The Local Clinical Scientist

A Bridge Between Science and Practice

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The local clinical scientist brings the attitudes and knowledge base of the scientist to bear on the problems that must be addressed by the clinician in the consulting room. The problems of inadequate generalizability are reduced by a recognition of the value of local observations and local solutions to problems. However, these observations and solutions benefit by the scientific attitude of the clinician and are subjected to the same need for verifiability that greets all scientific enterprises. The clinical setting is viewed as analogous to a scientific laboratory, and, by doing so, the scientist–practitioner model is enacted.

The foundation of all approaches to training in clinical psychology is the Boulder, or scientist–practitioner, model (Raimy, 1950). Programs either embody or rebel against this approach (e.g., the Vail model, as in Korman, 1976). Yet, it can be argued that the Boulder model remains the least understood and most distorted of all training approaches to clinical psychology (Stricker, 1992).

The Boulder Model

The Boulder conference, as is well-known, endorsed a training model that would combine the scientific foundation of psychology with its practice applications, so that clinical psychologists, unlike professionals in any other discipline, would be trained to be both scientists and practitioners (Raimy, 1950). This grand aspiration rarely has been achieved in individual psychologists, some of whom seek academic or research careers, but few of whom, despite lip service, genuinely contribute in both research and practice venues. Participants at the Boulder conference were well aware of this likelihood, and they endorsed a diversity of training patterns, preferring "the continued possibility of experimentation with new methods of education to the end that quality and vitality are not sacrificed for uniformity" (Raimy, 1950, p. 30). Unfortunately, there was little experimentation or diversity, and the training during the decade immediately following the Boulder conference was frozen in a model that emphasized existing models of scientific training at the expense of practice (D. R. Peterson, 1991; Stricker & Cummings, 1992).

If diversity had existed, we would expect a continuum of training programs, following a normal distribution, and ranging from those that were heavily scientific to those that were heavily professional, with a concentration on programs that truly followed the recommended scientist–practitioner model. Instead, rhetoric suggests that we have a bimodal distribution, with some programs clustering on the scientific end of the continuum and others clustering on the practice end, with little intellectual commerce between the two. The Boulder model implied a commitment to experimentation and pedagogical adaptation of approaches to training in the service of science–practice integration.

Contrary to this commitment, however, the name *scientist–practitioner model* seems to have become merely a rhetorical device reserved for the scientific training programs, and it occurs primarily in traditional university settings. There is little indication that the model as outlined at Boulder is embodied by many of the claimants to the title. In countering this rhetoric, the more practice-oriented programs often refer to their model as the scholar–practitioner model to emphasize the breadth of knowledge that they endorse, and it occurs primarily in the professional schools. Notably, in consecutive weeks in January 1991, curriculum conferences were held by both groups (Belar & Perry, 1992; R. L. Peterson et al., 1991). There was little overlap in the invited participants to the two conferences, and there was no mention made by either group of the existence of the other. Nonetheless, an examination of the two documents reveals remarkable similarities, and it may be that the two groups, despite the protests of each, approach the scientist–practitioner model from different directions.

The Boulder report recognized that some universities would "strongly emphasize one area to the relative neglect of the other" (Raimy, 1950, p. 81), although it did not anticipate that the almost universal emphasis would be on science and that practice would be neglected. The failure to develop a continuum of approaches and the lack of the diversity that was recommended gave rise to the professional school movement (Bourg et al., 1987), a backlash that has emphasized practice, often at the expense of science (D. R. Peterson, 1991; Stricker & Cummings, 1992).

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The exercise in realpolitik that followed the publication of the Boulder report is undeniable. The hegemony of the academy gradually was replaced by the ascendance of the practice community, and accreditation (American Psychological Association, 1986) often was the weapon used to enforce a vision of desirable training. It is clear that, had the Boulder model been heeded broadly as something more than a justification for existing forms of academic training, the polarization in the public discourse existing today would not have been possible, nor would it have been considered acceptable. It is not necessary to take sides in this debate to observe that a great many decisions that have been made have been governed by considerations of political power rather than of sound training, and neither practice nor science benefits from such actions.

There are areas of incompatibility between science and practice that encourage a divergence in training (D. R. Peterson, 1991). The scientist is interested in knowledge for its own sake: Efforts are geared toward the expansion of knowledge, and there is no value held in higher esteem than academic freedom. The professional is interested in knowledge for what it can accomplish: Efforts are geared toward the application of knowledge, and there is no value held in higher esteem than public service. Academic freedom requires free inquiry with a minimum of requirements. Human service, and the resultant need for protection of the public, requires disciplined inquiry with clearly specified requirements. These requirements are opposed by adherents of the science model who object to any inhibition of free academic inquiry, not out of any necessary disdain for practice but out of a high regard for research and a conviction that one cannot be trained by a single curriculum to do excellently in both. It is ironic that many scientists, although valuing freedom of inquiry, are quite restrictive as to their conceptions of acceptable methodology, whereas many clinicians, although valuing discipline in methodology, are more inclined to expand the acceptable approaches to scientific inquiry.

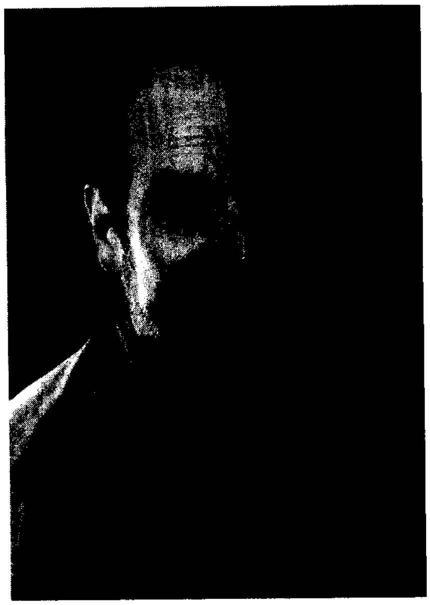
Nonetheless, there are areas of common concern between scientists and practitioners, and we continue to believe in the desirability of synergy between science and practice (Stricker, 1992). Consider the following description of scientists and practitioners from Flexner's classic evaluation of medical education:

> At bottom the intellectual attitude of the two are—or should be—identical: Neither investigator nor practitioner should be blinded by prejudices or jump at conclusions; both should observe, reflect, conclude, try, and, watching results, continuously reapply the same method until the problem in hand has been solved or abandoned. (Flexner, 1925, p. 4)

If science and practice are regarded as activities—research and praxis—then there may be fundamental incompatibilities between the two. There are several ways in which scientists and practitioners differ in their orientation to problems, which makes direct translation from one venue to the other complicated and difficult (Kanfer, 1990). However, if science and practice are regarded as attitudes or identities (Stricker & Kiesner, 1985), the incompatibility may be resolved to the benefit of each, despite the genuine obstacles that exist. We agree with Geiger that "science is by no means limited to the professional scientist; it represents an attitude that can function in any area of experience, an attitude of free and effective intelligence" (Geiger, 1941/1992, p. 20). The Boulder report, in its attempt to promulgate the scientist–practitioner model, emphasized the importance of the scientific attitude and the complexity of the issues that face the practitioner. We agree with the conferees that "there cannot be overindoctrination in the scientific attitude. There can be an illusory oversimplification of the problems faced by the clinical psychologist who is also a scientist" (Raimy, 1950, p. 86). We have sought the resolution of this apparent incompatibility between science and practice through the development of the local clinical scientist model (Trierweiler & Stricker, 1991, in press), an approach that recognizes the contributions of science and the scientific attitude as well as the realities of daily clinical practice.

The Local Clinical Scientist

The ideal model for clinical practice would be one in which practice is strictly an applied scientific activity, with praxis dictated by a sound body of scientific knowledge (McFall, 1991). Unfortunately, that model has not been realized in psychological practice and arguably never can be realized, just as it has not been realized by any other profession. Beutler, Williams, Wakefield, and Entwistle (1995) describe several examples of tension between science and practice in fields other than psychology. D. R. Peterson (1991) regards the direct linear application of science to practice, so that practice is limited by the bounds of science, as having originated in the preprofessional phase of the development of the field. It has been carried forward to some extent by many scientist–practitioner programs and neglects the contextual factors that make application so



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complex. The clinician rarely has the professional knowledge and the technical skill base that are completely adequate to the clinical task at hand. In fact, because the generalizations that contribute to this knowledge and skill base usually decay and it is often unclear how generalizations coordinate with specific clinical observations (Cronbach, 1975, 1982), it is likely that the practitioner always will be required to go beyond firm and available scientific knowledge.

Skills in local thinking and problem solving assume unusual importance for the clinician, as was noted previously by Cronbach (1975), who endorsed intensive local observation, and by Shakow (1976), who also cited the importance of observation. All empirical scientific work rests on observational skills. Shakow described four specific observational skills that are essential for good psychologists, whether we describe them as scientist–professionals, as thinking clinicians, or as local clinical scientists. These types of observation are objective observation (observation from the outside), participant observation (including an understanding of the reciprocal effects of the observer and the observed), subjective observation (empathic observation or intuition), and self-observation (self-examination). It is the breadth and depth of these skills, addressed to immediate clinical problems but imbued with the scientific approach and attitude, that constitute the heart of the activity of the local clinical scientist.

Local Settings

We use the term *local* in contrast to the universal or the general. A local observation may not be generalizable beyond the immediate setting. Local, as we use the term, can refer to any of four related concepts, each of which is relevant to the practitioner.

Local can refer to a particular application of general science. In this usage, the question is whether a general observation is pertinent to an instant case. We may know that a particular approach usually is effective with a given presenting problem, but will that approach work with this particular patient? In many instances, an accurately selected generalization provides the best approach to each individual problem, and the attempt to introduce local concerns only results in the introduction of error variance; but there are some situations that clearly fall outside of the scope of the generalization, and the clinical strategy must be modified (Meehl, 1954). This may be particularly evident in settings where local base rates call for modifications in general strategies (Meehl & Rosen, 1955) or where a generalization constitutes an incomplete representation of the problem.

A recognition of the generalizability gap has led to a concern about the difference between efficacy and effectiveness, as many controlled trials efficacy studies do not translate to effectiveness in field settings (Wolfe, in press). Perhaps this is because the highly select patients in efficacy studies only provide a simulacrum of the more complex symptom presentations seen in clinical settings. Kanfer (1990) noted that "the translation from theory to application must be enriched by consideration of the realities of the context in which therapy occurs" (p. 266).

Cronbach (1982) referred to the general process of drawing an external inference from a research finding as *extrapolation.* He suggested that there should be substantive reasons for making linkages between research generalizations and particular cases and that these reasons may extend beyond the demonstrated internal and external validity of the research itself—in effect, extending into the particulars of local circumstances. If there are identifiable differences between specific cases and research samples, or if heterogeneities exist within research samples, then the simple generalization of normative research conclusions may be questionable. A major task for the local clinical scientist is to generate evidence that either supports or questions the applicability of scientific conclusions in particular cases. From this perspective, despite frequently heard arguments about practice being nonscientific, overgeneralization of research findings without due heed to case particulars is inappropriate and misleading.

Local knowledge (Geertz, 1983) refers to an understanding that is specific to a particular group, most typically a cultural or subcultural group. A great possibility for misunderstanding occurs when a clinician imposes a personal construction of reality on a group that may have an alternative construction. This easily can be seen if the patient is a member of a different ethnic, social, or cultural group. It also can be manifest in working with a family, in which the clinician may be unaware of the idiosyncratic rules and understandings that exist in a particular family. In each of these cases, an understanding of the local is at least as important as an understanding of people in general, as the latter may have scientific currency, but it can be either misleading or useless in a particular local situation.

Local also can refer to the idiosyncratic, or what has traditionally been thought of as the idiographic aspect of clinical inquiry. Many circumstances identified in daily clinical interactions are unique to the specific case, relate to little in the corpus of science, and are unlikely to be generalizable to the general fund of knowledge (e.g., particulars of a personal biography, of a family, or of events in an individual's life). In dealing with these local circumstances, the clinician has little to draw on, although phenotypically disparate items may be united by an understanding of their genotypic meaning.

Finally, there is the space–time conception of the local, which at the most specific level draws attention to the particulars of the observation itself for both the patient and the clinician. This can be seen as a problem of reliability, as in conceptualizing the exact conditions under which an observer would perceive a complicated event the same way a second time were it repeated, but it may be more complex than that. Even when properly identified from a scientific standpoint, the same event may signify different things on different days, as the everchanging nature of events creates more instability than is comfortable for a fixed and predictable world. Moreover, there are unique qualities of behavior and experience that are emergent as the personal events of life unfold in unique space–time sequences (Baron & Misovich, 1993; Trierweiler & Donovan, 1994). These emergent properties, which include such matters as the ways events are perceived and interpreted in relation to one another, good and bad luck, and happenstance, also involve those events of life influencing the professional as he or she approaches an inquiry (e.g., recently having read a pertinent scientific article, personal problems at home, last night's ruminations about possible economic failure, or attending an inspiring lecture). These complexities are omnipresent; they may affect any interpretive activity, including symptom identification or conclusions drawn from the most reliable test data, and they cannot be dismissed simply as error, for, once made, errors require some possibility for their correction in the local sphere (randomness is not random at the local level). Only professionals who are aware of such localized influences, either as they happen or afterwards in reflection, have a chance of adjusting their impact.

The several meanings that can be ascribed to *local* all share a sense of uniqueness and context-dependent meaning. Science, in that it prefers general rules, has a difficult time with specific events. The local clinical scientist is aware of these aspects of uniqueness and addresses them with a scientific attitude of inquiry. He or she particularly is aware that there may even be order in the chaos, so that events that appear unique may be subject to more general rules, just as they have aspects of specificity.

Science and the Clinician

The curriculum conference of the National Council of Schools of Professional Psychology (Peterson et al., 1991) defined psychological science as "a systematic mode of inquiry involving problem identification and the acquisition, organization, and interpretation of information pertaining to psychological phenomena. It strives to make that information consensually verifiable, replicable, and universally communicable" (Trierweiler & Stricker, 1991, p. 103). This is the familiar public and general definition of science, and it provides the context for the training of the local clinical scientist, who will seek to achieve the same goals in a context that is private and local. The clinical setting can be regarded as the laboratory for the clinician, and it must be approached with the same discipline, critical thinking, imagination, openness to falsification, and rigor that characterizes the scientist in the traditional laboratory. This is not to say that psychotherapy itself is a science, but that psychotherapists can act like scientists and, by doing so, further hone their craft to the benefit of the patients they serve.

Science, in its traditional form, seeks answers that are public and general. Practice, in its traditional form, is private and personal rather than public. More important, it is local rather than general, in that the relevant information often is unique to the situation under consideration. We can contrast the experimental method with the correlational method in much the same way as we contrast the scientist with the clinician. For the experimentalist, universal laws are sought and individual differences are a nuisance to be controlled and dismissed. For the correlationalist, individual differences are the heart of the subject matter, and control, in that it may restrict the range of observations, is a source of difficulty in the design.

The clinician in the consulting room creates hypotheses that, although private and unique to the local situation, theoretically might become public and subject to general scrutiny. The local clinical scientist must work toward recognizing the evidence in support of or in opposition to the clinical hypotheses, and must consider how evidence, probably nonexistent, might be gathered and used. Often this will involve hypotheses about information that is not currently available but that might become available with additional inquiry. The scientific metaphor must be applied in the local context, so that an understanding of science and scientific values leads to the generation of internally consistent formulations that are consistent with all extant data, both local and more general.

We do not believe that it is unethical to practice without having fully supportive scientific evidence (Singer, 1980); indeed, if such a stricture were in place, practitioners would be paralyzed and little help would occur in the local setting. Wishes for such certainty in practice are consistent neither with the limits of the existing body of scientific knowledge nor with the very real complexities of human psychological problems. However, we do believe that it is unethical to engage in practices that fly in the face of scientific evidence (Stricker, 1992). Preferred theories and techniques must give way or be revised if disconfirmatory evidence exists, but they remain the basis of action in the absence of such evidence. Local clinical scientists amass whatever data are relevant, combine these with the observations of the immediate setting and with experience gathered from years of local practice, and put it all together in the service of providing assistance to those in need. They become Sherlock Holmeses of the consulting room: learned and astute observers, consummate logicians, and effective agents in the local situation.

The Local Clinical Scientist

The notion of the clinician as a thinking scientist was foreshadowed by David Shakow, whose contributions to the original Boulder model cannot be overestimated, as that conference adopted much that had been suggested by the earlier Shakow report (American Psychological Association, Committee on Training in Clinical Psychology, 1947). In terms that are strikingly similar to our conception of the local clinical scientist, Shakow described the scientist-professional as

> a person who, on the basis of systematic knowledge about persons obtained primarily in real-life situations, has integrated this knowledge with psychological theory, and has then consistently regarded it with the questioning attitude of the scientist. In this image, clinical psychologists see themselves combining the idiographic and nomothetic approaches, both of which appear to them significant. (Shakow, 1976, p. 554)

This is not a picture of a cramped and stereotyped scientist–professional who remains in the laboratory performing traditional, big-science experiments while expressing disdain for the muddy complexities of the consulting room. Rather, it portrays a vibrant scientist–professional, a local clinical scientist who enters the world of the profession, providing assistance to patients but never forgetting his or her roots in the discipline of psychology, both as a science and as a practice.

At this point, we should note that the local clinical scientist model encourages critical, scientific thinking and the application of scientific knowledge to clinical issues, but the model also is consistent with conducting research. The clinician has a clear obligation to contribute to a public body of knowledge, as it is through this body of disciplinary knowledge that the real link between science and practice exists (Stricker, 1992). We do not reject laboratory research as an activity for the local clinical scientist: We see it as one among many methodologies that can add measurably to disciplinary knowledge.

The practicing clinician begins in a professional setting, addresses a problem of significance to the patient who presents it, and is faced with a need to respond to that problem in a humane and effective manner. If scientific knowledge is sufficient to the task, the situation is an easy one and desirable behavior for the clinician is readily apparent. However, it rarely is the case that scientific knowledge is sufficient, and yet action still is needed (even if the action is a conscious choice not to intervene). It is here, where science only presents at best a partial solution, that critical judgment becomes crucial. The local clinical scientist model recognizes that scientific training—even when it does not present a substantive solution—can provide an attitude and an orientation to the problem at hand that will lead to an informed solution that is the best the state of the art can generate.

There are several components of this scientific attitude that we espouse for the local clinical scientist (Trierweiler & Stricker, 1991, in press). There must be openness and receptivity to a multiplicity of approaches to a problem. There is no room for unbending rigidity or dogmatism. Empirical support, whether it is general or local, is valued greatly, but it is tempered by a skepticism about any foreclosed certainty. Professional responsibility and knowledge are valued highly, but cannot fade into the arrogance that comes of unwarranted certainty. The local clinical scientist must be aware of personal biases, as these serve to shape and to distort local observations. There is a need to be attuned to the ethical implications of interventions, and these can take on unexpected meanings in local settings. Finally, although clinical practice is a private enterprise, there is a need for collegial interaction and feedback. Each of these matters is part and parcel of clinical functioning, and each has its parallel for the practicing scientist. Thus, training in science and respect for these dimensions of functioning will be of demonstrable value to the clinician.

Implications of the Local Clinical Science Model

The local clinical science model views the clinician as functioning as a scientist in the local setting. Each clinical exchange takes place in a metaphoric scientific laboratory for the clinician. In a familiar way, the clinician must draw on the corpus of scientific psychological knowledge and apply it as relevant and appropriate. However, that body of knowledge is limited. It may not be as limited as is believed by some practitioners who appear to disdain or to dismiss the importance of science for practice (Matarazzo, as cited in Barlow, 1981). Nonetheless, the corpus is not as vast as would be needed to provide a consistent blueprint for clinical activity (McFall, 1991). Furthermore, the changing and unique nature of the local situation provides natural boundaries to the immediate applicability of most aspects of this body of knowledge. Therefore, the local clinical scientist is not simply an applied scientist. In fact, both Kanfer (1990) and D. R. Peterson (1991) saw the clinical process as beginning with the patient rather than with research, and they recognized that theory and experience as well as data must influence the course of the treatment.

The aspect of the local clinical science model that we view as novel is the vision of the clinician operating as an active scientist, not simply as an applied scientist, and approaching each clinical interaction as a problem to be solved, much as the scientist approaches problems in the laboratory. This conception has important implications for both the scientist and the clinician.

Implications for Science

An approach to science that begins with a passive participant who is studied and manipulated by an active and implacable (Wachtel, 1973) experimenter can provide some relevant data, but with limited applicability to the local clinical setting. This setting is more bidirectional in influence, the patient–participant is more active, and the therapist–experimenter must be more flexible. Therefore, the model of the participant that must be developed should incorporate these characteristics and must begin with, but go beyond, our traditional methodology (Stricker, 1992).

Criticisms of a logical positivistic approach to knowledge abound in the recent literature (see, e.g., Hoshmand & Polkinghorne, 1992). We share these concerns about logical positivism as a sole source of knowledge, but also recognize, as they do, the importance of the contributions of both logic (correct reasoning) and positivism (reliance on empirical observation) to the development of the understanding of a phenomenon under study. However, human phenomena do not exist in a pristine form, lying in wait to be discovered by the clever and relentless experimenter. Rather, they are partially constructed by the interaction between the participants, so that any methodology that does not account for the contributions of the experimenter as well as for those of the participant is bound to miss part of the picture and to have limited generalizability as a result. The results of traditional experimentation have a good deal to offer the clinician, but they do not contain, or even promise to reveal, the secrets of the sum and substance of human functioning. An expansion of our approach to the discovery of verifiable and generalizable knowledge is necessary, and this expansion will not only rebound to the benefit of the clinician but also will add to the comprehensiveness and power of our science.

Approaches to the discovery of knowledge that supplement traditional experimental approaches have been described in great detail (e.g., Polkinghorne, 1983). Many of these alternative approaches stem from the existential–phenomenological or hermeneutic traditions. They do not have the advantage of careful, objective, reproducible reflections of an object world. They do introduce the possibility of applying a more subjective, personal methodology to the study of the most subjective and personal of all objects, the human being. Our recommendation is not to choose between the two, or to select any methodology as prized above others, but to recognize the strengths and weaknesses of each method and to look for convergences among them as we seek to understand the phenomena that we study.

Implications for Clinical Practice

There are three separate ways in which science, as viewed within the local clinical science model, can contribute to the functioning of the individual clinician. The first of these is the usual recognition that the findings of psychological science may be applicable to the clinical problem under study. For example, the justification for the efficacy of psychotherapy is rooted in decades of research (Smith, Glass, & Miller, 1980), so that the defense of the therapeutic enterprise can be undertaken on the basis of scientific evidence. Specific approaches to treatment have been validated empirically (Task Force on Promotion and Dissemination of Psychological Procedures, 1995), and these techniques are available to the clinician familiar with the scientific literature.

A second, more indirect value of science to the clinician rests in the use of scientific thinking in the clinical setting. The clinician in a local setting is faced with a myriad of observations and with the task of combining these observations in a manner that allows for the development of an effective plan for interventions. The basis for combining the observations is the theory held by the clinician. The theory provides a lens through which the clinician looks, and the lens necessarily admits some sources of light and omits others. The insufficiency of any single theory may be the reason for the growing popularity of psychotherapy integration (Stricker, 1994; Stricker & Gold, 1993).

The critical question for the practicing clinician concerns the basis for belief: Why should any one formulation be valorized above all others? It is here that the local clinician can draw on the critical thinking that is endemic to the scientific enterprise. Science, because it provides evidence to support belief, is a superior means of justifying belief than are appeals to authority, to tradition, or to blind belief—avenues of justification that may be too common for some clinicians functioning at a lesser level of scientific input.

Third, the clinical interaction can be seen as parallel to the scientific interaction, and so factors that affect the integrity of scientific conclusions can be instructive to the clinician who is seeking to justify beliefs and to understand the local interaction. Trierweiler and Stricker (1991, in press) discussed many examples of how methodological concerns raise important critical questions for the local clinical scientist. We will discuss three of these to provide some examples of how vital this connection can be.

Cook and Campbell (1979), in the course of presenting a discussion and evaluation of quasi-experimental approaches to research in field settings, listed a series of threats to experimental design, each of which compromise the internal validity—or the ability of the scientist to draw definitive conclusions—of the experiment. For example, statistical regression is a threat to experiments in that participants who are initially from an extreme group are likely to show changes (regression to the mean) independent of any experimental intervention. In a parallel fashion, patients often seek treatment at a point when they are feeling maximum distress. Awareness of statistical regression will make the local clinical scientist aware that apparent salutary changes may not be due to the effects of psychotherapy but to expectable measurement errors. An experimenter can correct this threat by means of a control group, but there are no control groups in local clinical settings, so the clinician simply must be aware of this tendency and be accordingly humble.

Miles and Huberman (1994) discussed approaches to qualitative data analysis, an alternative to more traditional methodology that we recommend as an additional source of potentially converging data. One problem raised by qualitative data analysis is that extensive data reduction is required, calling for coding strategies that are related logically to the questions being investigated. Similarly, in the local clinical setting, we are presented with unbounded verbal data and are faced with the task of making sense of this information. The same methods used by the qualitative analyst to identify relevant data and summarize it in a useful form may be of value to the clinician who conceptualizes the task in this manner.

Cronbach (1982) was concerned with evaluation research, a method by which programs in field settings are evaluated. It is important for the evaluation researcher to assess programs on dimensions that are relevant to the program being evaluated. It is equally important for the clinician to respond to issues that are of relevance to the patient being seen. Just as it would be easy for the evaluation specialist to measure that which is easily measurable, regardless of relevance, it would be easy for the clinician to respond to familiar and easily recognizable themes, regardless of relevance to the patient. In neither case is a service being rendered, despite the elegance of the attempt.

Conclusions

Ever since the initial promulgation of the scientist–practitioner model, there has been a growing antagonism between a large number of programs that attempt to train a small number of scientists and a small number of programs that attempt to train a large number of practitioners (Stricker & Cummings, 1992). The tension between the scientist's public quest for generalized knowledge and the practitioner's private quest for specific application has worked to the detriment of the grand and ambitious vision of the synergistic blending of the two roles into a single scientist–practitioner (Raimy, 1950).

Clinical psychology can be conceptualized as a field that embraces both science and practice and, by doing so, achieves the scientist–practitioner model (Stricker, 1992). Although very few single psychologists actually combine both aspects of the discipline in their daily functioning, the cumulative efforts of these people produce a discipline that has the breadth to claim title to being scientist–practitioner in its activities. However, with the introduction of the local clinical scientist model, we have identified an alternative path for the discipline to reach scientist–practitioner status.

The gap between science and practice was initially seen as inimical to the development of a mature clinical psychology (Raimy, 1950), and the scientist–practitioner model was offered as a bridge that would allow the contributions of the two to be combined in a single individual. Political and pedagogical forces combined to undermine efforts to actualize that model in reality, despite repeated lip service to it (Stricker & Cummings, 1992). Rather than seeing science and practice as antithetical, we view the key distinction as being between the local and the general. We believe that the local clinical scientist model, which encourages the application of scientific knowledge and the scientific attitude to the local clinical setting, provides the bridge that is necessary for the development of the individual scientist–practitioner.

REFERENCES

American Psychological Association. (1986). *Accreditation handbook.* Washington, DC: Author.

American Psychological Association, Committee on Training in Clinical Psychology. (1947). Recommended graduate training program in clinical psychology. *American Psychologist, 2,* 539-558.

Barlow, D. H. (1981). On the relation of clinical research to clinical practice: Current issues, new directions. *Journal of Consulting and Clinical Psychology, 49,* 147-155.

Baron, R. M., & Misovich, S. J. (1993). Dispositional knowing from an ecological perspective. *Personality and Social Psychology Bulletin, 19.* 541-552.

Belar, C. D., & Perry, N. W. (Eds.). (1992). National Conference on Scientist–Practitioner Education and Training for the Professional Practice of Psychology. *American Psychologist, 47,* 71-75.

Beutler, L. E., Williams, R. E., Wakefield, P. J., & Entwistle, S. R. (1995). Bridging scientist and practitioner perspectives in clinical psychology. *American Psychologist, 50,* 984–994.

Bourg, E. R., Bent, R. J., Callan, J. E., Jones, N. F., McHolland, J., & Stricker, G. (1987). *Standards and evaluation in the education and training of professional psychologists: Knowledge, attitudes, and skills.* Norman, OK: Transcript Press.

Cook, T. D., & Campbell, D. T. (1979). *Quasi-experimental design: Design and analysis issues for field settings.* Boston: Houghton Mifflin.

Cronbach, L. J. (1975). Beyond the two disciplines of scientific psychology. *American Psychologist, 30,* 116-127.

Cronbach, L. J. (1982). *Designing evaluations of educational and social programs.* San Francisco: Jossey-Bass.

Flexner, A. (1925). *Medical education: A comparative study.* New York: Macmillan.

Geertz, C. (1983). *Local knowledge: Further essays in interpretive anthropology.* New York: Basic Books.

Geiger, G. (1941/1992). Philosophy and social change. *Antioch Review, 50,* 15-27.

Hoshmand, L. T., & Polkinghorne, D. E. (1992). Redefining the science–practice relationship and professional training. *American Psychologist, 47,* 55-66.

Kanfer, F. H. (1990). The scientist–practitioner connection: A bridge in need of constant attention. *Professional Psychology: Research and Practice, 21,* 264-270.

Korman, M. (Ed.). (1976). *Levels and patterns of professional training in psychology.* Washington, DC: American Psychological Association.

McFall, R. M. (1991). Manifesto for a science of clinical psychology. *The Clinical Psychologist, 44,* 75-88.

Meehl, P. E. (1954). *Clinical versus statistical prediction: A theoretical analysis and a review of the evidence.* Minneapolis: University of Minnesota Press.

Meehl, P. E., & Rosen, A. (1955). Antecedent probability and the efficiency of psychometric signs, patterns, or cutting scores. *Psychological Bulletin, 52,* 194-216.

Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: A sourcebook of new methods* (2nd ed.). Beverly Hills, CA: Sage.

Peterson, D. R. (1991). Connection and disconnection of research and practice in the education of professional psychologists. *American Psychologist, 46,* 422-429.

Peterson, R. L., McHolland, J. D., Bent, R. J., Davis-Russell, E., Edwall, G. E., Polite, K., Singer, D. L., & Stricker, G. (Eds.). (1991). *The core curriculum in professional psychology.* Washington, DC: American Psychological Association.

Polkinghorne, D. (1983). *Methodology for the human sciences: Systems of inquiry.* Albany: State University of New York Press.

Raimy, V. (Ed.). (1950). *Training in clinical psychology.* New York: Prentice-Hall.

Shakow, D. (1976). What is clinical psychology? *American Psychologist, 31,* 553-560.

Singer, J. L. (1980). The scientific basis of psychotherapeutic practice: A question of value and ethics. *Psychotherapy: Theory, Research and Practice, 17,* 372-383.

Smith, M. L., Glass, G. V., & Miller, T. I. (1980). *The benefits of psychotherapy.* Baltimore: Johns Hopkins University Press.

Stricker, G. (1992). The relationship of research to clinical practice. *American Psychologist, 47,* 543-549.

Stricker, G. (1994). Reflections on psychotherapy integration. *Clinical Psychology: Science and Practice, 1,* 3-12.

Stricker, G., & Cummings, N. A. (1992). The professional school movement. In D. K. Freedheim (Ed.), *History of psychotherapy: A century of change* (pp. 801-828). Washington, DC: American Psychological Association.

Stricker, G., & Gold, J. R. (Eds.). (1993). *The comprehensive handbook of psychotherapy integration.* New York: Plenum Press.

Stricker, G., & Kiesner, R. H. (1985). The relationship between research and practice. In G. Stricker & R. H. Kiesner (Eds.), *From research to clinical practice* (pp. 3-14). New York: Plenum Press.

Task Force on Promotion and Dissemination of Psychological Procedures. (1995). Training in and dissemination of empirically-validated psychological treatments: Report and recommendations. *The Clinical Psychologist, 48,* 3-23.

Trierweiler, S. J., & Donovan, C. M. (1994). Exploring the ecological foundations of memory in psychotherapy: Interpersonal affordance, perception, and recollection in real time. *Clinical Psychology Review, 14,* 301-326.

Trierweiler, S. J., & Stricker, G. (1991). The research and evaluation competency: Training the local clinical scientist. In R. L. Peterson, J. D. McHolland, R. J. Bent, E. Davis-Russell, G. E. Edwall, K. Polite, D. L. Singer, & G. Stricker (Eds.), *The core curriculum in professional psychology* (pp. 103-113). Washington, DC: American Psychological Association.

Trierweiler, S. J., & Stricker, G. (in press). *Toward the scientific practice of professional psychology: Methodology for the local clinical scientist.* New York: Plenum Press.

Wachtel, P. (1973). Psychodynamic behavior therapy and the implacable experimenter: An inquiry into the consistency of personality. *Journal of Abnormal Psychology, 82,* 324-334.

Wolfe, B. E. (in press). Introduction to special issue on the treatment of panic disorder. *In Session, 1.*