
Translational Research

How Social Psychology Can Improve Psychotherapy

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In an effort to generate innovative treatments, the National Institute of Mental Health has made translational research for alleviating mental illness a major funding priority. Although translational research is a powerful approach for moving basic science findings into novel treatments, it remains ambiguous and rarely implemented in psychology. The current article describes conceptual and methodological issues involved with translational research, including considerations about time frame, scope of hypothesis tested, dose of treatment, contraindication, and sampling. Translational concepts and methods are illustrated with areas of social psychology that are promising for translation into solutions for pressing questions in psychotherapy research.

Keywords: translational research, applied social psychology, empirically supported principles, process and outcome

Perhaps the worst feeling experienced by a practicing psychologist is to realize that one does not have sufficient knowledge to alleviate a client's psychological suffering. Each year, approximately 6,273,000 adults and 3,024,000 children in the United States continue to experience debilitating symptoms at the termination of psychotherapy.¹ Although advances in science and practice have greatly improved psychotherapy (Lambert & Ogles, 2004), there remains a pressing need to develop more effective interventions for the sizable proportion of clients not responding to current treatments (Hansen, Lambert, & Foreman, 2002). In an effort to produce innovative treatments, the National Institute of Mental Health (NIMH) has placed strong emphasis on translational research. NIMH provides the following definition: "Translational research in the behavioral and social sciences addresses how basic behavioral processes inform the diagnosis, prevention, treatment, and delivery of services for mental illness, and, conversely, how knowledge of mental illness increases our understanding of basic behavioral processes" (National Advisory Mental Health Council, 2000, p. iii). Despite the promise of translational research, programmatic translational research in psychology has been rare, which may be partly attributable to a lack of familiarity on the part of psychologists with translational research terms and methods. The purpose of this article is to describe terms and methods applicable to translational research and to suggest how basic science from social psychology can be translated into innovative treatments. Although our basic science focus is on

social psychology, the translational methods described here are relevant to diverse subfields of psychology.

The Science–Practice Gap

To begin, we offer our humble assessment of some of the good news and bad news about research in clinical, counseling, and social psychology. The good news about applied research from clinical and counseling psychology is that on average, psychotherapy is efficacious, and the effect sizes between treatment groups and no-treatment groups are large (Lambert & Ogles, 2004). According to clinical outcome studies, approximately 80% of clients in psychotherapy improve compared with those not receiving treatment (Smith, Glass, & Miller, 1980), and between 55% and 66% of participants in treatment will improve compared with participants in active control groups (Baskin, Tierney, Minami, & Wampold, 2003). However, the reasons *why* psychotherapy works and what specific *causal mechanisms* account for client change are far less clear (Westen, Novotny, & Thompson-Brenner, 2004). Two approaches to investigating causal mechanisms underlying therapy outcomes are *empirically supported treatments* and *common-factors* approaches. Empirically supported treatment approaches try to match treatment modalities (e.g., cognitive-behavioral therapy [CBT]) to specific disorders (e.g., panic disorder; Chambless & Ollendick, 2002), whereas common-factors approaches examine what elements of the therapeutic process (e.g., therapeutic relationship) are effective across modalities of therapy (Wampold, 2001).

Although advocates of empirically supported treatments and common factors do not always agree, both

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We thank Patricia Frazier, Marti Gonzalez, Michael Steger, Ji-Yeon Lee, Margit Berman, Clara Hill, Robert Lent, Todd Kashdan, and Andrew Tix for helpful comments on earlier versions of this article.

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¹ These figures are based on very conservative estimates of 15% of the adult population ($N = 209,100,000$) and 21% of the child population ($N = 72,300,000$) seeking psychological services in the United States (Meyer, 2001; U.S. Department of Health and Human Services, 1999) who do not respond to psychological treatments across presenting problems (using a 20% rate of nonresponse to treatment; Smith et al., 1980).



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approaches have at least two things in common: (a) Both support the idea that techniques or components are important (Frank & Frank, 1991), and (b) both have yet to provide convincing data regarding the session-to-session causal mechanisms underlying change achieved by the end of psychotherapy. Knowledge of what components of larger treatment protocols are essential allows for more targeted and efficient treatment delivery. Some encouraging evidence does exist for components such as behavioral activation in CBT (Hopko, Lejuez, Ruggiero, & Eifert, 2003) and exposure to feared stimuli in treatment of anxiety disorders (Foa & Kozak, 1986), but in general, there are few empirical data to guide therapists' decisions during the course of a particular therapy session. Johnson (2004) summarized the state of affairs in psychotherapy well: "Therapists have had no coherent, integrative, research-supported map to rely on when formulating problems, delineating treatment goals, or focusing moment-to-moment change processes in therapy sessions" (p. 367).

For social psychology, the good news is that rich theoretical frameworks and highly controlled experimental designs from laboratory studies have provided a relatively precise understanding of the causal mechanisms underlying constructs that are of broad interest to most psychologists (e.g., self-esteem, emotion). However, social psychologists are not always aware of how to apply this rich knowledge base to mental illness, which has become increasingly problematic with the shifting priorities at NIMH (Carpenter, 2005). This funding crisis has forced a serious self-examination regarding critiques that social psychology is "not cumulative, that [social psychologists] talk only to each other, . . . and . . . findings have not been the basis of successful interventions" (Markus, 2004, p. 1). However, there is good reason to believe that the specificity of theory and data from social psychology

is particularly well-suited to enhancing knowledge about how moment-to-moment interventions lead to reductions in psychopathology (Frazier, Gonzales, & Rudman, 1995; Snyder, Tennen, Affleck, & Cheavens, 2000).

Conceptual and Methodological Issues in Translational Research

Translational research provides a promising framework for applying basic science from laboratory studies to novel treatment approaches for psychopathology (Nunes, Carroll, & Bickel, 2002). Programs of translational research have a long tradition in medical science, but clear programs of translational research are far less common in psychology. A PsycINFO search in 2005 using the keyword "translational research" yielded 25 hits, with 23 of the 25 occurring in the area of neuroscience. By way of comparison, the same keyword in MedLine, yielded 372 hits across diverse domains of study. Clinical trials in the medical sciences provide a number of valuable insights regarding translational research, including definitions and methodological recommendations. Most definitions of translational research are similar to the definition provided by NIMH and revolve around the broad idea of applying basic science findings to the prevention and treatment of illness. Although moving toward treatments is often the goal, the benefits from translational research are often bidirectional, with translational research often revealing new research questions that are highly relevant to basic science (Contie, 2006). Translational research also provides a common set of terms and methods that basic and applied researchers can use to communicate about collaborations (Widiger, 2005; Zvolensky, Lejuez, Stuart, & Curtin, 2001).

NIMH is currently placing funding priorities on three main areas: (a) basic behavioral processes in mental illness, including how emotion, motivation, personality, and social interaction affect mental illness; (b) functional abilities that are affected by mental illness (e.g., personal, social, and work outcomes); and (c) contextual influences on mental illness and treatment-related issues (e.g., culture, family, social institutions). Priority is also being given to research that addresses public health concerns, biological bases of mental illness, measurement innovations, and collaborative efforts between laboratory researchers, clinicians, and organizations (National Advisory Mental Health Council, 2000). We discuss current NIMH policies because of present concerns about funding. However, we also want to clearly convey that translational research is a rigorous approach for addressing long-standing problems in psychology. It would be unfortunate for translational research to decrease as funding priorities shift in the future.

Next, we review five methodological considerations derived from our observations of methods commonly implemented in successful programs of translational research: (a) time, (b) scope, (c) dose, (d) contraindication, and (e) sampling. In general, early-phase translational research begins with short time frames, focuses on hypotheses that are narrow in scope, delivers small doses of intervention components, closely monitors the possibility that interventions may be



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harmful (i.e., contraindicated), and investigates relatively healthy samples. The defining features of translational research are implemented in the middle phases, when time and scope broaden, and there is an increase in the dose of intervention with low-risk clinical samples. In late-phase translational research, large, full-scale clinical trials are conducted to test the efficacy and effectiveness of interventions with broad clinical samples. We provide examples of how basic social psychological science can be translated into solutions for psychotherapy problems with each of the five translational methods reviewed below. The examples range from programs of research already informing clinical practice broadly (e.g., social cognitive theory) to programs with very strong basic science bases that are just beginning to be translated into applications (e.g., affect and social cognition). To begin, we examine bridging gaps in time frame.

Time

To demonstrate how greatly basic and applied research differ regarding time frame, two coders blind to the purpose of this analysis reviewed studies published in three randomly selected issues of the *Journal of Personality and Social Psychology* (40 experimental studies) and the *Journal of Consulting and Clinical Psychology* (27 experimental studies) in 2004. Both are top-tier journals in social and clinical psychology, respectively. Results indicated that experimental studies in the *Journal of Consulting and Clinical Psychology* manipulated independent variables ($M = 32$ days) and assessed dependent variables ($M = 162$ days) across much broader time frames than did experimental studies in the *Journal of Personality and Social Psychology* (independent variables $M = 11.5$ min; dependent variables $M = 12.1$ min; mean interrater $r = .91$). Such gaps are likely a barrier to collaboration, because basic science researchers may question the internal validity of manipulations that last for many weeks, whereas applied

researchers may wonder how manipulations lasting for a few minutes can inform interventions.

A translational approach provides a very practical stepping stone to close this gap in time frame. Many basic science researchers would find it feasible to add at least a one-week follow-up assessment to test whether manipulations in the laboratory yield positive effects that persist at least one week later. If a brief laboratory intervention (e.g., decreasing rumination) decreases symptoms (e.g., anxiety) for at least one full week, the manipulation becomes far more clinically relevant. This is because most clinicians think in one-week intervals, because outpatient therapy appointments are typically scheduled one week apart from each other. For example, Pennebaker's (1997) programmatic research on disclosure found that participants in the laboratory writing about distressing or traumatic events reported better psychological and physical well-being in subsequent weeks compared with those writing about non-distressing events. Content coding of the essays revealed that use of more causal and insight statements and more negative emotion words was essential for the writing to cause improvements, which suggests that catharsis of negative emotion is beneficial only when accompanied by cognitive restructuring. What is uniquely valuable about this research is that the extended time frame and medium scope of hypotheses provides a far more precise understanding of the mechanisms underlying subsequent change than does previous psychotherapy research addressing mostly broad hypotheses regarding catharsis.

Scope of Hypotheses Tested

The differences between basic and applied research in the scope of hypotheses tested are often large. Basic science researchers tend to test brief manipulations of independent variables that are highly controlled so as to test very specific causal mechanisms, and they are interested in dependent variables that represent specific, short-term outcomes. Conversely, applied researchers' manipulations of independent variables usually entail randomly assigning participants to weeks of treatment in which numerous therapists may try numerous intervention components. Dependent variables, such as psychopathology, may have no clear starting point (e.g., age of onset), may fluctuate for years (e.g., remissions), and may be hard to categorize discretely (e.g., comorbidity; Brown, Campbell, Lehman, Grisham, & Mancill, 2001).

Although the gap in scope is large, an excellent translational bridge is the notion of empirically supported principles of change (Beutler, 2000; Rosen & Davison, 2003). Empirically supported principles of change focus on how specific components of full-scale treatments affect changes in symptoms. The search for efficacious components does not necessitate a piecemeal approach to psychotherapy but, rather, strengthens confidence in the moment-to-moment interventions contributing to the overall efficacy of psychotherapy. For example, many clinical outcome studies carry the burden of demonstrating whether 12 weeks of psychotherapy—containing numerous intervention components and delivered by numerous therapists—produces changes in a major depressive episode, which is defined by nine different symptoms. Con-

versely, an empirically supported principles approach might investigate whether a component of CBT, such as reducing ruminative thoughts, affects a specific outcome, such as ability to concentrate (Westen et al., 2004).

An excellent example of varying scope is the translation of behavioral and social cognitive theory findings into effective treatments for anxiety. Consider, for instance, treatment for panic disorder, which is characterized by repeated panic attacks and sometimes by agoraphobia, which may lead to varying degrees of social isolation because patients fear others will notice their panic attacks. This debilitating condition can endure for years, but CBT can bring clients into a normal range of functioning within a few weeks (Westen et al., 2004). The treatment is based on behavioral principles of habituation and counterconditioning, first established with animal models in the laboratory, which were then translated into human studies and, subsequently, into treatments for mental illness (Barlow & Allen, 2004). Bandura's (1997) social cognitive theory has augmented existing CBT approaches with self-efficacy components. Early laboratory studies of social cognitive theory sampled nonpathological populations, studied brief manipulations and outcomes, and focused on narrow causal hypotheses (Bandura, 1997). The translation of the internally valid and theoretically rich findings from these studies has led to an understanding that graded exposure to feared stimuli not only facilitates habituation but also builds the client's self-efficacy to engage in the intervention components necessary to prevent the full onset of a panic attack. When examining the changing scope of social cognitive theory, one is struck by the patience in the early stages to establish causal mechanisms and theoretical specificity before moving to subsequent experiments over the course of decades that tracked outcomes for months or years and expanded the scope of hypotheses to public health interventions. For practitioners, social cognitive theory provides clear direction about what specific moment-to-moment strategies in a therapy session could increase self-efficacy (e.g., vicarious learning). Although social cognitive theory has been very influential on psychotherapy, there is a need for further basic science research to understand questions of causality and primacy raised in recent clinical studies (Barlow & Allen, 2004). Considerations about the dose of social cognitive components needed to achieve desired outcomes will be an integral part of the continuing effort to elucidate the causal and temporal mechanisms underlying social cognitive applications.

Dose of Treatment

Currently, the dose-response literature suggests that in carefully controlled clinical outcome trials, approximately 13 sessions are needed for at least half of patients to improve, and 26 sessions are needed for 83% of patients to improve (Hansen et al., 2002). The empirical dose-response literature is consistent with clinical wisdom that many mood or anxiety symptoms remit quickly (e.g., 5 sessions), whereas more deep-seated problems such as interpersonal difficulties take longer (e.g., 104 sessions; Kopta, Howard, Lowry, & Beutler, 1994). Hansen et al. analyzed a national database of over 6,000 psycho-

therapy patients who were not involved in strictly controlled clinical trials but instead received psychotherapy in nonresearch-based counseling facilities. Results of this real-world study indicated that patients attended only five sessions on average, and more important, that only about 20% of the patients had improved at their last point of assessment. Most dose-response research operationalizes a dose as one session of therapy and response as at least 50% of a treatment group achieving clinically significant change (e.g., entering a "normal" range of functioning), and there have been good logistical and conceptual reasons for doing so (Kopta et al., 1994). However, in translational research investigating dose, so as to detect early outcomes of interest such as dropout, it may be more useful to think of dose as the number of times a specific therapy component is delivered.

Substance abusers are at high risk for dropout from treatment, and clinical wisdom suggests that substance abusers' defensiveness can make traditional treatments difficult to implement successfully. Promising new treatments for substance abusers are emerging from social psychology theories of self-concept. Knowledge regarding self-concept has been advanced tremendously over the past half century by elegant laboratory experiments providing insight into the causes of self-concept threat and the various strategies that individuals incorporate to defend or restore self-concept (Tesser, 2001). Seminal studies by Festinger (1957) on cognitive dissonance helped to shape classic experimental social psychology methods and sparked hundreds of studies that have provided a strong basic science understanding of the causal mechanisms underlying self-concept threat, attitude change, and behavior change.

Cognitive dissonance and another influential self-concept theory, self-perception theory (Bem, 1972), provided a strong basis for the development of a promising therapeutic intervention called *motivational interviewing* (Miller & Rollnick, 2002). One of the core components of motivational interviewing is *developing discrepancy*, which entails helping the client to generate attitudes and values (e.g., being a responsible parent) that are incongruent with current behavior (e.g., chronic binge drinking). Motivational interviewing capitalizes on blocking a client's attempts to reduce dissonance through attitude change (e.g., rationalization), and it has clients confront dissonance-inducing behaviors through Socratic dialogue (free-choice dissonance). Faced with the aversion of free-choice dissonant states, and with routes to attitude change blocked, clients are left to become more committed to changing their behavior.

Meta-analyses have found motivational interviewing for substance abuse to be as efficacious as other treatment modalities but that a lower dose of treatment is required (three fewer sessions) than with typical treatments (Burke, Arkowitz, & Menchola, 2003). This raises obvious questions about why fewer sessions of motivational interviewing produce the same effects as other interventions. Although cognitive dissonance and self-perception theory have provided a relatively precise theoretical basis for motivational interviewing, little empirical support exists regarding the dose of these core components needed (e.g., dissonance inductions) to produce motivational interviewing outcomes. Studies are needed to

examine how varying doses of dissonance arousal and blocking of attitude change cause changes in symptoms. In addition, because of dropout concerns, identification of the types of clients for whom high doses of certain therapeutic components are contraindicated is needed.

Contraindication

One of the great benefits of traditional translational research is that it guards against broad implementation of harmful treatments more carefully than do full clinical trials. Contraindication or iatrogenic effects occur when a treatment, under certain circumstances (e.g., individual-difference factors, comorbidity), exacerbates symptom level compared with pretest functioning (Dishion, McCord, & Poulin, 1999). Contraindication is the byproduct of what psychotherapy researchers call *Aptitude* \times *Treatment interactions* or what social psychologists would conceptualize as a function of person and environment (Lewin, 1951). A recent review of the psychotherapy literature suggests that a sizable minority of patients (5%–10%) deteriorate while in psychotherapy (Lambert & Ogles, 2004), but in some situations contraindication can occur for a majority of clients. For example, process groups conducted immediately following traumatic events attempt to begin immediate cognitive processing of the trauma. However, process groups for individuals who have very recently experienced a trauma appear to increase the risk for subsequent psychopathology (Gist & Woodall, 1999). A translational approach can reduce the likelihood of these types of harmful outcomes by starting with brief interventions that target focused aspects of the pathology with smaller doses. This methodology allows for monitoring of contraindication before moving to full-scale intervention.

Wegner (1994) and his colleagues' work on ironic processing is an excellent example of a program of research already informing clinical practice that could be extended to further understanding of contraindicated therapy components. Social psychological research on ironic processing strongly suggests that advising individuals *not* to think about something while they are under cognitive load actually increases thoughts about a topic in those individuals compared with those given no such instructions. Early highly controlled studies, allowing for causal inference about the mechanisms underlying ironic processing, have now provided a strong empirical basis for understanding many clinical problems with an unprecedented degree of specificity. Ironic processing has now been applied in efforts to understand symptoms common to numerous disorders, including insomnia (Wegner, Broome, & Blumberg, 1997), ruminative thought (Salkovskis, Richards, & Forrester, 1995), and processing of negative information and negative affect (Beevers, Wenzlaff, Hayes, & Scott, 1999; Kashdan & Steger, 2006). Of relevance to contraindication, many insight-oriented therapies emphasize delivering a high proportion of components focused on understanding the nature and roots of mental illness, but some clients' keen self-awareness of their pathologies is exactly what exacerbates their symptoms. This is not to say that all insight-oriented therapies are contraindicated; rather, insight-oriented therapies may be contraindicated for some clients who are prone to

ironic processing (e.g., highly ruminative individuals; Nolen-Hoeksema, 2000). Protection of the general public against large-scale implementation of contraindicated components also depends on careful sampling techniques.

Sampling

Translational research methods in the medical sciences make sampling strategies a core methodological and ethical consideration. Occasional high-profile cases of contraindication occur (e.g., Vioxx; Couzin, 2004), but methodical sampling has generally helped to guard against broad implementation of contraindicated medical treatments. New interventions based on basic science findings progress through testing on animals, healthy samples, mildly impaired clinical samples, and then more severe clinical samples before being broadly implemented.

Social psychologists and psychotherapy researchers would likely begin this sequence by sampling healthy individuals, and this requires awareness of how differences between unimpaired and clinical samples can obscure the effects of an intervention component (Coyne, 1999). For example, interventions for healthy populations may not demonstrate effects because there are basement effects on symptom severity or automatic adaptive mechanisms that protect healthy individuals from pathological processes (Deldin, Keller, Gergen, & Miller, 2001). Laboratory researchers can partly address these challenges by temporarily inducing symptoms through experimental manipulation (e.g., negative mood induction) or temporarily suppressing adaptive mechanisms of healthy participants (e.g., inducing cognitive load to produce ironic-processing effects). If efficacy and safety are evidenced in healthy samples, then mildly impaired samples are recruited to test the efficacy of the interventions. In the final stage, interventions are implemented with samples that have more severe levels of pathology and comorbidities. Throughout these stages, it is important to consider symptom severity and comorbid conditions as moderators of intervention components. At times, intervention components may show no effect with mild samples because the qualitative nature of the symptoms cannot be induced in the laboratory, and conversely, an intervention component may be efficacious with mildly impaired samples but not powerful enough for samples with more severe mental illness. Careful consideration of sampling issues produces stronger research designs² but also forces one to contemplate important theoretical topics about what makes a certain condition pathological.

A central hypothesis in CBT theories of mental illness is that maladaptive attitudes create ongoing vulnerability for depressive states. If this hypothesis is correct, then those at risk for experiencing depressive episodes (e.g., those with a history of depression) should report more maladaptive attitudes than those at low risk (e.g., never-

² The use of subclinical convenience samples has been criticized (Coyne, 1999), and this criticism is certainly warranted if a program of research never extends beyond college student convenience samples. However, subclinical samples typically allow researchers to collect larger samples at a low cost, permitting a number of internally valid laboratory tests of intervention components before moving to clinical samples.

depressed individuals). However, early research on attitudes and depression risk did not find evidence for these expected differences (Lewinsohn, Steinmetz, Larson, & Franklin, 1981). Almost all experimental studies of depression assess negative mood as an outcome of maladaptive cognition, but a voluminous social psychology literature on affect and social cognition suggests that mood can also have a causal influence on cognition (Ashby, Isen, & Turken, 1999). When people are motivated to solve complex problems, negative mood narrows cognitive focus, prepares individuals for fight-or-flight responses, and activates networks of information linked to the current mood state (Aspinwall, 1998; Bower, 1981). Thus, applying mood inductions from social psychology to clinical samples with depression seems like a logical next step. However, current knowledge of affect and social cognition is based almost entirely on relatively healthy college samples, and too little is known about how typical negative mood inductions would affect clinical samples. The following translational studies demonstrate careful sampling methods.

Experiments focusing on mildly depressed clinical samples have begun to unravel lingering questions about depression risk and maladaptive attitudes (Gemar, Segal, Segrati, & Kennedy, 2001; Teasdale & Dent, 1987). Translational studies of affect and social cognition have shown that people with past episodes of major depressive disorder (i.e., those at higher risk) will endorse more maladaptive cognitions than those who have never been depressed, but only when negative affective states are induced (e.g., Miranda, Gross, Persons, & Hahn, 1998). Given the unethical nature of and the risk involved in inducing even small doses of negative mood in actively depressed individuals, only participants below clinical cutoff levels were allowed to participate, and mood inductions were not given to participants with certain comorbidities (e.g., substance abuse). These studies demonstrate how inducing a small dose of negative mood, limiting the expected length of the mood effect to the laboratory visit, concentrating the scope of hypothesis on attitudes, and thoughtful sampling to guard against contraindication produced novel findings while protecting potentially vulnerable populations. Further studies expanding the scope of hypotheses to include not only cognitive vulnerabilities but also how therapists may use mood as an intervention component to cause changes in cognition hold tremendous promise.

Summary

The science–practice gap has been a long-standing problem in the sciences, but translational research provides a systematic framework for moving basic science knowledge into effective treatments for mental illness. The process of translational research not only enhances treatments for mental illness, it also requires that researchers return to the laboratory when applied studies raise new questions about basic psychological processes. Systematic variation along the lines of the methods described here provides a starting point for thinking about the progression of a program of translational research. The examples given here illustrate the major impact that basic social psychological methods and theory can have on treatments for mental illness. Rich

theory and causal data from social psychology provide a strong base of knowledge about constructs that are essential for improving the efficacy, effectiveness, and cost-effective delivery of psychotherapy. However, full implementation of successful programs of translational research will require new collaborative efforts and a commitment to training translational researchers.

Conclusions and the Promise of Translational Research

Although there have been excellent theoretical treatises (Frazier et al., 1995) and singular studies characterized by translational research concepts, programmatic examples of translational research have been extremely rare. Psychology is not unique in this regard—those in the medical sciences have become increasingly concerned about a dwindling number of new scholars capable of conducting successful translational research programs (Kuehn, 2006). Recently, the editors of the *Journal of Translational Medicine* commented that it has been discouraging to see some strong translational research manuscripts rejected. At times, the basic science reviewers see the work as lacking sufficient internal validity, and the applied researchers see the work as clinically irrelevant (Mankoff, Brander, Ferrone, & Marincola, 2004). The successful emergence of translational research in psychology will depend on the training of researchers who recognize that this middle ground will rarely fulfill all of the internal-validity expectations of the laboratory or external-validity expectations of clinic settings.

In an effort to advance medical translational research, training initiatives in the medical sciences are underway to educate graduate students in translational research methods, basic science knowledge, and the realities of clinical settings. Kuehn (2006) has provided a review of how MD/PhD programs in the medical sciences have been drastically revamped to meet the challenges of training translational researchers for the future. These programs typically provide students on the MD track with a more firm grounding in cutting-edge basic science and provide those on a research PhD track with opportunities for clinical experience. There has also been a shift by medical journal editors to reinforce researchers for conducting rigorous translational research. For example, the *Journal of the American Medical Association*, which has traditionally published few basic science articles, has created a new journal section specifically for basic science, preclinical studies that have translational research relevance. These types of changes in psychology are needed to educate a new generation of researchers who are well prepared to implement translational programs of research. Provision of the monetary, institutional, and publication incentives to reinforce this type of research is well within the reach of basic and applied psychology. Despite the ongoing challenges that exist to bridging the science–practice gap, translational research remains one of the best hopes for efficiently moving psychology's best laboratory science into effective clinical applications.

REFERENCES

- Asby, F. G., Isen, A. M., & Turken, A. U. (1999). A neuropsychological theory of positive affect and its influence on cognition. *Psychological Review*, *106*, 529–550.
- Aspinwall, L. G. (1998). Rethinking the role of positive affect in self-regulation. *Motivation and Emotion*, *22*, 1–32.
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: Freeman.
- Barlow, D. H., & Allen, L. B. (2004). Scientific basis of psychological treatments for anxiety disorders: Past, present, and future. In J. M. Gorman (Ed.), *Fear and anxiety: The benefits of translational research* (pp. 171–192). Washington, DC: American Psychiatric Press.
- Baskin, T. W., Tierney, S. C., Minami, T., & Wampold, B. E. (2003). Establishing specificity in psychotherapy: A meta-analysis of structural equivalence of placebo controls. *Journal of Consulting and Clinical Psychology*, *71*, 973–979.
- Beavers, C. G., Wenzlaff, R. M., Hayes, A. M., & Scott, W. D. (1999). Depression and the ironic effects of thought suppression: Therapeutic strategies for improving mental control. *Clinical Psychology: Science and Practice*, *6*, 133–148.
- Bem, D. J. (1972). Self-perception theory. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 6, pp. 1–62). New York: Academic Press.
- Beutler, L. E. (2000). Empirically based decision making in clinical practice. *Prevention and Treatment*, *3*, 1–17.
- Bower, G. H. (1981). Mood and memory. *American Psychologist*, *36*, 129–148.
- Brown, T. A., Campbell, L. A., Lehman, C. L., Grisham, J. R., & Mancill, R. B. (2001). Current and lifetime comorbidity of the DSM-IV anxiety and mood disorders in a large clinical sample. *Journal of Abnormal Psychology*, *110*, 585–599.
- Burke, B. L., Arkowitz, H., & Menchola, M. (2003). The efficacy of motivational interviewing: A meta-analysis of controlled clinical trials. *Journal of Consulting and Clinical Psychology*, *71*, 843–861.
- Carpenter, S. (2005). Hitting the bricks. *Observer*, *18*(2), 12–16.
- Chambless, D. L., & Ollendick, T. H. (2001). Empirically supported psychological interventions: Controversies and evidence. *Annual Review of Psychology*, *52*, 685–716.
- Contie, V. L. (2006). Clinical and translational science. *NCRR Reporter*, *30*(1), 3–5.
- Couzin, J. (2004, October 15). Drug safety: Withdrawal of Vioxx casts a shadow over COX-2 inhibitors. *Science*, *306*, 384–385.
- Coyne, J. C. (1999). Thinking interactionally about depression: A radical restatement. In T. Joiner & J. C. Coyne (Eds.), *The interactional nature of depression* (pp. 365–392). Washington, DC: American Psychological Association.
- Deldin, P. J., Keller, J., Gergen, J. A., & Miller, G. A. (2001). Cognitive bias and emotion in neuropsychological models of depression. *Cognition and Emotion*, *15*, 787–802.
- Dishion, T. J., McCord, J., & Poulin, F. (1999). When interventions harm: Peer groups and problem behavior. *American Psychologist*, *54*, 755–765.
- Festinger, L. (1957). *A theory of cognitive dissonance*. Evanston, IL: Row, Peterson.
- Foa, E. B., & Kozak, M. J. (1986). Emotional processing of fear: Exposure to corrective information. *Psychological Bulletin*, *99*, 20–35.
- Frank, J. D., & Frank, J. B. (1991). *Persuasion and healing: A comparative study of psychotherapy* (3rd ed.). Baltimore: Johns Hopkins University Press.
- Frazier, P. A., Gonzales, M., & Rudman, L. A. (1995). Evaluating the effectiveness of applying social psychological theory to counseling. *Counseling Psychologist*, *23*, 691–696.
- Gemar, M. C., Segal, Z. V., Sagrati, S., & Kennedy, S. J. (2001). Mood-induced changes on the Implicit Association Test in recovered depressed patients. *Journal of Abnormal Psychology*, *110*, 282–289.
- Gist, R., & Woodall, S. J. (1999). There are no simple solutions to complex problems: The rise and fall of critical incident stress debriefing as a response to occupational stress in the fire service. In R. Gist & B. Lubins (Eds.), *Response to disaster: Psychosocial, community, and ecological approaches* (pp. 211–235). Philadelphia: Brunner/Mazel.
- Hansen, N. B., Lambert, M. J., & Forman, E. M. (2002). The psychotherapeutic dose-response effect and its implications for treatment delivery services. *Clinical Psychology: Science and Practice*, *9*, 329–343.
- Hopko, D. R., Lejuez, C. W., Ruggiero, K. J., & Eifert, G. H. (2003). Contemporary behavioral activation treatments for depression: Procedures, principles, and progress. *Clinical Psychology Review*, *23*, 699–717.
- Johnson, S. M. (2004). Attachment theory: A guide for healing couple relationships. In W. S. Rholes & J. A. Simpson (Eds.), *Adult attachment: Theory, research, and clinical implications* (pp. 367–387). New York: Guilford Press.
- Kashdan, T. B., & Steger, M. F. (2006). Expanding the topography of social anxiety: An experience-sampling assessment of positive emotions, positive events, and emotion suppression. *Psychological Science*, *17*, 120–128.
- Kopta, S. M., Howard, K. I., Lowry, J. L., & Beutler, L. E. (1994). Patterns of symptomatic recovery in psychotherapy. *Journal of Consulting and Clinical Psychology*, *62*, 1009–1016.
- Kuehn, B. M. (2006). PhD programs adopt bench-to-bedside model to speed translational research. *Journal of the American Medical Association*, *295*, 1506–1507.
- Lambert, M. J., & Ogles, B. M. (2004). The efficacy and effectiveness of psychotherapy. In M. J. Lambert (Ed.), *Bergin and Garfield's handbook of psychotherapy and behavior change* (5th ed., pp. 139–193). New York: Wiley.
- Lewin, K. (1951). *Field theory in social science: Selected theoretical papers* (D. Cartwright, Ed.). New York: Harper.
- Lewinsohn, P. M., Steinmetz, J. I., Larson, D. W., & Franklin, J. (1981). Depression-related cognitions: Antecedent or consequence? *Journal of Abnormal Psychology*, *90*, 213–219.
- Mankoff, S. P., Brander, C., Ferrone, S., & Marincola, F. M. (2004). Lost in translation: Obstacles to translational medicine. *Journal of Translational Medicine*, *2*, 2–5.
- Markus, H. R. (2004). A social psychological model of behavior. *Dialogue*, *19*(Suppl. 1), 1–4.
- Meyer, J. (2001, October). *Age: 2000* (Census 2000 Brief C2KBR/01-12). Washington, DC: U.S. Census Bureau.
- Miller, W. R., & Rollnick, S. (2002). *Motivational interviewing: Preparing people for change*. New York: Guilford Press.
- Miranda, J., Gross, J. J., Persons, J. B., & Hahn, J. (1998). Mood matters: Negative mood induction activates dysfunctional attitudes in women vulnerable to depression. *Cognitive Therapy and Research*, *22*, 363–376.
- National Advisory Mental Health Council. (2000). *Translating behavioral science into action: Report of the National Advisory Mental Health Council Behavioral Science Workgroup*. Bethesda, MD: National Institute of Mental Health.
- Nolen-Hoeksema, S. (2000). The role of rumination in depressive disorders and mixed anxiety/depressive symptoms. *Journal of Abnormal Psychology*, *109*, 504–511.
- Nunes, E. V., Carroll, K. M., & Bickel, W. K. (2002). Clinical and translational research: Introduction to the special issue. *Experimental and Clinical Psychopharmacology*, *10*, 155–158.
- Pennebaker, J. W. (1997). Writing about emotional experiences as a therapeutic process. *Psychological Science*, *8*, 162–166.
- Rosen, G. M., & Davison, G. C. (2003). Psychology should list empirically supported principles of change (ESPs) and not credential trademarked therapies or other treatment packages. *Behavior Modification*, *27*, 300–312.
- Salkovskis, P. M., Richards, C. H., & Forrester, E. (1995). The relationship between obsessional problems and intrusive thoughts. *Behavioural and Cognitive Psychotherapy*, *23*, 281–299.
- Smith, M. L., Glass, G. V., & Miller, T. I. (1980). *The benefits of psychotherapy*. Baltimore: Johns Hopkins University Press.
- Snyder, C. R., Tennen, H., Affleck, G., & Cheavens, J. (2000). Social, personality, clinical, and health psychology tributaries: The merging of a scholarly “river of dreams.” *Personality and Social Psychology Review*, *4*, 16–29.
- Teasdale, J. D., & Dent, J. (1987). Cognitive vulnerability to depression: An investigation of two hypotheses. *British Journal of Clinical Psychology*, *26*, 113–126.
- Tesser, A. (2001). On the plasticity of self-defense. *Current Directions in Psychological Science*, *10*, 66–69.

- U.S. Department of Health and Human Services. (1999). *Mental health: A report of the Surgeon General—executive summary*. Rockville, MD: U.S. Department of Health and Human Services, Substance Abuse and Mental Health Services Administration, Center for Mental Health Services, National Institutes of Health, National Institute of Mental Health.
- Wampold, B. E. (2001). *The great psychotherapy debate: Models, methods, and findings*. Mahwah, NJ: Erlbaum.
- Wegner, D. M. (1994). Ironic processes of mental control. *Psychological Review*, *101*, 34–52.
- Wegner, D. M., Broome, A., & Blumberg, S. (1997). Ironic effects of trying to relax under stress. *Behavior Research and Therapy*, *35*, 11–21.
- Westen, D., Novotny, C. M., & Thompson-Brenner, H. (2004). The empirical status of empirically supported psychotherapies: Assumptions, findings, and reporting in controlled clinical trials. *Psychological Bulletin*, *130*, 631–663.
- Widiger, T. A. (2005). Five factor model of personality disorder: Integrating science and practice. *Journal of Research in Personality*, *39*, 67–83.
- Zvolensky, M. J., Lejuez, C. W., Stuart, G. L., & Curtin, J. J. (2001). Experimental psychopathology in psychological science. *Review of General Psychology*, *5*, 371–381.