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An Examination of Training Model Outcomes in Clinical Psychology Programs

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Are the outcomes of clinical psychology training related to training model affiliation, and, if so, how? An examination of 134 accredited clinical psychology programs, espousing a clinical scientist, scientist–practitioner, or practitioner–scholar training philosophy as defined by training group membership, uncovered significant differences among training models across student and faculty activities as well as across employment setting and weekly employment activity outcomes. Suggestions for educators and consumers in their analyses of programs' training activities and outcomes are offered.

Since 1896, when Lightner Witmer first began to apply theories and findings of psychological research to the treatment of mental illness in his University of Pennsylvania clinic, psychology as science and psychology as practice have been integral and complementary concepts, each informing the other to the benefit of the profession. Historically, most psychologists have agreed on the importance of scientific and practice training in the doctoral education of professional psychologists. They have not been of one mind, however, about how this training should be accomplished (Hoshmand & Polkinghorne, 1992; Meltzoff, 1984; O'Sullivan & Quevillon, 1992; Perry, 1979; D. R. Peterson, 1995; Sheridan, Matarazzo, & Nelson, 1995; Stricker & Trierweiler, 1995).

The development of the Boulder model, the "framework for the majority of training programs in clinical psychology" (Belar & Perry, 1992, p. 71), provided for equal provision of extensive training in psychological research and the applications of that research to eventual practice—that is, to the creation of the "scientist–practitioner" psychologist. About 25 years after the Boulder model was introduced, an alternative approach—the Vail model—emerged, with an emphasis on preparation for psychology practice informed by science (Belar, 1992). As further articulated through subsequent training conferences (McHolland, 1992; R. L. Peterson, Peterson, Abrams, & Stricker, 1997), the primary goal behind the training of the "practitioner–scholar" psychologist was the preparation for "delivery of human services in a manner that is effective and responsive to individual needs, societal needs, and diversity" (McHolland, 1992, p. 159). Psychologists would be trained to conduct "disciplined inquiry" beginning at the level of the client rather than through the conduct of controlled laboratory or field research (R. L. Peterson et al., 1997). More recently, the establishment of the Academy of Psychological Clinical Science, a group of training programs with a strong commitment to the scientific aspects of clinical psychology, essentially defined yet another model of training: the "clinical scientist." In this model, programs provide training in the production of scientific research on clinical problems and its application to those problems (Academy of Psychological Clinical Science, 1997).

The emergence of these basic training models may be viewed by some as an example of unresolved issues and the inability of the profession to agree on principles and methods of professional training in psychology. Alternatively, one can argue that the various models represent less a difference of principle than of specific program training goals related to career outcomes for which those programs are preparing their students. Indeed, the idea of the existence of multiple psychology training models is consistent with psychology accreditation principles, which purport that, while endorsing the values of science and practice in training, "there is no one 'correct' philosophy, model, or method of doctoral training

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for professional psychology practice; rather there are multiple valid ones" (Committee on Accreditation, 1996, p. 4).

Accredited programs have been given the flexibility (and the responsibility) to define and articulate their own training philosophies, although the clinical scientist, scientist–practitioner, and practitioner–scholar models have been most consistently articulated, and all currently accredited doctoral programs in clinical psychology may be viewed as having either a "pure" model affiliation or some variation thereof. Along with the flexibility to define their own models and the responsibility to define and articulate them, accredited programs have the responsibility to demonstrate that the outcomes of the training are consistent with the model being espoused, a matter of public accountability.

What are the outcomes of these training philosophies? Prior research on training outcomes typically examined doctoral program differences by using variables such as student–faculty research and service activities as well as employment settings of graduates (Gaddy, Charlot-Swilley, Nelson, & Reich, 1995; Kohout & Gaddy, 1995; Wicherski & Kohout, 1997). That research focused on area of emphasis (clinical, counseling, or school) and on type of degree awarded (PhD, PsyD, or EdD) as the grouping variables. The present study sought to examine training outcomes as a function of program training model. Do differences exist in the types of research and practice activities in which students and faculty engage? And how might training model affiliation relate to graduates' choice of employment setting and activities?

The Models Examination Study

The Sample of Accredited Clinical Psychology Programs

To examine the aforementioned differences, we drew a sample of accredited clinical psychology doctoral programs. The overall sample (N = 134) represented 71% of all clinical psychology doctoral programs accredited at the close of the 1997 academic year. The pertinent data for each program in the sample were gathered from annual report forms submitted to the Committee on Accreditation by each program in either 1995 or 1997. Data for 39 programs in the sample came from 1995 annual report forms; data for the remaining 95 programs were drawn from 1997 annual reports.

All of the programs in the sample were selected according to the programs' own identification with one of the three models included in the study. Twenty-eight programs (21% of the sample) were members of the Academy of Psychological Clinical Science (the clinical scientist group—self-identified programs offering training with a strong emphasis on research). Twenty-seven programs (20% of the sample) awarded the PsyD degree and were members of the National Council of Schools and Programs of Professional Psychology (the practitioner–scholar group—programs that prepare students to engage primarily in the practice of psychology). Seventy-nine programs (59% of the sample) espoused a scientist–practitioner training model (the scientist–practitioner group—programs that emphasize the integration of science and practice). Efforts were made to select a sample that corresponded closely to the proportion of program training models represented in all accredited clinical psychology doctoral programs. In the end, the sample of programs used in this study included a slight overestimation of clinical scientist and practitioner–scholar training programs and an underestimation of scientist–practitioner training programs so as to maximize the completeness and quality of the data used in the study's analyses.

Variables Examined in the Study

Training outcome variables were classified into one of two broad categories: "internal" outcomes, defined as intermediate training outcomes and professional characteristics exhibited by a program's faculty and its students, or "external" outcomes, which occur after graduates complete their programs and enter the psychological profession (e.g., employment setting and work activities). Internal outcome variable data examined in the study were provided by individual doctoral programs and represented percentages based on the total number of students and faculty engaged in the following activities: professional organization affiliation, grant-supported research (including research assistantships), authorship or coauthorship of papers presented at professional meetings in the previous academic year, authorship or coauthorship of articles published in refereed journals during the previous academic year, and part-time delivery of professional services on or off campus. Similarly, programs provided information on the settings in which their graduates were first employed. These external outcome variables included the percentage of graduates obtaining initial employment in the following settings: community mental health centers (CMHCs), HMOs, medical centers (including university-based and Veterans Affairs), academic settings, hospitals, private practices, school districts and systems, university counseling centers, postdoctoral residencies, and settings classified as "other."

An additional external variable that was examined was the percentage of time graduates from accredited doctoral programs engaged in various weekly employment activities. These data were obtained from the 1998 American Psychological Association (APA) Doctoral Employment Survey conducted by the APA Research Office. The data taken from the survey included individual graduates' responses to the question, "How many hours per week do you spend in [these] activities in your primary employment position?" Comparisons among graduates from programs espousing the three training models were made on the following weekly employment activity variables: research—basic or applied, direct human services (defined as services including diagnosis–assessment, psychotherapy, counseling–guidance, school psychological services, and prevention–consultation), "other" applied psychology (defined as the practice of industrial–organizational psychology, personnel selection or assessment, systems or equipment design, organizational consultation, and analysis or training), education–teaching, management–administration, development–design, and "other" activities. For purposes of this study, individual graduates from programs in the sample were selected, and their responses were aggregated. To account for discrepancies in the total weekly hours worked by each graduate, employment hours for each activity variable were transformed into percentages by dividing the number of hours reported for a selected variable by the sum of the seven individual activities.

In the student and faculty activity variable categories as well as in the external category of employment activities, we performed Kruskal–Wallis H tests to gain a better understanding of differ-

ences in these variables across the training models. Post hoc comparisons were completed using Mann–Whitney U tests and were evaluated with a Bonferroni corrected level of significance ($\alpha = .017$).

Internal Outcomes: Student Activities

Our data indicated that regardless of program training model affiliation, the majority of students enrolled in the programs in our sample were members of professional organizations. However, students enrolled in clinical scientist programs engaged in a relatively large amount of research-related activities and a smaller amount of professional service activities, whereas students from practitioner–scholar programs involved themselves in more professional service activities than in activities related to research (see Figure 1). Approximately 52% of students from clinical scientist programs had involvement in grant-supported research (more than seven times that of students from practitioner–scholar programs) as well as in authorship of presentations at professional meetings (more than three times the involvement of those in practitioner–scholar programs). Moreover, about 39% of clinical scientist students authored journal articles, whereas about 27% of these students were involved in professional service delivery. The opposite trend was observed for students in practitioner–scholar programs, however. Although approximately the same percentage of students in practitioner–scholar and in clinical scientist programs were involved in professional service delivery, a smaller percentage of the practitioner–scholar students (16%) were involved in authoring presentations, with an even lower percentage of them involved in grant-supported research and in authorship of journal articles (approximately 7% for each activity). The percentage of involvement in these activities for students from scientist–practitioner programs fell within the percentages observed for the other two model groups, with the exception of professional service delivery, in which 35% of students were involved (the highest among the three training groups). Approximately 44% of scientist–practitioner students were involved in authoring presentations, whereas a smaller but still substantial percentage of students were involved in authorship of journal articles (30%) and participation in grant-supported research (24%).

Overall statistical tests yielded significant differences across programs of different training models for the following student variables: involvement in grant-supported research, $\chi^2(2, N = 132) = 49.38, p < .001$; authorship of journal articles, $\chi^2(2, N = 131) = 47.94, p < .001$; and authorship of presentations, $\chi^2(2, N = 131) = 38.52, p < .001$. Training model differences for students were not observed in the professional association membership or, interestingly, for professional service delivery variables. Significant differences among all three of the training model groups were observed for the research and article authorship variables. The median percentage of students engaging in research

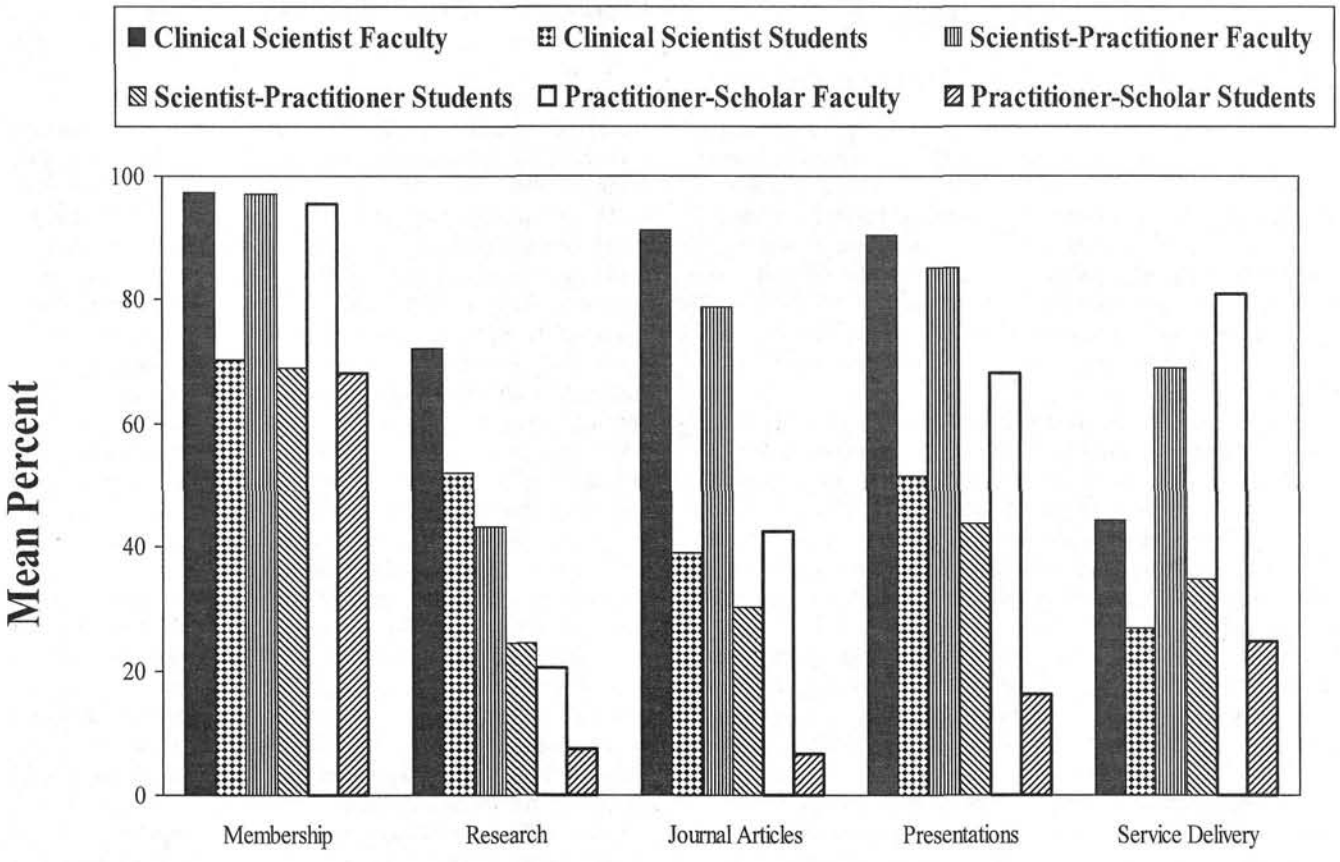

Figure 1. Faculty and student activities by doctoral program training model.

and authorship of articles was significantly higher for students in clinical scientist programs than for students in either scientist–practitioner or practitioner–scholar programs. Differences in the percentage of involvement in authoring presentations were observed between students from clinical scientist versus practitioner–scholar and scientist–practitioner versus practitioner–scholar programs. However, the median percentage of students from clinical scientist programs engaging in authorship of professional presentations was not significantly different from the median percentage of involvement of scientist–practitioner students.

Internal Outcomes: Faculty Activities

Data obtained for participation in activities by faculty almost completely mirrored those for students, at least when activity percentages were ranked in order from highest to lowest within model group (see Figure 1). Like the students, the majority of faculty were members of professional organizations regardless of the model affiliations of the programs in which they were employed. In addition, our data showed that, as was the case with student activities, faculty from clinical scientist programs engaged in a large amount of research-related activities and a smaller amount of professional service activities, whereas faculty from practitioner–scholar programs involved themselves in more professional service activities than activities involving research. In all instances, however, the percentage of participation was greater for faculty than for students for each activity type. Over 90% of faculty from clinical scientist programs were involved in the authorship of both journal articles and presentations. In addition, approximately 72% of faculty were involved in grant-supported research, whereas slightly less than half (44%) were involved in the delivery of professional services. In contrast, 80% of faculty from practitioner–scholar programs (almost twice as many as in clinical scientist programs) were involved in the delivery of professional services, whereas approximately 70% authored presentations. Additionally, fewer than half of faculty members authored journal articles and were involved in grant-supported research (42% and 20%, respectively). Again, percentages for faculty from scientist–practitioner programs fell in between—79% authored journal articles, whereas 85% authored or coauthored presentation papers. Almost 70% of scientist–practitioner faculty delivered professional services, whereas 43% were involved in grant-supported research.

Overall significant differences were found in four of the five variable categories: grant-supported research, $\chi^2(2, N = 132) = 46.03, p < .001$; authorship of journal articles, $\chi^2(2, N = 132) = 46.68, p < .001$; authorship of presentations, $\chi^2(2, N = 131) = 18.77, p < .001$; and professional service delivery, $\chi^2(2, N = 133) = 27.25, p < .001$. The percentage of faculty membership in professional organizations was the only variable that was not significantly different as a function of doctoral training model affiliation.

Specific doctoral program training model comparisons revealed that the research and authorship variables were all significantly different from one another. For the presentation variable, significant differences were observed for the clinical scientist versus practitioner–scholar and scientist–practitioner versus practitioner–scholar model comparisons; however, differences were not observed when faculty from clinical scientist and scientist–practitioner programs were compared. The median percentages of service delivery involvement between faculty from scientist–practitioner and practitioner–scholar programs were not significantly different from one another.

External Outcomes: Employment Settings

When we considered students' employment choices after graduation, it seemed that, again, differences existed as a function of training model, at least in terms of the categories employing the largest percentage of graduates for each model setting. No one category, however, accounted for 50% or more of the initial employment of graduates in any of the model groups.

The examination of initial employment settings within training model (see Figure 2) revealed that the single category in which graduates of clinical scientist programs most frequently found initial employment was academic settings (29%). When considering that academic settings provide numerous opportunities for research endeavors, such an employment outcome is logical. However, 13% of clinical scientist graduates were first employed in each of the following categories: medical centers, hospitals, and private practice settings. Fewer than 10% of graduates secured employment in postdoctoral residencies (9%), university counseling centers (8%), CMHCs (7%), "other" settings (7%), HMOs (2%), and schools (0%).

Trends in employment outcomes seemed less clear for graduates from practitioner–scholar programs. Twenty-five percent of these graduates most often chose CMHCs as their initial employment setting, which was not unexpected given the practice focus of CMHCs. However, a sizable percentage of practitioner–scholar graduates chose settings classified as "other" (23%), in which employment setting was not differentiated. Consequently, outside of CMHCs, we were uncertain as to where a large portion of these graduates were employed initially. Medical centers, hospitals, and private practice each accounted for 12% of the initial employment settings for practitioner–scholar graduates. Five percent or fewer of graduates obtained employment in each of the following settings: postdoctoral residencies (5%), university counseling centers (4%), schools (3%), and HMOs (3%). Only 2% were employed initially in academic settings.

Scientist–practitioner graduates secured employment in relatively equal proportions across the setting types, a finding perhaps consistent with the expected balance in research and practice provided by this program training model. Medical centers were the most common setting selected by scientist–practitioner graduates (19%), followed closely by CMHCs (15%), hospitals (14%), postdoctoral residencies (13%), and "other" settings (12%). The remaining graduates found employment in academic settings (11%), private practices (10%), university counseling centers (3%), HMOs (2%), and schools (1%).

External Outcomes: Weekly Employment Activities

Although some variation in initial employment across training models was observed, the variety of settings in which graduates from the model groups found employment provided the impetus for further examination of the activities in which the graduates engaged during their initial employment. Not only did graduates from different programs choose different employment settings, but

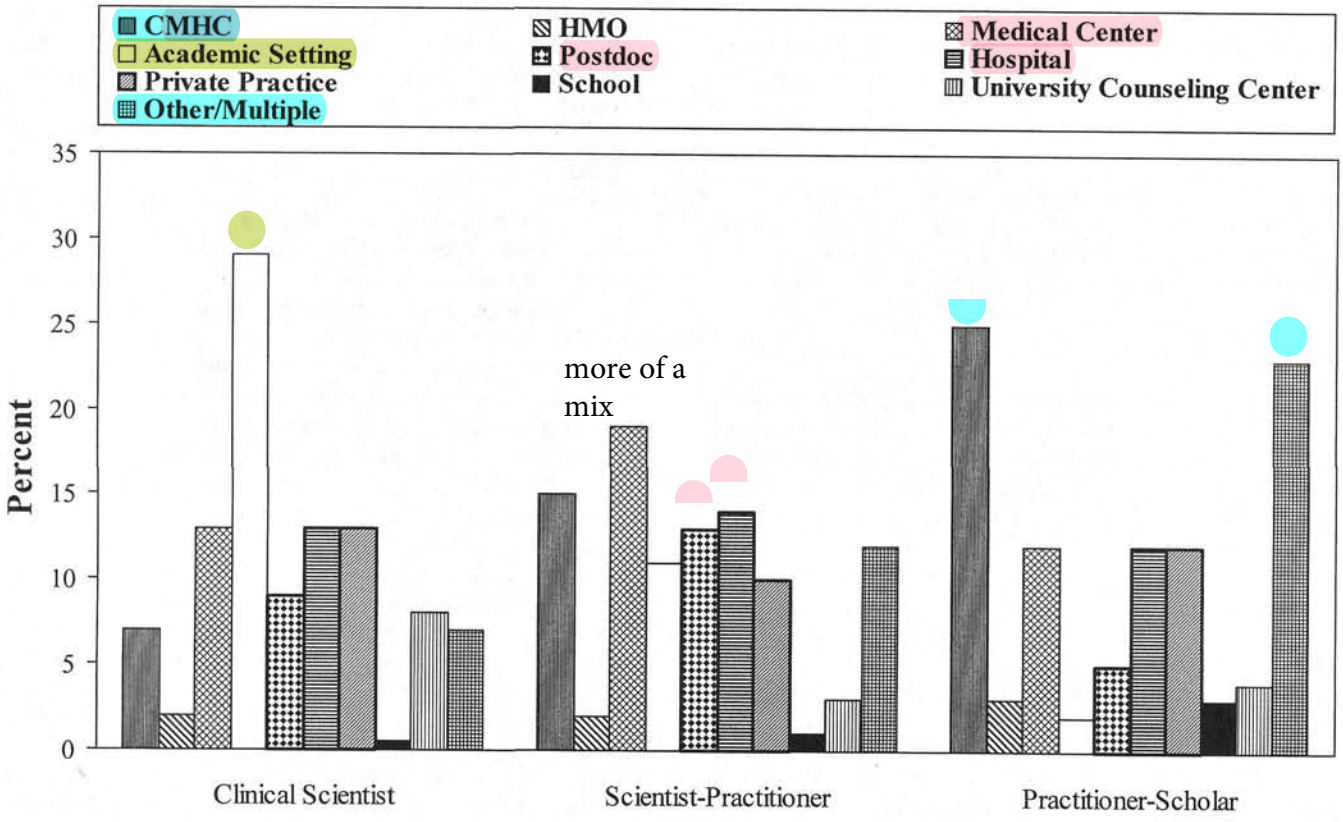

Figure 2. Employment settings by doctoral program training model. CMHC = community mental health center; Postdoc = postdoctoral residency.

they also participated in varied amounts of weekly employment activities. Clinical scientist graduates spent a relatively equal percentage of weekly time in research (28%), direct human services (25%), and education or training (22%) activities. In contrast, scientist–practitioner and practitioner–scholar graduates spent the majority of their workweek involved in direct human services (62% and 60%, respectively) and a lesser amount of time involved in basic or applied research (2% and 10%, respectively) and in education or training (7% and 9%, respectively).

Kruskal–Wallis H tests revealed significant overall median differences for the percentage of time (based on weekly hours) engaged in specific employment activities as a function of graduates' doctoral program training model affiliation. Differences were observed for research, $\chi^2(2, N = 512) = 80.01$, $p < .001$; direct human services, $\chi^2(2, N = 512) = 36.75$, $p < .001$; "other" applied psychology, $\chi^2(2, N = 512) = 8.93$, $p < .011$; and education or teaching, $\chi^2(2, N = 512) = 12.16$, $p < .002$. Mann–Whitney U test results indicated that the median percentages of time spent in research activities for graduates of all three programs were significantly different from one another. Clinical scientist graduates were likely to spend more of their workweek performing basic or applied research activities when compared with graduates of scientist–practitioner and practitioner–scholar programs. Also, scientist–practitioner graduates spent significantly more time performing research when compared with practitioner–scholar graduates. The median percentage of weekly hours that clinical scientist graduates engaged in direct human services was significantly less than the number for both practitioner–scholar and scientist–practitioner graduates. Graduates from practitioner–scholar programs spent significantly more time involved in applied psychology activities when compared with scientist–practitioner graduates. Finally, the only significant comparison for the education and teaching variable was between graduates of clinical scientist and practitioner–scholar programs. It should be noted that two median comparisons in the research and "other" applied psychology variables were significant even though values were equal to zero. In such cases, directional differences were ascertained by examining means.

Implications and Recommendations

Overall, our findings suggest that training outcomes (student and faculty activities as well as employment settings and activities) indeed varied when analyzed according to the program's training model affiliation. By extension, then, differences between training model groups, as well as similarities between student and faculty activities within each group, (a) suggest that training models are unique in the outcomes they produce and (b) support the idea that models do differ in the type of training they provide students. What implications might these findings have for training programs, professionals with an interest in psychology education and training, and current and future students?

It is likely that programs choose training models, in part, on the basis of the type of "end products" they wish to produce, but they

should expand their concept of outcomes to include the intermediate results of the programs' influence as evidenced by the faculty–student research and practice activities. Of particular importance is the role modeling provided by faculty. The "modeling" of faculty's professional activities seemed apparent when considering that students, regardless of program training philosophy, participated in similar activities as did faculty. One would expect that students look to those who are integral in their training for guidance, underscoring the important role that faculty play while training students in their professional discipline. Training programs may wish to pay close attention to the percentage of students and faculty involved in various research and practice activities to determine not only whether an appropriate amount of student research and practice activity is occurring but also whether faculty are participating in these activities in like fashion to serve as professional role models.

Programs also may find it helpful to adopt the concepts of internal and external outcomes in their systematic planning and evaluation activities. As we noted, the use of the internal concept may be helpful to ensure that adequate role modeling is available. Great care should be taken, however, to ensure that programs do not attempt to influence either internal or external outcomes to conform to certain expectations of what the particular model should be producing. This is especially critical with regard to employment outcomes. As we noted previously, no one employment setting within any model group analysis accounted for 50% or more of graduate employment, although one or two settings within each group tended to be more prevalent. Instead, programs may find it useful to collect more in-depth information about their graduates' initial employment experiences to determine what specific activities account for time spent on the job.

The tendency of programs in our study to exhibit differentiated internal and external outcomes can provide an indication to students and other consumers of psychology training that, on the whole, clinical psychology programs are accomplishing what they set out to accomplish—a kind of "truth in advertising." Programs, then, should make clearer to consumers the model of training that they espouse, the general outcomes of such training, and specific information on their own training outcomes—both internal and external—relative to those general outcomes. This delineation between internal and external outcome measures also may provide a clearer picture to prospective students as to whether the type of training experiences offered by a particular program meet their expectations. In so doing, programs more thoroughly demonstrate accountability to current and future students as well as members of the public who ultimately are served by programs' graduates. By extension, consumers should more closely examine programs' internal and external outcomes in program evaluations, whether for potential matriculation or for any other purpose.

As we noted earlier, faculty from programs advocating a practitioner–scholar training model engaged in more professional service delivery activities compared with faculty from the other two models. Interestingly, we did not find this same pattern when examining student participation. Although one might expect that students trained in a practitioner–scholar environment would likely engage in significantly more service delivery when compared with students from programs espousing other training models, this was not the case in our sample. In 1995, Gaddy et al. found a similar pattern when comparing students from PhD programs with students enrolled in PsyD programs. More specifically, they found that students from either degree program did not significantly differ when considering the delivery of professional services. However, Gaddy et al. also found this to be the case for faculty members, which runs counter to the finding for faculty in our sample regarding service delivery. Therefore, it is unclear which faculty pattern is more reflective of the current state of professional service delivery when different program types are being compared. It should be noted that the term *professional service delivery* might be too broad or vague for individuals to provide information about involvement and might result in varied findings across studies simply because either the construct is not well defined or there are contradictory definitions across studies. For this reason, it might be helpful for programs and for psychology professionals who monitor accredited program outcomes (such as the Committee on Accreditation) to develop and advocate the use of more refined measures for gauging service delivery. For instance, how many hours per week are spent in such activity? Is the professional service delivered on or off campus? Is the professional service delivery considered to be a part of the training curriculum (e.g., practicum), or is it external to the program (e.g., full- or part-time employment)? An examination of service delivery as analyzed by these and measures that others may develop may provide additional insight into this internal activity.

Finally, this study suggests to psychology educators that the tensions that exist between science and practice in psychology training are, indeed, more indicative of different training purposes for different intended outcomes than of an inability to agree on one way of training future psychologists. For this reason, those with interests in psychology training may wish to more closely examine the manner in which various psychology curricula are constructed. More flexible curricula as opposed to one standard curriculum may be more appropriate to enable programs to tailor their training to provide their graduates with the necessary tools and training experiences for the specific functions they may expect to perform in the workforce. In any case, all programs, regardless of the training model they espouse, should examine their individual curricula, internal training activities, and outcomes with an eye toward "looking beyond the model label" to examine the realities, rather than a set of standard expectations, indicated by their own particular internal and external outcomes.

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