Acceptance, Mindfulness, and Science

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The inclusion of technologies drawn from spiritual and religious traditions into empirical clinical psychology is a positive step forward, but it also helps reveal problems in the technological model of treatment development. The technological model does not necessarily lead to a more coherent, innovative, and progressive discipline, which requires the development of more adequate theory, not merely more adequate technology. If technologies drawn from spiritual and religious traditions are to be included in modern scientific psychology, the field must be free to interpret and transform them theoretically, without being limited by their religious and spiritual past.

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Roemer and Orsillo (this issue) do an excellent job of integrating current research on the functions of worry in GAD and research on the relevance of acceptance and mindfulness procedures to these problems. Although I have some specific comments, I am more intrigued by the good example this paper presents for empirical clinical psychologists about how to integrate technology development and theoretical development. Explaining the importance of this lesson requires a rather lengthy beginning digression.

THE FDA MODEL OF TREATMENT DEVELOPMENT

With the rise of empirical clinical psychology in the 1950s and 1960s, research attention began to turn from broad orientations to specific technologies. This process accelerated enormously in the 1980s as the FDA technology development model, refined earlier in pharmacotherapy trials, was self-consciously applied to behavioral interventions (Rounsaville, Carroll, & Onken, 2001). This change was fostered both by key researchers and by the federal funding apparatus, particularly the initiatives undertaken by Gerald Klerman while heading up the Alcohol, Drug Abuse, and Mental Health Administration (ADAMHA) in the late 1970s to link federal grants to thorough specification of syndromes and intervention technologies. Manualized treatments, therapist training, measures of adherence, and other features of the technological approach soon followed, enabling randomized, controlled trials of popular technologies (e.g., Waskow, 1984).

Empirical clinical psychology has begun to reap the benefits of these steps. A substantial body of literature now exists that shows unequivocally that psychosocial interventions work and that the effects produced can compete with or exceed the effects produced by pharmacological interventions. The effects of empirically supported psychosocial interventions include general change processes that are shared with a variety of therapeutic approaches, but commonly also include specific effects related to the particular intervention technology and particular disorders treated. It is now possible to create lists of empirically supported treatments (Chambless et al., 1996) and to develop clinical practice guidelines based on effective approaches (Hayes, Follette, Dawes, & Grady, 1995; Hayes & Gregg, 2001). All of this is real progress.

PROBLEMS WITH THE TECHNOLOGY MODEL

With these advances, however, the limits of the technological model are becoming increasingly evident. I will mention two areas in which this is particularly clear.

Manual Proliferation and Homogenization

Detailed manuals are by now virtually required for funded randomized, controlled trials, but professional and empirical forces are leading to the seemingly contradictory results of manual proliferation and manual homogenization. On the one hand, it is often easier to make a case for funding projects that test new techniques, since new approaches seem to hold out greater possibility of unexpectedly positive outcomes than do old approaches. Furthermore, the professional contingencies facing academicians and researchers lead them to want to put their own mark on treatment packages, resulting in a new approach with a new name. On the other hand, funding processes are inherently conservative, and learning how to produce competitive funding proposals is a skill that is difficult to master. This provides large advantages for proposals from established researchers and from research-

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ers who can appeal to existing pilot or randomized, controlled data to justify proposals.

The end result is that new proposals endlessly combine existing procedures into new packages with new names. Looking ahead over the next decades, it seems clear that there will eventually be hundreds of supposedly distinct manuals that have received relatively adequate empirical tests, but a large percentage of these will be variations on a few core themes. Nothing in the technological model seems to push for the reduction of these manuals to a smaller set of truly different procedures. That can come only from theory, but as currently conceived it is not necessary to show different mechanisms of action for a technology to be recognized as a new empirically supported treatment.

As a result, the technology model is leading to volumes of research, but in a way that makes that research output less and less coherent. Perhaps in part to defend themselves from being overwhelmed, researchers and students focus on ever smaller corners of the applied universe: syndromes and subsyndromes, specific settings, specific demographic populations, or specific procedures. Although this scientific coping strategy helps solve the coherence problem for individual researchers, it makes the problem worse for students and for the field as a whole because these corners of the applied universe are also not theoretically distinct. Thus, in a self-amplifying way, both the limits of the technological model and the researcher's reaction to those limits make it more difficult to master and to teach the science that results.

The Source of New Technology
The technological model does not specify where testable treatment approaches come from, and it does not ensure that rich new sources of good ideas are available. This problem is the reason that the federal government has begun to prime the pump by funding treatment development, or so called stage 1 research (Rounsaville et al., 2001).

The primary sources of new technological ideas are common sense, clinical experience, previous treatments, theory, and basic science. Common sense can be a vigorous source of new ideas only for a limited time, however. It is, as its label says, common, and what is common tends not to evolve quickly. Clinical experience is perhaps a more long-lasting source of creative ideas, but many researchers maintain less and less contact with direct clini-

cal work over time, and it can be difficult to distinguish the useful clinical ideas of others from those that are inane. Previous treatments are a useful source but can produce homogenization, as was just discussed. Theory and basic science are perhaps the most hopeful source for real innovation, which may explain why the federal government has also begun to link the translation of basic science to treatment development research (Rounsaville et al., 2001). Unfortunately, there is little to ensure that the basic science that is evolving at any given moment is addressing the kind of basic theoretical and research issues that clinicians actually need to have addressed at any given moment.

THEORY, TECHNOLOGY, AND EASTERN TRADITIONS
As Roemer and Orsillo (this issue) show, empirical clinical psychology is beginning to reach out to less empirical traditions as a source of technical innovation. There are undoubtedly many good ideas in analytic, Gestalt, humanistic, existential, and other such approaches, and it is worthwhile to subject the best of these ideas to empirical tests of their efficacy.

It is even bolder to reach out to behavior change domains that pre-date psychology itself, such as religious, mystical, and spiritual traditions. It would be hard to find older behavior change techniques than acceptance and mindfulness. Yet, it is only recently that the empirical analysis of acceptance and mindfulness procedures have become popular within empirical clinical psychology (e.g., Bohus et al., 2000; Hayes, Strosahl, & Wilson, 1999; Jacobson, Christensen, Prince, Cordova, & Eldridge, 2000; Strosahl, Hayes, Bergan, & Romano, 1998; Teasdale et al., 2000).

Opening the door to the analysis of such procedures shows the strength of the technological model, but it makes more evident its weakness as well. The problem, reflected in manual proliferation and homogenization or in the lack of reliable sources of innovation, is that there is nothing in the technological model that ensures that technical innovation leads to a progressive discipline.

Progressivity refers to the generativity and coherence of a discipline. Progressive sciences build upon themselves, while constantly adding new phenomena to revised accounts. That is, progressive sciences draw more and more phenomena into increasingly organized statements of relations among events. In the applied area, these statements are expected to lead to new and unusually

effective ways of manipulating or influencing the phenomena of practical interest.

Technological innovation based on spiritual and religious traditions is an especially useful example in understanding the difference between technological and disciplinary progress. Normally when mental health technologies prove to be successful in producing outcomes, researchers are left with a great deal still left to do in the form of training, dissemination, and additional testing with new problem areas. Because of the amount of work that needs to be done, the shallowness of these steps in a disciplinary sense can easily be lost. In contrast, training and service delivery systems already exist for religious and spiritual technology. After acceptance and mindfulness have been tested and shown to be useful, it is not quite so clear what should be done next. Are clients now to be sent to the nearest temple or ashram, rather than to the local clinic? Are therapists to be trained to do therapy through long Zen retreats? If such steps were taken and shown to be effective, empirical clinical psychology would be no stronger as a discipline as a result. Merely serving as a referral agent and empirical referee for spiritual practices does not create a coherent science. This same point can actually be made about normal mental health technologies—the possible disconnect between technological innovation and disciplinary progress is simply more obvious in this domain due to the existing infrastructure for delivery of spiritual and religious technologies.

Building a progressive discipline requires a pragmatically useful and generative theory (Hayes, 1998a), good data on theoretically important processes (Follette, 1995; Kazdin, 2001), and a dynamic relationship between applied and basic research (Hayes, 1998b). This is because coherence and generativity come from ways of speaking with both scope and precision, not, as in the technological model, from precision alone. As these issues apply to eastern technologies, Roemer and Orsillo have it just about right. We must develop careful theoretical analyses of applied problems and possible innovative techniques, and bring these together in a continuous recursive process of analysis, technology, and analysis.

Roemer and Orsillo (this issue) attempt to build on the positive aspects of the technological model of treatment development, but also attempt to avoid the negative aspects of that model. The strengths of their article in the present context are (a) an effort is made to link a func-

tional analysis of GAD to a more general, but still specific, mechanism of action: experiential avoidance; (b) evidence is provided of the importance of that mechanism in GAD; (c) the theoretical account is linked to particular treatment approaches that purportedly target the mechanism involved; and (d) some preliminary evidence is supplied both of the outcome value of these applied technologies and the relevance of these techniques to experiential avoidance.

Obviously, much remains to be done in testing the impact of these interventions on GAD and the importance of changes in experiential avoidance to these outcomes. I would like to focus my remaining comments, however, on the area identified in the first part of this commentary: the importance of a pragmatically useful theory that links in a dynamic way to basic research. Roemer and Orsillo (this issue) have done a good deal in this area in their article, but the link between experiential avoidance and acceptance and mindfulness requires still more.

BRINGING SCIENCE TO BEAR

To approach GAD as an experiential avoidance disorder, we need answers to questions such as, How does experiential avoidance work, precisely? Why is experiential avoidance a function of worry? Why would experiential avoidance respond to acceptance and mindfulness procedures?

Roemer and Orsillo (this issue) have relied on some of the components of acceptance and commitment therapy (ACT; Hayes et al., 1999) in their approach, which may provide an example of how to approach these issues. ACT is based on a theory of psychopathology (Hayes, Wilson, Gifford, Follette, & Strosahl, 1996), which is in turn based on a specific theory of language and cognition, relational frame theory (RFT; Hayes, Barnes-Holmes, & Roche, 2001). A detailed treatment would far exceed the limits of this commentary, but it is worth pointing to some of the elements because it sets up a discussion of ways we might elaborate the link between the theoretical and technological aspects of experiential avoidance and acceptance/mindfulness.

In an RFT approach, language and cognition are understood to be forms of relational responding—learning to respond to one event in terms of another. Even insects can do this in the nonarbitrary world (e.g., Giurfa, Zhang, Jenett, Menzel, & Srinivasan, 2001), but humans seem to be the only species who can arbitrarily relate

events as being same, different, opposite, better, and so on. Initially this powerful form of behavior is explicitly rewarded by the verbal community, but once it emerges it is maintained by coherence and sense-making on the one hand and instrumental value on the other. When relational networks are internally coherent, we feel confident that we understand. Because such understanding does often predict an ability to control events, sense-making becomes a proxy variable for instrumental success.

Unfortunately, in the psychopathology domain, verbal analysis is often directed toward relatively uncontrollable events (e.g., one's own history; historically produced bodily reactions) and thus giving reasons for psychopathological behavior is a dangerous practice because in this domain explanation may not in fact make events more predictable and controllable. Indeed, those who can offer what they believe are good reasons for their pathological behaviors tend to be both more severe and more difficult to treat than others (Addis and Jacobson, 1996), probably because (as Roemer and Orsillo point out) rule-governed behavior is less flexible. As one might expect, these persons also ruminate more, particularly in response to negative moods (Addis and Carpenter, 1999), because rumination is simply an internal application of these same cognitive skills.

The worrier seems caught by the safety signals provided by verbal analysis. The immediate effects can be calming, despite the formal sense in which worry is negative, because worry explains negative emotion, distracts from its direct experiential components, and is seemingly instrumental, among other reasons. Worry seems particularly likely under two conditions: general states of aversive stimulation, and a lack of effective positive behavior in a given situation. The former establishes worry because it produces negative emotional states that are both explained by the worry (providing a natural sense-making consequence) and calmed by the seeming ability of verbal analysis to control aversive events. The latter establishes worry because verbal analysis seemingly provides a guide to the necessary actions—a key goal when no positive actions are available. This may be one reason that worry occurs even when the focus of worry is an uncontrollable event.

This thumbnail analysis, which is meant as a minor elaboration of that by Roemer and Orsillo (this issue), helps explain why acceptance and mindfulness procedures might be helpful in GAD. Acceptance reduces the motivational condition for worry. Acceptance procedures establish both a clear discrimination between times when

deliberate control is effective and times when it is not and contact with the various primary or conditioned effects of uncontrollable or historical events. The person learns through direct exposure both that their own private reactions are not so fearsome and that a variety of alternative responses can occur in the presence of previously avoided psychological content. Experiential avoidance becomes less automatic and less necessary.

Second, acceptance and mindfulness reduce the domination of literal self-rules. In ACT this effect is called "cognitive defusion." Patients begin to notice the process of relational activity and not merely the products. This helps pierce the illusion of language. The illusion of language is that one is dealing with the world through thought. In fact, one is actively structuring the world through thought. Stated in term of RFT, the stimulus functions of events in the world are derived through their relation to other events. It is language and cognition that accomplish this feat, but the process is automatic and transparent. It appears to the thinker that one is simply dealing with the structured world, not that one is structuring as an ongoing process. Mindfulness and acceptance catch this bird in flight, and like an audience that learns how a magic trick is accomplished, they can profoundly change the effects of the language illusion.

Cognitive therapy addresses this phenomenon but is perhaps too committed to changing the effects of a verbally structured world by challenging the structure itself. It turns out that there is a very different way to push down the believability of negative or irrational thoughts: dispassionately noticing the process without agreeing or disagreeing, arguing or confirming, following or resisting. This is a kind of exposure process, but the target is not the world as verbally structured. The target is thought itself. Without defusion procedures, that distinction makes no sense, and exposure is thus impossible without simply exacerbating cognitive entanglement.

The reason acceptance and cognitive defusion lead naturally to action is that they open up forms of action based not on moment-to-moment logical analysis but on more general assumptions, values, or choices. In lay language, acceptance and mindfulness allow faith (not in the sense of a conclusion reached or an evaluation made, but in the sense of a stance taken that does not have to be continuously defended or justified verbally). If the actions based on this stance are effective, a kind of crack is produced in the rigid shell of rule systems. From a behavioral point of view we can say it this way: acceptance and mind-

fulness undermine the rigid behavioral regulatory effects of unnecessary self-rules and allow more flexible, contingency-shaped forms of behavior to begin to take hold instead.

A THEORY OF SPIRITUALITY

Religious and spiritual traditions accomplish these ends, but they do so in a way that psychotherapy cannot adopt in whole cloth because of their sectarian and supernatural conceptual content. If it is correct that is it the job of empirical clinical psychology not simply to use and test technology but also to develop a coherent discipline, then a very difficult task lies ahead of the field in the area of technology drawn from spiritual traditions. We must fit them into our field theoretically, without any sectarian or supernatural connotations. It may appear slightly sacrilegious to say so, but if religious and spiritual traditions are to enter empirical clinical psychology, they must be ours. We, as a field, must be free to interpret, analyze, and transform them, without being limited by their religious and spiritual past.

The naturalistic, scientific theories of transcendence, mindfulness, spirituality, faith, and the like, that will result may be a new source of treatment development. It worked that way in the case of ACT; the first article ever written on the approach was an attempt to develop a theory of spirituality (Hayes, 1984).

The great spiritual traditions were here long before psychotherapy arrived, and there is clearly much of value there. Empirical clinical psychology has something spiritual traditions do not have, however: science itself. Combining these two great traditions, spirituality and science, promises a leap forward in our understanding of human suffering, but only if psychological scientists keep their eye on the development of a coherent and progressive discipline, not merely the acquisition of a few new clinical maneuvers.

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