3 or 4 and participants who reported leaning positive into the group of targets reporting attitudes of 6 or 7 does not change the significance or conclusions of the results reported in the main text. In this case, targets whose initial attitudes were 6 or 7 (or who leaned positive) reported greater attitude change ($M = 5.40$, $SD = 2.20$) than did targets whose initial attitudes were 3 or 4 (or who leaned negative; $M = 3.42$, $SD = 2.13$), $t(413) = -7.98$, $p < .001$. These former targets also were more likely to increase their donation (33.33%) and changed their donation behavior by larger magnitudes on average (2.37 cents) than the latter targets (10.37%, $\chi^2 (1) = 20.09$, $p < .001$; 0.56 cents, $t(413) = -5.11$, $p < .001$).