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COMMENTARY

# Moving From Theory to Practice and Back in Social and Health Psychology

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Progressive advancement of interventions in health psychology requires improvements in underlying theory. The theoretical advances described in this special issue offer a number of possibilities for intervention development. These include advances in understanding the role of cognitive biases, priming effects, effective planning, the role of specific affective states, and the influence of attachment style on response to interventions. For these advances to translate into progressive improvements in interventions and realized gains in public health, we propose that the theories should: (a) be explicitly linked to the major theories from which they draw; (b) reflect the context sensitivity and dynamic nature of the intervention target; (c) show convincing evidence of improved effectiveness of interventions they spawn according to rigorous criteria; and (d) address the full translation process, including implementation by health care providers and engagement by the target population.

*Keywords:* theory, interventions, implementation, translation

Health psychology contributes to interventions to improve current or future health, and to maximize functioning and minimize the psychological distress caused by ill health. This can involve changing affect or behavior in nonpatient and patient populations, health care professionals or policymakers, and funding agencies. For many decades, social and personality psychology (henceforth, referred to as *social psychology*) has been developing theories that are relevant to these targets. The reviews in this special issue reflect recent advances in these areas. This commentary addresses how to translate theoretical perspectives exemplified by these advances into effective intervention strategies in clinical and public health practice.

We start by outlining what makes a good theory and describe how progressive advancement in interventions (an "incremental technology") requires corresponding advances in theory. We then suggest conditions needed to ensure that advances in theory translate into advances in intervention technology. We draw on the theories presented in this special issue as illustration.

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## What Makes a Good Theory?

The terms *theory* and *model* are often used interchangeably, and this commentary will follow that practice. A theory is conventionally defined as "a principle or body of interrelated principles that purports to explain or predict a number of interrelated phenomena" (VandenBos, 2006, p. 934), whereas a model is "a graphic, theoretical, or other type of representation of a concept or of . . . processes that can be used for various investigative and demonstrative purposes, such as enhancing understanding of the concept, proposing hypotheses, showing relationships, or identifying epidemiological patterns" (VandenBos, 2006, p. 586). Both theories and models represent a conceptual summary of cumulative knowledge about an area. Hence, their appropriate application facilitates future accumulation of evidence.

The domain of social psychological theory extends beyond interindividual and group processes to areas of individual psychology relating to motivation, emotion, and what has been termed *social cognition*. A substantial body of its theory is relevant to developing health psychology interventions. Although it is possible to develop such interventions with some degree of effectiveness without the guidance of formal theory, such an approach is antithetical to progress. Without theory, one is continually playing "20 questions with nature" (Newell, 1973, p. 283).

Theories in any area of psychology can only be partial descriptions of the complex interplay of events that occur. They are perceptions of the domain of interest and not reproductions of it. They describe aspects of the processes involved from a particular perspective and for a particular purpose. Thus, theories ultimately have to be judged according to how well they serve their purpose.

Although a considerable body of theory has developed in relation to health behavior, functioning, and well-being, health gains

may also be achieved by targeting theories at health care providers and systems to maximize the implementation of evidence-based practice. It is therefore at least as important to generate theories of translation as it is to generate theories describing the behavior, cognition, and affect of the populations that are the ultimate target. This has not been tackled in the current special issue, but is a key issue for future theorizing and empirical research. (The journals *Translational Behavioral Medicine* and *Implementation Science* encourage such thinking.)

When theories have the purpose of informing the design of effective interventions, they must be judged according to how far they have achieved this or are likely to achieve it. A reasonable presumption is that theories are more likely to lead to effective interventions if they: include constructs that are clearly defined and used consistently, are not clearly falsified by existing observations, explain the major observations in a parsimonious, coherent, and comprehensible narrative, and make predictions that can be tested through observation. These multiple criteria of a good theory often require a trade-off. For example, the broader the scope of a theory, the greater its potential range of application for intervention development, and the greater its likely complexity and lack of applicability to specific scenarios.

This commentary considers ways to maximize the likelihood that (a) theoretical advances, such as those described in this issue, will influence clinical and public health practice, and (b) evaluations of clinical and public health practice will contribute to theoretical understanding. We propose four features of new theories that will make them maximally useful to inform the design of effective interventions. We propose that new theories should: (a) be explicitly linked to the major theories from which they draw; (b) incorporate the context sensitivity and dynamic nature of the intervention target; (c) show convincing evidence that application of the theory leads to improved effectiveness according to rigorous criteria; and (d) address all aspects of the translation processes including implementation by health care providers and engagement by the target population.

## Feature 1: Linkage With Major Predecessor Theories

There is a long history of theory relevant to health behavior and affect that extends back to the ancient Greeks. As Mook has pointed out in his comprehensive treatise on motivation (Mook, 1995), Thrasymachus in the fourth century BC espoused the importance of "self-interest" as the ultimate driver of behavior with the attendant focus on reward and punishment as a means of controlling behavior. Socrates by contrast proposed that once individuals had decided what was right and wrong, this guided their actions. The former is of course the natural precursor to learning theory, whereas the latter presages what has come to be termed *decision theory*. The former makes no major distinction between humans and other animals, whereas the latter focuses on what appears to be distinctly human.

Learning theory does not presume that conscious reflection of any kind has occurred. There are two aspects to this theory: operant and classical conditioning, with rich empirical and theoretical histories. Operant conditioning (Skinner, 1953) draws on the observation that, through associative learning, cues that signal when behaviors will be rewarded or punished will come to control behavior. In classical conditioning (Pavlov, 1927/1960), a stimulus (e.g., the sound of a bell) that, through association, is predictive of another stimulus (e.g., delivery of food) can generate a response (e.g., salivation) that anticipates the latter stimulus. A huge body of research has detailed how this system operates in humans and nonhumans, including the brain regions and neural pathways underlying it (see Mook, 1995). This body of work has led to important behavior change applications in clinical and educational psychology, but has been largely neglected in health psychology, arguably because the latter developed after the so-called "cognitive revolution" of the 1950s.

Decision theory emerged from economics, and it encapsulates the view that our actions are governed by an analysis of the costs and benefits of those actions (often compared with others that we might do instead). Put in terms of economics, we seek to maximize our "expected utilities" (Lindley, 1985). Under this theory, behavior can be predicted by estimating the subjective expected utilities of options that are likely to be considered; behavior can be controlled by influencing these inputs to the decision process. According to decision theory, this process may be incomplete, haphazard, subject to bias and misperception, and disrupted by emotion. Even though there may be nonconscious, associative influences on reflective analysis, the presumption of decision theory is that the behaviors of interest arise from this analysis.

Recent attempts have been made to integrate the two "book ends" of learning theory and decision theory in what has come to be termed *automatic* and *reflective* processing (e.g., Strack & Deutsch, 2004). In one type of overarching model, dual-process theories, the processes operate in parallel and are triggered by different demands, but there is continual information flow between them (see Keren & Schul, 2009, for a critical evaluation). Another type of overarching model, PRIME theory, differs in that it proposes that all behavior arises directly from automatic processing, to which reflective processing acts as one source of input (West, 2006a).

We highlight two theoretical mechanisms referred to in this special issue that hold promise as potential bases for interventions to change health behavior. The first is *cognitive bias*, a disposition to process information in a particular way as *a result of learned emotional or motivational influences.* The second is *evaluative conditioning*, the process by which a stimulus comes to acquire similar evaluative properties to another stimulus with which it is paired (Sheeran, Golwitzer, & Bargh, 2012). To maximize their potential, it will be important to link these explicitly to the accumulated knowledge in both decision theory and learning theory. Leaving connections implicit may lead to (a) confusion regarding key concepts within the new theories, (b) undermining the possibility of determining under what conditions the new theories are applicable, and (c) potentially unhelpful restatements of elements of the major theories using different terminology. If connections are made, it is possible to draw on a wealth of evidence relating to the major theories to implement ideas from the new theories in intervention design. For example, because cognitive biases (e.g., of attention, interpretation, and memory) are presumed to arise from associative learning, learning theory can inform us about parameters that lead to their development. That knowledge base, in turn, can help guide training to reverse them by altering the patterning of stimuli, choice of reinforcer, and interactions with motivational states. In the case of evaluative conditioning, at present the effects are weak and have rarely, if ever, been applied to important,

long-term behavior change. To amplify such effects to a point where they can be practically useful, it will be necessary to draw on the wealth of evidence from classical conditioning experiments relating to, for example, configuration and choice of stimuli, number and patterning of exposures, and contextual factors.

One of the applications suggested by Sheeran et al. (2012) is to develop interventions geared at strengthening self-control. Based on cognitive and social developments in learning theory, the 1970s saw a blossoming of self-control techniques within clinical psychology (e.g., Thoresen & Mahoney, 1974; Meichenbaum, 1977). Both social and health psychology would benefit from greater engagement with the theoretical and applied developments within clinical psychology over the last 40 years. Sheeran et al.'s (2012) suggestion to extend the behavior change technique taxonomy approach to techniques that draw on nonconscious processes has seen some progress (Michie et al., 2011), but would benefit from integrating the knowledge base about the effectiveness of behavior change techniques that clinical psychologists have used to enhance self-control.

## Feature 2: Context Sensitivity and Dynamic Nature of Intervention Targets

Behavior is highly context sensitive—both in whether it is enacted and in the manner in which it is enacted. This poses considerable challenges for theories of behavior because of the need to incorporate a potentially very diverse set of contexts into the body of the theory. For example, the effect of priming may be different in laboratory settings with particular sets of expectations than in a real-world environment. Systematically observed variation in the effectiveness of interventions conducted in different contexts constitutes evidence to inform theoretical analyses of "behaviors-in-context." The same is true for other targets of health interventions, such as subjective well-being. One preliminary attempt at an overarching model of "behavior-in-context" that is designed to be used for intervention development is the COM-B system (Michie, van Stralen, & West, 2011). Behavior is conceptualized as a system involving three essential interacting conditions: capability, opportunity, and motivation. This neatly maps on to the mechanisms that Mann, de Ridder, and Fujita (2012) identify as underlying interventions to help people achieve their goals. These include selecting strategies to promote goal setting and goal striving (capability), identifying and promoting opportunities that are conducive to goal attainment, and maximizing the extent to which goals are intrinsically motivating.

As described in Mann et al. (2012), self-regulation models represent a step forward from predictive social cognition models in outlining the dynamic psychological mechanisms underlying behavior change. One of the challenges in such models is how to embody the dynamic and fluid nature of causal influence on a moment-to-moment basis. Our models and theories are fundamentally structural, in that they posit traits and states that have existence of some duration rather than posit complex dialectical processes. For example, desires are generally thought of as inputs to motivational processes such as decision-making. However, it is likely that they alter the very nature of the processes involved and the other inputs to those processes.

Opportunities for developing more dynamic theories of behavior-in-context have been greatly enhanced by new methods for collecting ecologically valid data in real time. The advent of inexpensive, reliable, and unobtrusive measurement devices has the potential to revolutionize near-continuous data recording. This includes handheld electronic recording devices (e.g., smartphones) or sensors on objects, as has been used to evaluate the impact of theoretically driven messages on rates of hand washing with soap in motorway toilet facilities (Judah et al., 2009). Data can be individually tracked by real-time location systems that involve sensors on both people and objects, allowing movements and interactions to be monitored externally. Mobile phone technology and online social networking applications can be used to integrate past and future activities and feelings to enable tailored digital behavior change interventions without the need for users to answer questions (see http://www.ubhave.org; Coons, Roehrig, & Spring, 2011).

## Feature 3: Adoption of Rigorous Criteria for Demonstrating Intervention Effectiveness

Translation of theoretical perspectives into intervention strategies depends on convincing others that the research is worth translating and having good links with key pathways for translation. To achieve the first, the theoretical perspectives need to be well supported by evidence, as understood by those to be convinced. Two key issues in relation to evidence are replication and generalizability. Good scientific practice is that a result is not considered to be "a finding" unless it has been replicated in at least three centers. Second, there is the issue of generalizability of findings across populations, settings, and types of behavior.

As noted earlier, to address the question of generalizability, theories need to characterize behavior-in-context. This will provide a basis for intervention evaluations carried out in different contexts to test theories. Without this, we cannot be confident whether a failure to replicate is theoretically meaningful or reflects chance variation. Such understanding is crucial if we are to test, refine, and develop our theories.

A further issue concerns the "real-world" significance of the target variables. Health psychology requires findings for behavioral outcomes that have clear implications for health, for example, biochemically verified, sustained reductions in alcohol consumption. The effect sizes with this kind of outcome are usually small, even though such changes may be of major public health significance in terms of shifting the distribution of risk behaviors in the entire population toward improved health (Rose, 1985). Large numbers of study participants are therefore required to ensure sufficient power to detect effects. For funders to provide the considerable investment of resources needed to conduct the research, the level of confidence required in the likely benefit of applying a certain theoretical perspective is much higher than that needed to support further social psychology laboratory research.

Scientific progress involves developing new theories or improving or abandoning existing ones. This raises the question as to what strength of evidence is required to change or abandon theories. An argument can be made that, as a scientific community, we should engage in a better-coordinated, collective effort to rigorously test and modify theory. By prompting greater integration, this could prevent the current plethora of partially overlapping theories with slightly different conceptualizations (Michie et al., 2005). A barrier to greater theoretical integration involves vested interests

(personal and commercial) in hanging on to theories despite an accumulation of contrary evidence (West, 2006b). International and cross-disciplinary coordination is key to achieving an optimal balance between stability and change in psychological theory.

## Feature 4: Coverage of All Aspects of the Translation Process

"Translation" is the process of adapting theoretical principles and empirical findings to the worlds of clinical and public health practice (Sung et al., 2003; Westfall, Mold, & Fagnan, 2007; Woolf, 2008). It proceeds through a series of phases. The first phase (T1) uses knowledge from the study of basic mechanisms to inform the development and refinement of promising interventions. The second phase (T2) tests the effectiveness of interventions under conditions that are progressively more representative of the general population and usual practice settings. For example, early T2 trials may begin by enrolling patients who have the target problem and no comorbidities, and by using research staff to deliver treatments in a university setting (efficacy testing). Efficacious interventions may then be tested by having local staff in a community setting deliver the intervention to all patients as part of their regular job duties (effectiveness testing). The third translational phase (T3 or "implementation") focuses on ensuring that effective interventions are routinely provided in day-to-day clinical care and public health practice. This requires studying and identifying ways to overcome motivational, capability, and opportunity barriers, which in turn requires good theories of behavior change at individual, social system, and policy levels. A fourth translational stage (T4) addresses uptake and engagement by the target population (Khoury et al., 2007). Finally, we propose a fifth phase of translation (T5), to be the study of how interventions are transmitted through a population, for example, by social networks.

To date, the vast majority of social psychological research effort in health has been dedicated to T1 translation. The articles in this issue contain excellent examples of how social psychological theories are beginning to be applied to translate insights from laboratory research into promising ideas about health interventions. As potentially effective interventions are developed, more theoretical guidance will be needed for the subsequent phases of research translation. For example, in T2 translation, there is a need for more developed theory to guide how an intervention should be formatted, delivered (e.g., professional vs. peer, face-to-face vs. telephone, Internet), and timed (e.g., asynchronous vs. real time).

Theory is especially lacking in T3 and T4 translation, and yet these are arenas to which social psychologists have much to contribute. Can the same cognitive and emotional processes that motivate individuals to change unhealthy behaviors be harnessed to prompt clinicians and policymakers to adopt new practices? How do attachment styles thwart or support relationship dynamics between patient and provider, especially when behaviors that the provider intervenes to change (e.g., smoking, overeating) may be stigmatized? How can theory guide what clinics do to mitigate the adverse effects of prejudice on patient care? The challenges of T3 also concern how to foster uptake of best practices into complex care systems at the level of a clinic, hospital, or care delivery system.

Beyond dyadic or small group processes involving provider, patient, and family, we need social psychological theory to elucidate complex organizational dynamics involving different institutional sectors that hold vantage points, interests, and resources that may or may not be aligned. Even when delivered with fidelity, interventions lack full impact unless patients and the general population engage sufficiently with them. Theories of T4 and T5 translation are needed to guide population-level outreach that initiates, propagates, and maintains engagement and self-regulatory change.

In sum, the development of psychological and social interventions has grown increasingly complex because of the increased technological sophistication of many interventions and the need to foster scale and sustainability by influencing social and institutional systems at multiple levels. A growing body of evidence indicates that solutions to complex, multifaceted scientific challenges benefit from cross-disciplinary collaboration among teams of experts possessing diverse specialized knowledge. Translational problems involving clinical or public health interventions impose a need for insights not only from scientists, but also from practitioners and other stakeholders at different levels in the health care delivery system. The challenges of working across disciplinary and scientific boundaries are considerable, but a systematized body of knowledge and learning tools (Falk-Krzesinski et al., 2010) has begun to emerge (cf., http://www.teamscience.net and http://www.teamsciencetoolkit.cancer.gov). Even with the best evidence and the most effective strategies, translation is difficult, given the near universal separation of academic research and practical application within society. Steps toward improvement are in progress, with funders encouraging research that includes users such as clinicians and policymakers. Academic health science partnerships are also developing in several countries. An example in the United Kingdom is the NHS National Centre for Smoking Cessation and Training (NCSCT; http://www.ncsct.co.uk). This "living laboratory" is based on bidirectional pathways between research evidence, including theoretical perspectives, on the one hand, and practice, on the other. Funded by the UK Department of Health, it is directed by health psychologists and smoking researchers. NCSCT is tasked with improving evidence-based practice across all smoking cessation services in England, which treat over 700,000 smokers a year. The data collected from routine clinical practice are analyzed by a team of scientists employed by NCSCT and used to address theoretical and empirical questions. Answers to these questions, in turn, feed into the training and other translational activities.

## Conclusion

Social psychological theories in this special issue offer considerable promise for the development of interventions to improve health and well-being. There are major challenges ahead if the potential of these theories is to be realized. Insofar as the theories will be judged on how well they inform the design of effective interventions, we have proposed four features that can help this process to work effectively. The theories should: (a) be explicitly linked to the major theories from which they draw; (b) incorporate the context sensitivity and dynamic nature of the intervention target; (c) show convincing evidence of improved effectiveness according to rigorous criteria; and (d) address all aspects of the translation processes, including implementation by health care providers and engagement by the target population. All of this will

require increased investment and coordination of activity through research consortia across centers and countries.

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