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Applying Theory across Settings, Behaviors and Populations: Translational Challenges and Opportunities

Robin J. Mermelstein, Ph.D. and
Institute for Health Research and Policy and Psychology Department, University of Illinois at Chicago

Tracey A. Revenson, Ph.D.
The Graduate Center of the City University of New York

Abstract

Basic social psychological theories have much to contribute to our understanding of health problems and health-related behaviors and may provide potential avenues for intervention development. However, for these theories to have broader reach and applicability to the field of health psychology, more work needs to be done in integrating contexts into these theories and addressing more specifically their application across settings, behaviors, and populations. We argue that integration of these theories into a broader multi-disciplinary and multi-level ecological framework is needed to enhance their translation into real-world applications. To enhance this translation, we make several recommendations, including breaking down silos between disciplinary perspectives and enhancing bidirectional communication and translation; analyzing boundary conditions of theories; expanding research approaches to move outside the laboratory and maintain a focus on external validity; and conducting efficacy testing of theories with meaningful, relevant endpoints.

Translating basic social-psychological theories to useful applications addressing health problems is a major challenge. This challenge derives both from the complexity of the health problems and from the methodological approaches often found in more traditional social psychological research. Social psychological theories have much to contribute to our understanding of disease mechanisms, health behaviors, and interventions to promote healthy behaviors and to reduce health-compromising ones. Yet currently a large chasm exists between the worlds of basic social psychological research methods and the real-world context of health problems and health behaviors. The papers in this special series provide the first step in bringing closer these parallel research endeavors with the hope of forging greater intersections. To strengthen the bridge between these two research communities, we need to consider the integration of context into basic theories and to address more specifically their applicability across settings, behaviors, and populations. Contextualizing theory and research approaches is an important step in helping to make substantial progress in addressing the health problems faced by our society today.

Wicked problems and the need for a contextual approach

The health problems that we grapple with today are complex ones, influenced by a constellation of intersecting biological, behavioral, psychological, cultural and social-structural factors. They are, as Kreuter, DeRosa, Houze, and Baldwin (2004) note, “wicked

Corresponding Author: Robin Mermelstein, Institute for Health Research and Policy, University of Illinois at Chicago, 1747 W. Roosevelt Rd., Suite 558, Chicago, IL 60608, robinm@uic.edu.

problems," or problems without neat and simple solutions. Problems in translation can arise when the basic researcher treats these issues, such as heart disease, cancer, diabetes, health disparities, or their associated health risk behaviors, as if they were "tame problems", or ones that can be clearly delineated and solved by experts using approaches within their own disciplines. Rather, as Kreuter et al. note, a multidisciplinary, systems perspective is more appropriate to address wicked problems and to consider how these health problems are enmeshed in their cultural, social, and economic structures.

Failures to translate research findings or findings of inconsistent results across studies may well be due to a failure to consider context or moderators. Complex health problems are often embedded within systems and cultures that bring their own challenges, with intersecting behaviors and dynamic processes that change in relevance as the behavior and health problem changes. Sociocultural context both influences and places constraints on health behaviors, such as dietary practices, patient-physician communication, and acceptable modes of coping. Removing health behaviors from their context may ultimately lead to erroneous conclusions and failures to intervene successfully.

A key feature of complex behaviors or wicked problems is the consideration of an ecological, multi-level systems perspective (Revenson & Pranikoff, 2005; Stokols, 1992). Consider the problem of obesity in the United States today, and the notable significant graded relationship between socio-economic status (SES) and obesity. Groups of lower SES are at much greater risk for becoming obese (Sobal & Stunkard, 1989). This relationship is not simply a function of poverty; the SES obesity gradient exists across multiple measures and dimensions of SES (Wardle, Waller, & Jarvis, 2002). Although no single mechanism can account for this SES-obesity gradient, one could easily hypothesize multiple contributing factors at multiple levels of influence, including knowledge of nutrition and food preparation options, cultural influences on food choices, neighborhood influences on availability of food choices, exposure to stressful life circumstances that might lead one to cope by eating high fat, calorie-dense, rewarding foods, family or relationship eating patterns, or access to physical activity in a safe environment.

One particularly influential explanation of the SES-health gradient is Link and Phelan's (1995) "fundamental cause" theory which points to "upstream" social-environmental factors that create negative outcomes. Link and Phelan highlight the importance of "contextualizing" risk factors – that is, the need to consider ultimate causes. Ignoring social factors or exposures, Link and Phelan suggest, may lead to an over-emphasis on individually-based intervention strategies or explanations that are ultimately ineffective at achieving lasting health behavior change. For example, poverty is a fundamental cause of multiple risk factors and disease outcomes. A recent review on the effects of poverty on children's health and well-being points to both physical and social environmental mechanisms that link poverty to poor health outcomes, including substandard housing, crowding, and chaotic and under-budgeted schools (Evans & Kim, 2007).

Neither should we ignore the more downstream individual-level mechanisms that are more proximal to health behaviors and health outcomes. The five papers in this series bring attention to individual-level mechanisms that have promise for integration within a multi-level framework. However, in order to maximize their utility, we need to start to place these theories within the contexts of more complex, multilevel pathways to health. Bi-directional integration, moving up from individual level factors to broader contextual ones, and moving down from the broad, macro-level societal contexts requires researchers to work across disciplinary boundaries and is imperative for making greater advances in improving health (Anderson, 1998).

Considering context helps us to address several key questions that will facilitate the translation of these theories into application. What are the conditions under which these proposed mechanisms are most related to disease or to health behaviors? What are the boundaries of each of these theories? Are there populations, settings, or behaviors for which these processes are more or less influential or effective? These key questions address the generalizability or the external validity of these theories and research findings and are essential in helping to determine how translatable these theories are to health care.

Moving beyond "proof of principle" and bringing context into health research

The papers in this series primarily present "proof of principle" studies. That is, they emphasize studies that are designed to detect whether a specific manipulation, often in controlled laboratory conditions, yields an effect on a relevant construct of interest. They provide the building blocks from which health researchers can frame studies, but the challenge is in translating them beyond the proof of principle stage to clinically meaningful and disseminable interventions. For example, in their review of nonconscious processes and health, Sheeran, Gollwitzer, and Bargh (this issue), cite evidence that implicit attitude measures show an association with health behaviors beyond those explained by explicit cognitions, and that certain types of training manipulations may alter implicit cognitions. At the same time, the authors note that there is a large variability in effect sizes across studies. Could this variation be explained by differences in contexts or populations or behaviors? Are there certain conditions under which implicit cognitions are more likely to influence health-related behaviors?

Context, or specific settings and situations, may place individuals more at risk to the influence of nonconscious processes. McKirnan, Ostrow, and Hope (1996) have proposed, for example, that substance use and highly stimulating sexual settings may promote cognitive disengagement, leading individuals to rely on more "automatic scripts" or nonconscious processes to respond to external pressures toward sexual risk. Partying or celebrating with friends who smoke when one is trying to quit is yet another risky situation that may make one vulnerable to nonconscious processes. Although in principle, it is easy to acknowledge that nonconscious goal pursuits may well get in the way of maintaining healthy intentions, we do not have evidence for the mediating mechanisms that would be the targets of interventions.

We want to encourage researchers to think beyond the "proof of principle" stage. Researchers need to start to address the boundaries of these theories: under what conditions do these mechanisms hold and how do they interact with mechanisms at different levels of analysis (Anderson, 1998)? How do nonconscious processes fit in, for example, with environmental conditions? Sheeran et al. provide some provocative examples of how environmental manipulations, such as exposure to advertising and marketing, can trigger nonconscious processes and influence health behaviors such as eating or physical activity. Such policy or environmental message interventions have the potential for broader applicability than the more intensive, individualized interventions that require significant training and professional time.

A recent study by Cooper and colleagues (Cooper, Roter, Carson, et al., 2012) provides an excellent example of moving beyond lab-based proof of principle studies into real world settings to demonstrate the phenomenon of "nonconscious processes" in health care settings. Cooper et al. examined the associations of clinicians' implicit attitudes about race with audiotaped measures of patient communication and patient ratings of care, thus marrying the rigor of lab-based methods with real world contexts. Their study is noteworthy for

demonstrating that both implicit bias and stereotyping are associated with directly observed medical visit communication and patient perceptions of care. Clinicians responded automatically based on their implicit beliefs, and these beliefs may have influenced their health care delivery. These findings, benefitting from the leads from basic social psychological theories, may translate into intervention strategies to help reduce health disparities in the patient-clinician health encounter.

Explaining and overcoming health disparities, or differences in the incidence, prevalence, mortality, and burden of adverse health conditions across specific population groups is one of the biggest challenges facing the health of our nation today. Major, Dovidio, and Berry-Mendes (this issue) address the issue of health disparities by examining intergroup relationships and highlight the importance of context. They note the value of being sensitive to how behaviors may be “in group” defining, and the need to be cautious in cultural tailoring of health promotion interventions when unhealthy behaviors are identified with a cultural group. For example, Major et al. discuss how nonwhite minority groups may view health promoting behaviors as characteristic of the white middle class, and unhealthy behaviors (such as smoking or fast food consumption) as in-group defining. The authors cite a study by Jackson et al. (2010) which suggests that engaging in health-compromising behaviors like smoking, eating high fat diets, and drinking, may be coping mechanisms for Blacks who are exposed to racism and stressful environments and may protect against depression. This implies that there are both positive and negative consequences to engaging in these behaviors, and the value on their expected outcomes may vary by cultural group. The Jackson et al. study underscores the importance of taking into account diverse cultural lenses as we examine whether these theories hold up across populations.

In considering how the theories presented in this series translate across groups and settings, we might also remember that these theories tend to be grounded within Western, and mostly Caucasian, cultural beliefs (Landrine & Klonoff, 1992), not only in how specific health-related behaviors are valued, but also by privileging the perspective that individuals have primary control over their behavior and health. These theories emphasize individualism, and may operate differently in cultures where family and community are more central to health behaviors.

The emphasis on individualism is a central component of self-regulation theory. The likelihood of success with self-control, however, depends on multiple factors, operating simultaneously, and with many of these factors outside of the individual’s control. Self-control strategies often depend on the availability of resources in the environment for alternative coping strategies. Environments can moderate both the likelihood and success of self-control strategies. Consider the case of two individuals who want to adopt a healthy, low-fat diet high in fruits and vegetables. One lives in an upper middle class neighborhood with several types of grocery stores along with a weekly farmers’ market and multiple restaurant options. The other lives in an urban “food desert”, with small corner markets, limited food choices, and relatively high prices for fresh produce. Restaurant options are limited to inexpensive, fast food venues. Settings play an important role in self-control, and control over one’s environment is not always feasible.

Studies of self-regulation processes are also now ripe to move out of the lab and into the field and real world contexts. In their paper on self-regulation Mann et al. (this issue) discuss the importance of motivational resources in inhibiting urges for unhealthy behaviors. Laboratory-based studies have found that situational factors may enhance motivation or reduce the depletion of resources -- two key factors in maintenance of health behavior change. These laboratory-based studies offer hope for overcoming this depletion of motivational resources so commonly found in struggles to change unhealthy behaviors, but

how these situationally specific manipulations translate into interventions that are broadly sustainable remains largely untested. The challenge for researchers will be to work together to build dynamic, longitudinal models of these self-regulation processes that better map onto the daily fluctuations in motivation and coping resources and that provide adaptive feedback in real world settings.

Fortunately, health behavior change researchers have done a good job of considering multiple contextual variables and differences in settings and populations in implementing interventions and translating evidenced based health research into practice. Self-regulatory processes and theories have been at the core of most effective health behavior interventions across the age span and provide good examples of translational research. Two recent studies show the value of considering self-regulatory processes in intervention design and implementation. McAuley and colleagues (2011) examined self-regulatory processes and sustained exercise behavior in older adults and found that higher levels of executive functions and the use of self-regulatory strategies (e.g., self-monitoring, goal setting, time management) at the start of the exercise program enhanced self-efficacy, which in turn, lead to greater exercise adherence. This study was notable in its use of community-dwelling older adults as participants. Wilson and colleagues (Wilson et al., 2011) demonstrated the efficacy of an intervention based on self-determination theory and social cognitive theory to increase moderate to vigorous physical activity in low-income, minority adolescents. The intervention significantly increased physical activity in the school setting in which the program was delivered, but not outside of school. Why? Barriers in the students' home environment made it difficult for them to continue to engage in physical activity outside of school. These two exemplary studies are impressive in their translation of theory-based interventions to real-world settings with challenging populations; they also are impressive in helping to point out the need to go beyond self-regulatory skill training in generalizing intervention effects across settings and environments.

Interpersonal influences on health move up a level of influence beyond the individual. Pietromonaco, Uchino, and Dunkel-Schetter (this issue) acknowledge the broader interpersonal influences that my influence health, such as the importance of social network characteristics. But they also remind health researchers that there are multiple dimensions to understanding social influence processes beyond the well studied constructs of social support, relationship quality or social capital. Their focus on attachment provides a thoughtful stretch for health behavior researchers, and may provide some new insights into understanding conflicting findings in the field. The health literature is replete with studies where strong correlational findings between, for example, social support and health behavior change, fail to translate to effective interventions, and more nuanced theory, accounting for context is needed (Westmaas, Bontemp-Jones, & Bauer, 2010). It may also be possible, though, that the inconsistent findings about social influence processes and support interventions reflect the presence of individual moderator variables. Attachment-related characteristics may be an important factor for health behavior researchers to consider in developing more tailored and individualized interventions.

The links between close relationships and health may well be universal, and important relationships can provide leverage points for health behavior interventions. Indeed, there is a substantial empirical literature linking interpersonal relationships to health outcomes, as well as interventions to enhance intimate relationships that lead to positive health outcomes (Wills & Ainette, 2012). Pietromonaco, et al. also note that transferring relationship science theory to understudied populations and contexts will take skill and sensitivity, and may well be challenging. We know relatively little about how these theories translate across racial groups, nontraditional family constellations, and by age.

Like the association between interpersonal processes and health, the links between emotions, emotional regulation and health may also be universal, and these effects may be both direct and indirect. As a cross-cutting theme, emotions cut across populations, settings, and behaviors. DeSteno, Kubzansky, and Gross (this issue) do a nice job of considering the broader perspective of how emotions and emotional regulation intersect with broader theoretical perspectives, as well as the need to examine multiple processes simultaneously and not in isolation. These authors also argue appropriately for the need to move beyond a main effects approach to examining the theoretical constructs and health outcomes. Indeed, the issue of generalizability across settings, populations, and behaviors can be addressed best through examinations of contextual moderators and not just main effects.

Emotional expression and regulation is also an area in which population differences may be strong. DeSteno, Kubzansky and Gross (this series) suggest that there may be critical periods during which the link between emotion and health is most powerful and advocate for a life-span perspective in moving this line of research forward. We whole-heartedly endorse the importance of a developmental perspective in understanding each of these proposed theoretical mechanisms. We'd also like to add the importance of layering that life-span approach within cultural, political and economic contexts. Affective expression likely varies across the lifespan, as well as across cultures, and historical events may further shape these processes across cohorts. DeSteno, et al. cite research suggesting that "disclosure of strong emotional feelings can improve health outcomes by avoiding the cumulative stress of inhibition." One wonders, though, whether this is a western or American view about emotional expression. Would similar findings hold in cultures where emotional expressiveness is socially less acceptable?

Challenges and Opportunities

Move beyond silos

The complexity of health problems today means that no one mechanism or theory can explain the broad array of predisposing factors, expression of behaviors, or influences on health behavior change. The papers in this series provide an excellent introduction to classic social psychological theories as they stand on their own. They have great potential for a new growth spurt in health psychology. The next challenge for social psychologists will be to consider the intersection of their work to theories, paradigms and frameworks in health psychology. Progress in moving these theories into broader consideration beyond the traditional social-psychological domain will occur more readily when linkages are made across levels of analysis, behaviors, settings and populations, using an ecological perspective, and when researchers more explicitly tackle the question of how these processes relate to each other.

Although a focus on individual, intra-individual level processes has an important role in understanding health problems, we also need to consider when such a focus on intra-individual level processes is not sufficient and when we need to consider how these processes operate in the context of social and environmental influences. As Anderson has described (1998), this is not only about including multiple levels of analysis, or looking at multiple influences *within* level, but also examining the mutual influences *between* levels of analysis. One methodological challenge is to consider how individual-level data are nested within larger contexts and populations. Individuals occupy all levels simultaneously, and individual level data still reflect reference points within the broader ecological contexts.

There is often a tension between the appeal of universality of theories and the need to acknowledge subgroup differences. Many aspects of context –for example, demographic variables that serve as proxies for access to health care and shape beliefs, coping strategies

and availability of social capital – can completely change the phenomenon of interest. It is useful to remember that theories devoid of contextual factors likely privilege those in majority groups, and, thus, may be incomplete models for understanding health behavior processes in non-majority groups. We need to test directly the applicability of these theories across populations. Including contextual factors in studies of basic social psychological processes that shape health behavior will enhance scientific progress in health psychology and translation to practice and policy.

Analyze boundary conditions

The question of applicability of theory across populations, settings, contexts, and behaviors requires specific tests of generalizability and external validity. The field should encourage and support rigorous replication across diverse samples, contexts, and problems (Ioannidis, 2006). Rigorous replication addressing boundaries should not be of lesser importance than new discovery. It is also important that "proven" interventions not only be replicated, but also tailored to different populations. Culture influences research at each state of the research process so that the basic constructs underlying an intervention or measures of them may not be relevant to a particular population.

Move outside the lab and maintain a focus on external validity

Perhaps our strongest recommendation is to encourage investigators to conduct research in real world, real time contexts. Nearly two and a half decades ago, Adler, Taylor, & Wortman (1987) pressed for the conduct of what they termed "basic field research" in health psychology – theoretically inspired work conducted in the field as well as in the laboratory that was oriented toward the elucidation of real-world problems. Their guidance is still applicable today, and we similarly urge greater collaborations across boundaries to ensure better the translational potential of the basic research.

Laboratory-based experiments are useful as initial "proof of principle" or preliminary first steps. Much of the research cited by the authors in this series of papers has been strong on internal validity. Lack of attention to external validity may limit the application of these theories. An emphasis on external validity adds credibility, increases the weight of the evidence, and promotes translation further along the continuum. Rigorous theory testing occurs not in tightly controlled contexts, but rather in imperfect settings (Green & Glasgow, 2006).

Conduct efficacy testing with meaningful, relevant endpoints

Much of the research cited by the authors of papers in this series has relied on laboratory-based experiments with artificial timelines and outcome measures that may not have strong construct validity. The study designs are often time-limited, and as a result, researchers often rely on questionable proxies for the ultimate outcomes of interest. For example, many studies end with self-reported behavioral intentions rather than the initiation or maintenance of the behavior. We encourage researchers to apply their theories to relevant health problems, populations, and outcomes.

Summary

Basic social psychological theories have much to offer health researchers. But we need to increase credibility, replication across populations, settings, and behaviors, and translation. Translational research comes with risks as well as great rewards. With good proof of principle in hand, researchers can move forward to apply their theories to health problems – but both the initial tests and applications need to move into real world contexts and behaviors. By understanding the context in which health behavior processes occur – even if

it creates conceptually complex models that cannot be tested in a single study – we move the science forward. Not every study can or should measure all relevant contextual factors, but researchers can start to theorize about how contexts may aid in the interpretation or understanding of the limits of their findings. Translation and considering context are the responsibility of all researchers, both basic and applied, social and health. Our goal is to use the best science possible, conceptually and methodologically, marrying what we learn from social psychological theories with the realities and generalizability of broader health domains, in order to build more effective interventions and achieve a deeper understanding of complex health problems. We don't want to let our strong basic science get lost in translation.

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