

Editorial

Current issues and new directions in *Psychology and Health*:

Bringing basic and applied research together to address underlying mechanisms

In recent years, health psychology research has gained sophistication and impact. Even so, the distinction between theoretically-guided and applied research looms large within the field, and the gap has actually widened now that much basic research has begun to address underlying biological mechanisms. Theoretically-guided research, especially that which integrates psychology and biology, often addresses basic science issues, but not necessarily the practical problems facing practitioners concerned with health care needs. Investigations focused on the specific needs of patients often fail to address issues of larger theoretical and empirical significance that might advance the underlying science. Theoretically-guided research that integrates psychology and biology, but that also maintains a focus on the goal of better prevention and patient care is the work to watch. There are a number of successful examples of research programs that have adopted these multiple but not mutually exclusive goals.

Research by Keith Petrie, Elizabeth Broadbent, and associates has shown the value of heart patients' drawings of their hearts as both a diagnostic tool that may aid health care providers in the identification of high-risk patients, and as a tool for identifying mechanisms by which patient perceptions may affect long-term health. First, the applied goal: patient drawings are easily obtained. They do not rely on literacy, high degrees of sophistication about illness, or access to internal emotional states for their production. Anyone can draw the heart, and so the technique can enjoy wide use. Importantly, characteristics of patients' drawings of their hearts are related to recovery following myocardial infarction. Broadbent, Ellis, Gamble, and Petrie (2006) found that patients who drew larger hearts at a 3 month follow-up, compared to drawings immediately after discharge, returned to work more slowly, had more anxiety about their health conditions, made more phone calls to health services, were more worried about a repeat event, restricted their activities, were more likely to seek alternative medicines, and were less likely to exercise.

But why would drawings predict functional status and recovery? One viable mechanism that may not only predict patient behavior following a heart attack,

but also ultimately predict long-term health prognosis is psychological distress, most especially anxiety and depression. In a subsequent study, this research group (Reynolds, Broadbent, Ellis, Gamble, & Petrie, in press) found that patients who drew damage to their hearts had significantly greater depression and more negative beliefs about their illness, and the drawings also were significantly tied to clinical markers of illness severity. Thus, this program of research advances both the diagnostics of patients' psychological distress and its relation to health as well as addressing potential underlying mechanisms that may link patients' perceptions of their illness to long-term functional status and the likelihood of advancing disease.

In a second example, Paul Norman and colleagues (Moore, Norman, Harris, & Makris, 2006) used the theory of cognitive adaptation to examine patients' reactions to venous thrombosis. The theory of cognitive adaptation maintains that following a severe threat to the self, such as a chronic illness diagnosis, people are able to restore their psychological functioning by shoring up their self-esteem, their sense of mastery over the events around them, optimism about the future, and the experience of meaning in the event or in their lives more generally. Venous thrombosis is a common, life-threatening condition that involves a dysfunction in the blood-clotting mechanism, leading to a blood clot in the vascular system that may migrate to other regions. This disorder can be fatal, and consequently it creates great anxiety in patients. Yet little attention has been paid to how this anxiety might be alleviated. Moore and colleagues (2007) recruited patients with venous thrombosis and had them completely measure assessed the variables central to cognitive adaptation theory (Taylor, 1983), specifically measures of meaning, mastery, self-esteem, and optimism. They then related these predictors to outcome variables of anxiety, depression, thrombosis-related worries, and quality of life. Mastery, self-esteem, and optimism were significantly associated with good adjustment, as the theory predicts. However, meaning was associated with elevated levels of distress, perhaps indicative of enduring concern about the disorder. This study then not only creatively employed an existing theoretical framework for analyzing a previously largely ignored patient group, but also provided insights for the theory that guided it. From the standpoint of basic research, the results suggest the importance of different coping strategies for different phases of adaptation to disorders, indicating the fact that the search for meaning may be more beneficial at some times than at others (cf. Tomich & Helgeson, 2004). In terms of applications, the research calls attention to the distress experienced by this under-researched patient group, and the need to develop interventions that may help people restore their sense of self-esteem, optimism, and mastery about the future. The research addresses potential mechanisms by focusing discussion on the potential adverse consequences of anxiety on coagulation and on anti-coagulation treatment for the disorder.

To take a third example, the social environment has long been known to be one of the most potent psychosocial predictors of health outcomes, and it is also one of the most modifiable health-related variables. Participation in activities ranging from organized religion to civic organizations, social support groups whether on

the internet or face-to-face, and informal get-togethers are all known to be protective of mental and physical health (Cohen, Underwood, & Gottlieb, 2000; Taylor, 2007). These potential applications have led directly to a search for mechanisms, and increasingly we are understanding the neuroendocrine, immunologic, and even genetic processes by which such effects can be mediated. In a recent study, for example, Steve Cole, Sheldon Cohen, and colleagues (Cole et al., 2007) showed that people who experience subjective social isolation (loneliness) have impaired transcription involving glucocorticoid response genes and increased activity of pro-inflammatory transcription control pathways. Because loneliness and/or a lack of social support has been tied to elevated risk for inflammatory disease, including coronary heart disease, these data point to an important functional genomic explanation for this risk. Then, in this example, the known relationship between social support and health has given rise to investigations that not only clarify the mechanisms underlying this important resource, but also provided important evidence of relationships between psychosocial variables and transcriptional control pathways. Studies such as this should inspire us not to avoid the exciting new biological perspectives and technologies that are now available for investigating underlying mechanisms, but to embrace them instead.

These are three examples of research that has maintained a basic and applied focus simultaneously, but there are numerous other examples that could be described. Janice Kiecolt-Glaser's work with colleagues that examines the impact of relationships on stress hormones, wound healing, and other biological processes is an important example (e.g., Heffner et al., 2006). Work by Jamie Pennebaker on writing interventions (e.g., Pennebaker, 2007; Pennebaker & Chung, 2007) and by Annette Stanton on emotion-focused coping in cancer patients (e.g., Low, Stanton, & Danoff-Burg, 2006) uncovers not only interventions that may have benefits for patient care, but the underlying mechanisms that may explain these effects.

Why don't all studies integrate the basic and applied perspectives? Several factors may impede this kind of integration. First is the artificial distinction between these two orientations. Often, researchers decide where they fall on this dimension, and then are reluctant to incorporate measures and methods that could be easily and profitably added to their research protocols to address the other perspective. If we began each investigation by asking the twin questions, how can we make a difference in prevention or patient care, and if we do, what mechanisms might underlie these effects? It will lead us to design studies that will make progress toward both goals. A second concern that may drive a wedge between basic and applied work is the increasing emphasis on the underlying biological mechanisms that link psychosocial variables to health outcomes. Many health psychologists have not been formally trained in biology. It can be scary to try, to gain the expertise of another discipline when one is already established in one's own. Often, however, the biology is more easily understood than might first seem apparent. Moreover, the fact that much health psychology work is conducted by teams of researchers that represent biological expertise

through physicians and other experts on underlying disorders means that, with their input, underlying biological mechanisms can be addressed.

As health psychology gains in sophistication and impact, the twin goals of elucidating underlying mechanisms to advance theory coupled with the need to make progress on the specific problems facing patient groups points us in the direction of designing studies that may achieve both goals. If health psychology is to continue to fulfill the implicit promises of the discipline, then we can no longer afford to conduct simple applied studies that address the issues of patient care without considering the underlying mechanisms, nor can we afford to focus exclusively on underlying mechanisms without some attention to issues of prevention or patient care. The best work of the future will bring basic and applied research together to address underlying mechanisms and applications.

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