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# When More Is Not Better: Three Common Mistakes in Health Messaging Interventions

Katherine Farrow (University of Paris, Nanterre)

Gilles Grolleau (Universite' Bourgogne Franche-Comte' and Universite' MontpellierNaoufel Mzoughi  
INRA (Institut National de la Recherche Agronomique)

**Abstract** Health messaging interventions frequently make three well-intentioned but mistaken choices in their communications strategies. To increase their persuasiveness, these messages frequently call attention to the greatest possible numbers of people engaging in undesirable behavior, victims of this behavior, and reasons why one should change the behavior. We raise recent research suggesting how and why the intuitively attractive more-is-better heuristic can be unproductive, and suggest ways to overcome these pitfalls.

**Keywords** health messaging campaigns, persuasion, identifiability bias, social norms

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Behavioral habits pertaining to physical activity, smoking, and diet are important determinants of variations in individual health, and altering these behaviors can deliver impressive health improvements (Forouzanfar et al. 2015). To accomplish this objective, policy portfolios often include communication campaigns that seek to persuade the public to give up unhealthy behaviors in favor of healthier ones.

Emerging empirical evidence suggests, however, that the efficacy of these types of communication efforts can be marginal, in part because the task of communicating scientific findings has not typically been approached with the same degree of rigor that is applied to the production of other kinds of primary scientific knowledge (Kahan 2010). We suggest that health communication strategies can be flawed due to three common, but inadvertent, messaging mistakes that have been shown to generate counterproductive effects, namely the social norm effect, the identifiability bias effect, and the "too many reasons" effect. These mistakes share an underlying intuition: that more is better.

Recent empirical findings in the behavioral sciences explain why these approaches can work counter to the goals of public health messages. These issues have been discussed with respect to environmental messages (Farrow, Grolleau, and Mzoughi 2018) but can also be paramount in the health domain. Stone (2002) called attention to how numbers work as rhetoric. She highlighted the importance of the narrative within which numbers are communicated, the dual implications of many numbers (e.g., costs, which are invariably revenues for others), the fact that sudden growth rates can reflect a decline in social tolerance of a problem more than an increase in the problem itself due to increased reporting efforts, and the role that statistical information can play in creating "political communities out of people who share some trait that has been counted." (196) The "more is better" approach attests to the importance of numbers in policy narratives, but the evidence we raise herein demonstrates three situations in which this tactic can backfire.

In each of the following sections, we present a counter-intuitive mistake arising from this intuition, identify the potential underlying psychological mechanisms that may drive the behavioral effects evidenced in the literature, and provide suggestions for how the mistake can be avoided when designing public health messages. We note that these messaging pitfalls are not mutually exclusive.

### **Normalizing an Undesirable Behavior by Inadvertently Emphasizing Its Prevalence**

In an effort to persuade people of the severity of an issue (e.g., binge drinking or obesity), and therefore of the reason to take action, (by, e.g., drinking less alcohol or eating better), one common strategy employed in information campaigns is to call attention to the ubiquity of the undesirable behavior (e.g., many students drink too much or many people are overweight) and its harmful consequences. The rationale behind this messaging strategy appears to be that the greater the perceived severity of the problem, the greater an individual's motivation to address it. The flaw in this strategy becomes apparent, however, when we consider the well-established finding that perceived descriptive norms (i.e., the perceived behavior of others) have a significant impact on one's own behavior, as has been shown in a number of domains including environmental behavior (Farrow, Grolleau, and Ibanez 2017) and voter turnout (Gerber, Green, Larimer 2008). Social norms appear in many theories that have been applied in the realm of health-related behavior change, such as the Theory of Planned Behavior and Social Cognitive Theory (Noar and Zimmerman 2005), and conformity to social norms is hypothesized to arise from a variety of psychological mechanisms such as conditional reciprocity, social learning, seeking coordination benefits, avoiding social sanctioning, and engaging in positional races (Nyborg et al. 2016)<sup>1</sup>

In the health domain, descriptive norms have been shown to be associated with physical activity (Ball et al. 2010), attitudes toward food (Etile´ 2007), healthy eating (Mollen et al. 2013), and obesity (Sieverding, Decker, and Zimmermann 2010). For people who overestimate the prevalence of unhealthy behavior, interventions that communicate its actual prevalence serve to correct inaccurate perceptions and thus leverage conformist tendencies so as to reduce unhealthy behaviors. For people who underestimate the prevalence of unhealthy behavior, however, sharing the same information can lead to possible boomerang effects (e.g., when people who drink less than average feel entitled to increase their drinking habits) (Schultz et al. 2007). It has been argued that the boomerang effect can be less likely in health-related domains because the norm-conformity consequences impact primarily

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<sup>1</sup> Conditional reciprocity refers to the tendency to behave in a tit-for-tat manner toward others; social learning refers to looking to the example set by others to identify optimal behavior; coordination benefits refers to benefits that accrue to group members conditional on a minimum level of group engagement in a particular behavior; social sanctioning refers to verbal and nonverbal shaming; and positional races refers to the process of trying to outdo one's peers.

the individual. Prince et al. (2014), for example, find no such boomerang effect with respect to drinking behavior. But at a minimum this may mean only that different types of health behaviors are impacted differently by information regarding descriptive norms. Sieverding, Decker, and Zimmermann (2010) find, for example, that learning that very few men participate in cancer screenings reduces personal intention to get screened, and Raspe, Hueppe, and Neuhauser (2008) raise the possibility that the dissemination of social norms (from Western to Eastern Germany) can explain the convergence in prevalence rates of self-reported back pain after reunification, transforming back pain into a “communicable disease.” In a similar vein, Blanchflower, van Landeghem, and Oswald (2009) find evidence of a contagion effect for obesity.

Rather than communicating information about the prevalence of poor health status or unhealthy behaviors, it may therefore make sense to avoid sharing this information altogether in cases where modal behavior or health status is considered unhealthy. An alternative strategy consists of employing an injunctive social norm that emphasizes the acceptability (unacceptability) of the healthy (unhealthy) behavior, or even a mix of descriptive and injunctive social norms (Schultz et al. 2007). Christakis and Fowler (2007) find that certain reference groups (e.g., friends vs. neighbors), and those of the same sex, may be more powerful in changing obesity-related behaviors, which suggests that descriptive norms could also be used more advantageously by creating strategic subgroups (or even personalized feedback) designed to more effectively leverage the power of social comparison. New evidence also suggests that a close examination of the framing and wording in communicating social norms can play a critical role in how this information is received (Demarque et al. 2015). Rather than calling attention to the high percentage of people engaging in an unhealthy behavior, for instance, a more effective strategy could emphasize the absolute number of individuals engaging in the healthy behavior or a positive trend in the frequency of the healthy behavior (Sparkman and Walton 2017).

### **Emphasizing the Large Number of Victims of Detrimental Behaviors**

When it comes to mobilizing political action regarding public health measures, another strategy that is often used to draw attention to the scale of a problem is to emphasize the large number of victims or potential victims. In these cases, the more-is-better conventional wisdom asserts that the greater the number of victims, the greater the expected impact of a message on an individual’s propensity to take action. Nevertheless, recent anecdotal and empirical evidence suggests that emphasizing a large number of victims can in fact reduce motivations to act on this information, namely due to the identifiability bias (also referred to as psychic numbing, or the collapse of compassion), which highlights the tendency for single, identifiable victims to elicit stronger affective reactions among potential helpers than abstract, unidentifiable ones do (Hsu 2008; Jenni and Loewenstein 1997; Kogut

and Ritov 2005; Lewinsohn-Zamir, Ritov, and Kogut 2017; Slovic 2010). This effect pertains specifically to individual versus multiple victims, as we are not aware of research showing that it also holds on a larger scale (e.g., 10,000 vs. 100 victims)

Several mechanisms (Hsu 2008; Jenni and Loewenstein 1997) have been proposed to explain the identifiable victim effect, notably (i) the vividness of an identification that is activated through an emotional story, visual images, and real-time unfolding, (ii) the certainty effect, according to which people overweight certain outcomes (e.g., helping an identifiable victim) relative to uncertain ones (e.g., helping statistical or probabilistic victims), (iii) the reference group effect, or the tendency of individuals to overweight the risks that are faced by smaller groups (e.g., a single identified victim) relative to those faced by bigger groups (e.g., statistical victims), and (iv) the differential evaluation of harm before it occurs (*ex ante*) in the case of statistical victims versus after (*ex post*) in the case of identified victims, which can lead to feeling a greater impetus to help in the latter case relative to the former (Jenni and Loewenstein 1997). A good deal of evidence suggests that individuals are moved to help identifiable victims to a greater extent because they elicit greater affective reactions (Genevsky et al. 2013; Slovic 2010; Small and Loewenstein 2003). In 2005, for example, a Canadian newspaper article shared the story of Leslie Cowan, a 41-year-old mother and breast cancer survivor who was fighting for the release of a new drug, Herceptin, that was not yet approved by Ontario's Health Ministry at time, which forced her to seek treatment in the United States at the cost of \$100,000 a year. The very next day, the same newspaper reported that the health minister stated that he was "personally impacted by personal stories" and that the Ontario Health Ministry would fast-track the review process, making Herceptin fundable by the province within a few months (Hsu 2008).

When the aim of a message is to spur individual behavior change, the evidence raised above suggests that messages stressing a greater number of victims may actually lessen people's motivation to act on this information. Accordingly, the evidence suggests that this pitfall could be avoided by emphasizing the identity of a single individual who suffers ill health rather than many faceless, statistical individuals. We note, however, that impressive figures can be useful when the aim of a message is to garner political support from third parties, as political mobilization to address a given issue can be strengthened by the potential welfare gains that this mobilization stands to generate (Stone 2002). Moreover, ignoring statistical information can lead to suboptimal health policy decisions (Hyman 2000; Parmet 2013). We recognize that, instead, anecdotes represent a powerful tool to bring attention to issues that require significant public mobilization, especially when this mobilization may be greatly helped by the support of key decision makers. Some campaigns, such as "The Real Cost" antitobacco and antivaping campaigns in the United States, target teen audiences with graphic depictions of the negative health effects of smoking and vaping, presumably because this type of message is believed to be most effective among this particular group. Based on observations made by Hyman (2000), we raise

the possibility that anecdotal stories should be preferentially used in cases where they are indeed representative of wider statistical trends, and they should furthermore be completed by information regarding the specific conditions driving the outcome in question so as to increase their reliability as the basis for policy development.

### **Providing Too Many Reasons to Encourage Behavior Change**

Health campaigns often cite many arguments in favor of behavior change, and, indeed, it seems intuitively convincing that providing more reasons why one should adopt a healthy behavior is more persuasive than providing fewer reasons. Recent studies in other contexts, however, challenge the effectiveness of the idea that “more is better” in this regard, demonstrating that adding arguments can in fact reduce the overall persuasiveness of a message (see Weaver, Garcia, and Schwarz 2012 and Weaver, Hock, and Garcia 2016 in a prosocial context).

The presenter’s paradox (Weaver, Garcia, and Schwarz 2012) suggests that when individuals present information they tend to follow an additive strategy, according to which more arguments generate a more persuasive message. When individuals evaluate information, however, the evidence suggests that they tend to use a process that more closely resembles averaging, according to which more arguments do not necessarily increase the persuasiveness of a message if the additional arguments are sufficiently weak. By following the additive strategy prescribed by the more-is-better intuition, communicators often cite the maximum number of reasons possible why one should take action, regardless of the strength of the particular reasons cited. According to the presenter’s paradox, however, an audience is in fact less likely to be persuaded to engage in a behavior after receiving a message that contains both weak and strong arguments compared to a message that contains the stronger arguments only (Weaver, Hock, and Garcia 2016). The objects of persuasion may assume that all arguments should be accurate and logically sound. If one argument is perceived as inaccurate or illogical, for example, if it is incongruent with other facts or with one’s own experience, this could cast doubt on the validity of other arguments as well. Increasing the number of arguments raises the risk that the targets will have reasons to object on one or more. Shu and Carlson (2014) posit that in settings where consumers know that the source of a message has a persuasion motive the optimal number of claims is three, and they suggest that beyond this point the sheer number of claims engenders skepticism about all of the claims made. Other research, indicating that working memory only allows people to keep five to nine facts accessible at any one time (Miller 1956), would suggest that the maximum number of reasons provided in a persuasive message should be no more than nine.

Accordingly, the detrimental effect of too many reasons could be avoided by privileging only the strongest arguments for the targeted group. Albeit counterintuitive, this strategy would involve deliberately limiting the number of reasons cited in health messages in order to maximize their persuasiveness. Pilot studies would be necessary in order to determine the optimal number of reasons, the most appropriate framing and wording, the strongest types of arguments given the targeted audience, and the type of behavior change that is being pursued in the contexts of interest.

## **Conclusion**

In this piece we have provided evidence suggesting that common practice may not always be right with respect to persuasive messaging regarding health behavior. Specifically, many interventions aiming to induce health-related behavior change may be flawed by the intuition that more is better, which can undermine the very outcomes that these interventions are intended to encourage. These mistakes can be addressed if campaign proponents are well informed regarding the behavioral impacts of messaging and are willing to take the necessary, if sometimes counterintuitive, measures to avoid them. This work also constitutes a call for further research in the form of the systematic assessment of health-related messages through a behaviorally informed lens, including the possibility for cross-cultural differences in the results obtained.