

Field Experiments in Social Psychology

Message Framing and the Promotion of Health Protective Behaviors

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In this article, the authors present the case for field experimentation in social psychology primarily by describing a program of research concerned with psychological aspects of health communication and persuasion. In particular, the authors are most interested in when and for whom are messages emphasizing the benefits of a health behavior (these are called gain-framed messages) more persuasive and motivating than messages emphasizing the costs of not engaging in a behavior (these are called loss-framed messages), and vice-versa. This line of research is as theoretically driven as most laboratory investigations in social psychology, and it involves experimental approaches with random assignment, control groups, and the like. However, most of this work recruits participants in ecologically interesting contexts such as community clinics and housing developments. These especially vulnerable individuals are followed for sufficient periods of time to allow for the assessment of the influence of these health messages on relevant health behaviors such as obtaining a mammogram or acquiring condoms.

Keywords: *health communication; health behavior; message framing; field experiments; cancer prevention*

The purpose of this volume is, in part, to make the case for field experimentation in the social sciences, especially in those disciplines, such as political science, where experiments have not been the primary method of scholarship. We

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represent the field of social psychology (as a subdiscipline of psychology; there is also a related subdiscipline in sociology with the same name), and experiments are the social psychologist's bread and butter. This is easily verified merely by perusing the pages of the major social psychological journals such as the *Journal of Personality and Social Psychology*. The most prestigious organization of psychological social psychologists is the Society for Experimental Social Psychology and, essentially, nearly all active social psychologists of a certain seniority eventually are inducted into it. The resistance in social psychology is clearly not directed toward the experiment. Random assignment of participants to conditions and the exploration of the causal influence of manipulated independent variables on dependent variables is par for the course. Rather, resistance in social psychology concerning field experimentation is more likely directed toward the field. Whereas thousands of experiments are conducted in social psychological laboratories every year, very few social psychologists view the field as a more interesting and relevant place for drawing causal conclusions about social cognition and social behavior.

In this article, we try to make the case for field experimentation in social psychology primarily by describing a program of research concerned with social psychological aspects of health communication and persuasion. In particular, we are most interested in when and for whom are messages emphasizing the benefits of a health behavior (these are called gain-framed messages) more persuasive and motivating than messages emphasizing the costs of not engaging in a behavior (these are called loss-framed messages), and vice-versa. This line of research is as theoretically driven as most laboratory investigations in social psychology, and it involves experimental approaches with random assignment, control groups, and the like. However, most of this work recruits participants in ecologically interesting contexts such as community clinics and housing developments. It follows these especially vulnerable individuals for sufficient periods of time to allow for the assessment of the influence of these health messages on relevant health behaviors such as obtaining a mammogram or acquiring condoms.

Some in mainstream social psychology might characterize this work as applied because it is driven, in part, by a desire to address a significant real-world problem—the low rates of adherence to behavioral recommendations that could reduce the incidence of or mortality from certain cancers or the spread of HIV/AIDS. However, the work takes as its starting point a model of preference and decision making, Prospect Theory, that is as formal and generalizable as any theory in the social sciences.

The tension between so-called basic (often laboratory) and applied (often field) research is not a new issue for social psychology. One of the intellectual founders of social psychology, Kurt Lewin, advocated for what he termed Action Research (Lewin, 1946). Lewin viewed the acquisition of new knowledge as inseparable from using it to address social problems and encouraging social change. Most important, Lewin argued that there is a feedback loop

between application and basic theory building such that attempts to put the theory into practice, followed by the evaluation of such efforts, would provide evidence for the validity of the theory and suggest ways in which the theory might need to be changed (Sadava, 1997). This idea was developed further by Chris Argyris as Action Science in social and organizational psychology (Argyris, Putnam, & McLain, 1985). In this tradition, research participants are viewed as clients to be served and theories are tested through interventions designed to influence the behavior of these clients. For Argyris, the key to theory testing is intervention research, which is often experimental in design.

In social psychological work such as ours that addresses health behavior, the interplay between theory and application is evidenced by three common research strategies (described by Taylor, 1984; see also Salovey, Rothman, & Rodin, 1998). First, one can test the application of general theory. In this instance, an investigator uses a psychologically oriented theory that might have been designed for another domain (or with no particular domain of application in mind at all) and attempts to apply it specifically to a health context. Our research represents application of general theory. We use Prospect Theory as the starting point for making predictions about whether gain- or loss-framed messages are more effective in encouraging various health behaviors (Kahneman & Tversky, 1979). Second, social psychologists may develop grounded theories to address specific health problems and then use the theories to guide future studies. These kinds of theories are termed "grounded" because they were developed (or grounded) in the domain in which they are being applied. For example, the Transtheoretical Model of Behavior Change (Prochaska, DiClemente, & Norcross, 1992) was created to understand the various challenges faced as individuals at different stages of the change process attempt to alter a health-damaging behavior or adopt a precautionary behavior. Finally, psychologists may develop research to address a particular problem without using theory as a guide. In this kind of problem-focused research, a social psychologist looks to see if a particular intervention can significantly influence behaviors relevant to a given concern. Any hypotheses guiding the study do not necessarily derive from more general predictions about human behavior; they may be specific only to the problem at hand.

Despite the differences in these three approaches to social psychological research, Lewin and Argyris remind us that theory building and problem solving are inextricably linked. Given the importance of many public health problems, the social psychologist must consider, from this vantage point, that the nuances of mechanism and moderation sometimes need to give way to the necessity for application. At the same time, the consensually held values of social psychology remind the public health professional that the generalizability of findings and recommendations from one health domain to another one is more likely to be successful when guided by an underlying theory that makes specific predictions about the conditions under which the antecedents of health behavior or health

behavior change are most likely to be observed. We try to keep both perspectives in mind in our own work, which uses theory to guide field-based experiments (for the most part), generally focused on real health behaviors in ecologically complex settings.

A PROGRAM OF RESEARCH

Let us now turn to the particular line of research in which we have found an approach emphasizing field experimentation especially fruitful. This program of research concerns the framing of health messages to promote cancer- and HIV/AIDS-relevant health behaviors.

MESSAGE FRAMING: THEORETICAL BACKGROUND

In this context, message framing refers to the emphasis in the message on the positive or negative consequences of adopting or failing to adopt a particular behavior (Rothman & Salovey, 1997). Therefore, appeals aimed at persuading individuals to perform a particular health behavior can be framed in different ways. Gain-framed messages usually present the benefits that are accrued through adopting the behavior (e.g., “using a condom during sexual intercourse can help to keep you healthy”). Loss-framed messages generally convey the costs of not adopting the requested behavior (e.g., “failing to use a condom during sexual intercourse exposes you to various sexually transmitted diseases such as HIV/AIDS”). Although these two messages convey essentially the same information about condom use and health, one of these messages might be more persuasive than the other to certain kinds of people in certain kinds of settings.

The theoretical jumping-off point for investigating the effects of framed persuasive messages on health behaviors is Prospect Theory (Kahneman & Tversky, 1979, 1982; Tversky & Kahneman, 1981). Prospect Theory was developed as an account of choice and decision-making strategies under conditions of risk. The framing postulate of Prospect Theory suggests that decision makers organize information relevant to choice options in terms of potential gains (i.e., benefits) or potential losses (i.e., costs) as compared to a reference point (e.g., in the situation that we study, one’s present level of health). Factually equivalent material can be presented to individuals such that they encode it as either a gain or a loss. Prospect Theory characterizes a set of preferences or decision strategies by noting that individuals are, in general, risk seeking when losses are salient but risk averse when gains are salient. Prospect Theory assumes that an S-shaped function relates objective outcomes to their subjective values and that the function is concave for gains and convex for losses, and steeper in the loss domain. This function suggests that when behavioral choices involve some risk or uncertainty, individuals will be more likely to take these risks when informa-

tion is framed in terms of the relative disadvantages (i.e., losses or costs) of the behavioral options, that is, when the downside of a situation is made salient. Alternatively, when behavioral choices involve little risk or uncertainty, individuals are more like to prefer these options when information is framed in terms of relative advantages (i.e., gains or benefits), that is, when the upside of a situation is made salient.

The literature on framing and health promotion has yielded an interesting pattern of findings (reviewed in Rothman & Salovey, 1997; Wilson, Purdon, & Wallston, 1988). Although loss framing has been especially effective when promoting breast self-examination (Meyerowitz & Chaiken, 1987), HIV screening (Kalichman & Coley, 1995), and mammography utilization (Banks et al., 1995; Schneider et al., 2001), gain-framed messages have encouraged preferences for certain surgical procedures (Levin, Schnittjer, & Thee, 1988, Exp. 2; Marteau, 1989; McNeil, Pauker, Sox, & Tversky, 1982; Wilson, Kaplan, & Schneiderman, 1987), the use of infant car restraints (Christophersen & Gyulay, 1981; Treiber, 1986), regular physical exercise (Robberson & Rogers, 1988), and sunscreen utilization (Detweiler, Bedell, Salovey, Pronin, & Rothman, 1999; Rothman, Salovey, Antone, Keough, & Martin, 1993).

From a Prospect Theory point of view, the perceived risk (of finding an abnormality) could make loss-framed messages more persuasive in promoting detection behaviors. However, prevention behaviors may not be perceived as risky at all; they are performed to deter the onset or occurrence of a health problem. Choosing to perform prevention behaviors is a risk-averse option—it maintains good health. From the view of Prospect Theory, because risk-averse options are preferred when people are considering benefits or gains, gain-framed messages might be more likely to facilitate performing prevention behaviors. Therefore, our initial empirical work tested whether the match between a message frame (gain or loss) and the function of the required health behavior (prevention or detection) effectively motivates behavior change; that is, are gain-framed messages more persuasive when promoting prevention behaviors but loss-framed messages more persuasive when promoting early detection (screening) behaviors?

Since 1990, we (the Health, Emotion, and Behavior [HEB] Laboratory in the Department of Psychology at Yale University) have conducted a program of research investigating the influence of variously framed messages on behaviors relevant to cancer or HIV/AIDS. Many of these experiments have been conducted in field settings, such as community medical clinics, housing developments, and public beaches, often under the auspices of some kind of health promotion program. A few of the experiments have been conducted in the laboratory, in which we have sacrificed some ecological validity but have gained greater control over the experimental setting and greater opportunity to explore potential mediators and moderators of framing effects.

**LOSS-FRAMED MESSAGES PROMOTE
DETECTION BEHAVIORS: MAMMOGRAPHY**

Many government and nongovernment cancer prevention and control organizations recommend that women seek regular mammography screening. At the time we conducted our experiments, women between the ages of 40 and 50 were told to obtain mammograms every 1 to 2 years; women older than 50 were encouraged to have mammograms annually. Most women pursue screening believing that they are healthy. Obtaining a mammogram, then, is a psychologically risky behavior—a woman must consider the risk of finding out she has an abnormality that could be cancerous when prior to obtaining the mammogram she had assumed she was healthy. Because mammography involves a probabilistic, uncertain outcome, it should be better motivated by loss-framed messages than gain-framed messages.

Our first field experiment focused on mammography screening was conducted as part of a workplace health-promotion program at a large telephone company (Banks et al., 1995). Women were recruited through announcements in their paycheck envelopes. Any woman who had obtained fewer than 50% of the mammograms that she should have for someone of her age (assuming one every other year between age 40 and 50 and then one annually after age 50) was invited to view a 15-min videotape on breast cancer and mammography. One hundred thirty-three women were assigned randomly to view a video during their lunch hour in which most of the information was presented either in gain-framed terms (e.g., the title was “The Benefits of Mammography”) or in loss-framed terms (e.g., titled “The Risks of Neglecting Mammography”). The sample was about 80% White and mostly Catholic. These women were generally from middle-class families with moderate levels of education. We assessed attitudes relevant to breast cancer and mammography before and after the video presentation and, more important, tracked utilization of screening mammography 6 and 12 months later. Sample sentences from the two videos are provided in Banks et al. (1995, Table 1).

Women who viewed the gain- or loss-framed video did not differ in their liking for the video or knowledge gleaned from it. However, after 12 months, it was clear that the loss-framed video had been more persuasive: 66.2% of the women had obtained a mammogram compared to 51.5% of the women who had viewed the gain-framed video, and this difference was significant in a logistic regression analysis controlling for mammography behavior at baseline.

Some years later, we replicated this experiment but in a much different population of women (Schneider et al., 2001). We recruited 752 women from two inner-city health clinics and several public housing developments in the same neighborhoods. About 43% were African American, 27% Anglo, and 25% Latina. Most of the participants were from low-income families (less than \$13,500 per year), and they had a mean age of 56. Once again, women viewed a 15-min video about breast cancer and mammography that was gain- or loss-

framed. We produced different pairs of framed videos: one pair emphasized the problem of breast cancer for all women—Black, White or Latina—whereas the other videos were targeted especially for either Black, White, or Latina women and provided statistics and pictured models drawn only from those groups. We labeled these pairs of videos multicultural versus targeted, respectively. The videos for Latina women could be viewed with either an English or a Spanish soundtrack.

As measured 6 months later, the advantage for loss- over gain-framed messages seen in the telephone company study (Banks et al., 1995) was replicated here. With the multicultural messages, which were most similar to the ones used at the telephone company, 50% the women who viewed the loss-framed message received a mammogram compared to only 36% in the gain-framed version. However, there were no differences due to framing when the messages were targeted to the specific ethnicity of the participants, and neither version of the targeted video was as effective as the loss-framed, multicultural one. After 12 months, the pattern of findings was still the same, but the effect size had attenuated. Perhaps loss-framed messages that are so explicitly targeted to a particular ethnic group elicit some defensiveness that counteracted their expected effectiveness.

Taken together, loss-framed videos designed to promote screening mammography are more effective than gain-framed videos, provided they are designed for a multicultural audience rather than specifically targeted for a particular ethnic group. This effect was obtained in two field experiments with two quite different samples. Given that mammography is a health behavior that involves a psychological risk—the uncertainty associated with the potential to find cancer—these findings are consistent with the Prospect Theory prediction that risk (uncertainty) should be preferred over certainty when losses are made salient.

GAIN-FRAMED MESSAGES PROMOTE PREVENTION BEHAVIOR: SUNSCREEN

In comparison to early detection behaviors such as screening mammography, the use of sunscreen at the beach, similar to most prevention-oriented health behaviors, involves few uncertainties and little psychological risk. Using sunscreen is a low-cost way of reducing skin cancer risk. Prospect Theory suggests that individuals should prefer options with certain outcomes (to options with probabilistic or uncertain outcomes) after considering potential gains; that is, when the advantages of the option are made salient. Therefore, in contrast to the findings obtained for screening mammography, we expected that the best way to promote the use of sunscreen is with gain-framed messages.

Over the years, we have conducted several experiments involving the manipulation of framed messages and the acquisition of sunscreen, some among college students and others with more diverse samples of sunbathers on public

beaches. In one study, 146 undergraduates read gain- or loss-framed pamphlets about skin cancer and sunscreen use (Rothman et al., 1993, Exp. 2). After reading the pamphlets, participants were given postage-paid postcards that they could mail to our laboratory requesting sunscreen samples and more information about skin cancer prevention. Interest in the pamphlet was high and did not differ across the two framing conditions. As Prospect Theory led us to predict, the gain-framed pamphlet motivated more requests for sunscreen. The advantage of gain-framed messages as opposed to loss-framed ones was small for the men in the study but quite sizable for the women. For instance, 79% of the women who read a gain-framed pamphlet subsequently requested sunscreen as compared to 45% who read the loss-framed pamphlet. For men, requests rates were 50% and 47%, respectively. This might have occurred because the skin cancer topic was viewed as more personally relevant by the women in study.

For people sunbathing on the beach, however, skin cancer might be a relatively involving topic for both genders. The beach certainly represents an ecologically valid setting in which to collect data about interest in sunscreen. In one experiment, we recruited 217 sunbathers on a public beach to read either gain- or loss-framed brochures about sunscreen and the prevention of skin cancer. After reading the brochure, they were given a coupon that could be exchanged later for a free bottle of sunscreen. When the sunscreen vender appeared on the beach about half an hour later, we could observe those beachgoers who actually turned in their coupons. Seventy-one percent of the participants who read a gain-framed pamphlet subsequently requested sunscreen, but only 53% of those who read a loss-framed pamphlet did likewise. This difference remained reliable even when prior intentions to use sunscreen that day were statistically controlled in a logistic regression analysis. The advantage of gain-framed messages as opposed to loss-framed messages was especially apparent among beachgoers who indicated that they had no prior intention to use sunscreen that day. In the more psychologically involving setting of the beach, these framing effects were seen in both men and women (Detweiler et al., 1999).

An interesting aspect of the line of research examining behaviors relevant to skin cancer has been that our findings from the field have been much more robust than those from laboratory experiments. It appears that being on the beach, for example, creates a sense of involvement with the attitude object (sunscreen) that then enhances message processing, making it easier to discover framing differences. In the sterile setting of the laboratory, some of our framing experiments on sunscreen—not described here—have failed to produce any framing effects, most likely because participants could not muster much concern about skin cancer prevention in this environment. At times, laboratory-based framing experiments have only worked among individuals who scored highly on a test of need for cognition, the willingness to engage in effortful thinking. In the field, however, framing effects have been easier to demonstrate and generally are unmoderated by such individual difference variables.

Unlike our experiments targeting mammography in which an early detection behavior was best promoted using loss-framed messages, the sunscreen experiments suggest that prevention behaviors might be best promoted with gain-framed messages. This was exactly the pattern of effects predicted based on the notions gleaned from Prospect Theory, but this pattern was only obtained across very different experiments targeting very different behaviors. More convincing data require observing both the loss-frame and gain-frame advantages within the same study when participants are randomly assigned to conditions.

BEHAVIORS THAT CAN BE DESCRIBED AS DETECTION OR PREVENTION

Ideally, we would like to show that when a health behavior is described as serving a prevention function, gain-framed messages are more effective than loss-framed messages. But when the same action is described as an early detection or screening behavior, loss-framed messages should be more effective. We have conducted this type of two-way, factorial experiment in both the laboratory and field.

Mouthwash. In an experiment promoting mouthwash—one of the few that we conducted in the laboratory rather than in the field—we described a mouth rinse product to 120 University of Minnesota undergraduates (Rothman, Martino, Bedell, Detweiler, & Salovey, 1999, Exp. 2). Half of these students heard about a typical mouthwash, one that removes plaque from teeth and thus prevents tooth decay and gum disease. The other half heard about a slightly more unusual mouthwash, one that detects the buildup of plaque by leaving red discolorations on the teeth where better brushing is needed (much like those red disclosing tablets that many baby boomers were given in elementary school). As usual, arguments in favor of either the prevention mouthwash or the disclosing mouthwash were framed in gain or loss terms and participants were assigned randomly to receive one set or the other. Once again, ratings of the quality of the pamphlet were unaffected by either the behavior-type or framing manipulations, although participants reported having more positive affective reactions to the gain-framed pamphlet.

Participants were asked about their intentions to buy the mouthwash in the next week. As predicted, intentions to purchase the product were strongest when the preventive mouthwash was described in terms of benefits of using the mouthwash (gain-frame) and when the disclosing (detection) mouthwash was described in terms of costs of not using the mouthwash (loss-frame). For the prevention mouthwash, 67% of the participants planned to purchase it after reading the gain-framed pamphlet, but only 47% planned to purchase it after reading the loss-framed pamphlet. In the detection condition, 73% of the participants said they would buy the disclosing mouthwash after reading the loss-framed pam-

phlet, but only 37% of them said they would purchase it after reading the gain-framed pamphlet. These are sizable framing effects.

Pap testing. Pap testing is generally thought of as a behavior designed to detect cervical cancer. Actually, pap tests can be described in two different ways, emphasizing their early detection function, which is typical of most pap messages, or their preventive function. For example, health communicators can emphasize the prevention of cervical cancer through the detection of precancerous abnormalities with regular pap. We developed four different videotape programs about the benefits of pap testing: gain- and loss-framed versions of a program emphasizing the early detection of cervical cancer and gain- and loss-framed versions of a program emphasizing the prevention of cervical cancer through the detection of precancerous lesions that could then be treated (Rivers, Pizarro, Schneider, Pizarro, & Salovey, 2003). Although this latter message is not exclusively focused on prevention, it does include more information about cancer prevention than the more typical pap test-promoting communications.

We showed one of these four videos to 497 women older than age 18 who were attending a community health clinic. Most of these women were from relatively poor families; 59% were African American, 26% were Latina, and 12% were White. Six months later, rates of pap testing were highest in the prevention-gain and detection-loss conditions, as expected, and in a logistic regression analysis that included baseline behavior, the main effects for behavior type (prevention/detection), and message framing (gain/loss), the Behavior Type \times Message Framing interaction just about reached conventional levels of significance ($p = .065$).

HIV TESTING CAN BE CONSTRUED AS HAVING CERTAIN OR UNCERTAIN OUTCOMES

The perceived function—as prevention or detection—of performing a health behavior appears to determine whether a gain- or loss-framed message is more persuasive in promoting it. Prevention and early detection behaviors differ in terms of the risk or uncertainty typically associated with them. Prevention behaviors are usually construed as safe, risk-averse choices. The decision to initiate a detection behavior often involves uncertainty and risk, because one generally does not know the outcome (health/illness) in advance.

Being tested for HIV would seem to be a typical detection behavior with attendant psychological risks and uncertainty, and thus should be better motivated by loss-framed messages. However, because HIV is tied, in large part, to behavior, some individuals might reasonably believe, based on their past behavior, that they are not at risk for HIV. For these individuals, HIV testing is a psychologically safe behavior (there is little chance of testing positive); the

behavior has a relatively certain outcome. Therefore, these individuals might be more persuaded by gain-framed messages.

We recently completed a field experiment in which we tested whether individuals who differed in their views of HIV testing in this way would likewise differ in the framed message that would be most effective in motivating them to obtain an HIV test (Apanovitch, McCarthy, & Salovey, 2003). There has been little experimental framing research in the domain of HIV/AIDS. One study, cited earlier, reported that 63% of African American participants volunteered for HIV testing after watching a loss-framed videotape targeted to participant's sex and ethnicity as compared to 23% who watched an unframed video featuring sex- and ethnic-matched models and 0% who viewed an unframed video in which ethnicity but not sex was matched (Kalichman & Coley, 1995). Kalichman and Coley did not provide a systematic test of message framing, however, because the groups varied on both message framing and targeting and a gain-framed message was not included in the study. In other research, when condoms were described as 95% effective in preventing the spread of HIV (gain-frame), college students said they were more likely to use them than when they were described as having a 5% failure rate (loss-frame), even though the two statements are factually equivalent (Linville, Fischer, & Fischhoff, 1993). However, Linville et al. did not recruit participants from a particularly vulnerable population, and they did not include a report of actual safer sex practices.

In our experiment, we examined whether gain- or loss-framed messages were more effective in encouraging women living in public housing or attending a community health center to obtain an HIV test (Apanovitch et al., 2003). We expected women who viewed HIV testing as a risky behavior with uncertain outcomes to be more persuaded by a loss-framed message, whereas women who viewed HIV testing as a safe behavior with certain outcomes would be more persuaded by gain-framed messages.

All participants were women from a low-income neighborhood of New Haven, Connecticut, either living in one of four public housing developments or attending a community health center. Of the 480 participants included in our analysis, most were ethnic minority group members: 66% African American, 21% Latino, 9% White, 1% Asian, 1% American Indian/Alaskan Native, and 2% other. The average age of the women in this sample was 32. Most (65%) of the women were single (never married), 82% had a high school diploma or less education, and the average annual income was \$8,076.

We developed four videotaped educational programs, identical in informational content but framed differently. Two types of gain-framed and two types of loss-framed videotapes promoting HIV testing were created; that is, gain-framed messages either noted that HIV testing would bring positive consequences or would make negative outcomes unlikely and loss-framed messages either noted that not testing for HIV would make negative consequences likely or would make positive outcomes unlikely (see also Detweiler et al., 1999; Rothman & Salovey, 1997). There were no differences across the two types of

gain-framed or loss-framed videos so they were combined in all subsequent analyses.

At 6 months, the findings generally conformed to the pattern previously discussed. There was a significant gain-frame advantage among women who viewed HIV testing as a behavior with a certain outcome such that 38% of those who saw a gain-framed video were tested, compared to 26% who saw a loss-framed video. Participants who viewed HIV testing as a risky behavior with uncertain outcomes showed a trend in the other direction, toward loss-framed messages being more persuasive. Forty percent of participants who saw a gain-framed video were tested compared with 47% who saw a loss-framed video. In a logistic regression analysis controlling for prior behavior, this interaction term was significant. (Analyses at 3 months revealed a marginally significant interaction term; analyses after 9 months showed that the messages had worn out their differential welcomes.)

HIV, compared to breast cancer, for example, seems to be a unique disease in that individuals have a greater chance of surmising their HIV status, based on their behavioral history, without testing. In other words, to some extent, individuals can assess their risk independently without reference to a medical test. Differences in the perceptions of the riskiness of being tested for HIV naturally follow, with those engaging in high-risk behavior having more uncertainty as to their HIV status and test outcome and those not engaging in high-risk behavior perceiving the test as an opportunity to confirm their present health status. Loss-framed messages appear more persuasive to the former group of individuals, whereas gain-framed messages are more effective for the latter group.

FIELD AND LAB

Given that field experimentation can be rooted in theory and yield interpretable conclusions, why have social psychologists for so long so strongly preferred laboratory settings? We explore here some of the frequent objections to field experimentation. Critics of such an approach tend to argue that it is easier to draw causal inferences from laboratory experimentation, it is difficult to study mechanism (mediation) in field experiments, and findings from one field setting will not generalize to other field settings.

Many social psychologists view the ability to draw causal inferences about human behavior as the defining characteristic of our research enterprise. Indeed, the great preference for experimental designs as opposed to correlational studies is rooted in the high value to which the understanding of causality is held in social psychology. However, the importance of being able to make causal claims has sometimes led to a blindness concerning the value of field experiments. Writing in the landmark *Handbook of Social Psychology* (4th ed.), Aronson, Wilson, and Brewer (1998), in an excellent summary of the experimental method in social psychology, ask, "Why, then did Gilbert and Hixon (1991)

conduct their study [of stereotyping] in the laboratory? . . . to gain enough control over the situation to be able to make causal inferences” (p. 105), implying that if a similar study had been conducted in the field, there would be insufficient control to allow such inferences. Aronson and his colleagues further argue that the laboratory setting allows the researcher to manipulate independent variables more precisely and to eliminate or minimize the intrusiveness of unwanted noise, which is thought to impede “the chances of obtaining a pure indication of the effect of one variable upon another” (p. 106). And finally, “to really get at the heart of a problem, however—namely, to understand its causes—experimental, process-oriented studies are often the method of choice, usually conducted in the laboratory instead of the field” (p. 107). A large worry is that causal inference is premised on random assignment, and random assignment may not be possible in all field settings (e.g., participants may select themselves into various programs or conditions, natural randomization may be haphazard in some way, differential dropout can cause initially randomized samples to not be randomized by the end of the study). In our view, when random assignment is not possible, we would not claim that an experiment had been carried out (by definition, experiment implies random assignment).

Of course, Aronson and his colleagues do see the value in field experiments. For instance, in many field experiments, social desirability pressures and resulting biases (answering questions or behaving in certain ways so as to please the experimenter or merely to “look good”) may be less salient. Unobtrusive measures that involve observation of a behavior without interfering in that behavior also may be easier to employ in the field than in the laboratory (e.g., who sits next to whom in a public setting as a measure of attraction). In fact, they view the perfect experiment as “one conducted in a naturalistic setting, in which people were randomly assigned to experimental conditions, the independent variables was one that was impactful and involving, and all extraneous variables were controlled” (p. 133), but they then argue that such conditions rarely exist (especially in the field). In the end, they conclude, as would we, that programmatic research, involving a series of experiments—some in the laboratory and some in the field—is most likely to advance theory but also address applied problems. We certainly would not disagree with their bottom line: “If the distinctive contribution of experimental social psychology to the general body of knowledge is ever to be realized, an optimal integration of theory-oriented laboratory research with applied field experimentation will be required” (p. 135), although we would not equate quite so strongly theory with laboratory versus application with field settings. (We strongly endorse McGuire’s [1969] view that “the distinction between basic and applied research is orthogonal to that between field and laboratory research” [p. 26].)

In fact, we would argue that our field experiments have provided a useful feedback loop with respect to Prospect Theory, in the Lewinian spirit described earlier. As an example, the postulates about framing derived from Prospect Theory concern preferences for risky (uncertain) versus risk averse (conservative)

options. One can imagine rather contrived laboratory experiments in social or health psychology in which participants consider such choices. In the field, however, the decision is usually more focused on whether to engage in a health behavior (varying in riskiness) or not, and this is not the choice problem anticipated by Prospect Theory. Nonetheless, the constraints imposed by the ecological realities of the field motivated us to explore the robustness of Prospect Theory in being able to account for a different kind of choice situation. To the extent that our predictions have generally been confirmed, the theory is extended and generalized in ways that were, perhaps, not anticipated by the original theorists.

In recent years, social psychology has placed great value on experiments that provide evidence for either the mechanism underlying some phenomenon (mediation) or the boundary conditions on a phenomenon (moderation). This emphasis has produced a shift in what is published in the journals from demonstrations of important social psychological effects—often main effects—to articles presenting a series of experiments in which various mediators or moderators of these effects are explored. Typically, the articles that are now published in social psychology present three or four or even five experiments, each only subtly different from the other in that an alternative mediator is explored or, with respect to moderation, a two-way interaction is qualified by a three-way interaction, which is then qualified by a four-way interaction, and the like. This emphasis on mediation and moderation has chased social psychology indoors, that is, has required the precision of the laboratory rather than the ecological validity of the field. Demonstrations of mediation and moderation can require heroic efforts to hold down noise and error (especially random error), and the field does not strike the typical experimentalist as conducive to this goal.

Often the tension here is one of values. Is it of greater value to demonstrate that an intervention works or that a phenomenon exists than it is to develop a “boxes-and-arrows” model delineating the constructs that help to explain the reasons why? Is it of greater value to show how robust a social behavior is despite vast differences in context or population studied than it is to demarcate when and for whom the behavior is more or less likely? Of course, it depends, in part, on what motivated the research in the first place: the desire to address a social problem or to provide evidence for an intricate psychological theory.

We would argue that this dichotomy is too strongly drawn. Rather, the ideal research program would generally employ laboratory and field experiments simultaneously to test both the existence and importance of some phenomenon as well as understand why and when it is likely to reveal itself. By moving back and forth between multilevel laboratory experiments and compelling and more simple field tests, investigators can understand both the complexity and the importance of a phenomenon. The cliched trade-off between rigor and meaningfulness is unnecessary. Although, generally, we have favored the field experiment for our work on health communication strategies in part because it allows us to address some of the health needs of vulnerable populations as a side consequence of conducting our research and in part because we are interested in the

generalizability, cost-effectiveness, and real-world size of our effects, we do on occasion bring our experiments into the laboratory (e.g., the mouthwash experiment) because it allows us an opportunity to measure a greater number of variables with more precision. Often, in field experiments, the literacy level of participants or competing demands on their time limits the degree to which we can engage them in the research enterprise. Such is not as likely to be the case for college sophomores.

It is often assumed that field experiments are by nature more generalizable than laboratory experiments. This assumption is represented by the current debate about “effectiveness” versus “efficacy” in clinical psychology research. Traditionally, experiments designed to test an intervention for some clinically relevant phenomenon such as a simple phobia or mood disorder were tested under ideal circumstances in what are termed “efficacy” studies. In efficacy studies, participants are likely to be assigned randomly to receive either the intervention being tested, perhaps an equally compelling standard-of-care intervention, or a control intervention that might involve a placebo or, perhaps, assignment to a wait-list to receive the experimental intervention at a later time. Participants in such an efficacy trial would receive the intervention from a well-trained “therapist” (often one of the investigators) who adhered carefully to a set of treatment guidelines, in the context of a prestigious academic environment, and who employed state-of-the-art assessment instruments. Treatments with promising efficacy data associated with them often then would fail when put into practice in part because their originators would not have anticipated some of the difficulties inherent in implementing such interventions in real-world settings.

In recent years, effectiveness studies have been preferred over efficacy studies. Effectiveness trials also test whether an intervention works, again using an experimental design. However, now the experiment is conducted under the conditions in which the intervention ultimately would be implemented. The treatment might be delivered by therapists with no special training or allegiance to the approach, perhaps in community-based environments where there are few controls over treatment fidelity (whether the treatment actually delivered was consistent with the manualized intervention) or cross-talk (whether participants receiving different treatments can be kept from contacting each other and sharing their experiences). The goal here is to demonstrate that despite these challenging circumstances, the benefits of the new intervention could still be demonstrated. And, one could be more confident, then, concluding that these benefits would be obtained despite the messiness of the real world.

Certainly, the current emphasis on effectiveness as opposed to efficacy recognizes the difficulty in generalizing from findings demonstrated in the laboratory to application in field settings. However, it also would assist generalizability if we had a better taxonomy of contexts and settings available to us. By carefully considering the nature of a particular field setting with respect to those conditions under which some phenomenon had been demonstrated, investigators could make more precise predictions about the conditions under which

some phenomenon should be expected to replicate. Merely assuming that findings from the laboratory will not generalize and that those from the field will be probably naive. At the same time, it is also not likely the case that field settings are so unique that one should expect that conclusions drawn from experiments in one context to have no relevancy for other situations and settings.

CONCLUDING COMMENTS

Nearly 35 years ago, McGuire (1969) challenged the field of social psychology to consider field experimentation (actually, field research more generally) as an appropriate (indeed, ideal) vehicle for theory testing. McGuire predicted that field experimentation would become more attractive in social psychology due to the simultaneous press of a number of forces, such as (a) improvements in data collection and data analytic procedures that would reduce the noise and error traditionally associated with field research, (b) increasing interest in what McGuire termed “transdisciplinary cosmopolitanism” (p. 28), (c) increasing social and political concern of researchers, (d) increasing public concern for scientific pay-off to justify expenditure of tax dollars, and (e) the rapid growth in the number of social science researchers since the days of the Great Society. Certainly, McGuire is correct in viewing theory-oriented research in natural settings as “the best of both worlds” (p. 21), and he was right on target in anticipating the incentives that would push social scientists of all stripes toward field experimentation as a vehicle for theory testing. Nonetheless, he likely overestimated the enthusiasm for such an approach among rank-and-file social scientists in the early part of the 21st century, and one can hope only that conferences such as the one reflected by this special issue of the *American Behavioral Scientist* represent a renewed vigor for this alternative way of advancing the knowledge base on which our respective disciplines rest.

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