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The Boulder Model: History, Rationale, and Critique

Although the current philosophy of education in clinical psychology allows for the existence of a program of training clinical psychologists who primarily want to be practitioners in conjunction with the more traditional scientist-practitioner (Boulder Model) program, departments of psychology have been reticent to adopt two-track programs. Indeed, the controversy as to the heuristic value of the scientist-practitioner program versus the practitioner program continues. The criticism of the Boulder Model is that the rationale for requiring clinical psychology students to learn to do research as well as train to be clinicians was spurious; the Boulder Model trains students as researchers, a role that is incompatible with their interests and abilities. The history of the development of the Boulder Model was reviewed as were the data regarding the personality traits, interests, and abilities of people interested in research versus service work. These data indicate that the objections of the critics are well-founded.

Most of us would agree that the scientist-practitioner model has not only served us well but has been enormously successful. (Strickland, 1983, p. 25)

This assessment was made by the current president of the Division of Clinical Psychology. Strickland is not alone in her praise of the Boulder Model. Indeed, ever since the Boulder Conference (Raimy, 1950), when psychology gave public support for the scientist-practitioner model of training in clinical psychology, there have been many others who have expressed a similar positive sentiment—for example, the participants in the Stanford Conference (Strother, 1957), the Miami Conference (Roe, Gustad, Moore, Ross, & Skodak, 1959), Glickman and Di Scipio (1975), Perry (1979), Shakow (1965, 1976, 1978), Thelan and Ewing (1970), Webb (1969-70), Wiens (1969-70), and most of those who participated in a symposium on training at the American Psychological Association (APA) convention in August of 1982 (Adams, 1982; Carson, 1982; Garfield, 1982; Katkin, 1982).

However, psychologists have not always assessed the Boulder Model so positively. The essence of the Boulder Model is that the student in clinical psychology should be trained in research skills as well as clinical skills. There are those who are not convinced that the same person could (or should) be trained in both applied and research techniques (e.g., Albee, 1970; Albee & Loeffler, 1971; Clark, 1957; Cook, 1958; Hughes, 1952; Levy, 1962; Meehl, 1971; Paterson, 1948; Peterson, 1968, 1971, 1976; Raush, 1974; Strupp, 1976, 1982; Thorne, 1947; Tryon, 1963). Concerns regarding the viability of the Boulder Model have even been expressed by participants of some APA committees and conferences on training (e.g., APA, 1951, 1956; by members of the Estes Park Conference, APA, 1959; the Clark Committee, 1965, 1967; the Chicago Conference, Hoch, Ross & Winder, 1966; the Kurz Committee, 1969-70; and the Vail Conference, Korman, 1976). Essentially, the criticisms of the scientist-practitioner (Boulder) model have centered around two major issues. One issue has been philosophical, namely, that there is no validity to the necessity of research training for the clinician (Hughes, 1952; Meehl, 1971). A second criticism has been psychological, namely, that the interest in and talent for research and the interest in and talent for

applied work are incompatible (e.g., Albee, 1970; Albee & Loeffler, 1971; Clark, 1957; some members of the Clark Committee, 1967; Cook, 1958; Meehl, 1971; Peterson, 1968, 1971, 1976).

Because participants, when they are at conferences, in committee meetings, or writing position papers, are invited to express their opinions, these presentations tend not to involve the presentation of data. However, there are data to support the position that the scientist-practitioner model does not foster the development of the kind of psychologist (i.e., the scientist-practitioner) for which it was intended. The purpose of this article is to document, with psychological data, the opinions of those who have questioned the viability of the Boulder Model.

Most students enter their clinical training having had some experience with research (e.g., in a variety of undergraduate courses, laboratory courses in other sciences, and/or a laboratory course in experimental psychology, and a course in statistics). But during the course of their doctoral education they are supposed to receive rather intensive research training. If we consider research training as a "treatment effect," we can consider doctoral education as a kind of experiment. We would look for some evidence that the "treatment" has had an appreciable effect; research output will be considered the dependent variable. With regard to research output, the data are twofold: (a) Many students have such difficulty doing their dissertations that they cannot even conduct and write up that *one* piece of research that will help them earn the degree for which they have worked so hard (the so-called "ABD," of which most departments have their share), and (b) surveys indicate that once graduated, only a relatively small number of clinical psychologists publish (see, e.g., surveys by Bornstein & Wollershein, 1978; Garfield & Kurtz, 1974; Kelley & Fiske, 1951; Kelly & Goldberg, 1959; Kelly, Goldberg, Fiske, & Kilkowski, 1978; Levy, 1962; Pasewark, Fitzgerald, Thornton, & Sawyer, 1973; Steinhelber & Gaynor, 1981). Indeed, Cohen (1979) found that once graduated, clinical psychologists tend not to even be interested in *reading* about research.

In short, then, we cannot reject the null hypothesis. Education for research seems to have no appreciable effect on the postgraduate activity of the majority of clinical psychologists. The Boulder Model does not seem to produce many scientist-practitioners. Of course, there may be other variables, either acting alone or in consort with the variable of the Boulder Model to account for the low rate of scientific activity in graduate clinical psychologists. We examine these variables.

One possibility as to why we fail to develop an interest in doing research might be

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the way the research skills are taught. Surely, one cannot state that a year's course in statistics and a year's course in research design (the usual content of the research training in the average doctoral program in clinical psychology) is sufficient to enable anyone to feel comfortable with the notion that they can do research. When we teach clinical skills, we make every effort to ensure competence in the student; there are a variety of supervised experiences, from practica to internship, plus group discussions (case conferences). It takes years to develop clinical skills—why do we treat the learning of research skills differently?

Another factor has to do with the attitudes clinical and nonclinical faculty sometimes express toward clinical research. The nonclinical faculty often feels that basic research on psychological processes must be done before one does applied research or applied work. Further, the nonclinical faculty often believe that the kind of experimental controls, research design, and mode of data analysis clinical researchers employ are not stringent enough, and hence, clinical research does not constitute "good" research. The attitude of the clinical faculty might be that nonclinical research is not relevant for the clinical enterprise; that research on clinical issues is too difficult to conduct because there are so (too) many variables that have to be accounted for, variables for which the research designs and data analysis are not effective. The attitude of clinicians sometimes is that research is a waste of time; clinical acumen is all that is needed to solve clinical problems. *Both* clinical and nonclinical faculty tend to share the opinion that students do research while they are being educated only because they are required to. The faculty see that their students want to be clinicians; they are not really interested in their students' work on their theses and/or dissertations; they see this duty as a chore and can inadvertently communicate this perception to their graduate students. Anyone having taught in a clinical doctoral program will recognize representatives of at least one, if not more, of these attitudes in those faculties.

A third possibility may have to do with the models the student are exposed to during the course of their education. The clinical psychologist who opts for an academic career generally is not interested in an active (certainly not full time) clinical career; also, their deans and chairpersons would not approve of them expending such a great deal of time away from university business. Moreover, universities cherish the image of their faculty as "scholars" and not as "tradespeople." On the other hand, the positions of psychologists who opt for clinical careers, their positions at clinics or hospitals are for service; research is sometimes seen as something that detracts from the professional's hospital or clinical time. Thus the clinical supervisor the student will meet will most often not be doing research. Thus the role models the students tend to encounter during the course of their training may not match the scientist-practitioner model.

A fourth possibility has to do with vocational reality. When a student graduates and secures a position, for example, with either a clinic or a hospital, they are then expected to provide direct service to patients. Research is not considered direct service and certainly does not add to the income-producing of staff that is necessary for the continuation of the clinic or the hospital. And once the psychologist becomes eligible for private practice, time is money, and it may take a long time (if ever) before the psychologist can afford to engage in such non-income-producing activity as research or writing.

But whether these above-mentioned factors can be considered influential in the low productivity of clinical psychologists, there is, yet, a fifth factor that must be taken into

consideration. This factor has been accorded little consideration by the proponents of the Boulder Model, and one that *by itself* can account for the limited research activity of clinical psychologists. I refer here to individual differences in talent and interest for research. This variable alone can account for whether a psychologist opts for an academic or an applied career.

Some psychologists have argued that research and clinical work involve the same approach toward data, that they both require a scientific attitude. This has been the rationale for the Boulder Model. I believe, as some others do, that clinical work and research work necessitate *different* attitudes, talents, and interests. In this regard, Lloyd Humphreys has commented

The professional and the academic . . . have different needs in graduate training. Training for research consumption and application versus research production constitutes one brief summary of these differences . . . In addition . . . the two groups differ psychologically in terms of their value systems, their interests and attitudes . . . The constellation of traits related to the roles are approximately orthogonal. (Humphreys in Clark, 1967, p. 57)

And Paul Meehl (in Clark, 1967) has commented

The attitudes and skills are two broad sorts, clinical and research-consuming. Both of these presuppose a solid "basic science" foundation; neither presupposes personal research productivity. (p. 61)

The great majority of clinical practitioners never publish any research . . . Most of them are not interested in functioning as research producers. (pp. 61-62)

It is psychologically possible for an individual to be bright, well informed in the preclinical behavioral and biological sciences, and to have a critical, 'scientific' habit of mind, *without* being personally engaged in research activity. The skills of a *research consumer* are only partially overlapping with those of the *research producer*. (p. 62)

The correlation between scientific interests and 'helping' interests is at best negligible and may actually be negative. (p. 55)

Eberhart has commented

A system or an atmosphere which in effect requires the talented and untalented alike to 'do' research is a bad system both from the standpoint of the science and of the people who are involved. (Eberhart in Clark, 1967, p. 71)

It can be assumed that a clinical psychologist of any vocational persuasion—a research worker, teacher, or clinician—is interested in the study of human beings. What would appear to differentiate one psychologist from another is that one (the scientist) wants to find generalities and universalities in behavior, whereas the other (the humanist) wants to discover information about *a* person that can be used to help that person. Although both these orientations can exist in one psychologist, experience has shown that this tends not to be the case; psychologists tend to be characterized by the scientific *or* the applied tradition, and they lead their professional lives accordingly. What I think underlies the differences between the person interested in a career in research and the person interested in a career in clinical service is the age-old scientist-humanist differentiation. But I would like to present psychological data that suggest that the scientist-humanist differentiation, in general, and—in particular in psychology—does not just constitute ideological differences but actually constitutes two different temperaments.

Scientist-Humanist Differentiation in General

The scientist-humanist differentiation, in general, has been acknowledged for a long time. Both Aristotle and Descartes were concerned with this issue (Berenda, 1957), and it is a differentiation found in all fields of study (Koch, 1961). In psychology, the scientist-humanist differentiation was noted early on by Titchener (Cook, 1958) and James (Berenda, 1957) as well as by, for example, Bingham (1923) Klein (1932), McDougall (1922), and Skaggs (1934). However hard we may have tried to attenuate this difference in the education of psychologists, we have obviously not been successful in doing so.

VOCATIONAL INTERESTS

With regard to the scientist-humanist differentiation in general (that is, as may be found in any area of study), research demonstrates that this differentiation represents two differing vocational interest patterns. Individuals interested in service work (toward individuals or society—the humanists) demonstrate significantly different (and in some instances, mutually exclusive) vocational interests than do those more interested in technical, scientific pursuits (Creaser, 1976; Farnsworth, 1969; Goodman, 1942; Holland, 1973; Holland, Krause, Nixon & Trembath, 1953; Kuder, 1951; MacPhail & Thompson, 1952; Nafziger & Helms, 1974; Roe, 1953; Rounds & Dawis, 1979; Segal, 1961; Terman, 1954; Tyler, 1964). Those interested in the humanistic approach to life share vocational interests with, for example, ministers, teachers, artists, writers, and musicians, whereas those interested in science tend to share vocational interests with those interested in the formal study of things, such as laboratory technicians, laboratory scientists, and those interested in math and/or accounting.

Research indicates that vocational interests associated with the scientist-humanist differentiation are identifiable early in a person's life, clearly by adolescence (e.g., Meyer & Penfold, 1961; Rowlands, 1961; Terman, 1954; Tyler, 1964).

PERSONALITY TRAITS

Research indicates that the scientist-humanist differentiation reflects differences in personality. For example, those interested in scientific pursuits tend to be introversive (Bendig, 1963; Cattell & Drevdahl, 1955; Goldschmid, 1967; Johannson, 1970; Roe, 1953), self-sufficient (Cattell & Drevdahl, 1955), and have a strong need for autonomy (Roe, 1953). They tend to be prudent, conventional, and energetic, show a preference for overt action, are pragmatic, may be relatively free from manifest self-doubts, have a relatively good sense of well-being, manifest good control over their impulses, show a restricted range of interests, and tend to prefer the familiar (Goldschmid, 1967). On the other hand, humanists tend to be extroverted (Bendig, 1963; Cattell & Drevdahl, 1955; Goldschmid, 1967; Johannson, 1970; Roe, 1953), ambitious and self-centered, impatient, have difficulty binding tensions, are emotionally expressive, exhibit a wide range of interests, and are involved in political and social affairs (Goldschmid, 1967).

COGNITIVE ABILITIES

Research demonstrates that there are cognitive differences between the scientist and

ON THE BOULDER MODEL

the humanist. Persons interested in scientific pursuits tend to have strong abstract abilities, tend toward formalized, objective thinking (Roe, 1947), and are field-independent (Sofman, Hajosy, & Vojtisek, 1976). Their thinking shows a preference for what is logical, precise, pragmatic, value-free, and structured. Humanists, on the other hand, tend to be field-dependent, and they prefer the imaginative, the creative, and the personal; they prefer the intuitive approach, the innovative, and the ambiguous (Goldschmid, 1967).

FAMILY BACKGROUND

Goldschmid has written that the research "findings suggest that the [humanist-scientist] split . . . is the result of deep-seated and long-standing personality differences rather than of . . . educational orientation" (Goldschmid, 1967, p. 307). The research by Laurent (1951) supports such an idea, and Roe (1957) has even developed a theory that the scientist-humanist differentiation reflects differences in family backgrounds and childhood experiences. Roe (1957) hypothesized that people who were brought up in a family atmosphere that was warm, attentive (if not overprotective), and child-centered, would prefer social service vocations, whereas those brought up in a cold, non-child-oriented family would prefer non-person-type vocations (e.g., science or technology). Although not all the research confirms Roe's hypothesis (e.g., Grigg, 1959; Switzer, Grigg, Miller, & Young, 1962), some research does (e.g., Hagen, 1960; Utton, 1962). Nachmann (1960) found that lawyers and dentists tend to have a father-dominated, impulse-repressing family, whereas those in social work tend to come from mother-dominated, impulse-channeling families, families in which the children are taught concern for human suffering. In comparing the child development experience of clinical psychologists and physicists, Galinsky (1962) found that as children, clinical psychologists were encouraged to be curious about people, were raised in mother-dominated families, and were intensively involved with members of the family but where family discipline seemed to be lax. On the other hand, Galinsky found that the physicists came from father-dominated families, families that were more authoritarian in structure and had fewer intense interpersonal involvement. Although the research on child development here might be criticized for assuming an isomorphic attitude between early experience and adult behavior, there are, nonetheless, some interesting trends that cannot be ignored.

Scientist-Humanist Differentiation in Psychology

VOCATIONAL INTERESTS

We have established that the scientist-humanist differentiation in many disciplines suggests that the scientist and the humanist are different kinds of people. Research on the scientist-humanist differentiation in psychology demonstrates that the research psychologist shares values and attitudes with people in the physical sciences, with those involved in math and mechanical work (Baas, 1950; Kriedt, 1949; Loiterstein, 1976), and with physicians, dentists, engineers, and chemists (Kelly & Fiske, 1950). In contrast, clinical psychologists share interests, attitudes, and values with people interested in social service, with those who have literary and artistic bends (Baas, 1950; Kriedt, 1949), and with those who are in personnel work, YMCA work, sales, or law (Kelly & Fiske, 1950). In fact, research (Thorndike, 1954) demonstrates that the

value systems and interests of clinicians are almost diametrically opposed to that of research psychologists. The research psychologist is interested in laboratory experimentation, data analysis, and manifests a low interest in the study of the individual and nonlaboratory data. The clinical psychologist is interested in the study of the individual, nonlaboratory data, pioneering thinking, and reflects a low interest in laboratory experimentation. Clinicians tend not to be interested in doing research (Loiterstein, 1976). And if one correlates the interest in helping people with that of interest in experimentation, the result is $-.29$ (Thorndike, 1955) or $-.52$ (Kriedt, 1949). An important datum for our consideration is that although experimental psychologists are interested in scholarly activities (.42), clinicians are not ($-.17$, Thorndike, 1955). The scientist tends to be conservative and tends not to draw conclusions until all the data are in, whereas the clinician must be able to make inferences and even draw conclusions in the absence of the complete set of data. Clinicians may use intuition to supplement their logic, whereas scientists set greater store on logic (Hathaway, 1958; Shaffer, 1953).

NEEDS

Research demonstrates that the academic/research person and the clinician have different *needs*. The clinician tends to be high on the Need for Nurturance (*n Nurt*; Schuldt & Smee, 1968; Siess & Jackson, 1970), whereas the experimental psychologist tends to be high on the Needs for Achievement, Autonomy, and Aggression (*n Ach*, *n Aut*, and *n Agg*; Schuldt & Smee, 1968).

PERSONALITY TRAITS

Research demonstrates that clinicians differ from research psychologists in terms of personality traits. Kelly and Goldberg (1959) found academicians were high on such factors as curiosity and creativity and low on altruism; the clinicians were high on altruism and low on curiosity and creativity. Nagle (1967) found that clinical students tend to be higher on the Internal side of Rotter's Internal-External Scale and more defensive (as measured by Byrne's Repression-Sensitization Scale). Perry (1975) found that although clinicians and research psychologists were not differentiated on the bipolar factors of extraversion-introversion, sensation-intuition, or judgment-perception, they were differentiated on the factor of thinking-feeling. Clinicians tended to be characterized by the feeling dimension; researchers, by the thinking dimension.

In a comprehensive study of clinicians and academicians (employing the Strong Vocational Interest Blank, the Miller Analogies Test, the Minnesota Multiphasic Personality Inventory, the Guilford-Martin Personality Inventory, the Allport-Vernon Scale of Values, Thurstone's Primary Mental Abilities, the Rorschach, the Thematic Apperception Test, the Bender-Gestalt, sentence-completion and an autobiographical sketch), Goldberg (1959) found the following: (a) clinicians were the eldest child (the academicians were the middle or youngest); (b) clinicians reported considerable friction with their fathers (the academicians reported hardly any); (c) both clinicians and academicians reported experiencing feelings of insecurity in childhood; (d) both the clinicians and the research psychologists tended to be Jewish as compared to those who went into administration, who tended to be Christian; (e) both clinicians and academicians reported having permissive parents and did not participate much in college

sports; (f) the academicians cut class more often in college, scored higher on the Miller Analogies Test, on the Strong Vocational Interest Blank (math/science interests), and on the Guilford-Martin Personality Inventory (objectivity).

COGNITIVE ABILITIES

Research demonstrates differences between research psychologists and clinical psychologists with regard to cognitive style. Nagle (1967) found that clinical students tend to be lower on field-independence (as measured by the Embedded Figures Test) than were nonclinical students. Roe (1956) found that as compared to clinical psychologists, research psychologists showed a $P > V$ (performance > verbal) pattern on the Wechsler Adult Intelligence Scale.

CHILDHOOD EXPERIENCE

The research psychologist and the clinician report somewhat different childhood experiences. Medvene (1970) found that although both person-oriented and the non-person-oriented psychologists describe their parents as "distant," person-oriented psychologists describe their parents as accepting and caring. Goldberg (1959) found that the clinician reported more variation in the type of childhood experiences they had than the academicians reported; the reports of the academicians about their early family lives tended to be relatively homogenous, the clinicians, much more varied.

The data presented thus far suggest that the research psychologist and the clinician are, to some extent, different kinds of people. This inference is based on the observation that differences emerged between the two with regard to vocational interests as well as values, needs, traits, and even, to some extent, cognitive functioning and early childhood experience. To add to this array of data, I add one more datum: neurophysiology.

CEREBRAL DOMINANCE

Early reviews of research suggested that the left and the right halves of the brain eventuate in different modes of processing information (e.g., Gazzaniga, 1970; Kimura, 1973). The more current research on cerebral dominance (e.g., Searleman, 1977; Tomlinson-Keasey & Kelly, 1979; Zaidel, 1979) indicates that the psychological functioning of each side of the brain is not as clear-cut and distinct as first thought. Moreover, research has found difficulty with the measures of lateral dominance (e.g., Colbourn, 1978; Stone, 1980) and has ignored the influence of moderator variables (e.g., Callaway, 1975). Nevertheless, there are sufficient data to reflect on the apparent differences in modes of cognition and styles of information processing, as well as personality traits, of left- and right-brain-dominant people.

Left-brain people tend to be more organized, more objective, and more formal in their mode of thinking than are right-brain people; right-brain people seem to be less organized, more idiosyncratic, and more creative and poetic in their mode of thinking than are left-brain people (e.g., Binder, 1976; Birkett, 1977; Dimond & Beaumont, 1974; Doyle, Ornstein, & Galin, 1974; Erlichman & Weinberger, 1978; Etaugh, 1972; Kimura, 1973; Kraft, Mitchell, Languis, & Wheatley, 1980; Martin, 1979; Shaffer, 1974; Smokler & Shevrin, 1979; Tucker, 1981; Umlita, Bagnara, & Simion, 1978;

Wexler, 1980). I suggest that the differences between left-right cerebral dominance are similar to some of the differences found between the scientist and the humanist. There are some data that support this hypothesis. Weiten and Etaugh (1973) found that left-brain dominance was associated with students who were majors in science and quantitative fields in college and who had minimal interests in social studies. Bakan (1969) found that right-brain people had more humanistic interests and performed poorly on mathematical problems. However, as yet, there has been no research that directly studies the lateral dominance of research psychologists and clinicians or clinical psychologists interested in an applied career versus those interested in an academic career.

What I think I have been able to demonstrate is that research on interests, values, needs, traits, cognitive styles, early childhood experiences, and even cerebral dominance strongly suggests that there are real differences between psychologists interested in doing research and psychologists primarily interested in clinical work. These psychological differences seem to be part of two rather different temperaments, and one would not expect that basic temperaments change easily, if at all. Therefore, it would appear that the Boulder Model, which tries to instill an active research attitude in students who are in training to be clinicians, may, in fact, be attempting the impossible. If the critics of this line of reasoning point to those clinical psychologists who do engage in scholarly and/or scientific writing as an invalidation of my argument, I would submit that those few psychologists who are interested in both clinical service and research came into their doctoral programs with this proclivity preexisting. Their interests and abilities were but consonant with the intent of the program. To expose the many to only what the few are interested in seems, at best, unkind. The data presented in this article suggest that those psychologists who have criticized the Boulder Model for being unrealistic and further, for not being a useful model for training in clinical psychology, were justified.

In light of the questionable validity of the Boulder Model, we should ask how such a development occurred. Meehl queried

Why do we assume that the only way to be intellectually responsible, scientifically informed, and scholarly in attitude is to be a producer of research? The world—even the academic world—is full of people who are extremely well informed, have very able minds, and a thoroughly scholarly attitude, who are not research-productive. (Meehl, 1971, p. 64)

It should be noted that the scientist-practitioner model was not the original model for the education of the clinical psychologist. Gesell, Goddard, and Wallin (1919), Poffenberger (1938, 1945), and the participants in several APA committees on graduate education (Moore, 1943; Sears, 1947) all expounded the philosophy that clinical training should be grounded *in* and *on* research in psychology. It was Shakow (1945) who thought differently. Shakow's opinion was that the clinical psychologist should be trained to *do* research, and the two APA committees on graduate education he chaired (Shakow et al., 1945; Shakow et al., 1947) made that recommendation to the APA. It was that philosophy that was articulated at the Boulder Conference in 1949.

The reasons for the shift from the philosophy that clinical training should be grounded *in* research to one in which the clinical student is expected to *do* research were not, in my opinion, ideological or philosophical, but socio-political. The Shakow Committee (Shakow et al., 1947) made particular reference to "the special contribution

of the psychologist as a research worker" (p. 543). To understand this emphasis we need to look at the socio-political events of that era that influenced developments in clinical psychology.

The exigencies of World War II necessitated that psychiatrists request the aid of psychologists in dealing with the enormous number of psychological and psychiatric casualties the war was producing. Although psychiatrists had to solicit the help of the psychologist in doing treatment as well as in assessment in this time of crisis, psychiatry was unwilling to accept the psychologist as an equal partner in the mental health enterprise. A psychologist could use tests to assist the psychiatrist in making a diagnosis, and a psychologist might engage in psychotherapy if he or she was supervised by a psychiatrist. To establish a position in the mental health field independent of the psychiatrist's authority and rule, I submit that research, the traditional training for the PhD, was invoked. The early model of training in clinical psychology did not include research. To free the clinical psychologist from complete domination by the psychiatrist, a research component now had to be added to the existing clinical programs.

Another reason for the development of the scientist-practitioner model had to do with the politics *within* psychology. It must be acknowledged that there have always been two major modes of interest in psychology: the nomothetic (that is, the search for universal laws of behavior) and the idiographic (that is, the exploration of individual differences between and within individuals). Because the history of science in psychology tends to focus on the contributions of Wundt (i.e., the search for general laws of behavior), we tend to forget that other trends had already existed in psychology even before Wundt opened his laboratory in 1879. Seguin (1866) and Galton (1869, 1883) emphasized the exploration of individual differences in their research. And as Watson (1953) pointed out, it was the idiographic mode from which applied psychology evolved, not the nomothetic.

This epistemological dichotomy became a crucial issue for psychology and has produced a rift between psychologists that periodically erupts professionally. When the APA was formed in 1892, the organization was dedicated to "psychology as a science" (Wolfe, 1946). As the numbers of applied psychologists increased and they began to apply for membership in the APA, the association made it clear that membership was limited to psychologists who engaged in scholarly and scientific activity and to those who published (Fernberger, 1932). Thus in 1917, the applied psychologists formed their own group, the American Association of Clinical Psychologists. *Their* constitution stated that the purpose of *their* organization was the "application of psychology as a science" (Fryer, 1937, p. 321). In 1919, the applied psychologists were invited into the APA, but they were assigned a separate section within the organization to differentiate them from the nonapplied psychologists. This (ambivalent) union lasted for two decades whereupon, in 1937, the applied psychologists once again withdrew from the APA to form their own organization, the American Association of Applied Psychologists (English, 1938). At the same time, psychologists interested in the application of psychology to the study of social issues, who also did not find common cause with traditional psychologists (and vice versa), formed *their* own organization, the Society for the Psychological Study of Social Issues (Wolfe, 1946). Due to the efforts of such psychologists as Boring (Boring et al., 1942), in 1945 psychologists united once again in one organization; this time, the constitution of the reorganized APA read as follows:

The object of the American Psychological Association shall be to advance psychology as a science, as a profession, and as a means of promoting human welfare. (Wolfe, 1946, p. 3)

At the time of this reunification, we find Brotemarkle asserting

The foundations of clinical psychology are . . . dependent upon the origins of modern, scientific, experimental psychology (Brotemarkle, 1947, p. 1).

and Poffenberger calling for:

A proper balance between the academic and the professional . . . between the urge to find out and the desire to make practical use of what is known . . . it would not be healthful for psychology to have . . . any applied or professional psychologists who are not also psychologists (Poffenberger, 1945, p. 2).

The scientist-practitioner model, therefore, was also an attempt to heal the age-old rift between academic and applied psychologists, to ensure that all could be considered psychologists regardless of their place of employment. However, the problem arose regarding how one defined what it meant to be a "psychologist." The first attempt was to focus on content: A psychologist was one who studied learning, motivation, development, thinking, sensation and perception, memory, attention, and so forth. Therefore, if the clinical psychologist was to be considered a psychologist, clinical work had to be grounded on and in the theory and research of general psychology (thus the attitudes expressed by the Moore, 1943, committee). Unfortunately, Brotemarkle's assertion—that the foundation of clinical psychology was experimental psychology—could not have been further from the truth. Clinical techniques (tests and psychotherapy) had *not* evolved from the theory and research in general or experimental psychology, and research done by academic psychologists at that time had little transfer value to the clinical enterprise (Krech, 1946). Reluctant recognition of this fact caused psychology to search for another commonality that linked all psychologists together—that turned out to be method (hence, the opinion expressed by Shakow, 1945, and the Shakow committees, Shakow et al. 1945, 1947). The history of psychology does not suggest that requiring the clinician to emulate the training of the nonclinical psychologist has brought the two groups together in any great sense of common fellowship.

Summary

We have seen that the original philosophy of education in clinical psychology was that training should be grounded *on* and *in* research in general and experimental psychology. For a variety of reasons, the emphasis of that philosophy was changed so that the clinical psychologist *had* to do research. This philosophy, the scientist-practitioner model, seems to have been put forth publicly by David Shakow and became the accepted paradigm for training in clinical psychology, endorsed by the participants of the 1949 Boulder Conference; hence, its name: the Boulder Model. Some of the reasons for the change in philosophy of training had to do with events within psychology as well as in the field of mental health. At the time that the Boulder Model was being formulated and formalized (the mid 1940s), the APA was going through a reorgani-

zation. Applied psychologists, not feeling in common fellowship with academic psychologist, had left APA in 1937 and had formed their own organization (the American Association of Applied Psychology). By 1942, the movement for reunification had begun, and in 1945, the applied psychologists rejoined APA. Some of the consequences of that reunification were that APA changed its stated purpose. From an organization dedicated to the advancement of psychology as a science, it became an organization "to advance psychology as a science, as a profession, and as a means of promoting human welfare." In return for this concession, clinical psychologists would have to demonstrate that they were, first and foremost, psychologists, and clinicians, second. Unfortunately, at that time, the theory and research in general and experimental psychology seemed to have little relevance for the understanding of the psychological issues the clinician studied. Thus it was as if the study of clinical work in psychology had been grafted on to a body of knowledge for which it had no use. Because this approach failed to bridge the professional hiatus between clinical and academic psychology, another pedagogical bridge was built. Because PhDs were, by tradition, trained to do research, clinical psychologists should be trained to do research too, and so the scientist-practitioner, or Boulder Model, was born. Added impetus for this emphasis on research training was derived from clinical psychologists' need to ensure themselves some independent status in the field of mental health, which at the time was clearly dominated by psychiatry. Although assessment and psychotherapy were professional activities psychiatrists and psychologists shared in common over which the psychiatrist could claim authority, the psychiatrist did not ordinarily receive research training. Research training, therefore, made the clinical psychologist unique, and in that regard, independent from the control of psychiatry.

The fate of the Boulder Model is now history. Quite early in its development, concern was raised about its viability. The criticisms centered around two issues: that there was no real justification for the clinician to be trained to *do* research and that research and clinical skills and interests were incompatible with one another. The criticism mounted until, in 1965, the participants at the Chicago Conference on training in clinical psychology recommended that clinical psychology experiment with a different model of training, one more appropriate for the psychologist who was primarily interested in a career as a practitioner. This idea was reinforced by the members of the Clark Committee on professional training (1967). In 1968, Donald Peterson developed the first practitioner-oriented program in clinical psychology (at the University of Illinois), an alternative to and coexisting with the older (scientist-practitioner) model. Official blessing for this new paradigm for training in clinical psychology was given at the 1973 Vail Conference. And yet, some 8 years after the Vail Conference, a survey by Caddy (1981) revealed that few departments of psychology had introduced this auxiliary model to the Boulder Model of training. It seemed clear that at least one reason for this reticence was the fact that the virtues of the Boulder Model are still being (loudly) proclaimed. In light of the markedly conflicting opinions about the heuristic value of the Boulder Model, a comprehensive assessment was deemed necessary—which is the purpose of this article.

Using number of publications as one barometer of a psychologist's investment in research, it was found that many surveys of the publication activity of clinical psychologists indicated that only a small percentage of clinical psychologists actually engage in research and scholarly/scientific writing. The viability of the Boulder Model is clearly in doubt.

Undoubtedly, there are many factors that could be invoked to help explain the low research productivity of clinical psychologists, for example, the attitudes of faculty (who might undercut the value of research in and for clinical psychology), the role models students encounter during the course of their training (who most often do not reflect the scientist-practitioner model in what they do, either at the university or in the practicum settings), and the positions psychologists secure after graduating (which, ordinarily, pay for direct service to patients, not to research). As important as these practical issues might seem to be in helping to explain the lack of consonance with the input (the training) and the output (the trained), another variable was introduced that was offered as a factor that would question the validity of the Boulder Model from a psychological point of view. Through the presentation of a variety of sets of data, I tried to make the point that clinical psychologists interested in an academic career (involving research and teaching) are different kinds of people than are clinical psychologists interested in a career in clinical practice (with regard to abilities, interests, cognitive styles, a variety of aspects of personality, and even the possibility of differential cerebral dominance). Through the presentation of these data I tried to establish that the scientist-practitioner model in clinical psychology is, indeed, not viable pedagogically and that those psychologists who question the value of the Boulder Model for all students in clinical psychology are justified in doing so.

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