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The Place and Promise of Theory in Rehabilitation Psychology

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Abstract

Objective—Although rehabilitation psychology is more focused on empirical evidence and clinical application than theory development, we argue for the primacy of theory, and explain why theories are needed in and useful for rehabilitation psychology. Impediments to theory development are discussed, including the difficulties of applying psychological theories in multidisciplinary enterprises, and the difficulties in developing a theory-driven research program. We offer suggestions by reviewing research settings, knowledge gained through controlled studies, grantsmanship, and then identify topical areas where new theories are needed. We remind researcher-practitioners that rehabilitation psychology benefits from a judicious mix of scientific rigor and real-world vigor.

Conclusions—We close by advocating for theory-driven research programs that embrace a methodological pluralism, which will in turn advance new theory, produce meaningful research programs that inform practice, and realize the goals of this special issue of *Rehabilitation Psychology*—advances in research and methodology.

Psychology aspires to be a science awarded the same authority and credibility granted to biology, physics, and chemistry. The two major disciplinary organizations in psychology in the United States—the American Psychological Association (APA) and the Association for Psychological Science (APS)—are predicated on the idea that psychology is a science; indeed, the latter recently completed a name change to underscore this fact (Wargo, 2006). What qualities or characteristics denote whether a discipline is or is not a science? By no means do we intend to revisit the intricacies of this age-old debate in this article, which strikes us, in any case, as being more in the ken of historians and philosophers of science, as well as those interested in the psychology of science (e.g., Ghoulson, Shadish, Neimeyer, & Houts, 1989). Our answer to this question is simple: Most definitions of science emphasize the importance of and reliance on empirical observations and theory. As a broad discipline interested in explaining and predicting behavior, most psychologists working in most sub-areas embrace the empirical and the theoretical.

What about rehabilitation psychology? Rehabilitation psychologists, researchers as well as practitioners, score well when it comes to using empirical observations and insights in their

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work with individuals who seek treatment for congenital, chronic, or acute disabilities. Findings routinely pass back and forth from the laboratory to the clinic, and data from journal articles are often integrated into existing therapeutic regimens. As argued herein, however, the corresponding track record for the creation and application of theory in rehabilitation psychology is much less well-developed, especially theory which incorporates empirical evidence. Other rehabilitation researchers echo this view (e.g., Siegert, McPherson, & Dean, 2005). Theory should be a cornerstone in rehabilitation research but, except for some notable exceptions, it is not. Our goal in this article is to demonstrate that theories should have pride of place in rehabilitation research, that focus on their primacy holds promise for scholars, clinicians, and people who live with chronic and debilitating health conditions.

We explain why theories are needed in and useful for rehabilitation psychology, including some discussion of the history and course of some representative theories, reasons why there are few theories, and recent advances in theory. We then discuss ways that theory can inform psychosocial and clinical issues in rehabilitation research. A chief impediment to theory development is the fact that many researcher-practitioners are uncertain about how to go about developing a coherent, focused research program. We offer some suggestions in that vein by reviewing research settings, knowledge gained through controlled studies or clinical work, the importance of grantsmanship to theory development, and suggest some topical areas where new theories are needed. We also remind readers that rehabilitation psychology is characterized by and benefits from a judicious mix of scientific rigor and real-world vigor. Finally, we close by issuing a call for theory-driven research programs that test hypotheses across research designs to advance new theory and capitalize on the goals of this special issue of *Rehabilitation Psychology*—advances in research and methodology.

Theory in Rehabilitation Psychology

Why Theory?

There should be little mystery surrounding the role and relevance of theory to rehabilitation research and practice. As is true in the larger discipline, a theory is a collection of coherent, related ideas derived from what is already known about some phenomenon in order to explain some existing behavior or to predict the occurrence of future behavior. Any theory, then, is used to establish causality and, in effect, to explicate what sequence of events led to what particular outcome or set of results.

Where do theories come from? How do researchers identify ideas that are later formed into theories and testable hypotheses? McGuire (1973, 1976) suggested that typical sources for ideas that blossom into theories include *metaphors* (e.g., “misery loves company” in the study of affiliation; Schachter, 1959), *paradoxical incidents* (e.g., emergencies and the accompanying “diffusion of responsibility”; Latane & Darley, 1970), the *need to reconcile conflicting results* (e.g., demonstrating when performance is enhanced or inhibited based on social facilitation effects; Zajonc, 1965), *rules of thumb* (e.g., persuasion tactics gleaned from salespeople and then tested empirically; Cialdini, 2007), and *intensive case work* (e.g., collecting self-reports regarding incidents of social ostracism prior to experimental validation and theory development; Williams, 2001). *Serendipity* or having the good luck to recognize heretofore unrecognized connections between variables or conditions (e.g., Pavlov's learning insights into the conditioned salivation of his research dogs) is another source for new theories (Rosenthal & Rosnow, 1991; see also, Grinnell, 1987).

These idea sources are all associated with the lab or possibly the library. What about insights gained in less controlled, *real world venues*? Close work with clients in clinic settings can also be a constructive source of ideas for theory development. Coupled with clinical observation and experience, for example, individuals' self-reports and reactions to therapy regimens could

also spur theory development. Similarly, clients' interactions and relations with their families, friends, and caregivers can also be a source for ideas. A broader theory, for example, would examine how disability affects family dynamics and communication beyond a local social network.

Due to its relative youth as a formal discipline, the logic underlying theories in psychology tends to evolve through inductive rather than deductive reasoning; that is, disparate observations are gathered together, studied, and then joined together in a narrative that posits a particular causal relationship among some set of variables (for reviews of inductive inference in humans, see Holland, Holyoak, Nisbett, & Thagard, 1989; Nisbett, 1992). More mature sciences, such as physics, are largely deductive in that an overarching theory of how particular variables relate to one another is used to predict a set of subsequent observations (e.g., "If x occurs, then y should follow"). Rehabilitation psychology is no different. The principles that form any theory allow researchers to engage in reasoned conjecture or speculation, usually culminating in the generation of testable hypotheses for the collection of empirical data. These data are, in turn, analyzed and used to extend the existing theory in new directions. Whether one is engaging in inductive or deductive reasoning, then, a theory not only tells a story, it tells an investigator—whether researcher or clinician—where to look for answers and what to do in order to find them.

Advantages of a good theory include:

Simplicity—All else being equal, a simple, straightforward, parsimonious, and clear account for some behavior is preferred over a complex description. When two or more explanations for the same findings are compared, following William of Occam ("Occam's razor"), the simpler theory is presumed to be the better one (Leahey, 2004).

Consistency with what is already known—Although a theory should cover new ground by pointing to new conclusions about some behavioral domain, it should also be able to account for (or at least be consistent with) existing knowledge. Thus, a new account for how individuals initially adjust to limb amputation should take into account existing psychosocial and medical research on the topic.

Is empirically integrative—As will be discussed shortly, rehabilitation psychology is both a borrower and exporter of ideas in closely aligned areas of psychology and medicine. Rehabilitation researchers and their theories could prosper if they borrowed concepts, especially theoretical perspectives, from less traditional allies, such as decision science, cultural psychology, perhaps even economics. The wider discipline of psychology is already doing so (e.g., De Cremer, Zeelenberg, & Murnighan, 2006; Gilovich, Griffin, & Kahneman, 2002; Nisbett, 2004) and rehabilitation psychology research could benefit by emulating this trend.

Organizing and communicating findings—A theory provides a coherent, organizing framework for observed facts. Its details, including any corollaries, should be readily understandable by other professionals working in the same or a related research area of disability or rehabilitation. A clear framework allows a researcher to effectively share the rationale for results with others. Such a framework will also chart a course for future research efforts.

Is general, not overly specific, in scope—What is the theory's range? Does it attempt to understand one type of disability (e.g., chronic pain) or does it account for several (e.g., spinal cord injury, multiple sclerosis, amputation)? In the rehabilitation arena, a theory that

can satisfactorily explain responses to rehabilitation for several disorders is apt to be favored over one with a more narrow focus (Siegert et al., 2005; see also, Thagard, 1992).

Being shared, not owned—Theory development, like science in general, is a shared enterprise. Any researcher can question a theory or seek to revise or extend it in new directions. Indeed, theorists very much hope that their ideas will not only influence subsequent research but that their initial conclusions will be independently confirmed by others. Thus, theories are public, “living” ideas within research communities that are open to criticism, extension, and revision.

Guiding and directing subsequent research—A good theory not only accounts for observed facts but posits future findings, particularly when new variables and empirical variations are introduced. Effective theories generate new questions, which in turn point to new research investigations.

Being highly practical—Social-personality psychologist Kurt Lewin is remembered for having observed that “There is nothing so practical as a good theory” (Lewin, 1943; Marrow, 1969). Lewin meant that an effective theory remains useful as long as it predicts and explains relevant behavior. As Wright commented in Marrow (1969, p. 128), “... theory was always an intrinsic part of Lewin's search for understanding, but the theory often evolved and became refined as the data unfolded, rather than being systematically detailed in advance.” Thus, a good and practical theory not only generates new knowledge, it also generates new and testable questions which may lead a researcher in unanticipated directions. This possibility is especially true where what Lewin called “action research” is concerned; marrying theory to experimentation in order tackle social problems, such as disability, in daily life (Lewin, 1946).

Open to adjustment and change—A good or effective theory is one that is permitted opportunity to grow and develop (Higgins, 2006). When theoretically-derived predictions are no longer confirmed, the theory must either be modified or even discarded in favor of a new concept with more explanatory power. In keeping with influential views in the philosophy of science (e.g., Kuhn, 1970; Lakatos, 1970; Laudan, 1977), no theory is presumed to be the last word on any research question; what explains behavior currently is apt to be replaced by a better, more thorough account in the future. The preferred ideal is when researchers use *strong inference*, where critical experiments are intentionally designed to pit one theoretical account against another in a scientific winner-take-all competition (Platt, 1964).

Clearly, these qualities should guide theory development and theorizing in rehabilitation psychology. Yet, as will be shown, there is a paucity of coherent psychological theories in our discipline.

Overview of Psychological Theories in Rehabilitation Psychology

Rehabilitation psychology, one branch of the broader discipline of psychology, relies on established theories aimed at preventing and treating disability and chronic illness. Some theories are drawn from the wider discipline; others represent applications or extensions of this existing knowledge, while still others are developed in response to the particular health needs of individuals or groups. The distinction between research and practice is relevant here, but the two categories are best construed as continuous rather than discrete activities. Ideally, practitioners rely on theory-based research in their everyday clinical duties. For their part, researchers acquire direction for theory-building by working closely with clinicians and with people who live with disabling health conditions. Thus, rehabilitation knowledge flows both ways; theory advances practice, and vice versa.

Is there anything about rehabilitation psychology that renders theory development somewhat different from other areas of the wider discipline (e.g., social psychology, clinical psychology, developmental psychology)? Perhaps. Historically and currently, rehabilitation psychology *embraces interdisciplinary perspectives*. Research in rehabilitation psychology is a constructive amalgam of hypotheses, methods, and data from psychology (especially clinical, counseling and social), education (particularly special education and rehabilitation counseling), medicine (physiatry, neurology), nursing, physiotherapy, physical and occupational therapy, and, increasingly, neuroscience. Approaches and ideas from the nascent field of positive psychology are also apt to affect the creation of theory in rehabilitation psychology (Dunn & Dougherty, 2005; Dunn, Uswatte, & Elliott, in press).

The interdisciplinary nature of rehabilitation, generally, has posed unique challenges and opportunities for psychologists that are not encountered in the more academic specialties of the profession. Throughout its history, rehabilitation psychology has been perpetually positioned to address stated national priorities and health and public policy needs (e.g., rehabilitation of veterans returning from international conflicts; facilitating the vocational rehabilitation of persons with acquired disabilities; Elliott & Leung, 2005; Larson & Sachs, 2000). These opportunities usually place a premium on applied, pragmatic solutions within a multidisciplinary endeavor. In these scenarios, a practical product or service is championed: An esoteric, jargonized academic theory that is difficult to communicate to colleagues from other professions is viewed as impractical or professionally self-serving (indeed, the National Institutes of Health [NIH] have an explicit value on theoretical approaches that cross-fertilize across professional boundaries and eschew research that seems in thrall to a single professional interest; <http://nihroadmap.nih.gov/interdisciplinary/index.asp>).

The explicit value on the practical is not without consequences. In the rush to apply components of a promising theoretical approach in a multidisciplinary setting, key elements from a theory may be lost in translation. For example, conceptual confusion accompanied the broad acceptance of Julian Rotter's (1966) locus of control theory, a fact that was often lamented in the many applications that bore little theoretical resemblance to the original work. Rotter was interested in people's generalized expectancies for control of reinforcement across situations and he suggested that these expectancies could range from very internal to very external (hence the origin of the internal and external locus of control concept). Although Rotter's theory grew out of the behaviorist tradition in academic psychology (a key fact that many of his interpreters routinely neglect), it relies heavily on cognitive constructs (i.e., expectations). Rotter (1975, 1989) went to pains to claim that the internal-external distinction is neither a simple dichotomy nor a personality typology (i.e., a person is not an "internal" or an "external"), and the concept was never intended to mean that a person felt "in control" or had "no sense of control" in daily life.

Similarly, Lazarus and Folkman's (1984) transactional theory of stress, appraisal, and coping spawned many studies of coping in both health and rehabilitation psychology. The interest in coping behavior and its correlates, measurement, and patterns continues to this day (with considerable success; Carver, 2007). However, in this enterprise, few researchers attended to the essential role of the cognitive, subjective appraisal of stress – the key motivator of coping behavior that characterized Lazarus' research program for decades (Lazarus, 1966) – and studied coping behavior separate and apart from this motivational mechanism (Elfström, 2007; Ptacek & Pierce, 2003).

Misapplication of theory undermines our understanding of the mechanisms that underpin certain behaviors, and subsequent advances in the respective knowledge base are compromised. Quite often, the adverse effects are seen in attempts to develop meaningful interventions, as the mechanisms involved are not clearly understood or addressed in the design or execution

of a given intervention. With an absence of theory-driven research with *a priori*, testable and potentially falsifiable hypotheses the resulting empirical base is typified by descriptive, correlational designs in *ex post facto* studies that cannot meaningfully predict, explain or refine theoretical mechanisms of behavior.

Categorizing Levels of Theory and Theoretical Advancements

Rehabilitation psychology has borrowed and benefited from some of the familiar, broad theoretical approaches popular in the discipline's mainstream. Where rehabilitation following trauma is concerned, for example, behavioral theories (e.g., learning, conditioning and reinforcement), psychodynamic theories (e.g., unconscious states, defense mechanisms), and cognitive theories (e.g., attribution, finding meaning and sense-making) have all been used as frameworks for conceptualizing adjustment (Ehde & Williams, 2006).

But theories are not created equal. They vary in scope, in their connections to the larger systems of psychology, in their proposed applications, and in the degree to which their properties are testable and potentially falsifiable (Popper, 1963). Table 1 contains several examples of theoretical contributions in the study of chronic disease and disability by their relative connections to the larger systems in psychology. This information conveniently illustrates features of the varying levels of theory and the ways in which these theories advance rehabilitation psychology research and practice.

Broad theories—Broad theories stem directly from the major systems of psychology (e.g., behaviorism, neuroscience). The theoretical properties involved are testable and refutable in the context of objective, disinterested investigations. Broad theories are logical extensions of existing, established theoretical systems. The implications of the research they generate advance our understanding of the mechanisms and properties of the larger school of thought and thus have an intellectual, scholarly impact beyond clinical practice and across professional boundaries. Consequently, the authors of broad theories cited in Table 1 are also respected in the larger arenas of clinical psychology, social psychology, and cognitive neuroscience.

Exemplary theoretical advancements in rehabilitation include Wilbert Fordyce's (1976) applications of operant theory to the study of chronic pain and illness behavior, and the applications of classical and operant conditioning theory to the study of visceral, reflex, and motor responses by Neal Miller (Miller & Brucker, 1979) and his students (Brucker & Ince, 1977; Ince, Brucker, & Alba, 1978). A related and contemporary extension of this work from behavioral neuroscience can be seen in theory of learned non-use of motor behavior by Edward Taub and colleagues (Taub & Uswatte, 2000).

Fordyce effectively developed ideas derived from operant conditioning and principles of reinforcement (e.g., Fordyce, 1971) to motivate clients undergoing rehabilitation. Fordyce (1976) specifically focused on how individuals with acquired disabilities understood and responded to their environments, the people within them, and the contingencies and secondary gains associated with them. As Fordyce (1971, pp. 77-78) wrote:

The development of an effective treatment relationship with a client or patient can be enhanced considerably by the professional's awareness of his client's [verbal or nonverbal feelings]. What is suggested here is that a more expeditious way to help the disabled person is to focus in helping him to change his behavior. It is quite possible that feelings will follow rather than lead these behavior changes.

This landmark work initiated an appreciation for operant principles in the development and reinforcement of disabling behaviors, and for use of operant approaches to facilitate and reward healthier, adaptive behavior (Patterson, 2005).

Theoretical contributions from social psychology – notably that found in the work of Beatrice Wright and Tamara Dembo – also represent applications from predominant systems within psychology. These theorists built on the theoretical foundation of Kurt Lewin's social psychology, namely that behavior is a function of the person and his or her perceived environment: $B = f(P, E)$ (see Dunn, in press). This classic formulation led Wright to observe the need to conduct within- rather than between-group research on people with disabilities, noting that there was little useful psychological knowledge regarding disability to be gained by comparing people with disabilities to “normative” (non-disabled) groups (e.g., Wright, 1983).

Following Lewin, Wright also argued that a person's disability per se is not the true psychological issue; rather, how people respond to the person with the disability and how well that individual can navigate the social and physical world are the actual issues. To wit, physical disability is a problem of social psychology (Meyerson, 1948a, 1948b, 1988). In a related vein, Dembo, Leviton, and Wright (1956) argued that the onset of disability can motivate people to change or broaden their scope of values concerning what is important in life (see also, Dunn, 1994; Keany & Glueckauf, 1993). Instead of a narrow focus on physique, for example, an individual with a disability might re-evaluate (and thereby re-value) his social and communication skills. Acceptance of disability often follows when people recognize that a loss in one domain does negate personal skills or assets found in other domains.

Tamara Dembo, in turn, identified a key distinction in rehabilitation psychology, whether one is an insider (i.e., having direct knowledge of what life with a disability *is* actually like) or an outsider (i.e., observing and speculating about what living with a disability *must* or *should* be like). As Dembo (1969) and others argued (e.g., Shontz, 1982; Wright, 1991), outsiders assume a disability is all-encompassing so that insiders must always be preoccupied with their physical or mental states; the idea of living a normal and fulfilling life is rejected by these observers. Preferring to focus on their abilities, however, insiders affirm that disability is independent of identity.

In summary, these applications broaden our understanding of learning and social behavior, generally, and they stimulated clear implications for practice and research across professional boundaries and for subsequent generations. To this date, these applications stand out as enduring legacies of rehabilitation psychology to the behavioral sciences.

Mid-range theories—Mid-range theories are derivative applications of the larger systems in psychology. They have testable propositions, and although their proposed causal mechanisms may have originated under laboratory conditions, their clinical value often overshadows their experimental foundations. The behaviors they describe often overlap with other theoretical explanations and thus, may not be readily distinguished from other theoretical concepts. Concepts such as self-efficacy (derived from the broader theory of social learning; Bandura, 1977, 1986) and problem-focused and emotion-focused coping (from the transactional stress theory; Lazarus & Folkman, 1984) have considerable currency in clinical research, they are often invoked in practice, and their intellectual roots are based in experimental research. More recently, the theory of planned behavior (Ajzen, 1985) and its predecessor, the theory of reasoned action (Ajzen & Fishbein, 1977) -- both developed and refined in experimental studies of attitude formation and change -- are used to study health behavior and its promotion among persons with chronic health conditions. Interestingly, these concepts are often studied in tandem (i.e., self-efficacy is often included as a major construct in studies of planned behavior and as a predictor of coping behavior).

Micro-theories—Psychological research is replete with theoretical explanations of fairly discrete, well-defined behavioral phenomena. Micro-theories tend to account for a rather

circumscribed set of behaviors. Many social psychological theories are developed for this purpose. It is instructive to regard the “kindness norm” research of Robert Kleck (Kleck, 1968; Kleck, Ono, & Hastorf, 1966) in this category. This work examined the ambivalent and indirect reactions to stigmatized individuals -- stimulated to a great extent by sociologist Erving Goffman's (1960) description of social stigma and its implications for identity and social interaction – and ensuing research tested a series of specific predictions in a variety of creative experiments that eventually demonstrated the effect and identified conditions in which responses could be amplified (Katz, Farber, Glass, Lucido, & Emswiller, 1978) or negated (Hastorf, Wildfogel, & Cassman, 1979).

A more contemporary example of a micro-theory may be seen in the study of illness intrusiveness or how poor health interferes with the course of daily living (Devins, Beanlands, Mandin, & Paul, 1997; Devins & Shnek, 2000), and in its apparent physical concomitant, activity restriction (Williamson, 1998). These theories describe illness intrusiveness as an appraisal process that can predict the degree of distress an individual may experience following disability. In both of these examples, however, illness intrusiveness and kindness norm research, the theories do not stray far from the specific behavior they describe, explain, and predict. Although they stimulate a considerable amount of systematic research, they usually have a limited range of applicability.

Explanatory models—An important, if often overlooked, distinction should be emphasized: models are different than theories. In psychology, *models* are used to examine, describe, or even test a limited range of behavior or to demonstrate a single (e.g., behavioral, cognitive) process or even some aspect of a process. Where models are relatively narrow descriptions of psychology events, theories are larger, broader, more systems-oriented accounts of behavior. Where models are specific, theories are much more general. Models are often recognizable when they invoke analogies (Hesse, 1966). Models typically do not provide potentially falsifiable propositions, nor do they extend the current boundaries of knowledge from a broader theoretical system within psychology. They are often bound to matters of clinical interest, and they can be quite useful to practitioners and clinical researchers.

Models usually (a) *describe* elements of an important behavior under consideration or (b) *prescribe* ideal behaviors and conditions that provide direction for intervention or treatment. Many biopsychosocial models of adjustment following a medical condition are descriptive. For example, Wallander and Varni's (1992) disability-stress-coping model succinctly described salient factors that influence the adjustment of a child with a disabling health condition. This model proved quite useful in organizing information in the extant literature related to the domains specified therein, and it stimulated research and the development of strategic interventions. The basic propositions of this model were not truly testable, however; research examined the varying degrees to which a prediction was supported (in terms of relative variance attributed to one factor or another), but no single proposition of the model could be truly refuted in an empirical test.

A *prescriptive* model is best illustrated by D'Zurilla and Goldfried's (1971) initial formulation of social problem-solving abilities. In the model, the authors stipulated five components of effective problem-solving activity; these steps were later applied and refined in subsequent research (D'Zurilla & Nezu, 1999). Over the years the model and accompanying research have guided many intervention studies. The social problem-solving abilities model is often invoked in chronic disease management programs, it has generated instrument development, and it has been cited in critical literature reviews in other health disciplines (Elliott & Hurst, in press).

Of the available models in the rehabilitation psychology literature, supported employment (Wehman, 1988; Wehman, Sale, & Parent, 1992) has probably enjoyed the greatest empirical

support. This model, influenced considerably by teaching strategies in special education (particularly the individualized approaches pioneered by Marc Gold [1974]) and others, emerged at a time when current practice and policies that emphasized job placement for persons with disability were evaluating current practices of the day. Conditions that were favorable to maintained, competitive employment were identified and articulated in this work. To date, at least 12 published randomized clinical trials (RCTs) have demonstrated the effectiveness of this job placement strategy for persons with psychiatric disorders (Bond, 2004; Cook, Leff, Blyler et al., 2005; Cook, Lehman, Drake, et al., 2005).

Theory-Driven Research in Rehabilitation Psychology

Several engaging themes in this categorization of theory and related contributions to rehabilitation psychology stand out. First, each example contained in Table 1 was characterized by a thoughtful, reasonable extension of prior theory or research, or it was directly derived from a creative melding of careful observations of behavior with some theoretical perspective in the extant psychological literature (e.g., kindness norm research, social problem-solving abilities). Second, each contribution can be characterized by an impressive research program, initially stimulated by the originators, but readily extended in systematic research programs conducted by colleagues with little or no working relationship with the originators. This characteristic signifies the objective value of sound theoretical ideas in the larger marketplace of scholarship, and it signifies a recognition of the potential contribution of these ideas for practice, policy and advocacy. Finally, many of these influential, theoretical contributions developed from relatively humble beginnings, occasionally with small sample sizes (and accompanying methodologies to maximize meaningful analyses), and usually with little – if any – external funds to support the researchers. These commonalities are instructive for the current generation of rehabilitation psychology researchers.

Psychological Theories in Multidisciplinary Research

Psychological theories can clearly inform the multidisciplinary practice of rehabilitation. True to the rather egalitarian spirit of scholarly, scientific inquiry, the unique contributions of psychological theories often fade into the larger, ongoing rehabilitation enterprise and the origins of the theoretical innovation or application are forgotten. Yet it is disconcerting to read recent papers extolling research in rehabilitation, repeatedly emphasizing techniques, tools or support with no mention of theory development from psychological perspectives, or for programmatic research informed by psychological theories (Frontera et al., 2006; Tate, 2006; Tate, et al., 1999). Granted, these essays were chiefly concerned with the larger multidisciplinary enterprise of rehabilitation, but the lack of attention to the role of theory, generally, and psychological theories, specifically, in the research infrastructure (Frontera et al., 2006) or in the use of randomized clinical trials (RCTs; Tate, 2006) raises many questions about the way theory is viewed by many rehabilitation researchers.

In a similar, thoughtful piece by Fuhrer (2003) concerning clinical trials in rehabilitation research, the emphasis is clearly placed on the meaningful detection of “differences” between groups in an experimental design that supports a particular intervention or practice, and the utility of theory is discussed in terms of experimental methodology to find differences between groups and to identify “...active components and underlying mechanisms of interventions” (Fuhrer, 2003, p. S13). RCTs, as a logical extension of the best experimental methods, approximate the “...closest science has come to a means for demonstrating causality” (Haaga & Stiles, 2000; p. 14). In our view, there is a greater premium on the detection of “differences” in much of the RCT research relevant to rehabilitation psychology, and little value on theoretical propositions that predict and explain the specific behavioral mechanisms and the processes of change in interventions in an *a priori* and potentially falsifiable fashion.

This is the kind of information needed to understand causality in behavior and to then, in turn, develop strategic, theory-driven interventions.

A hallmark of science is the rigorous testing of theory, so that existing knowledge is appropriately scrutinized, modified and refined (Popper, 1963). And behavioral and social mechanisms have the greatest influence on the ultimate health and well-being of people who live chronic, disabling health conditions (Israel, Schultz, Parker, & Becker, 1998). The exemplary applications contained in Table 1 stimulated research that modified existing explanations of behavior and advanced our understanding of disability, chronic pain, illness, and social stigma. Theory can inform evidence-based practice and provide clinicians with an array of *empirically-supported techniques* (Ingram, Hayes, & Scott, 2000). Moreover, many sound theories and corresponding tests of theory do not necessarily require the support of RCTs across multiple sites to establish their veracity. For example, the extensions of classical and operant conditioning by Neal Miller and his students were conducted with small number of participants in creative yet rigorous single-case designs. The cumulative results from this work were sufficient to establish biofeedback as an empirically-based technique for use with many persons with disabling conditions.

Many theoretical propositions are steadily refined and matured in a systematic series of studies that vary in designs and applications. The resulting data that accumulates across studies may be sufficient to support the basic tenets of the theory. This systematic activity of developing and refining theory is best realized in a program of research. Guidelines for developing a research program are the topic of the next section.

Creating a Research Program: Issues and Opportunities

If there is a brass ring or Shangri-la for theory development, it is a researcher's ability to create and carryout a program of research. Programmatic research involves the careful planning and execution of multiple studies concerning some question of interest (e.g., "What is the nature of attitudes towards persons with disabilities?"). Such research often relies on a fixed paradigm or set of research methods that allow an investigator to explore all aspects of a question within a set of clearly articulated boundaries (e.g., construction and validation of a questionnaire or survey instrument to measure the attitudes of nondisabled people about persons with disabilities). Studies representing variations on a theme can be carried out using the paradigm so that subtle distinctions in findings, shades of meaning, or magnitude of effects can be identified and explicated (i.e., measuring attitudes of different subgroups—children, students, adults, employers, caregivers—who had no or varying degrees of contact with persons with disabilities).

Finding and Framing Research Questions

Quality research begins with a good question. Few research questions develop spontaneously, rather, most begin when curiosity and a need to know motivate a researcher to seek an answer. Within rehabilitation psychology, many research questions are formulated in response to a gap in knowledge, often clinically-related knowledge. This "knowledge gap" refers to the psychological distance between what is known (e.g., individuals with spinal cord injuries are more likely to manifest depressive symptoms than those without such injuries) and what knowledge is needed (i.e., is the injury per se the direct cause of the depressive symptoms or does the injury have an indirect effect through other life changes?). An investigator will set out to answer one question using some empirical method only to discover that the obtained results usually lead to more compelling questions rather than a definitive answer. (Fortunately, provisional answers usually inform treatment.) Pursuing answers to new and subsequent research questions is the usual marker of programmatic research. An ideal research program

is one that supplies both helpful empirical findings for clinical work and solid theoretical results that educate and aid other researchers working in the same or related disciplines.

Issues of Setting: Lab versus Clinic

The lab is often construed to be the pristine setting for the careful testing of theory whereas the clinic is the pragmatic, often task-oriented arena where theoretical ideals meet the need for (or are subsumed by) functional solutions. In other words, theorizing is all well and good, but accumulation of rehabilitation wisdom is more likely to come from evidence-based interventions and not carefully controlled research settings (e.g., Wade & de Jong, 2000). Although this concern should be viewed with appropriate caution, we see the lab versus clinic issue in the same way that some non-clinically oriented researchers characterize the distinction between the lab and the field—as largely artificial (e.g., Aronson, Wilson, & Brewer, 1998). Indeed, the valuable insights that are found in the lab can be both tested and applied in the clinic, and vice versa. The two settings should be seen as complementary venues for establishing and refining theory, not as a debate of the “ideal” versus the “real.”

Learning from Research, Learning from Practice

Of course, there is an important caveat linked to our advocating an open exchange between the lab and the clinic: Empirical findings found in one setting must be heeded and used in the other. All too often particular variables are found not to be predictive of identified outcomes yet they are not discarded from subsequent research efforts. Building scientific knowledge requires heeding theory but it also requires that researchers abandon things—whether cherished ideas, favored hypotheses, or pet variables—when they do not serve as valid predictors. Alternatively, researchers need to find new ways to theoretically explain the presence of problematic predictors in follow-up studies or data analyses.

Consider research on adjustment to spinal cord injuries: Many researchers routinely include variables such as the level of the injury or the time since the event for no compelling reason other than clinical lore, as neither variable has proved to be consistently predictive of psychological or physical adjustment (Elliott & Rivera, 2003). These and similar variables may have some clinical relevance but heretofore there is no consistent pattern in their relationship to adjustment. Systematic and thoughtful advances in rehabilitation research will occur when the emphasis is on the convergence of evidence rather than continued reliance on single studies that seek to but cannot resolve all questions.

Theory is essential in determining *a priori* analytic strategies, ideally to test specific properties of a theory, or to conduct a test between two competing hypotheses. In practical terms, when no empirical evidence emerges for the role of a variable in preliminary analyses (e.g., examination of a correlation matrix), then there is no compelling reason to retain the same variable in any subsequent hypothesis testing (e.g., regression). Not only is there no practical reason for doing so, the weight of prior research illustrating the non-viability of the variable points to a theory-based reason for dropping it from further consideration.

A recent study of pressure sore occurrence illustrates the considerable differences with an atheoretical approach to data analysis and a theory-driven analytic plan. In the initial analysis, the research used a sophisticated and innovative analytic strategy to predict pressure sore occurrence (assessed at three annual evaluations, one assessment per year; Elliott, Bush, & Chen, 2006). The generalized estimating equation (GEE) examined the relative contributions of several social problem-solving variables and demographic and SCI-specific variables deemed to have clinical value in the prediction of pressure sore occurrence. The GEE procedure did not test for theoretically-defined relationships between the predictor variables. The resulting model revealed that pressure sore occurrence was associated with older age, being

male, and with a complete lesion to the spinal cord. The significant contributions of the problem-solving variables were somewhat mixed, as a rational style was associated with a decreased occurrence but another element of problem-solving appeared to have a paradoxical effect. In a second analysis, the researchers devised a theory-driven *a priori* contextual model consistent with prior research on problem solving research that stipulated specific relationships between the predictor variables toward the prediction of the occurrence construct. The resulting structural equation model provided a good fit to the data, and no single demographic or SCI-specific variable significantly contributed to the prediction of pressure sore occurrence. The major problem-solving constructs, however, were significantly associated with the outcome in a manner consistent with the social problem-solving model, which in turn implies clear directions for cognitive-behavioral interventions based on this model. Thus, results can vary tremendously with the choice of analytic strategy. It is essential for rehabilitation psychology researchers to provide fair *a priori* tests of psychological constructs that are based in sound reasoning from an existing theoretical explanation of the relations between predictor and criterion variables.

A systematic research program will incorporate important related research in the area and push toward new explanations or for some reconciliation of disparate results across different research programs. Rehabilitation psychologists have known for some time, for example, that family caregivers of persons with traumatic brain injuries (TBI) report considerable distress. However, over ten years ago Kathleen Chwalisz (1996) demonstrated that individual differences account for a significant amount of the variance in this distress, and her data also raised questions about our understanding of caregiver burden and its function as a general stress variable. These data had clear implications for future, theory-driven research with potential implications for interventions. On the basis of this study and the evidence at that time, there was little need for additional atheoretical, cross-sectional correlational studies of distress among caregivers of persons with TBI, thus, this particular question was answered. New research that would examine theoretical predictions was required: *Who* reports more distress and *why*. Unfortunately, this area of inquiry has yet to witness a strong, theory-driven research program that answers these questions and culminates in a theory-based intervention to prevent or alleviate caregiver distress. The concept of burden as a proxy stress variable has also been lost along the way.

Rehabilitation psychology needs more studies that actually set out to test theories (see also, Siegert et al., 2005) to “weed out” bad variables that have no explanatory potential (like those not linked to adjustment after SCI) while retaining or identifying those variables that do have explanatory power. Such “successful” variables can then be studied in greater depth in a programmatic fashion so that their relevance for practice, policy, and further theory development can be explored.

Grantsmanship, Policy-Relevant Research, and Theory-Driven Scholarship

Rehabilitation psychology research has been responsive to stated federal priorities from its beginnings in post-World War II America (Elliott & Leung, 2005; Thomas, 1991). Rehabilitation psychology researchers have worked collaboratively with federal, state and private agencies for decades, and the research base has prospered accordingly from the support received from the National Institute on Disability Rehabilitation and Research (NIDRR) (and the Rehabilitation Services Administration; RSA), and more recently from the NIH and the Centers for Disease Control (CDC). Rehabilitation psychologists have been active in multidisciplinary research enterprises throughout the NIDRR's existence and the field of rehabilitation psychology has been active in health and policy formation, and in the development of clinical practice guidelines (Frank & Elliott, 2000).

Grantsmanship and its corollary, the willingness to conduct policy-relevant research, is a valuable aspect of the research enterprise that is usually construed as an objective indicator of the relevance and potential contribution of research efforts. However, there are important distinctions that should be delineated between grantsmanship and theory-driven research in the larger domain of scholarly, scientific inquiry.

Policy-relevant research is determined by stated federal priorities and needs identified by vested and knowledgeable stakeholders that represent various disciplines, constituencies (e.g., professionals, consumers, advocates) and federal policymakers (who may be particularly attuned to current administrative agendas and society needs). These needs and priorities can be rather dynamic, depending upon context, influences, and available support. For example, the accelerating rate of chronic disease in the United States over the past 20 years has forced a higher priority for research on the prevention and treatment of chronic health problems, and placed a greater emphasis on health promotion and the prevention of secondary complications among persons who live with these conditions. Understandably, there is currently a greater interest in the federal sector on rehabilitation programs for veterans returning from combat with brain injuries, amputations, visual impairments, and burns. Research addressing these priorities is needed.

Scholarly and scientifically-sound theories of behavior may or may not have an apparent value in the meeting of these needs. In early stages of development, a theory needs to be tested and refined in a series of studies (often varying in design, time frame, and samples recruited) to mature to a point that other colleagues sense its potential in larger applications. Theories may appear relegated to certain areas of inquiry until their potential contributions to current needs are indicated. In an earlier and relevant critique of the same issues in the rehabilitation counseling literature, Ken Thomas (1991; p. 189) expressed concern that the pursuit and allotment of federal grants funds occurred "...at the expense of basic research and the individual researcher." Indeed, Thomas astutely observed that innovative, ground-breaking research usually emanates from "...independent men and women, and they are seldom in areas in areas that governments and societies would necessarily wish to be explored" (Thomas, 1991; p. 189).

The present need for evidence-based practice also places external demands on scientific inquiry that may at times seem antithetical to scholarly contributions. The press to identify evidence-based practices solicits the best scientific tools and methods to determine the most effective and efficacious practices in all service professions. The need to document gains and benefits that are attributable to a specific intervention is paramount in this activity (Fuhrer, 2003); explanations about the actual behavioral change—in theoretical terms—have been de-emphasized in much of this work. As noted earlier, supported employment has enjoyed considerable empirical support across numerous RCTs as an evidence-based practice. There is sufficient empirical evidence of its effectiveness and efficaciousness as a job placement strategy. There are few, if any, qualms about its relevance to theoretical explanations of changing human behavior or learning new behavior, or even in defining the rather fuzzy theoretical properties that overlap between various manifestations of the supported employment model (ranging from early notions of the concept by Anthony & Blanch, 1987, to the Interpersonal Placement and Support model by Drake and colleagues; Mueser, Clark, Haines et al., 2004). Supported employment has currency as an evidence-based practice.

In contrast, constraint-induced movement therapy (CIMT)—derived from laboratory and clinical studies of the learned non-use theory of motor behavior (Taub & Uswatte, 2000)—has immense implications for our understanding of brain-behavior relationships and neuroplasticity. The degree to which CIMT is a cost-efficient intervention is under investigation (Wolff, et al., 2006). Readers may anticipate the answer to this issue by rhetorically reflecting on the theory-based interventions in Table 1: Are biofeedback techniques

and behavioral management techniques for chronic pain behavior regarded as evidence-based practices in the contemporary marketplace? Does this recognition diminish or elevate the theoretical contributions of Fordyce and Miller to the science and practice of rehabilitation psychology?

Our point is rather straight-forward: Researchers should not confuse the quality and contributions of theory-driven research with the stated priorities as currently stated by stakeholders. The marketplace of service and policy reflects needs that are determined by a variety of factors, and these influences change in response to understandable demands and influences. A grant proposal may not be funded simply because of a lack of available funds or because it does not adequately address current multidisciplinary needs *at the present time*; the proposed study may otherwise be theoretically sound, promising and of considerable merit. And current stated priorities should not serve as the best *de facto* arbiter of the worth of a particular theory. As issues in the service sector change, the opportunities for practical applications of a theory-based intervention will wax and wane. Social problem-solving interventions for persons with chronic health conditions were of little interest 25 years ago; now, problem-solving abilities are considered essential in chronic disease self-management programs (Hill-Briggs, 2003). The lack of external funds and third-party reimbursement for behavioral management of chronic pain behavior does not diminish the theoretical contributions of these interventions, nor does it diminish its status as an empirically-supported technique. Rehabilitation researchers should not sacrifice the development of systematic research programs that tackle theoretically-based questions in the pursuit of immediate policy-relevant research.

Practical Guidance for Establishing a Research Program

In the end, how does one go about establishing a theory-driven program of research? There is no one way to conduct theoretically-driven research, however, there are some concrete steps any researcher, whether new or established, can take.

Pick good exemplars—A good start for any investigator is to search the literature for good exemplars. Read the collected publications of a researcher-scholar-practitioner who pursued a research theme in order to develop a coherent theory aimed at rehabilitation and other health-related issues. We have already discussed scholars whose research followed a theoretical vision for broadening the understanding of disability. It is enlightening to collect their published works across outlets and read these papers in the sequence of appearance: There is much to learn in how a scholar develops and refines an idea over time. Alternatively, read and model a productive exemplar from another area of the discipline, attending as well to the systematic evolution of their thinking and their research program.

Identify key variables and relationships among them in order to develop a theoretical narrative—A theory tells a good story. As you identify key variables and hypothesize about how they relate to one another in some causal sequence, do so using a narrative. Your story is important, as others, whether colleagues or critics, must understand the points you are making and how they hang together.

Where possible, link the psychological to the behavioral—When developing any theory, be sure that your description points to behaviors that can be objectively observed and measured, that is, how a client reacts behaviorally. At the same time, do not neglect purely psychological (internal) states, such as thoughts (cognitions) and feelings (emotions). Linking these more subjective states to behaviors will provide readers and reviewers of your work with a more coherent sense of your theory. Plan to use some verbal measures (e.g., questionnaires) or validated instruments (e.g., personality scales, attitude measures) to tap into these subjective

states. Be certain, however, that whatever verbal reports you collect (e.g., clients' goals for rehabilitation) have some clear connection to behavior (e.g., persistence at physical therapy, performance of activities for daily living).

Articulate a theory's prediction clearly and completely—One is never too old or too experienced to be a student again. As Higgins (2006) notes, a researcher must have a firm grasp of what a favored theory does and does not predict. One way to do so is to carefully think through a project's procedure (specifically what the research participants will experience) in order to understand what psychological assumptions are necessary and must be explicitly stated (some useful suggestions for teaching about theory development can be found in Higgins, 2006).

Accept the inherent limitations of any theory—Researchers often want theories to do too much. A good theory is meant to explain some set of behaviors, but not all behavior. Rehabilitation researchers will do well to learn from the *perspectivist* approach in social psychology, which presumes that no representation of knowledge is ideal or complete, but that any solid attempt will reveal some behavioral truths (Jost, Banaji, & Prentice, 2004). Perspectivist psychologists believe that research knowledge is “situated” or understood best within a given context (McGuire, 1989, 1997). A researcher's perspective is but one perspective on a given psychological phenomenon. Nonetheless, knowledge about the phenomena is gained and related theory grows when an investigator uses different and creative methods, as well as multiple but interrelated hypotheses, to explore the phenomenon. As empirical knowledge grows, so, too, does the relevant theory. More to the point, theoretical as well as practical (i.e., boundary conditions) limitations and predictive circumstances (i.e., theoretical and empirical conditions that meet expectations) can be identified (for examples and suggestions for planning a perspectivist research program, see Jost et al., 2004; McGuire, 1989, 1997).

Take baby steps at first, then step out as the theory allows and the data support—In the early stages of theory development, it is prudent to start with small, manageable empirical projects that test a few, clearly-delineated propositions. It is important to stay conservative at first so that the basic premises are supported. It is imperative that subsequent studies extend logically from the model and from the results of the previous work. After a steady record of success bolder forays can push the theoretical assumptions in more adventurous designs with more challenging tests and outcome variables that have been vexing the field. Ideally, a research program that advances rehabilitation psychology science and practice will culminate in implications for interventions and policy.

Toward Better Theorizing in Rehabilitation Psychology

Continue to use quantitative and experimental methods whenever possible

Where theory development is concerned, rehabilitation researchers will do well to embrace the advantages of the experimental approach used so fruitfully elsewhere in the discipline (Wilson, 2005). Well-designed, well-executed, creative experiments characterize the best sciences as they test theoretical notions that are usually attributed to their discipline. Rehabilitation psychology research would do well to take note of this tradition. Professions that are dependent upon another discipline's research base are not accorded the same influence and respect received by the professions that conduct, monitor and nurture their research base.

Be more open to qualitative methods

In developing theoretical explanations of behavioral issues among people who live with chronic health conditions, it is prudent to take their observations and experiences into account. This is a feature of participatory action research, and it is consistent with partnership models now

espoused in community health programs for persons who live daily with their health conditions and problems and challenges they experience in their routine activities. Furthermore, several contemporary statistical strategies now use mixed models to incorporate qualitative data in their analyses. Consequently, rehabilitation psychologists will see an increased and creative use of qualitative data in future research programs.

Use more than one method in order to advance theory

A solid theory will hold up under a variety of conditions and designs if the reasoning and the extensions are sound. Theoretical contributions that advanced and championed rehabilitation psychology research relied on various methodologies and research techniques, and they did not require evidence from multi-site clinical trials. Studies conducted in the research programs listed in Table 1 often studied small number of participants. Most of the early studies were not supported by external funds. But the studies that advanced these research programs were based on sound theoretical logic that endures to the present day.

Researchers face demands for external funds and operate under assumptions that only large-scale intervention studies with large numbers of participants are informative. This atmosphere discourages creativity and theory-driven and clinically-based research (and in some unfortunate cases, dictates that only faculty with external funding are permitted by the home department to conduct research). In a thought-provoking essay, Tucker and Roth (2006) argued that behavioral science thrives on methodological pluralism in the development and application of meaningful and clinically relevant theory that informs practice. In part, this is due to the many contextual demands of most behavioral issues, but it is also supported by the weight of the evidence in the psychotherapy outcome research. Differences and advances in methodological rigor and experimental designs have no detectable effect on the support for psychotherapy, generally, over no-treatment and control groups (Wampold, Mondin, Moody, Stich, Benson & Ahn, 1997).

Thus, we heartily recommend the use of alternative designs in research programs that apply and refine theory. The field is particularly invested in practical applications and clinic life often requires practitioners to address behavioral problems that occur among persons with low-incidence disabilities, or present with co-existing chronic health problems. Clinicians are asked to provide treatment plans for problems that may never be addressed in multisite clinical trials because of the lack of funding for certain low-incidence conditions and the real difficulty in managing controllable treatment conditions across sites. In these circumstances—and as seen previously in the work of Miller and his students—single-case designs are the preferred methodology for studying solutions to these kinds of problems. There are many sophisticated advances in analyzing data from these designs, most developed by behaviorally-oriented, special education researchers who routinely encounter the need to study a small number of participants (e.g., Parker & Brossart, 2003; Parker, Cryer & Byrns, 2006).

Well-executed quasi-experimental designs can advance the evidentiary base (Concato, Shah, & Horwitz, 2000) and there are many ways to improve the internal validity of these designs with theoretical applications (Shadish, Cook, & Campbell, 2002). These designs can effectively serve theory development and refinement in studies of clinical practice and interventions.

The current reliance on correlational procedures, however, should be pushed to a higher standard. The field needs more rigorous tests of theory with these techniques. While recognizing the inherent limitations of correlational procedures in theory testing (a problem encountered in health psychology research, generally; Weinstein, 2007), rehabilitation psychology research would benefit from prospective designs that examine the contributions of theory-driven variables in the prediction of important clinical outcomes.

Compare and test competing theories against one another

Too often, researchers become partisans for their favored accounts for explaining behavior. Although understandable, such favoritism risks hindering theory advancement. Models of intervention, in particular, need to be replicated and applied by colleagues who are not associated with the theoretical development of the model; indeed, modern meta-analytic procedures are capable of detecting “developer” biases in intervention studies (e.g., Malouff, Thorsteinsson, & Schutte, 2007).

Seek collaborative ventures

Two heads are often better than one where advancing theory is concerned. No would-be theorist needs to think or to work alone. There is ample evidence indicating that collaboration plays a significant role in creative scientific endeavors. Small group processes and intergroup dynamics can promote better theory development as long as the collaborators working styles are compatible (Levine & Moreland, 2004). Imagine the strong and creative theories that can result from a close working relationship between a rehabilitation psychologist who works in a research setting with one whose time is largely spent in the clinic.

Relatedly, there is great potential in collaborations that are open to new perspectives from junior colleagues. Usually such collaborations defer to a senior colleague, who typically offers guidance and opportunities that could lead to fundable ideas. However, behavioral science is replete with accounts in which junior colleagues provided new opportunities or challenges that were not apparent to their senior. For example, Neal Miller often acknowledged that his students, Brucker and Ince, convinced him of the unique possibilities posed by the “clinical laboratory” of the rehabilitation hospital, and their encouragement and energy resulted in the highly influential work that provided some of the more impressive data supporting biofeedback (B. Brucker, personal communication).

Theory in Rehabilitation Research: Vigor with Rigor

Social psychologist Herbert Kelman (1968) noted the inherent but beneficial trade off that occurs when research is conducted outside the controlled confines of laboratory settings: rigor's loss becomes vigor's gain. We advocate channeling rehabilitation psychology's acknowledge strength, its empirical vigor, toward theory development and greater empirical rigor. We believe that rehabilitation psychologists can capitalize on the field's history of real world vigor by refocusing their efforts toward developing rigorous, comprehensive theories for predicting and explaining the course of rehabilitative experiences. Theory-driven efforts will inform rehabilitation research as well as practice, and no doubt lead to parallel improvements in methodology, all of which will benefit psychological science and well-being of clients and their families.

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Table 1
Levels of Theoretical Contributions in Rehabilitation Psychology Research

Theoretical Perspective	Major Works	Illustrative Contributions
Broad Theories		
Learning Theory	W. E. Fordyce (1976)	Behavioral management of chronic pain
Operant Conditioning of Chronic Pain and Illness		
Classical and Operant Conditioning of Motor, Reflex And Visceral Movement	Miller & Brucker (1979)	Biofeedback, self-management
	Ince, et al. (1978)	
	Brucker (1980)	
Learned Non-Use	Taub & Uswatte (2000)	Constraint-induced movement therapy, understanding neuroplasticity in neurorehabilitation
Lewinian Field-Theory		
Coping-Succumbing Framework	B. A Wright (1960)	Understanding P X E dynamics in personal and social adjustment, rehabilitation
Insider-Outsider Distinction	Dembo, Leviton, & Wright (1956)	
Adjustment to Misfortune		
Mid-Range Theories		
Stress-Appraisal Coping Theory	Lazarus & Folkman (1984)	Appraisal, problem-focused and emotion-focused coping
Self-efficacy	Bandura (1977)	Interventions to promote efficacy
Theory of Planned Behavior	Ajzen (1985)	Goal-setting and concomitant behavior
Micro-Theories	Kleek (1966, 1968)	Interpersonal and social techniques to offset avoidance, discomfort
Kindness Norm		
Illness Intrusiveness	Devins & Shnek (2000)	Appraisals and goal-driven behavior, subsequent adjustment
Explanatory Models		
Disability-Stress-Coping Model	Wallander & Varni (1992)	Identify unique areas of vulnerability, strength
Social Problem-Solving Model	D'Zurilla & Nezu (1999)	Problem-solving training, interventions
Supported Employment	Wehman (1988)	Job placement strategies