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Social MobilizationTodd Rogers,¹ Noah J. Goldstein,² and Craig R. Fox²¹John F. Kennedy School of Government, Harvard University, Cambridge, Massachusetts 02138; email: Todd_Rogers@hks.harvard.edu²Anderson School of Management, University of California, Los Angeles, California 90095; email: noah.goldstein@anderson.ucla.edu, cfox@anderson.ucla.edu

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social influence, collective action, charitable giving, voter mobilization, environmental behavior, field experiments

Abstract

This article reviews research from several behavioral disciplines to derive strategies for prompting people to perform behaviors that are individually costly and provide negligible individual or social benefits but are meaningful when performed by a large number of individuals. Whereas the term social influence encompasses all the ways in which people influence other people, social mobilization refers specifically to principles that can be used to influence a large number of individuals to participate in such activities. The motivational force of social mobilization is amplified by the fact that others benefit from the encouraged behaviors, and its overall impact is enhanced by the fact that people are embedded within social networks. This article may be useful to those interested in the provision of public goods, collective action, and prosocial behavior, and we give special attention to field experiments on election participation, environmentally sustainable behaviors, and charitable giving.

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INTRODUCTION

In 2011, 10,000 Egyptian citizens joined a protest in Tahrir Square to topple a corrupt government. Attending this event put each citizen's life in serious jeopardy, with a credible risk of retaliation and imprisonment. Yet one could reasonably argue that the consequent overthrow of the Egyptian government was not affected by any typical participant: Any one of those brave Egyptians could have stayed home without significantly affecting the outcome.

In 2016, over 138 million US citizens voted in the US Presidential election. These citizens spent millions of hours in total performing this behavior, rather than engaging in leisure or other productive activities. None of those individual voters had a meaningful impact on the election outcome.

In 2007, 281,000 car buyers paid more than \$22,000 each for a Toyota Prius, the first fuel-efficient hybrid car that was a breakout mainstream success. Many of these purchasers were motivated to reduce their carbon footprints. In reviewing the car, Edmunds noted that it was “less powerful and agile” than its peer midsize sedan, and Kelley Blue Book highlighted concerns about the expected long-term ownership costs compared to its peers (<https://www.edmunds.com/toyota/prius/2007/>). Yet any single car buyer purchasing a Prius instead of a much-less-efficient vehicle would result in no detectable effect on Earth's changing climate.

A well-functioning civil society requires a large number of citizens to regularly act in ways that traditional economics characterizes as irrational. People must take actions for which the cost outweighs the benefit to them and that only help the collective if many people participate. In this article, we review psychological factors that can be leveraged to prompt a large number of people to engage in these kinds of behaviors. We define “social mobilization” as the effort to marshal many people to perform behaviors that impose a net cost on each individual who complies and provide negligible collective benefit unless performed by a large number of individuals. Examples include civic engagement behaviors like voting or volunteering, environmentally sustainable behaviors like conservation or recycling, and charitable contributions of time and money.

Collective action is a topic that has interested a range of social scientists for decades.¹ In particular, economists have long recognized that rational self-interested individuals should not contribute to the achievement of common goals or to public goods that can be consumed by

¹There have been a variety of excellent reviews on related topics across disciplines. These include psychological perspectives on social dilemmas (Dawes 1980, Weber et al. 2004), psychological perspectives on prosocial behavior (Keltner et al. 2014, Penner et al. 2005), a sociological perspective on collective identity and social movements (Polletta & Jasper 2001), political science and economic perspectives on the logic and evolution of collective action (Ostrom 1998, 2014), an evolutionary perspective on cooperation (Kraft-Todd et al. 2015), and an experimental economics perspective on the provision of public goods (Chaudhuri 2011). Though related, the perspectives of each of these reviews differ quite substantially from that of this review.

others at no additional cost and from which others cannot be readily excluded (Samuelson 1954). Mancur Olson (1965) articulated this zero contribution thesis in his classic book *Logic of Collective Action*. He wrote that “unless there is coercion or some other special device to make individuals act in their common interest, rational, self-interested individuals will not act to achieve their common or group’s interests” (Olson 1965, p. 2; quoted in Ostrom 2014, p. 235). Of course, people commonly violate this thesis, as illustrated by the three anecdotes that opened this review. Our focus is on how to develop interventions that can prompt many individuals to exhibit such other-benefiting behaviors.

In experimental economics, collective action is commonly modeled using a public goods game (or related n -player prisoner’s dilemma) in which each player chooses (usually privately) how much of their personal resources to contribute to a public pool of money. This pool is multiplied by a number greater than one and less than the total number of players, and the payoff of this public good is divided evenly among all players, even those who did not choose to contribute. Rational choice theory predicts that all players will free ride by contributing nothing because they have an individual incentive to do so no matter how much others contribute (this is the Nash equilibrium). Nevertheless, laboratory experiments frequently observe high levels of contribution in these games, especially when participants expect others to cooperate (for a recent review, see Chaudhuri 2011).

In this review, we focus on the psychology of collective action, with a particular focus on interventions that social mobilizers can develop and administer to effectively prompt many individuals to take personally costly actions that benefit the collective. Several notes concerning the scope of this topic are in order. First, our definition requires that the immediate individual costs of acting exceed the immediate individual benefits, so that taking action entails some measure of self-sacrifice or exposure to possible negative consequences. We therefore exclude tactics such as coercion or compensation that provide a material incentive for people to take action. Moreover, by focusing on costly actions, we look beyond mere attitudinal persuasion (e.g., Petty & Caccioppo 2012) or interpersonal compliance and conformity (e.g., Cialdini & Goldstein 2004).

Second, social mobilization involves prompting people to perform behaviors that primarily benefit a group of other people; the meaning and purpose of social mobilization are fundamentally social. Thus, the other-benefiting nature of social mobilization can amplify the effectiveness of some influence principles (e.g., adherence to social norms, public commitments, and social accountability). Where available, we discuss direct evidence for this amplification phenomenon, and where this evidence is not available, we appeal to indirect evidence. This focus on motivating other-benefiting behaviors also brings to the fore some insights that have been underappreciated in the social influence literature. For instance, we focus on the many ways in which social connectedness (and the digital social networks that have emerged to facilitate it) can amplify efforts to mobilize people to perform other-benefiting behaviors. In so doing, we deemphasize influence principles that primarily prompt self-benefiting behaviors (e.g., scarcity and authority).

Third, social mobilization as we define it focuses on situations in which individual action is practically meaningless and public benefits only emerge when many people perform the behavior. Thus, we exclude situations where a small subset of individuals have disproportionate influence over collective outcomes or make a disproportionate sacrifice, as with giving large philanthropic contributions, donating an organ to a known recipient, or volunteering for a dangerous military operation.

A basic psychological motive underlying many of the social mobilization principles that we discuss is people’s fundamental need to belong or feel socially connected to others. Humans have a natural tendency to seek and maintain social connectedness (Baumeister & Leary 1995, McClelland 1985). This desire for social esteem, some argue, is the origin of self-esteem: Self-esteem functions

as a way to monitor and manage one’s social belonging. Self-esteem, these researchers argue, has evolved to ensure that people exert effort to maintain or improve their social standing (Leary & Baumeister 2000). Consistent with this argument’s assertion of the primacy of social belonging, the threat of social rejection is highly aversive, causing neural reactions similar to those involved in physical pain (MacDonald & Leary 2005). In short, humans have a fundamental need to feel that they are socially connected with others. Because of this, strategies that harness social principles to prompt other-benefiting behaviors can be especially mobilizing.

We organize behavioral principles for social mobilization into five intervention elements that have proven to be potent in the behavioral literature. As a convenient mnemonic, the first letter of each principle forms the acronym PANIC. Social mobilization efforts tend to be more effective when they are (a) *personal*, i.e., they involve more personal and personalized interactions between people who can relate to one another; (b) *accountable*, i.e., they make people’s behavior observable to others, so that they feel that action or inaction could have consequences for their reputations and social standing; (c) *normative*, i.e., they convey what relevant people think others should do or what relevant people actually do; (d) *identity relevant*, i.e., they align behaviors with the ways in which people actually see themselves or would like to see themselves; and (e) *connected*, i.e., they leverage the structure of people’s networks of relationships and the platforms that maintain those networks. **Table 1** lists and defines social mobilization strategies associated with each of these five principles.

Table 1 Summary of social mobilization principles discussed in this review

Personal	Social mobilization efforts tend to be more effective when they involve more personal and personalized interactions between people who can relate to one another.
Personal interactions	In-person face-to-face authentic mobilization efforts are more effective than scripted, purely verbal, or written mobilization efforts.
Personalized potential beneficiaries	Social mobilization efforts are more effective when beneficiaries are identified or determined in advance.
Synchrony	Coordinated behaviors between participants can enhance social bonds and collective identities, rendering social mobilization efforts more effective.
Accountable	Social mobilization efforts tend to be more effective when reputation-relevant behavior is observable to others.
Social observability	People are more likely to engage in other-benefiting behaviors when they are led to expect that their behaviors will be observable to others.
Postbehavior signaling opportunities	People are more likely to engage in other-benefiting behaviors when they expect that others will observe evidence of their behaviors after the fact.
Observability cues	Environmental cues that are associated with being observed (e.g., photographs of eyes) can promote other-benefiting behaviors.
Normative	Social mobilization efforts tend to be more effective when they convey what relevant people think others should do as well as what relevant people actually do.
Injunctive norm salience	Reminding people of shared values and beliefs concerning how the group expects them to behave can enhance mobilization efforts.
Norm of reciprocity	Providing people with unconditional favors, gifts, or other-benefiting sacrifices can make people feel obliged to repay these gestures through participation in social mobilization activities.
Beneficial descriptive norms	Evidence of the pervasiveness of behaviors can amplify the effectiveness of social mobilization efforts, especially when the behaviors are performed by others who are similar to or in similar contexts as the people being targeted.

(Continued)

Table 1 (Continued)

Identity relevant	Social mobilization efforts tend to be more effective when they align behaviors with the ways people actually see themselves or would like to see themselves.
Symbolic identity displays	When people display behaviors that are representative of a particular group identity, they tend to feel more connected to that group and more willing to engage in mobilization activities.
Identity-behavior associations	Associating a behavior with a desirable identity can turn performing the behavior into an opportunity to affirm that the desirable identity is self-relevant.
Identity labeling	Reinforcing the idea that people possess other-benefiting identities can increase the behaviors associated with those identities.
Foot-in-the-door	Small, initial requests for other-benefiting behaviors can promote other-benefiting identities and lead people to be open to larger, related requests.
Self-prediction	People tend to believe that they will perform other-benefiting behaviors that they might not actually perform, but people's desire to behave consistently with what they say can make self-predictions self-fulfilling.
Hypocrisy avoidance	When people become aware that their behaviors have been inconsistent with a desirable identity, they can be especially likely to subsequently perform identity-consistent behavior.
Connected	Social mobilization efforts tend to be more effective when they leverage the structure of people's networks of relationships and the platforms that maintain those networks.
Close connections among individuals	Directing social mobilization efforts at people who are well-connected to other individuals can lead to positive spillover effects such that mobilization propagates from the target to other individuals.
Influential individuals within social networks	Focusing appeals on people who have many strong and embedded connections in a social network can help propagate mobilization appeals through simple contagion.
Observability within networks	Making behaviors more visible to other members of a social network can amplify propagation of behaviors across social networks.
Communities on the periphery of a larger social network	When contagion depends on redundant messages from similar people, social mobilization may be enhanced by targeting communities of individuals on the periphery of a larger network.

In this review, we cite the most compelling available field evidence from across various behavioral sciences to illustrate and explain each principle, with particular focus on more recent research. The principles share an underlying emphasis on social concerns and needs, and some of the evidence we marshal could speak to multiple social mobilization principles. We note these connections throughout. We afford special attention to research in three relevant domains that have received substantial attention in recent years: electoral participation, environmental conservation, and charitable giving. The behaviors that are central to these domains exemplify a key aspect of social mobilization in that they offer potentially substantial collective benefits while imposing individual costs. Because our definition of social mobilization emphasizes active interventions in field settings (as opposed to the laboratory), we pay particular attention to interventions that have been investigated in experimental field research, which has flourished in recent years.

Before proceeding, we hasten to note that social mobilization tactics rely on causes that people find compelling. People's willingness to engage in these behaviors may be moderated or mediated by moral emotions such as moral outrage or existential guilt (Montada & Schneider 1989), other-focused emotions such as empathic anger (Batson et al. 2007), or self-conscious emotions such as pride and shame (Tracy et al. 2007). We surmise that most of the social mobilization principles that we review operate, in part, through the emotions they evoke. Because there has been scant field experimentation on the direct role of emotions in social mobilization, they are not a central focus in this review (for a sociological perspective on emotions in social movements, see Jasper 2011).

We turn next to a more detailed characterization of our key principles of social mobilization and their application across various domains.

PERSONAL

The first principle of social mobilization is that the more personal and personalized an interaction is, the more impact it will tend to have on subsequent behaviors. This principle suggests that social mobilization will be more effective when interactions are made more person-to-person (rather than impersonal), involve personalizing the beneficiaries of behaviors, and structure actions so people feel synchronized and connected with others. A recent meta-analysis of cooperation in social dilemma games (Balliet 2010) supports our emphasis on personal interaction. It found that face-to-face discussion before the games began was associated with greater rates of cooperation than situations in which there was no discussion, especially for larger groups. The first contemporary randomized field experiment studying voter mobilization techniques examined the impact of different levels of personal interaction, finding that the more personal the communication, the more effective it was (Gerber & Green 2000). This conclusion generally held up over more than 100 get-out-the-vote (GOTV) randomized field experiments reviewed by Green and colleagues (2013). Being encouraged to vote by a canvasser at one's door tends to be about 150% as effective at increasing turnout as being encouraged over the phone by a volunteer caller communicating conversationally (as opposed to communicating in a highly scripted way). Meanwhile, conversational volunteer callers tend to be three times as effective as more scripted live commercial callers, and live commercial callers tend to be seven times as effective as GOTV mailers.

Newer modalities of communication generate effects consistent with the notion that the more personal interactions are the more effective they are at mobilizing individuals. Standard encouragements sent through bulk email have no positive impact on turnout (Green et al. 2013, Nickerson 2007). Personalized messages sent by email from people who are personally acquainted with the recipient tend to be relatively more effective, reflecting the power of social connectedness, as discussed in the section titled Connected (T.C. Davenport, unpublished manuscript). Standard encouragements delivered through automated robocalls have no impact on turnout, whereas standard encouragements delivered through live calls have a relatively sizable impact. Standard messages sent through text messages can have a slight positive impact on turnout, but they appear to have become less effective as they have become more widely used (Malhotra et al. 2011). This decay of treatment effect from text messaging over time may result from the increasing use of personal text messages, making each marginal text message relatively less notable and, perhaps, less likely to capture attention.

Personal interactions have also been shown to be potent at increasing recycling behavior: Face-to-face solicitation of recycling pledges increased pledges and subsequent recycling substantially more than impersonal solicitation (Reams & Ray 1993). More personal appeals make a difference in charitable giving, as well. For instance, one field experiment found that Salvation Army volunteers solicited more donations from customers exiting a store when the volunteer made eye contact with the passersby and engaged them verbally, compared to when they avoided eye contact or other forms of engagement (Andreoni et al. 2011; see also Dolinski et al. 2001).

There are several reasons that appeals involving more personal interactions are more potent than appeals involving less personal interactions. First, more personal interactions undoubtedly garner more attention than less personal interactions. For example, people surely pay more attention to a message when it is delivered face-to-face than when it is delivered through the mail. Second, when people are asked in face-to-face interactions to perform other-benefiting behaviors, they tend to believe that—and even overestimate the extent to which—others will interpret their

performance of the behaviors as indications that they are good people (Flynn & Lake 2008). Third, partly because of this heightened perception of the social costs of declining to perform a behavior, personal interactions may be especially likely to elicit pledges to perform other-benefiting behaviors. Pledges to perform future behaviors are often more than just cheap talk because they can increase the likelihood that people actually follow through on those behaviors, as discussed in more depth in the section titled Identity Relevant. For example, the vast majority of people pledge to vote when asked, and being asked increases actual voting relative to not being asked (Nickerson & Rogers 2010, Sherman 1980). Fourth, personal interactions may make pledges especially potent because people may grow concerned that they could encounter the elicitor in the future and, thus, may be prompted to report whether they actually performed the pledged behavior (Rogers et al. 2016). This accountability process is discussed in more detail in the section titled Accountable. Fifth, more personal interactions likely foster deeper personal connections than less personal interactions (see Drolet & Morris 2000). Deeper social connections engage people's empathy and their fundamental desire for acceptance, both of which tend to increase motivation to behave in socially desirable ways (Baumeister & Leary 1995). Sixth, more personal interactions create opportunities to notice similarities between oneself and another person, and perceived social similarity increases people's likelihoods of complying with requests (Cialdini & Goldstein 2004, Gehlbach et al. 2016).

Although some of the aforementioned factors are relevant to multiple forms of social influence, we assert that personal interactions can be especially potent in the context of social mobilization. People may be uncomfortable exerting personal social influence on others due to the perception that the goal of such influence is personal gain—thus, it may feel selfish. However, when personal social influence serves other-benefiting purposes, people may be more willing to engage in it. For instance, people may be more comfortable asking friends and acquaintances for contributions to a fundraiser to help children with cancer than for contributions to help cover their own medical expenses. Relatedly, when soliciting for other-benefiting behaviors, people may make stronger personal appeals and be more forceful than when requesting benefits for themselves. For instance, women tend to negotiate more effectively and more assertively when they are doing so on behalf of others rather than of themselves (Amanatullah & Morris 2010).

In addition to personalizing interactions, social mobilization may be aided by personalizing the potential beneficiaries of interventions (see Slovic et al. 2007). Mother Teresa described this idea about personalized potential beneficiaries by saying: “If I look at the mass I will never act. If I look at one, I will.” Research on the identifiable victim effect reports that people are more motivated to help identified than statistical victims and that identification is stronger when more information is provided about the individual (e.g., a picture, name, and age) (Kogut & Ritov 2005). Other work finds that merely determining a victim (or beneficiary) in advance, rather than leaving this to be determined, increases people's willingness to donate in both lab and field studies, even when no identifying personal information has been provided (Small & Loewenstein 2003). Further research has pointed to the role of emotions in the identifiable victim effect. In one small study (Genevsky et al. 2013), participants donated more money to orphans who were more identifiable (depicted in photographs rather than silhouettes), and this effect was mediated by self-rated positive arousal. Similarly, Grant and colleagues (2007) found that those working for a fundraising call center worked harder and raised more money when they had an opportunity to meet briefly with a beneficiary of the fundraising (as opposed to reading a letter from a beneficiary or having no exposure to a beneficiary). Finally, there is also evidence of an identified impact effect, whereby providing tangible details about the effect of a potential donor's contribution—a way of personalizing the impact of the donation on the beneficiary—increases charitable giving (Cryder et al. 2013).

Another strategy for social mobilization that is related to personalization involves increasing feelings of synchrony. Participants in marches, protests, and other civic actions often perform behaviors such as marching, holding up signs, singing, or chanting in unison. Perceived similarity among those participating in such events—such as similarity in perceived identity (e.g., women) or even clothing (e.g., wearing a knitted pink hat)—can foster social bonds among them (see Cialdini & Goldstein 2004). These social bonds can be further enhanced when participants engage in these behaviors in synchrony (see Chartrand & Lakin 2013). Public gatherings that involve synchronized chants, protests, and marches effectively personalize the group, blurring the psychological boundaries between the self and others who were previously merely strangers (Páez et al. 2015, Paladino et al. 2010). By strengthening participants' social bonds and sense of identity (see the section titled Identity Relevant), feelings of synchrony likely also prompt individual participants to perform other-benefiting behaviors that are valued by the other participants.

ACCOUNTABLE

When behaviors are observable to others, people are more likely to perform reputation-enhancing behaviors and avoid reputation-damaging ones. Because other-benefiting behaviors tend to be reputation enhancing (Nowak & Sigmund 1998), the accountability that comes from one's behavior being observed is a powerful principle for social mobilization. This motivation can be particularly powerful when the direct beneficiaries of the behaviors are the observers themselves, although it also affects behavior when the observers are not the direct beneficiaries (see Kraft-Todd et al. 2015). Although the direct beneficiaries of other-benefiting behaviors may reciprocate (see the section titled Normative), even others who are not direct beneficiaries often reward those who perform other-benefiting behaviors (indirect reciprocity) (Nowak & Sigmund 1998). Whether a behavior is construed to be reputation enhancing or reputation damaging may vary by person and situation (Ariely et al. 2009). For this reason, observability's impact on behavior depends on people's beliefs about others' preferences and expectations (Lerner & Tetlock 1999).

In addition to the broad strategy of harnessing people's behavioral responsiveness to social accountability (social observability), there are three narrower, complementary strategies for social mobilization: signaling opportunities, observability cues, and observability avoidance. Social observability entails increasing people's expectations that their behaviors will be observable to others. Observability interventions are increasingly possible today given the availability of ever-improving personalized data.

Gerber and colleagues (2010) examined the impact on voter turnout of a single GOTV mailer that created up to three levels of social observability concerning whether recipients voted. The first level involved informing the recipients that, after the election, a third party (the researcher) would examine whether the recipients voted. The second level, added to the previous level, was the claim that, after the election, recipients' cohabitants would be informed of whether the recipients voted. Finally, the third level, added to the other two levels, was the claim that recipients' neighbors would also be informed of whether the recipients voted. Voting behavior increased as the GOTV mailer involved more potential observers. The condition that induced the greatest level of social observability (in which people's neighbors were involved) resulted in a treatment effect that was an order of magnitude larger than a typical GOTV mailing. These social observability effects were undoubtedly the result of some combination of people's desires to avert the reputational damage of observers knowing that they did not vote and their desires to gain the reputation boost of observers knowing that they did vote. The original study occurred in a relatively low-turnout election, and the main findings have since been replicated in relatively high-turnout elections, as well (Rogers et al. 2017). The social observability GOTV strategy has subsequently been operationalized in a

range of less invasive ways. For example, communicating that people who vote will be added to a Civic Honor Roll (Panagopoulos 2013) or that names of those who vote will be published in the local newspaper (Panagopoulos 2010) have been shown to generate sizable turnout increases. Consistent with work showing that bad outcomes have greater impact on behavior than good ones (i.e., negativity bias; see Baumeister et al. 2001), publicizing the fact that people have not voted has proven to be more potent than publicizing the fact that they have voted (Gerber et al. 2010)—suggesting that shame motivates turnout more than does pride.

Social observability has also been harnessed to increase environmentally friendly behaviors and charitable giving. For example, Delmas & Lessem (2014) found that delivering private energy feedback and social comparison data to people living in residence halls was ineffective at reducing their energy consumption, but making energy use information public resulted in a 20% reduction in consumption (see also Yoeli et al. 2013). Likewise, Schwartz and colleagues (2013) found that residents who were sent mailings informing them that their energy use was being studied by researchers consumed less energy than members of a control group who were not told that they were being studied. Similar effects have been found at the organizational level, as well. For example, prominently publishing a list of companies that have failed to comply with environmental regulations had a larger effect on compliance than fines and penalties (Foulon et al. 2002). There may be additional pressure to comply when those who would directly benefit from people's prosocial actions are observing the actions (e.g., Alpizar et al. 2008) or when the solicitor of the action might have reason to judge a lack of contribution as being due to prejudice (Norton et al. 2012). Although increasing the social observability of a behavior may increase the number of people who perform it, increasing social observability can also create social welfare costs. People dislike some observability interventions, and research has shown that, under some conditions, people are willing to forego compensation in order to avoid situations in which their behavior will be observed (DellaVigna et al. 2012). Those engaged in social mobilization must balance the consequences of these strategies.

Another way to harness social observability is to create postbehavior signaling opportunities that allow people to show others that they performed a behavior and, thus, increase the reputation enhancement from performing a behavior. This suggests that one reason to vote could be to be seen by others as having voted. The prominence of "I Voted" stickers (or "I Voted" buttons on Facebook) may reflect this phenomenon. In fact, Rogers et al. (2016) found that simply alerting people at the top of a GOTV mailing that they may be called after the election and asked about their voting experience increased their likelihoods of voting. Similarly, DellaVigna and colleagues (2017) found that alerting people before an election that they would be asked in person after the election if they voted appeared to increase turnout. As the authors put it, some people appear to "vote to tell others." In a related survey, respondents reported being asked an average of five times after an election whether they voted; thus, people typically have quite a few opportunities to tell others that they voted or to try to justify why they did not.

Voting to tell others that one voted may contribute to the sizable effect on turnout of having festivals at polling places on Election Day (Addonizio et al. 2007): The more observers present when one votes, the more observers whose impressions of a person can be enhanced by the person's voting (in addition, the presence of a large number of voters signals a social norm, as we discuss in the section titled Normative). The motivating power of signaling that one voted could also help explain why voting rates fell in small communities in Switzerland when voters were given the option to vote by mail rather than in person (Funk 2010). When people vote in person, they can signal that they are voters to observers who are voting as well.

Postbehavior signaling opportunities can also increase charitable giving. For instance, Harbaugh (1998) finds that the prestige of giving is a motive for alumni of a law school to contribute

to their alma mater, as a large proportion of individuals strategically donate just enough money to enter a higher publicly acknowledged giving category. In field and lab experiments, the likelihood and amount of charitable giving increases when the opportunity for postbehavior public recognition is offered. This effect appears to be driven by a desire to improve one's reputation rather than an effort to induce others to donate as well (Karlan & McConnell 2014). In the environmental domain, the distinctive and recognizable design of the Toyota Prius, the first mainstream hybrid automobile, allowed individuals who purchased it to conspicuously display their environmentally friendly choice to others. In many communities, this purchase decision was seen as other benefiting and, therefore, was likely to be reputation enhancing (Griskevicius et al. 2010).

Mere observability cues can sometimes trigger behavioral responses similar to actual social observability. For example, several studies have found that the subtle visual presence of eye images can motivate people to perform reputation-enhancing behaviors. Bateson and colleagues (2006) found that placing a picture of eyes on the wall above a communal coffee and tea station increased contributions to the station's beverage fund. Similarly, Haley & Fessler (2005) found that placing an image that resembled eyes on the screens of participants' computers increased giving during a subsequent dictator game, and Krupka & Croson (2016) found that people were more likely to donate to their public library when the solicitation included three dots forming the shape of an upside-down triangle, which also resembles a face, compared to three dots arranged as a right-side-up triangle. Panagopoulos (2014) found that adding images of eyes to a GOTV mailer increased its impact on turnout, as well. These findings may suggest that the presence of eye images can induce a feeling akin to being socially observed, prompting people to behave as if they were actually being observed.

Finally, we note that people are sometimes willing to incur costs to reduce the observability associated with other-benefiting behaviors that they do not intend to perform or would rather not perform (Dana et al. 2006). For example, people exhibit observability avoidance when they avoid store exits at which Salvation Army volunteers are stationed (Andreoni et al. 2011) and avoid answering their own doors when they know canvassers will be asking for donations (DellaVigna et al. 2012). In an election participation study, people were so affected by the prospect of others knowing that they did not vote that they intentionally did not answer their doors to respond to a face-to-face survey for which they would have been compensated (DellaVigna et al. 2017). Observability avoidance likely results in people not performing other-benefiting behaviors that they might have performed if exit from observability were not an option. Thus, reducing opportunities to avoid observability may increase other-benefiting behaviors (Hirschman 1970).

NORMATIVE

Another powerful social mobilization principle is that leveraging normative information can strongly affect other-benefiting behaviors. Norm information can be categorized as descriptive or injunctive (see Cialdini & Trost 1998). Injunctive norms refer to expectations about what behaviors are commonly approved of or disapproved of in a community (i.e., what ought to be done), whereas descriptive norms refer to beliefs about what behaviors are commonly performed in a given situation (i.e., what is done). Both kinds of norms can be enlisted for social mobilization.

Increasing injunctive norm salience can be an effective strategy for social mobilization. For many behaviors—especially other-benefiting ones—there are widely shared injunctive norms. The ideas that one should recycle and that one should not litter are examples. Another widely held injunctive norm is that citizens should vote. Formal models of why people vote incorporate the sense of civic duty to vote as a core rationale, and this variable is especially predictive of who will vote and who will not (A. Blais and C.H. Achen, unpublished manuscript). Surprisingly, interventions that have attempted to increase the salience of the injunctive norm to vote have

tended to have minimal impact on turnout (Gerber & Green 2000), perhaps due to the already high salience of the norm as elections approach and the near ubiquity of the belief. Similarly, interventions that have tried to reinforce individuals' civic duty to conserve natural resources have also tended to have minimal impact, likely for similar reasons (Nolan et al. 2008).

However, when commonly approved behavior is ambiguous, communicating injunctive norms can strongly influence behavior. For example, consider the behavior of taking samples of petrified wood from the Petrified Forest National Park in the United States. To many, it is not clear whether this behavior is considered acceptable. Consequently, exposing park visitors to a sign conveying an injunctive norm that one should not take petrified wood appears to reduce wood theft (Cialdini et al. 2006). Another example is the use of free plastic bags at grocery stores. To many, it may be ambiguous whether using these free bags (versus reusable shopping bags) is the right thing to do. Thus, exposing shoppers to a sign conveying an injunctive norm urging them to minimize their use of the plastic bags reduced the number of bags taken (de Groot et al. 2013). Interventions that increase injunctive norm salience can be especially effective when they help people understand the meaning and rationale behind an injunctive norm. For example, Asensio & Delmas (2015) found that connecting residents' energy usage with the amount of pollution they were responsible for emitting each month (alongside the health impact on the community, like increases in childhood asthma and cancer) caused residents to reduce their energy usage. Interventions that increase injunctive norm salience may be especially potent in the context of social mobilization because injunctive norms tend to serve other-benefiting purposes, and society tends to cultivate these norms for collective purposes.

One especially potent injunctive norm is that we should reciprocate kind gestures from others. The injunctive norm of reciprocity, which obliges people to repay others when they have been helped, is one of the strongest and most pervasive injunctive norms across human cultures (Gouldner 1960). Some charitable organizations make use of reciprocity by accompanying donation requests with unsolicited gifts. For instance, the Disabled American Veterans' success rate nearly doubled when they included in their mailers an unsolicited gift of individualized address labels (Smolowe 1990). Although much of the research done on this topic has examined reciprocity as a function of one party doing a direct favor for (or providing a gift to) another, Goldstein and colleagues (2011) showed that individuals could be mobilized to conserve environmental resources via a sense of reciprocity even when those individuals were not the beneficiary of the favor. This research found that hotel guests were more likely to reuse their towels when the hotel reported that it had already made an unconditional donation to an environmental charity on their behalf and then asked the guests to return the favor (reciprocity by proxy) compared to when it promised to make a donation on behalf of guests only if the guests reused their towels (incentive by proxy, which is the basis of many real-world cause-related marketing appeals).

Whereas injunctive norms convey what behaviors others think are acceptable and expect, descriptive norms convey what others typically actually do. People tend to conform to descriptive social norms, particularly when they feel uncertain about what kind of behavior is correct in a given situation (see Cialdini & Goldstein 2004). Economists have examined a closely related phenomenon. Laboratory experiments using anonymous public goods games show that around half of participants are conditional cooperators who contribute more to a public good when they expect others to contribute more, whereas less than one third free ride on others' contributions (Fischbacher et al. 2001), and that people update their beliefs about others' behavior from their experience of it and then adjust their own behaviors accordingly (Fischbacher & Gächter 2010). A field experiment of student contributions to scholarship funds similarly documents a significant positive correlation between students' expectations about the contribution rates of others and their own willingness to contribute (Frey & Meier 2004).

Descriptive norms may be especially powerful because they appear to influence behavior through automatic channels as opposed to more deliberative ones (Jacobson et al. 2011). Additionally, people tend to underestimate the mobilizing power of descriptive norms on their own behavior, which may contribute to the effectiveness of interventions conveying descriptive norm information. For example, Nolan et al. (2008) found that California homeowners predicted that, among four possible factors, descriptive norms would be the factor least likely to influence energy conservation behaviors. A subsequent field experiment found that descriptive norm information was, in fact, the most potent of the factors at changing energy conservation behaviors (for a related finding, see Schultz et al. 2015).

Interventions that highlight beneficial descriptive norms tend to change behavior by making already-known descriptive norms salient, making previously unknown descriptive norms known, or correcting misperceptions about descriptive norms (see Miller & Prentice 2016). This descriptive information can be presented in a variety of formats, including the raw number of people engaging in the desired behavior (Gerber & Rogers 2009), the percentage of people engaging in the behavior (Goldstein et al. 2008), the average amount that a group of people engages in the behavior (Schultz et al. 2007), lists of individuals who have already engaged in the behavior (Reingen 1982), and firsthand observations of the frequency of the behavior in one's own environment (Berger & Heath 2008, Cialdini et al. 1990). Field experiments that have manipulated descriptive norms have found that they influence behavior in a number of domains, including soliciting blood donations (Reingen 1982), encouraging towel reuse in hotels (Goldstein et al. 2008), increasing motivation to vote (Gerber & Rogers 2009), and affecting charitable giving (Frey & Meier 2004). Beneficial descriptive norms may be especially useful for increasing other-benefiting behaviors because they often convey an invitation to work with others toward a common cause—for example, urging people to “join others” in reusing their towels (e.g., Goldstein et al. 2008)—and such cues tend to instill motivation toward that cause in individuals (Carr & Walton 2014).

A central question when developing descriptive norm interventions is whose norms should be communicated. Similarity-aligned descriptive norms tend to be most effective. These are the norms of reference groups with which people feel similar and are also related to the principle discussed in the next section, titled Identity Relevant. People are more likely to conform to a given descriptive norm if they share a social identity with the reference group associated with that norm (e.g., Goldstein & Cialdini 2007). For example, public radio listeners calling into a fundraising drive donated more when they learned that someone matching their own gender had just made a relatively large donation (Shang et al. 2008). The more strongly people positively identify with a social group, the more they will tend to conform to the descriptive norms of that group (see Swann & Bosson 2010). The inverse is also true: as people want to disassociate themselves from a given social group (e.g., an undesirable outgroup) their behaviors will tend to deviate from the norms of that group (Berger & Heath 2008). Consistent with the work discussed above in the section titled Accountable, people's behavior deviates even more strongly from the norms of undesirable groups when it is observable to others (White & Dahl 2006). A key implication of these findings is that social mobilization interventions leveraging descriptive norms must take into account people's perceived similarity to and affinity for potential reference groups.

Another dimension of similarity-aligned descriptive norms is whether people view the reference group as physically proximate to themselves. Goldstein et al. (2008) argued that people may be especially likely to follow the normative behavior of reference groups that are or have been physically proximate to them relative to those that are or have been more distant. They found that hotel guests were more likely to reuse their towels when the descriptive norm for towel reuse referred to the behavior of other guests who had previously stayed in their exact room compared to other relevant reference groups (e.g., all other hotel guests, similar-gender hotel

guests, or fellow citizens). Of course, in many cases, physically proximate reference groups are also personally important reference groups with which people closely identify. For example, Martin (2012) reported that British citizens were more likely to pay their taxes when they received a letter urging them to pay that mentioned the proportion of citizens from their particular town complying, compared to when they received compliance information about more global reference groups in their postcode or the country as a whole (for a related finding in energy consumption, see Loock et al. 2012; for related findings in charitable giving, see Agerström et al. 2016; Kessler & Milkman 2017, experiment 2).

Just as people's behavior tends to conform to beneficial descriptive norms, it also tends to conform to counterproductive descriptive norms. For this reason, social mobilization interventions should selectively normalize desired behavior and marginalize undesired behavior. Communicating descriptive norms about undesired behavior can backfire. For example, Cialdini and colleagues (2006) found that signage at a national park highlighting the fact that many people had previously stolen petrified wood from the park appeared to encourage the very theft the park aimed to prevent. Similarly, Gerber & Rogers (2009) found that informing people that voter turnout would be relatively low reduced people's motivation to vote compared to informing them that turnout would be relatively high. Interestingly, changing beliefs about expected turnout did not change people's beliefs about an election's closeness or importance or their likelihood of casting a pivotal vote. A subsequent GOTV field experiment targeting Latino citizens underscored the importance of selective descriptive norms, showing that adding to a GOTV mailer the phrase "Only 20% of registered young Latinos voted in 2006" decreased actual turnout relative to the same GOTV mailer without the phrase (Keane & Nickerson 2015).

Selective descriptive norms are especially important when social mobilization interventions communicate descriptive norms as statistical averages. For example, Schultz et al. (2007) provided residents with personalized energy use feedback that included the descriptive norm in the form of the average energy use of their neighborhood. As expected, those who consumed more energy than average subsequently reduced their energy consumption; however, those who consumed less energy than average subsequently increased their energy consumption. However, researchers found that the lower-than-average energy users could be prevented from backsliding if they were also provided with injunctive norm information. Adding an explicit injunctive message (a smiley face emoticon) conveying that their low energy consumption was approved of by the message senders (and presumably society more generally) neutralized the negative effect of providing descriptive norm information to lower-than-average energy users. Opower, an organization that partners with utilities to provide communications that include personalized electricity use feedback and descriptive norms to residents, has leveraged both the descriptive and injunctive elements of the Schultz et al. (2007) work to great effect on a massive scale. The organization's scaled intervention meaningfully reduces energy usage (Allcott 2011, Ayres et al. 2013) and is remarkably persistent, even after it discontinues administration of its intervention (Allcott & Rogers 2014; for similar results in water conservation, see Ferraro & Price 2013).

In addition to providing the descriptive norm about average energy use, Opower's intervention also provides a descriptive norm about the energy use of the top 20% of most-efficient neighbors. This aspirational reference group of exceptionally energy-efficient neighbors likely reduces the possible backfire effect among those who are more energy efficient than their average neighbor but less energy efficient than the top 20% of their most-efficient neighbors. However, it is not clear that descriptive norm interventions need to include both the average and the aspirational reference groups to be successful. For instance, Meeker and colleagues (2016) substantially reduced doctors' unwarranted prescription of antibiotics by presenting both personalized feedback about their inappropriate prescription rate and the inappropriate prescription rates of the best 10%

of physicians in their clinics. That said, we note that communicating the descriptive norms of exceptional performers can sometimes backfire because this information can discourage those who perceive the aspirational norm as unattainable, which can lead to counterproductive quitting (Rogers & Feller 2016; see also Delmas et al. 2017).

Finally, descriptive and injunctive norms should be aligned when possible. For example, Cialdini (2003) reports achieving a 25% advantage in recycling tonnage using public service announcements showing many individuals recycling and disapproving of a lone individual who does not. However, when alignment is not possible, mobilization campaigns may choose to emphasize one norm over another depending on other features of the campaign; for example, White & Simpson (2013) found that, when grass recycling campaigns appealed to the collective self (e.g., we), both norms were equally effective, but when they appealed to the individual self (e.g., you), descriptive norms were more effective.

IDENTITY RELEVANT

Social mobilization efforts can be enhanced by leveraging the intimate connection between people's identities and their behavior. People hold many competing identities. One person may be a US citizen, father, son, husband, vegetarian, student, Marine Corps veteran, moral person, and Philadelphian. Each of these identities carries with it different behavioral tendencies (see Swann & Bosson 2010). In any specific moment, each identity is more or less accessible and, thus, has more or less influence on behavior. We discuss five strategies for making an identity associated with performing specific other-benefiting behaviors more accessible in key moments and increasing the personal importance of a given identity.

Broadly speaking, there are two identity types: social identities and self-identities. As briefly discussed in the section titled Normative, social identities encompass people's perceptions and beliefs about social groups with which they have an emotional identification. According to social identity theory (Tajfel & Turner 1979), individuals' self-concepts are strongly influenced by the social groups and categories to which they perceive themselves as belonging. The influence of social group identification on behavior depends both on the strength of a person's identification with the social group and on the social identity's salience at the moment a behavior is to be performed.

Once a particular social identity has been made salient, people are more likely to behave consistently with what they believe to be the prototypical group behavior or with what they believe to be in the group's interests. Social identities can be especially mobilizing when the identity group is threatened or when people feel that the status differential between the identity group and the group in power is illegitimate (van Zomeren et al. 2008). Thus, social mobilization campaigns will tend to be more motivating when they highlight a sense of threat to a given identity, unjust treatment toward those who share that identity, status differences between those who share that identity and those in power, and illegitimacy of those in power. A good example is the 2017 Women's March in Washington, DC, in which millions of women (and men and children) rallied around the world the day after the inauguration of Donald Trump as President of the United States. Reasons that protesters cited for their participation included the unjust threat to women's rights (i.e., privacy, contraception, health care, etc.) and their status and respect in the world by the words and stated policies of the new President, and the belief that the new President may have come to power illegitimately (due to alleged interference by Russia and the unusual intervention of the Director of the US Federal Bureau of Investigation).

The example of the Women's March suggests that an effective strategy for harnessing shared identity is to create symbolic identity displays that allow participants to feel more strongly

connected with others in their group. This could then increase other-benefiting behaviors that are aligned with that social identity (Páez et al. 2015). Because people's possessions are often extensions of their identities (Belk 1988), apparel can be a useful form for these symbolic identity displays to take. Examples of symbolic apparel include the pink hats worn at the Women's March, the identical T-shirts worn by volunteers of various causes, the ash cross rubbed on the foreheads of Christians on Ash Wednesday, and the colored rubber bracelets worn by those who have donated to and are concerned about a given cause. This strategy complements that of creating postbehavior signaling opportunities, described in the section titled *Accountable*, as well as that of creating opportunities for synchrony, described in the section titled *Personal*. However, in addition to creating opportunities to enhance people's reputations and increase perceptions of closeness with others, these symbolic identity displays serve as opportunities to make salient and amplify people's shared identities and increase the likelihood of performing behaviors associated with those identities or benefiting relevant groups.

Thus far (in both this section and the section titled *Normative*), we have focused mostly on strategies that harness social identities. In addition, strategies leveraging self-identities can be equally potent. Self-identities entail how people perceive themselves, including people's knowledge or perceptions about their own traits, attributes, and values. Social mobilization efforts based on self-identity typically harness people's natural motivation to see themselves in a positive light (Leary 2007) and behave in a manner that is consistent with their favorable self-identities and previous statements and behaviors (for a review, see Cialdini 2008). We illustrate next how these insights can be applied in the context of social mobilization.

One social mobilization strategy involving identity is to associate an other-benefiting behavior with a desirable identity. Nurturing identity-behavior associations entails associating a behavior with a desirable identity, thereby turning performance of the behavior into an opportunity to affirm a desirable identity. For instance, Bryan and colleagues (2011) found that voter turnout was higher after people answered a series of election-related questions as part of an online survey the night before an election when the questions contained noun-identity language ("be a voter") compared to when they contained verb-action language ("to vote"). "Be a voter" language implies that one can claim a desirable identity ("a voter") as self-relevant by performing the behavior (casting a vote) (see also Bryan et al. 2016, Gerber et al. 2016).

Another social mobilization strategy harnessing identity is known as identity labeling. Identity labeling involves explicitly asserting and affirming that a person possesses a value, trait, attitude, belief, or other label that they have previously demonstrated, and then making a request for which compliance is consistent with that label. This strategy tends to work because individuals for whom a desired identity is asserted want to live up to the positive attributes, values, or beliefs associated with that identity—even in private, when target individuals do not believe that the labeler would be aware of their behavior. For instance, in the charitable giving domain, appeals to one's identity as a past donor or member of a community can render fundraising appeals more effective. Kessler & Milkman (2017) reported that lapsed donors to the American Red Cross were more likely to donate again when solicitation mailings sent to them included an additional line reminding them of the date of their previous gift.

Identity labels can also be aspirational. For instance, in one field experiment (Tybout & Yalch 1980, p. 409), after participants completed a survey about an upcoming election, experimenters briefly reviewed the responses and verbally labeled randomly assigned participants as being "above-average citizen[s] . . . who [are] very likely to vote" or as being "average citizen[s] . . . with an average likelihood of voting." Affirming that people possessed this identity increased turnout. Importantly, we note that 81% of all participants in this study voted, so that the "above average" label was likely

credible to those who received it, and such labels would probably not be credible if administered to a population who rarely if ever voted. In order for an identity label to be effective, it must be credible to its recipient (LeBoeuf et al. 2010). That said, given the increasing availability and quality of commercial data detailing people's past behaviors, personalized labeling interventions may be increasingly practical in the years to come.

People's motivation to behave consistently with their identities can be leveraged to enhance social mobilization efforts in several ways. The foot-in-the-door strategy aims to motivate people to engage in a given target behavior by first asking them to perform a smaller, related behavior at an earlier point in time and then later making the larger target request (Freedman & Fraser 1966; see Burger 1999 for a review and meta-analysis). The underlying mechanism for this effect is believed to be a self-perception process whereby people infer traits, attributes, attitudes, and beliefs about their identity based on the initial, smaller behavior they first perform. Target individuals are then motivated to act consistently with this newly strengthened (or at least more salient) identity (Cialdini et al. 1995). In the social mobilization sphere, the ultimate goal is often to motivate citizens to engage in relatively difficult, time-consuming, or costly actions, where the psychological barrier to initial participation is fairly high. The foot-in-the-door strategy can increase engagement in such behaviors by lowering the psychological barrier to entry, so to speak, and then leading target individuals to perform increasingly costly actions that accord with the newly established identity. In the domain of environmental conservation, for example, Scott (1977) found that participants were more willing to engage in tedious manual labor as part of a recycling campaign if they had been asked two weeks earlier to put a small sign in their window saying "CONSERVE RESOURCES—RECYCLE."

The attributions that people are likely to make about why they are engaging in an initial behavior (i.e., their self-identity) are critical to the success of foot-in-the-door interventions. The more costly (i.e., active, effortful, uncompensated) the initial action, the more invested people become in the subsequent behavior because people tend to interpret their effort as signifying the strength of their commitment to the underlying identity and cause (for a review, see Cialdini 2008). These findings create an interesting dilemma for those involved in social mobilization campaigns: The very factors that increase the likelihood that people will engage in the initial behaviors—making those behaviors effortless, costless, or passive or offering a strong social or monetary incentive—may reduce target individuals' subsequent commitment to the cause. Thus, social mobilizers must balance the percentage of people who engage in the initial behavior with the likelihood that they will internalize that initial behavior and see the issue as important to them and worthy of future action.

Another strategy for harnessing self-identity and consistency involves having people explicitly predict their future behavior. Because of the importance of self-consistency, asking people to make self-predictions about whether they will perform a behavior in the future can make them more likely to perform that behavior (Greenwald et al. 1987, Morwitz et al. 1993). Because people are especially prone to believing that they will perform other-benefiting behaviors in the future (Milkman et al. 2009), self-prediction may be especially potent for social mobilization efforts. Several field studies have shown that asking people to self-predict if they will vote can increase turnout (Greenwald et al. 1987, Nickerson & Rogers 2010). Although the likely impact of self-prediction on election participation is small (Smith et al. 2003), this intervention is inexpensive and tends to have a positive incremental effect (Nickerson & Rogers 2010). Similarly, researchers have found that self-predictions about recycling behavior can increase actual recycling (Werner et al. 1995) and that asking prospective blood donors whether they can be counted on to show up to an appointment can decrease no-show rates (Lipsitz et al. 1989). As discussed in the section titled *Accountable*, self-predictions tend to be especially potent when they are made in front of

others because others may hold one responsible for the accuracy of one's predictions (Pallak & Cummings 1976). Self-predictions are also more potent when they are relatively specific. For example, hotel guests were more likely to reuse their towels when they were asked to make a specific commitment about towel reuse to help the environment, compared to when they were asked to make a more general commitment to help the environment (Baca-Motes et al. 2013).

Because holding a self-identity that one is a hypocrite can be unpleasant, framing a behavior as an opportunity for hypocrisy avoidance can be a powerful social mobilization strategy. For example, Dickerson and colleagues (1992) approached swimmers on their way to the locker room after a swim. One group of swimmers was asked if they always make their showers as short as possible (most admitted that they did not), whereas a second group was asked to publicly advocate that people take shorter showers by signing their names to a flyer on the topic (most agreed); a third group received both interventions (in that order). Participants who were asked both questions proceeded to take the shortest showers, presumably because this action allowed participants to restore their favorable self-identity as a nonhypocrite. Relatedly, Kantola and colleagues (1984) found that households that were high consumers of electricity were especially likely to reduce energy consumption when they were reminded of the discrepancy between their high consumption and the fact that they had previously indicated on a survey that they felt that it was their duty to save electricity. Taken together, these findings suggest that a hypocrisy-avoidance strategy can aid in social mobilization; however, as Schultz (2014) notes, in order to succeed, such a strategy requires that individuals value these goals in the first place.

CONNECTED

The final principle of social mobilization is as much an amplifier of the others as it is a distinct principle. The ways in which information and influence are propagated from individual to individual in a social network can play a critical role in mobilizing people to perform other-benefiting behaviors, as influence spreads beyond those who are directly targeted. We discuss four strategies for harnessing social connectedness to amplify social mobilization efforts.

The first strategy is to leverage close connections among individuals. One experiment suggests that being directly encouraged to vote by someone one knows can be more effective than being encouraged to vote by a stranger (Nickerson 2007). Likewise, GOTV door-to-door canvassing not only increases turnout among targeted individuals, but also indirectly increases turnout among those who live with the targeted individuals (Nickerson 2008). Similar within-household spillovers arise for student absenteeism–reduction interventions. When one sibling in a household is targeted, the effect spills over to other siblings within the household, as well (Rogers & Feller 2017).

A second strategy for exploiting connectedness is to target influential individuals within social networks. How personally connected two individuals feel affects the influence they exert on each other. People with whom an individual has a strong tie, such as kin and close friends, tend to provide the individual with more information, advice, and emotional and instrumental support than those with weak ties, such as casual acquaintances (Coleman 1988, Contractor & DeChurch 2014). Thus, strong ties offer more opportunity for influencing people than weak ties do. This suggests that an effective intervention strategy is to target individuals who have many strong ties in a given network. For instance, Paluck and colleagues (2016) found that antibullying interventions were most effective when they targeted students with whom many other students reported spending time. In the conservation behavior context, block leaders designated to promote residential curbside recycling programs were more successful at inducing recycling behaviors when they had closer connections with their neighbors (Everett & Peirce 1992), and people tended to influence their friends' littering and recycling behaviors in a high school community (Long et al. 2014).

Identifying and targeting influential individuals are facilitated by the ubiquity of online networks. For instance, a field experiment examined the decisions of 1.3 million Facebook users regarding whether or not to adopt a commercial application that allowed users to share movie information and opinions (Aral & Walker 2014). The program sent automated notifications about a focal user's actions on the application to a randomized subset of that focal user's Facebook friends, and the researchers then examined the impact of this manipulation on subsequent adoption of the application. The researchers found that certain measures of tie strength between two people (whether the online friends attended the same college, shared other institutional affiliations, or lived in the same town) predicted greater influence from the focal individual. Moreover, the more ties a focal person shared with a target person (the more embedded the connection), the more influential the focal person tended to be on the target. A related experiment using similar methodology (Aral & Walker 2012) found that characteristics of the focal user (e.g., gender) were more important than characteristics of targets in predicting the spread of adoption of the application and that these influential focal individuals tended to naturally cluster together in networks. This finding suggests that mobilization efforts can be especially effective when they target influential people with influential friends.

A third strategy for amplifying social mobilization efforts is to enhance observability within networks. Individuals often learn about the relative attractiveness of options by observing the behaviors of others (i.e., descriptive norms), and literature in economics shows that this can lead to information cascades that cause groups of individuals in networks to make the same (correct or incorrect) choice (Bikhchandani et al. 1998). Such herding behavior has been documented in laboratory experiments (Anderson & Holt 1997) and may contribute to emergent collective actions such as increasing participation in dangerous protests (e.g., Lohmann 1994). Indeed, one study found that the number of protests on a given day during the Arab Spring of 2010–2011 could be predicted by coordination in the (highly visible) use of Twitter hashtags (i.e., the more intense use of a smaller number of hashtags) the previous day in the region, which presumably reflected the intensity of interest in protest activity (Steinert-Threlkeld et al. 2015).

For a behavior to spread within a network (Christakis & Fowler 2009; but see also Lyons 2011), those with whom a person is connected must be able to learn that the person performed the behavior. For example, the spread of residential solar power systems through communities appears to be affected by whether neighbors can observe the rooftop installations (Graziano & Gillingham 2015). Social media can amplify social mobilization by making indicators of behaviors more observable to others within people's networks. In one study, Facebook users were randomly assigned to one of two treatment arms or an untreated control group (Bond et al. 2012). Those assigned to what we term the simple encouragement group received encouragements to vote and an opportunity to click on an "I Voted" button to be displayed to others. Those in what we term the social connectedness group were administered the same treatment and also saw the profile pictures of up to six of their Facebook friends who had already clicked on the "I Voted" button. Whereas the behavior of those in the simple encouragement group was indistinguishable from that of those in the control, those in the social connectedness group were more likely to click the "I Voted" button and to actually vote. Intriguingly, about half of the effect on actual voting spilled over to those Facebook friends with whom these people communicated most frequently. Given that people typically had many such close friends, the total treatment effect was larger on close friends of treated individuals than it was on the treated individuals themselves. This study illustrates the fact that social mobilization can be amplified when the behavior of targeted individuals is communicated to people with whom targets are socially connected, especially those with whom targets have strong ties. We note that nearly 20% of people offered the chance to click the "I Voted" button actually clicked it, an extremely high rate for an online behavior. Because

individuals had no economic incentive to express that they had voted, this presumably reflects the motivation to be seen by others as the kind of person who votes. Such a button is one of many ways social networks can create signaling opportunities (as discussed in the section titled *Accountable*). Many people signaling to their friends that they had voted gave rise to a similarity-aligned descriptive social norm (as discussed in the section titled *Normative*), which presumably mobilized more people to vote and click the “I Voted” button, creating a virtuous cycle.

Although some behaviors can spread through one person exposing a target individual to the behavior or message, many social behaviors require that multiple people expose a target individual (especially when target individuals see those people as similar to themselves; see Centola 2011). For such behaviors, it may be especially effective to target communities on the periphery of larger social networks, as illustrated by an online study (Centola 2010) in which participants were randomly assigned to a position within a social network for sharing health-related information. Participants were assigned to either a network in which people were interconnected within dense neighborhoods that were less strongly connected to each other (clustered lattice network) or a network containing the same number of total connections that were spread randomly throughout the network (random network). The clustered lattice network offered more opportunities for participants to receive the same signal from multiple unconnected individuals and exhibited faster overall spread of the health behaviors—perhaps by increasing the credibility of the information or signaling wider prevalence of the behavior throughout the larger social network. These findings suggest that, for some behaviors, social mobilizers can be more effective if they target clustered networks on the periphery of larger networks rather than focusing on influencers with many isolated connections in casual contact networks. Participation in protests may rely on this form of contagion. In this process, people receive multiple signals from moderate activists, many of whom are on the periphery of people’s networks. These moderate activists’ behavior may be more informative of general interest in the protest activities than signals coming from individuals who might be considered core to the domain and activities, such as professional organizers or media sources. Indeed, an analysis of Twitter activity during the Arab Spring (2010–2011) that linked geotagged Twitter activity with protests found that regional coordination of Twitter hashtags predicted more protests the following day if that coordination came from individuals on the periphery of the networks (those with relatively few followers) than if it came from more central and core individuals (those with relatively many followers) (Steinert-Threlkeld 2017).

In sum, whereas some of the research on social networks (as described above) points to the power of targeting influential members who are often central to networks, this research highlights the importance of also targeting communities on the periphery of a larger social network. Although more research is needed to better understand the circumstances under which each strategy is most effective, there is evidence that targeting both types of connections can foster mobilization of different social behaviors.

CONCLUSION

This review began with descriptions of three widely performed other-benefiting behaviors. Any particular Egyptian protester in 2011 could have stayed safe at home, and their government would have toppled anyway. Any particular US citizen could have saved half an hour or more by skipping voting in 2016, and Donald Trump would still have been elected President. And any particular early model Prius owner could have saved thousands of dollars by purchasing a better-performing, less-fuel-efficient car, and the course of global climate change would have been unaffected.

Yet a large number of individuals performed each of these behaviors. In this review, we have explored how insights from behavioral science research can be used to develop interventions that

mobilize a large number of people to perform behaviors that are costly and practically meaningless when performed by any one person. Throughout, we have underscored the centrality of social dimensions to human motivations to help others, exploring the interplay between social concerns and social mobilization. Most people have powerful psychological needs to belong, to be well regarded by others, and to see themselves as positive contributors to relevant social groups. Such needs make most people especially responsive to social mobilization interventions that are particularly personal, entail social accountability, harness positive social norms, are identity relevant, and leverage social networks. This review has described how interventions designed to mobilize people to perform other-benefiting behaviors can create those conditions and has reviewed many new field applications of these ideas. We look forward to an increasing number of field experiments on social mobilization in the years to come and the novel theoretical insights that will emerge from such work.

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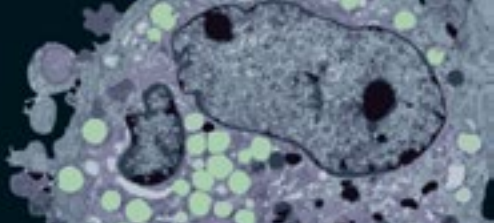
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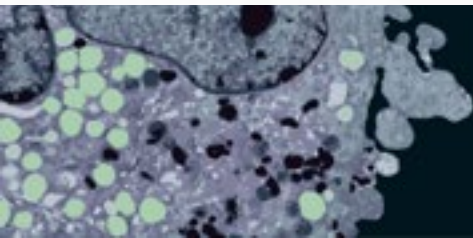
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