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Considering Emotion in COVID-19 Vaccine Communication: Addressing Vaccine Hesitancy and Fostering Vaccine Confidence

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ABSTRACT

Long-term control of the COVID-19 pandemic hinges in part on the development and uptake of a preventive vaccine. In addition to a segment of population that refuses vaccines, the novelty of the disease and concerns over safety and efficacy of the vaccine have a sizable proportion of the U.S. indicating reluctance to getting vaccinated against COVID-19. Among various efforts to address vaccine hesitancy and foster vaccine confidence, evidence-based communication strategies are critical. There are opportunities to consider the role of emotion in communication efforts. In this commentary, we highlight several ways negative as well as positive emotions may be considered and leveraged. Examples include attending to negative emotions such as fear and anxiety, raising awareness of emotional manipulations by anti-vaccine disinformation efforts, and activating positive emotions such as altruism and hope as part of vaccine education endeavors.

Covid-19 vaccine hesitancy

Although COVID-19 preventive behaviors such as mask wearing and social distancing have been shown to be effective in curbing the spread of the virus (World Health Organization, 2020), long-term control of the COVID-19 pandemic will hinge on the development and uptake of a preventive vaccine. To date, a sizable proportion of the U.S. population has reported that they either do not plan to or are unsure about becoming vaccinated against COVID-19 (Associated Press-University of Chicago National Opinion Research Center, 2020; Suffolk University Political Research Center, 2020; The City University of New York School of Public Health, 2020; Thigpen & Funk, 2020). This trend is concerning from a public health standpoint given that herd immunity is paramount to slowing the pandemic's spread. However, hesitancy to vaccinate against COVID-19 is also understandable given the novelty of the disease, the unusually rapid speed of vaccine development, some groups' mistrust in science and health experts (Funk et al., 2020; Kaiser Family Foundation, 2020 (KFF); Tyson et al., 2020), and the documented concerns by some over the politicization of the vaccine as well as its safety and efficacy standards (Kaiser Family Foundation, 2020; The City University of New York School of Public Health, 2020; Tyson et al., 2020). In order to effectively address vaccine hesitancy and foster vaccine confidence, evidence-based health communication strategies are necessary. One important aspect of communication is the consideration of the role of emotion (e.g., fear, anger, and happiness) (see a definition and a comprehensive discussion in Ferrer & Ellis, 2019) in anticipation of COVID-19 vaccine rollout. Attention to emotion can complement other major aspects of vaccine dissemination and education, such as building trust and credibility of health agencies and scientific experts, conveying the safety as well as stringent standards enforced in vaccine development process, and facilitating equitable dissemination of vaccine information across the US.

Emotional responses to COVID-19 pandemic

The COVID-19 pandemic has heightened the public's collective emotions due to dramatic societal changes, including the loss of loved ones, isolation, and loneliness in part due to social distancing measures, trepidations about the management of pandemic, fear of contracting the virus, fears over vaccine safety, and financial hardships (Nicola et al., 2020; Taylor 2019; World Health Organization, 2020). Heightened negative emotional responses to the pandemic have taken the form of myriad emotions such as fear/anxiety (Jungmann & Witthöft, 2020; Lwin et al., 2020) and anger (Lwin et al., 2020), which are coupled with a sense of uncertainty and negative attitudes such as racism and xenophobia (Lwin et al., 2020; Ruiz et al., 2020). Conversely, constant news updates and politicization of the pandemic may have also contributed to detachment and dampened emotional responses to the crisis, causing some to underestimate the risk and severity of COVID-19 (Associated Press-University of Chicago National Opinion Research Center, 2020; Hall Jamieson & Albarracín, 2020; Tyson, 2020). Some have become emotionally detached due to fatigue and passivity associated with the adverse, uncontrollable nature of this crisis and its prolonged uncertainty (Morgul et al.,

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2020; Seligman, 1975; Tyson, 2020). In this commentary, emotional responses are discussed in terms of either heightened emotions or detached/disengaged responses. Such responses have been found to affect behaviors and outcomes: heightened or lowered levels of emotions interfere with motivation and willingness to engage in preventive health behaviors (Morgul et al., 2020; Qiu et al., 2020; Wang et al., 2020), and may increase susceptibility to and endorsement of misinformation (MacFarlane et al., 2020). At the same time, given that emotional responses to the pandemic are inevitable, there may be opportunities to leverage them for vaccine education.

Emotions and vaccines

Even before the COVID-19 pandemic took hold, vaccination had long been an emotionally charged issue in many communities. As demonstrated in a growing body of literature (Bean, 2011; Broniatowski et al., 2018; Kata, 2010, 2012), a major contributor to heightened emotions surrounding vaccination is the coordinated anti-vaccination groups manipulating emotions to promote misinformation and conspiracy theories, sow confusion, and create division. In particular, analyses of anti-vaccination websites have shown that 76% to 88% of the websites studied leveraged emotional appeals (e.g., vaccines as a violation of civil liberties, dangers of vaccine side effects), and 20% to 50% of the websites underplayed the risk and severity of vaccine preventable diseases (Bean, 2011; Kata, 2010). Furthermore, a study of anti-vaccine Twitter accounts showed that anti-vaccine accounts were more likely than pro-vaccine accounts to express anger (Mitra et al., 2016). Studies also found that conspiracy theories aimed at sowing mistrust of experts and government organizations were commonly found in posts by anti-vaccine groups (Broniatowski et al., 2018; Mitra et al., 2016). Alarmingly, such emotionally driven sentiments have contributed to vaccine hesitancy and declines in vaccine uptake (Dubé et al., 2014; Jolley & Douglas, 2014). These vaccine disinformation campaigns have continued, and in fact thrived, throughout the COVID-19 pandemic (Fisher et al., 2020; Sear et al., 2020). Efforts toward addressing hesitancy and increasing vaccine confidence need to include attention to the dominant disinformation tactics.

Emotions, health behavior, and COVID-19

Emotional engagement has played a central role in the research and practice of health behavior change (Perugini & Bagozzi, 2001), and emotional appeals have been effectively used in health message design for behavior change (Dillard & Nabi, 2006; Lang & Yegiyan, 2008) – for example, anger and other negative sentiments towards tobacco industry (Murphy-Hoefer et al., 2010), fear appeals in driving safety (Carey & Sarma, 2016), and feelings of social responsibility in fruit and vegetable consumption (Williams-Piehota et al., 2004). The relationship between emotions and health behaviors, however, is complex. For example, a message intending to activate one type of emotion may instead activate other emotions (e.g., guilt messages evoking shame) that increase health risk behaviors or decrease willingness to perform preventive behaviors (Duhachek et al., 2012; Eppright et al., 2002). These complexities may be accentuated during the pandemic, as the emotionally charged nature of COVID-19, coupled with anti-vaccination rhetoric may cause confusion, nervousness, apathy, and other emotions affecting vaccine decisions. Furthermore, given the novelty and science's evolving understanding of the virus, expedited vaccine development process, and the broader political discord, concerns over the safety and efficacy of future vaccines against COVID-19 have been exacerbated, including worries about compromised safety standards for vaccine approvals (Associated Press-University of Chicago National Opinion Research Center, 2020; Kaiser Family Foundation, 2020; U.S. Department of Health and Human Services, 2020). This complex context helps to explain key drivers of vaccine hesitancy. Fears over vaccine safety, side effects, and the rapid development of the vaccine have been cited as barriers to vaccination (Associated Press-University of Chicago National Opinion Research Center, 2020; Fisher et al., 2020). Given that emotions are found to influence vaccine risk perceptions and intentions more strongly than statistical information (Betsch et al., 2011), future COVID-19 vaccine education efforts must move beyond presenting factual information to address emotions surrounding COVID-19. Below we highlight possible approaches to leverage emotions in COVID-19 vaccine communication efforts.

Counteracting negative emotions

The widespread anxiety, loss, and psychological fatigue caused by the pandemic have impacted health behaviors and vaccination intentions (Jungmann & Witthöft, 2020; Lwin et al., 2020; Morgul et al., 2020; Qiu et al., 2020). Assuming the upcoming availability of a COVID-19 vaccine that passes stringent safety standards and demonstrates efficacy, vaccine education efforts must still acknowledge and manage pervasive negative emotions, while also considering the different emotional predispositions of the specific intended audiences.

In communities with pervasive heightened emotions, care must be taken to attend to those emotions rather than inadvertently heightening them in ways that would be counterproductive in vaccine decisions. For example, researchers have theorized that, in uncertain and uncontrollable situations, people focus on reducing negative emotions rather than changing behavior to mitigate potential threats (Lerner & Keltner, 2001). Therefore, the use of certain negative emotional appeals to encourage vaccination may instead activate further fear and inability to engage in prevention (e.g., vaccination). Framing vaccination as a concrete, actionable strategy to reduce COVID-19 risk may help to address negative emotions, increase self-efficacy (Witte & Allen, 2000) and highlight feelings of control over reducing COVID-19 risk.

In contrast to above communication strategies for audiences with heightened negative emotions, communication efforts may leverage negative emotional appeals to reach audiences that may be emotionally disengaged or even apathetic about vaccination. Given that some of these audiences may believe that COVID-19 risk and severity are exaggerated and consequently become disengaged, communicating the risk of contracting COVID-19 may be an important part of the vaccine education message (Tannenbaum et al., 2015). Neglecting to do

so may elicit message avoidance and further de-activate emotions (Janis & Feshbach, 1953; Ness et al., 2017), consequently reducing the perceived need for vaccination. In sum, "one size does not fit all," and we must avoid generic messages and instead consider the emotional states of different audiences in targeted and tailored vaccine communication efforts.

Moreover, given that anti-vaccine groups frequently employ negative emotional appeals in their campaigns (Bean, 2011; Kata, 2010), it may be helpful to bring public awareness to the tactics used by these groups. Considering the demonstrated sustained effects of misinformation exposure (Lewandowsky et al., 2012), it may be possible to "inoculate" the public against misinformation by presenting counterarguments to misinformation and raising awareness of negative emotional appeals leveraged by anti-vaccine campaigns prior to COVID-19 vaccine rollout (McGuire & Papageorgis, 1961). For example, studies of climate change misinformation by Cook et al. (2017) and Van der Linden et al. (2017) found that people could be protected from the effects of misinformation through messaging that exposes and explains the misinformation dissemination strategies used by parties spreading misinformation (Cook et al., 2017; Van der Linden et al., 2017). A study of inoculation messaging and 9/11 conspiracy theories also showed that inoculation can promote skepticism toward conspiracy theories that may weaken their potential effects (Banas & Miller, 2013). Because many fears cited by COVID-19 vaccine hesitant individuals coincide with misinformation tactics used in anti-vaccine efforts (Associated Press-University of Chicago National Opinion Research Center, 2020), drawing attention to these patterns and inoculating the public prior to vaccine rollout may help to bring awareness and allay vaccine fears. Given that inoculation messaging may help to promote skepticism toward misinformation (and negative emotional appeals) (Banas & Miller, 2013), adopting this strategy may provide the public with needed misinformation "literacy" to identify misinformation tactics and make informed choices about COVID-19 vaccination.

Activating positive emotions

Along with considering the potential communication strategies in response to negative emotions and raising awareness of manipulative vaccine misinformation campaigns, we may consider counterbalancing negative emotions with positive emotional appeals in order to reduce mistrust, xenophobia, and exposure and endorsement of misinformation (Bavel et al., 2020; Lwin et al., 2020). One strategy to leverage positive emotional appeals is framing vaccine messages to appeal to altruism and the positive impacts of vaccination on the wider community ("prosocial motivations") (Jordan et al., 2020; Ojala, 2012). Prosocial message framing has been shown to elicit positive emotions such as hope or joy (Bavel et al., 2020; Lwin et al., 2020; Ojala, 2012), which may counteract some of the collective negative emotions and consequential passivity and message avoidance (Janis & Feshbach, 1953; Morgul et al., 2020; Ness et al., 2017; Seligman, 1975, 1981). Additionally, there may be opportunities to appeal to positive emotions by highlighting the importance of family and community connections and the collective desire to return to closer interactions after a prolonged period of social distancing and isolation (World Health Organization, 2020). Notably, a formative study by Jordan et al. (2020) showed that messaging promoting prosocial motivations (i.e., protecting one's community from COVID-19) was a stronger predictor of intentions to perform preventive behaviors than messaging promoting personal motivations (i.e., protecting oneself from COVID-19). Another study by Heffner et al. (2020) similarly showed that prosocial appeals were effective in increasing willingness to practice preventive behaviors, especially if the messaging produced a strong, positive emotional response (Heffner et al., 2020). Future studies may extend prosocial appeals to messages designed to enhance COVID-19 vaccine intentions and uptake. Taken together, these recent studies suggest the utility of activating positive emotions in COVID preventive behaviors.

Conclusions

In this commentary, we highlighted several ways emotion may be leveraged in COVID-19 vaccine communication to address vaccine hesitancy in the short term and increase vaccine confidence in the long term. Acknowledging fears, anger, and other negative emotions while emphasizing the stringent safety and efficacy standards of COVID-19 vaccine development process and fostering individuals' self-efficacy through vaccination may help to increase vaccine confidence. Moreover, messaging that raises awareness of the manipulation of negative emotions by disinformation campaigns may help to inoculate against the effects of vaccine misinformation. Another potential strategy is to elicit positive emotions toward helping one's community restore health and well-being and, consequently, deciding to vaccinate against the most consequential disease of our time. In summary, vaccine education that is tailored to the extant emotional state of its audiences, rather than a "one size fits all" approach, may be effective. As research continues to identify barriers/facilitators to vaccination, the urgent need to achieve community protection/herd immunity against COVID-19 requires us to rapidly develop and deploy nimble, adaptable communication strategies in real time. Considering the role of emotion is one of the components of a coordinated communication endeavor.

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