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Postdoctoral Training in Posttraumatic Stress Disorder Research

Denise M. Sloan, Dawne Vogt, Blair E. Wisco, and Terence M. Keane

VA National Center for PTSD, VA Boston Healthcare System, Boston, Massachusetts, and Boston University School of Medicine

Abstract

Postdoctoral training is increasingly common in the field of psychology. Although many individuals pursue postdoctoral training in psychology, guidelines for research training programs at this level do not exist. The rapid advances in the field, particularly with respect to genetics, neuroimaging, and data analytic approaches, require clinical scientists to possess knowledge and expertise across a broad array of areas. Postdoctoral training is often needed to acquire such a skill set. This paper describes a postdoctoral training program designed for individuals pursuing academic careers in traumatic stress disorders research. In this paper, we describe the structure of our training program, challenges we have faced during the 15 years of its existence, and how we have addressed these challenges. We conclude with a presentation of outcome data for the training program and a discussion of how training programs in other settings might be structured.

Keywords

PTSD; trauma; training

Postdoctoral training is increasingly common among clinical psychologists pursuing clinical, teaching, and research careers (McDermott & Braver, 2004). For those pursuing an academic career, postdoctoral fellowships can offer unique opportunities for developing skills in clinical research, such as specialty training in a particular methodology, experience with a new clinical population, or training in a specific subject area before beginning an independent research career. Despite the increasing interest in and availability of research-focused postdoctoral training for clinical psychologists, there are no established training guidelines.

Over the past 15 years, we constructed a postdoctoral training program for the study of traumatic stress disorders funded by National Institute of Mental Health (NIMH; T32MH019836-15). The main goal of our training program is to train the next generation of clinical researchers, who will be capable of providing leadership in the scientific study of disorders that emerge as a function of trauma exposure. In this paper, we describe the specific goals of the training program and how the program is structured to achieve its goals. We also describe some of the challenges that we have faced and how we have tackled these challenges. We present outcome data documenting the success of this training program. We

conclude with a discussion of how such research training programs could be conducted in different settings as well as how the training structure might be adapted for trainees funded to work on specific grant projects.

Why Traumatic Stress?

Our postdoctoral fellowship program provides specialty research training in the study of traumatic stress and, in particular, posttraumatic stress disorder (PTSD). Epidemiological studies reveal substantial rates of exposure to trauma and attendant PTSD in the population. In the National Comorbidity Survey-Replication Study (Kessler & Merikangas, 2004), 84% of men and 79% of women reported experiencing at least one traumatic event (Mitchell, Mazzeo, Schlesinger, Brewerton, & Smith 2012). The prevalence of lifetime PTSD rate was 6.8% in the total sample (Kessler et al., 2005). Thus, PTSD is a highly prevalent disorder that often persists for years, and exposure to events that could potentially lead to the development of PTSD is quite common (Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995).

Clinical researchers with specialized knowledge in the field of traumatic stress are few in numbers and are needed to advance understanding about the origins and mechanisms of PTSD and to develop, test, and implement prevention programs and interventions that promote recovery. The situation has improved over the past 15–20 years, but there continue to be insufficient numbers of behavioral scientists who are experts in the scientific underpinnings of PTSD. Most important, very few are skilled in contemporary research methodologies for studying trauma exposure and its consequences, the integration of behavioral and neurobiological models, and the evaluation and implementation of treatment approaches to ameliorate negative effects.

Goals of the Training Program

Our training program provides fellows with knowledge and expertise in several domains, including (a) the phenomenology of trauma exposure and its consequences; (b) major conceptual models that apply to posttraumatic adjustment; (c) the assessment and treatment of PTSD and related disorders; (d) behavioral, neurobiological, and psychophysiological research methodologies commonly used in the field of traumatic stress; (e) socioeconomic, gender, racial, ethnic, and cultural factors that are relevant to research; and (f) scientific, professional, and ethical standards essential to the responsible conduct of research. Fellows acquire skills and knowledge through supervised research and clinical experiences, seminars, and directed readings selected by numerous core and support faculty. However, the essence of the training program is a close, collaborative relationship between each fellow and one or more members of the core faculty who serves as primary mentor. Mentors oversee all aspects of individual training, facilitate professional development, and guide the fellow in the planning and implementation of original research projects. The fundamental goal is to foster a sense of mastery regarding conceptual and research abilities such that by the end of the training each fellow is able to function as an independent investigator and effective research collaborator in the field of traumatic stress.

Training Environment

The program is located in a rich training environment that contains several long-standing and highly respected training programs and many core faculty who possess relevant expertise. The environment affords fellows multiple opportunities for accessing highly productive scholars and engaging with a large trainee peer group. The training program is housed within the two Divisions of the Department of Veterans Affairs (VA) National Center for PTSD (NC-PTSD) located at the VA Boston Healthcare System: Behavioral Science Division and Women's Health Science Division. VA NC-PTSD is a congressionally mandated specialty center that operates within the VA. The center is devoted to research and training in all aspects of traumatic stress. The two Boston divisions of the VA NC-PTSD have approximately 20 core faculty and 20 support staff representing a wide range of research expertise. The VA NC-PTSD in Boston is academically affiliated with and strongly supported by Boston University School of Medicine. The core faculty in the two divisions also represent core faculty in the NIMH-funded postdoctoral training program in PTSD.

Male and female veterans of U.S. military service are the most common populations of study, but faculty research interests and activities are neither limited to the veteran population nor restricted to posttraumatic reactions that result from combat. The range of topics spans a broad array in the domains of traumatic stress and psychopathology. Most core faculty members within these two divisions of VA NC-PTSD are clinical psychologists, although faculty with backgrounds in epidemiology, quantitative statistics, genetics, neuropsychology, psychophysiology, social psychology, and psychiatry are also represented.

Core faculty members and the fellows themselves also hold academic appointments at Boston University. In addition to providing access to libraries and other scientific resources, the academic affiliation with Boston University provides opportunities for workshops on grant writing skills, lectures on responsible conduct in research, and consultation services through the Boston University Clinical and Translational Science Institute.

Recruiting Candidates

Recruiting high-quality fellows with diverse backgrounds is critical to the success of the training program. Thus, considerable effort is devoted to recruitment, and various strategies are used. First, to reach a broad audience of potential candidates, we announce the fellow positions on several professional listserves, on the Postdoc Exchange Web site of the Association for Psychological Science, and on the VA NC-PTSD Web site (www.ptsd.va.gov). In addition, we personally contact our trauma research colleagues in the field to alert them of the fellowship positions openings and recruit promising candidates locally and at national and international conferences. Lastly, because several of the interns at our local predoctoral training program come to Boston because of their specific interests in trauma research, we routinely recruit fellows from this internship program.

There are several important considerations in evaluating applications to our program. For example, one factor that is considered is whether the candidate has demonstrated promise as a clinical scientist. Demonstrating promise is achieved by having a strong research training

background, a publication record, and positive letters of recommendation from research mentors. Another equally important consideration is whether the candidate's specific research interests match the expertise of our training faculty.

Although we have generally been successful in recruiting fellows, recruitment of underrepresented minority candidates represents a significant challenge for us, as it does for most graduate programs in the health sciences. One factor is that the population in our geographic location is predominately White (U. S. Census Bureau, 2013). This may make it a less appealing training site for racial and ethnic minority candidates. An even larger issue is that racial minorities are not well represented in psychological doctoral training programs in general (American Psychological Association, 2011). Therefore, we draw from a relatively small pool of minority candidates across the country in recruitment. Despite these challenges, we have been moderately successful in recruiting underrepresented minority candidates with the application of more targeted recruitment strategies over the past several years. We were able to increase the racial diversity of our fellows by directly advertising our program to organizations and special interest groups focused on diversity and racial minority issues, such as the American Psychological Association Office for Ethnic Minority Affairs, as well as by inviting a greater number of racial minority applicants for on-campus interviews. These targeted strategies have resulted in an increase in the percentage of minority fellows in the program. Whereas only approximately 5% of the total fellowship consisted of minority fellows across a 10-year period, approximately 17% of our fellows during the past 5 years identified as an underrepresented minority.

Training Structure

The training program provides funding for four fellows each year. The program is designed as a 2-year opportunity and generally has aimed for recruitment of two new fellows each year. The administrative aspects of the program are overseen by a Steering Committee, which comprises the program director (Terence M. Keane), the program coordinator (Denise M. Sloan), and three core faculty members. The Steering Committee is responsible for review of fellowship applications, interviewing, and selection of candidates. The Steering Committee develops and coordinates the program didactics series and meets with each fellow every 6 months to review their progress in the program. These evaluation meetings ensure that each fellow is progressing well with their training goals and are remaining productive. In addition, any potential problems are identified within the first few months of the first year, which facilitates correcting problems before the problems become too substantial to overcome within a fellowship training period. We also provide additional guidance and mentorship for fellows that appear to experience initial problems adjusting to the program and achieving their training goals.

Establishing Training Goals and Achieving These Goals

In collaboration with the primary mentor, each fellow develops an individualized training plan (ITP), which is reviewed and approved by the Steering Committee. The ITP is a written document created within the first month of training and then reviewed and updated every 6 months thereafter. The first section of the plan delineates the fellow's career goals and

enumerates (a) short-term goals to be accomplished in the context of postdoctoral experience and (b) longer-term goals to be accomplished over the course of his or her career. The second section of the plan identifies areas in which development is needed during the course of the fellowship. Here, the fellow generates a list of developmental needs (e.g., knowledge, skills, or abilities to be acquired) and developmental activities addressing each need (e.g., conducting specific research studies, literature reviews, attending lectures and seminar, preparing a grant application, completing additional coursework). The primary mentor assists the fellow in choosing a secondary mentor to augment research training when appropriate. Fellows also generate a timeline for completion of the specific activities, and progress is reviewed every 6 months with the mentor(s) and is formally evaluated by the Steering Committee. This ongoing review of training goals allows the opportunity for revision to training goals when fellows' research interests and/or needs change over the course of the training period. In some cases, shifts in research focus may require changes in the mentoring team. Although these cases are rare and are generally discouraged because of the limited training period, the diversity in our staff's research expertise has allowed us to identify alternative research mentors when needed.

ITPs encourage the formulation of creative training aims tailored to the unique interests and needs of each fellow. For example, some fellows have chosen to complete intensive study in the physiological parameters of emotion in PTSD whereas others have focused on treatment outcome research and others have elected to train in molecular genetics. These examples demonstrate how fellows may participate in core training program activities (e.g., grant writing workshops, contemporary data methods seminars) while simultaneously having individually tailored training components that result in a different profile of didactic and empirical opportunities. Fellows may supplement knowledge gained from their mentored experiences with courses and workshops offered outside of VA Boston and Boston University campuses. For instance, fellows have taken various workshops focusing on advanced statistical skills such as Hierarchical Linear Modeling, Structured Equation Modeling, and other methods for longitudinal analyses. Fellows have also enrolled in psychophysiological workshops on topics such as electroencephalography, impedance cardiography, and event-related potential technique. In addition to these workshops, mentors frequently assemble a collection of readings that are relevant to the area of training for a specific fellow. Fellows then move through the directed reading list as they meet weekly with the mentor to discuss the readings they have completed. Funds for completing course work, outside workshops, and purchasing training-relevant handbooks (e.g., *Handbook of Psychophysiology*) and textbooks (e.g., *Using Multivariate Statistics*) are available through the training grant. The Steering Committee and primary mentors guide fellows on effective ways to spend their training funds each year to maximize the available funds.

In addition to the opportunities for enrolling in courses and workshops outside of the training site, our site also offers a series of didactics that all fellows are required to attend. These didactics cover a range of topics, including professional development (e.g., preparing for the job market, work-life balance, reviewing manuscripts for scientific journals), contemporary research methods, clinical trial methods, assessment approaches for traumatic stress disorders, cognitive neuroscience of traumatic stress disorders, grant writing skills, responsible conduct in research, and training in minority and diversity issues. Because the

training site is housed within a setting that has multiple training programs, the local site also offers many colloquiums each year, including a neuropsychology colloquium series and a PTSD colloquium series sponsored by the two Boston VA NC-PTSD divisions. Fellows also attend and present their research at weekly research meetings attended by core faculty of the two Boston VA NC-PTSD divisions. Lastly, to facilitate collaboration with researchers at the five other NC-PTSD divisions across the country, fellows attend monthly videoconferencing research meetings.

An important component of our training program is the opportunity for each fellow to gain direct experience in their individualized area of research training. This is accomplished in several ways. One effective strategy for providing hands-on research experience is through fellows working with an ongoing funded project led by one of our core faculty members. It is important that the experience working on an ongoing research project is solely focused on the training goals of a particular fellow rather than the benefit of the mentor investigator. That is, if a fellow participates in an ongoing research project, then their participation has to be specifically related to one of their short-term training goals. For instance, a fellow might serve as a study therapist in a randomized controlled trial if they have the training goal of learning how to implement the treatment that is being used in the clinical trial. To protect their training time, the fellow might minimize the number of participants they treat within the study to no more than two at a time. This type of study involvement may have the added benefit of increasing fellows' knowledge of treatments for PTSD while allowing them to acquire additional postdoctoral licensing hours (see Clinical Training Experience section).

Another way we provide fellows with research training experience is by facilitating their access to multiple, high-quality, large datasets. These datasets provide the opportunity for fellows to conduct research in their area of interest and to implement data analytic techniques they have learned through didactics and workshops. The datasets commonly result in peer-reviewed journal publications. Although experience with original data collection is valuable, this may not be feasible with particular research designs, such as clinical trials or observational cohort studies, given the restricted time duration of the training program. By providing fellows with access to secondary datasets, such as randomized controlled trials and neuroimaging studies, fellows have the opportunity to pursue a wider variety of research questions and publish in their area of interest. We also find that training in data analytic didactics and workshops are most effective when accompanied by hands-on experience with these data analytic strategies. By accessing existing datasets, fellows have the opportunity to optimize their training in contemporary data analytic techniques while under the close supervision of mentors who have experience with these methods.

The training program also provides grant writing experience. Specifically, after providing didactics on grant mechanisms and funding agencies and general grant writing skills, we conduct a weekly grant course that runs for approximately 4 months each year in which fellows write a grant proposal. The first several weeks of the course involve fellows developing their grant proposal idea and deciding on the appropriate federal agency mechanism. Fellows typically elect to write a career development award, although some fellows have elected to write small grant mechanism proposals (e.g., R21, R34 mechanisms).

After the specific topic and mechanism of the proposal are identified, fellows proceed with writing specific sections of the proposal. Weekly meetings focus on discussing the important elements of these specific sections. Fellows submit drafts of each section to the core faculty member leading the workshop and to peer fellows who are also taking the course for their comments and suggestions. By the end of the 4-month course, fellows have a completed proposal that is ready to be submitted. Past fellows have found that the process is sufficiently paced to make the grant proposal process feel manageable, and they view the course as very useful approach to learning about the process of developing a grant proposal. In addition, because fellows discuss the course with other trainees at our local site, we receive many requests from other trainees to join the course. However, we keep the size of participants small to maximize the benefit to the training fellows in our program. It is important to note that our diverse portfolio of didactic and direct research opportunities offers fellows a range of scientific and methodological experiences. This balance between standardized and individualized training has proved effective in preparing fellows to conduct meaningful research when they become independent investigators.

Training Challenges

A challenge that some fellows have identified in meeting their training goals is the shift from a more structured educational experience during predoctoral training to a more self-directed learning environment. The fellowship program allows substantial time for self-initiated research, which requires more self-motivation and initiative than graduate school and predoctoral internships. For some fellows, this shift in structure is an easy transition whereas the transition can be quite difficult for other fellows. We address this issue by talking with fellows in the first few weeks of their training about the importance of setting daily and weekly goals to remain on track with accomplishing their training goals. We also have past fellows talk with trainees about successful strategies they have used to maintain productivity during their fellowship training. Another method we use is weekly meetings with mentors during which fellows provide an update on the progress they have made in accomplishing their short-term goals. Specifically, fellows are asked to report on the work they have accomplished on specific research projects and their timeline for completing other aspects of the project, such as writing a draft of a manuscript describing the research findings. The meetings with the Steering Committee every 6 months reinforce this emphasis on effective time management because fellows are asked to submit a detailed progress report about what they have accomplished since the last evaluation meeting. Learning to effectively manage one's time is an important professional development issue.

As a program with primary strengths in traditional clinical research training, including assessment and intervention research, another challenge we have faced in recent years is the need to broaden our training to address innovations in biological research as it related to trauma and PTSD. However, it is difficult to thoroughly train fellows in such approaches during a 2-year fellowship program if they have no prior experience in these areas. We have addressed this issue by changing the structure of our training program such that all fellows receive training in biological-based research methods. For fellows that have a biological-focused program of research, they will already train in biological approaches during the fellowship period; therefore, no additional training accommodations are needed. However,

for fellows who have no background in biological methods, we identify an area of biological research that makes sense to integrate into their program of research. We then provide them with a secondary mentor who has expertise in that specific area of research. This experience provides the fellow with specific training experience that will facilitate their success in competing for grant funding and academic positions after their fellowship training.

Another challenge we have relates to whether fellows are allowed to conduct their own data collections during the fellowship period. Fellows occasionally arrive to our program with a specific research study they want to conduct. However, it is not typically feasible to conduct a study from start to finish during a 2-year training program. The decision to support new data collections depends on the nature of the project, whether conducting the project would serve as a training experience for the fellow (e.g., will they learn a new skill such as psychophysiology that is consistent with their training goals), and the general organization and time management skills of the fellow. For those fellows who conduct their own studies, it is important that they also work with existing datasets so that they can continue to publish papers during the fellowship period.

From the program perspective, the number of datasets available for fellows was limited in the first several years of the training program because of a smaller number of faculty mentors and available datasets that could be used by fellows. Thus, the research options available for fellows in the early years of our training program were more limited. As VA NC-PTSD grew, the number of faculty in each division grew, as did the number of datasets available to fellows to conduct research.

Another challenge that the program has faced has been the number of faculty, especially more senior faculty, who are willing to mentor fellows. Mentorship requires a substantial time commitment. For faculty who are involved in multiple research projects and have many other demands on their time, mentoring fellows may be less appealing. We have had some occasions in which a particular faculty member may be the best research mentor for a given fellow candidate but the faculty member has been hesitant to mentor a candidate because of their current commitments. One strategy for addressing this is to pair more senior and junior research mentors to reduce the burden on the senior mentor and ensure that the trainee's mentoring needs are adequately met. This approach has the added benefit of providing the junior faculty member with the opportunity for a supported mentoring experience.

Clinical Training Experience

As previously described, one of the goals of the training program is to gain experience in the assessment and treatment of traumatic stress disorders. The most effective way to gain such experience is through direct clinical experience. Fellows gain this experience through direct clinical care in one of two trauma clinics at VA Boston, the PTSD Clinic Team, and the Women's Stress Disorders Treatment Team. Both clinics serve veterans who present for assessment and treatment of postdeployment trauma-related symptoms. Fellows provide assessment and treatment services within one of these two clinics and receive individual supervision from a licensed clinical psychologist. These clinical experiences are also valuable in informing research interests of the fellows as they gain insights into the

presentation of individuals seeking trauma treatment, such as the chronicity of PTSD and the comorbid conditions that are frequently present. In addition, fellows are afforded the opportunity to further refine their skills in the delivery of evidence-based assessments (e.g., the Clinician-Administered PTSD Scale; CAPS) and treatments for traumatic stress disorders (e.g., Prolonged Exposure [Foa, Hembree, & Rothbaum, 2007], Cognitive Processing Therapy [Resick & Schnicke, 1993]). Our training site is also fortunate to be able to provide extensive training in Cognitive Processing Therapy consisting of a 2-day didactic workshop followed by ongoing weekly case consultation meetings. We also provide extensive training in Prolonged Exposure by providing clinical supervisors who have received Prolonged Exposure certification, which denotes competency in delivery of Prolonged Exposure therapy. In addition, all fellows receive extensive training in the assessment of traumatic stress disorders through didactic lectures on trauma-related assessment measures that are provided as part of the training program. These didactics are followed by the assignment of assessment cases of patients presenting to the PTSD clinic. The assessments require the use of various trauma-related assessment instruments (self-report and semistructured diagnostic interviews). The program can draw on the extensive assessment training resources that are provided through the VA NC-PTSD division and from the wealth of experience of faculty, many of who developed the trauma assessments measures, including the CAPS. In addition, the VA intranet site provides extensive clinician resources, including video-recordings of Prolonged Exposure sessions and Cognitive Processing Therapy treatment sessions, treatment manuals, and relevant articles on PTSD treatment with a particular focus on military and veteran populations. These resources are incorporated in the assessment and treatment training of the fellows.

When selecting treatment cases for fellows, cases are selected for each fellow that best match their research interests (e.g., substance use disorders and PTSD) as well as gaps in their clinical training (e.g., delivering dialectical behavior therapy [Linehan, 1993], behavioral activation [Martell, Dimidjian, & Hermann-Dunn, 2013]). Lastly, fellows have the opportunity to supervise the clinical activities of trainees who are junior to them within these clinics. This supervision experience is important because fellows are often expected to provide clinical supervision in faculty positions they accept after the fellowship. One final important aspect of the direct clinical training experience is that it provides the supervised postdoctoral clinical hours often required for licensure. Because licensure is a desirable or even necessary condition for employment in many academic settings, providing these postdoctoral hours promotes the professional development of our trainees and makes them even more desirable for faculty positions that are available across the country. The program carefully tracks the direct clinical hours and clinical supervision hours of fellows to make sure that they acquire at least the minimum number of postdoctoral training hours required for licensure. Our program uses licensure requirements for Massachusetts because this state has one of the highest requirements for postdoctoral clinical training hours within the United States. Thus, if fellows have met the requirements for Massachusetts, then they will likely meet the postdoctoral hours for any other state.

Providing clinical training experience can present some challenges in terms of protecting the time dedicated to research training activities. Although we feel strongly that the clinical training is an important aspect of training clinical scientists, it is also important to establish

boundaries on the amount of time that is devoted to clinical training within a program designed to develop independent clinical scientists. We instruct fellows that the time spent in clinical training activities should not exceed more than 5–6 hr of direct client contact per week. Of course, there are exceptions to this time frame for fellows who have specific research interests that require additional clinical work, such as clinical trial methods, and in these instances clinical duties may be increased. Nonetheless, we have found that some fellows have difficulty effectively balancing their clinical and research activities because research activities can often be perceived as less time sensitive and easier to delay. A strategy we have found to be effective for managing clinical activities is to schedule clinical activities into one specific day during the week. This one day can then become focused solely on clinical activities whereas the remaining days of the week are dedicated to research activities. In rare instances, we have had to remove or substantially decrease clinical training time for fellows who have had persistent difficulties making sufficient progress with their research training goals even after mentors have worked closely with the fellows to structure their time.

Training Program Satisfaction Data and Success of the Program

A key component of the training program involves tracking outcomes to evaluate the success of the training program and inform modifications to enhance outcomes. Various different criteria and procedures inform this evaluation. A key aspect of this process is ongoing review by the Director of Postdoctoral Fellowship Training and Director of Accreditation and Admissions at the VA Boston Healthcare System to ensure that training standards are being met. Periodic feedback about the training program and mentors/supervisors is obtained from trainees to inform this evaluation. This information is then presented to the overarching Training Consortium Executive Committee to determine whether there are any deficiencies or areas of concern and to decide whether corrective action is needed.

Another key source of data is an anonymous survey of former trainees regarding their experiences in the training program. The results of this evaluation, which are presented in Table 1, are used to make adjustments and improvements to the program. This survey was designed to evaluate the program on several criteria identified as key areas of focus for the training program, including gaining expertise in the phenomenology of traumatization and its sequelae; conceptual models for the etiology of PTSD; assessment and treatment of PTSD; research methodologies used in the study of traumatic stress; the influence of gender, race, and ethnicity on research outcomes; and ethical principles in the conduct of research. The survey includes Likert-type questions that allow respondents to rate dimensions of the program along a continuum and open-ended questions that allow for qualitative evaluations of the training experience. In the past, we used an Internet tool (www.surveymonkey.com) to administer this evaluation tool; this approach allows for anonymous responding, a condition that likely fosters more candid evaluations of the program.

One impressive and gratifying outcome is simply our success in securing the participation of prior fellows in this program evaluation process, with all but one former graduate completing the survey to date. Survey results over the lifetime of this program are generally very positive, suggesting that the program has been successful in achieving its aims and that

the trainees are satisfied with their experiences with us. For example, our most recent survey revealed that all former trainee respondents except one either somewhat or strongly agreed that they were satisfied with their experience in the training program, and 92% indicated that they would recommend the training program to a student with background and interests in the area of trauma and PTSD. Comments from respondents included

- “The National Center provided me not only with the skills and training I needed to contribute meaningfully to an improved understanding of PTSD, it also gave me the confidence I needed.”
- “This program had a profound impact on the trajectory of my career. I began it as a schizophrenia researcher, and ended as a traumatologist. I teach, conduct research, and do applied work in the field of psychological trauma, all in large part because of the opportunities and experiences I enjoyed in this program.”
- “Overall, I could not be a bigger fan of the program, and I am pleased to report that reviewers on my own grant applications invariably comment on the quality of my training!”
- “This is, without a doubt, the finest postdoctoral training opportunity in the country.”

At the same time, feedback on this survey has suggested some areas for improvement, which that have been applied to strengthen the program over the years. For example, although ratings of the extent to which trainees were able to gain additional training in multicultural and diversity issues were generally positive (a total of 84% somewhat or strongly agreed), a larger percentage of participants endorsed disagree for this item than for other domains of expertise. As a consequence, we have expanded our emphasis on topics of diversity within the program by seeking opportunities for interested trainees to conduct research in this area and providing additional didactics on this topic. We have also included didactics on some of the challenges faced by women working within an academic setting.

Another key metric for evaluating success for the program is our evaluation of the professional accomplishments of fellows who have participated in the program thus far. We survey former fellows approximately once every 2 years to monitor their activities and accomplishments. At this time, we request information on current position, publications, and grants so that we can evaluate their work setting, career development over time, academic/research involvement more broadly, and specific contributions to the research literature in trauma and PTSD.

Our most recent evaluation of former fellows’ professional activities revealed that all but 1 of 27 former trainees had obtained full-time employment in an academic/research setting, with most currently employed in university settings (e.g., psychology departments) or university-affiliated medical center settings, such as the VA. Several have obtained staff positions in Divisions of VA’s NC-PTSD, and this fellowship has served as a key vehicle for identifying promising new investigators with research interests and expertise that aligns with VA NC-PTSD priorities. Moreover, most are currently conducting independent research in the area of trauma and PTSD and have made significant contributions to advancing this literature through peer-reviewed publications and through contributions to policy related to

trauma and PTSD. It is important to note that past fellows are remarkably successful in securing funding for research on trauma and PTSD, with reported involvement in over 82 funded grants (with 53 as principal investigators) from various funding sources, including VA, the National Institutes of Health, and the Department of Defense. In recognition of their substantial contributions to the field, many received awards recognizing their achievements and as of our last evaluation, past fellows produced 712 publications in scholarly journals over the 15 years of the program. As a whole, these findings suggest that the program has been successful in providing fellows with the knowledge, guidance, and opportunity they need to become the next generation of researchers and leaders in the traumatic stress field.

As described previously, our training program has used an individualized training approach, in which each fellow identifies research training goals and works with a mentor to achieve those goals. Although there are many advantages to the individualized approach, one limitation is that our program has not identified a set of core competencies that all fellows are expected to achieve. Moving forward, our training program would benefit from developing core competencies for all fellows in the training program and then tracking whether these core competencies are achieved by fellows who complete the program. The program could draw from the core competencies identified by the New Haven Competency Conference that was held in April 2013. The goal of the meetings was to identify core competencies that would be expected for clinicians working with trauma survivors. Sixty trauma experts identified five foundational and functional competencies in the area of trauma-focused and trauma-informed scientific knowledge, assessment and treatment of traumatic stress disorders, professionalism, and relational and systems (Cook, Newman, & the New Haven Group, in press).

Different Types of Postdoctoral Training Programs

The training program we have described here is a funded postdoctoral training program with the goal of training future clinical scientists with expertise in PTSD and trauma-related disorders. This type of training program differs from research positions that are funded by specific grant projects. Positions that are funded by grant projects do not allow for as much dedicated research training because the person is hired to complete specific responsibilities (e.g., project coordinator, study therapist) for the funded project. How much time a person can devote to other research training will vary in such positions and should be discussed before accepting the position. Of course, responsibilities for a funded project can serve as valuable research training itself. Mentors who take an active interest in their postdoctoral fellow's training goals will offer the best training experience. Scheduling regular meetings to discuss training goals and ways in which the project responsibilities align with those goals is one strategy to ensure that the postdoctoral fellowship is mutually beneficial. Another type of fellowship position is one that is focused on clinical postdoctoral training. These positions are typically full time and 1 year in duration because this time frame provides the hours needed for clinical licensure, except for neuropsychology clinical training, which is typically a 2-year position. In clinical fellowship positions, trainees dedicate the majority of their time to specialty clinical training (e.g., PTSD, substance use disorders, geropsychology). Time devoted to research activities is commonly limited to a few hours a week. These positions are designed for individuals who want to pursue primarily clinical careers.

We are fortunate that our training program is housed in a site that has many resources, including many faculty who have extensive funding track records, many datasets that can be made available to fellows for training and publication purposes, data analytic software needed for complex longitudinal analyses, a neuroimaging facility that has dedicated research scanning time, and psychophysiological equipment. In addition, the training program is located in a major metropolitan area that includes many universities and colleges, which affords multiple additional training opportunities for course work, collaborations with other local investigators, and access to colloquia at other institutions.

We recognize that not all training programs have the same array of resources to support training. However, the most critical resource for a successful training program is faculty who are committed to training the next generation of clinical scientists. One strategy that programs with a limited number of faculty may use is to identify secondary mentors outside of the institution to fill specific training goals. Collaborations can also be built with investigators outside of one's institution as a means for accessing additional databases, and this is a typical approach for fields that require large datasets, such as genetics. In addition, there are many publically available databases that fellows could access for training purposes.

Funding Opportunities

For sites interested in providing postdoctoral training in PTSD research, identifying and obtaining sufficient funding is critically important. The most comprehensive funding option for postdoctoral research training is the institutional training grant (T32) offered by the National Institutes of Health. The T32 mechanism provides funding to cover fellows' stipends, tuition and fees, and training-related expenses, such as participant reimbursement or conference travel, and typically provides funding to support multiple postdoctoral fellows at a time. The VA also provides funding for training clinicians and researchers who are interested in remaining in the VA system after completion of their training. The types of training programs available vary depending on the needs of VA and the number of currently funded training programs in the system. In addition to seeking funding for training programs, there are also funding mechanisms that individuals can seek for their own training. The National Institutes of Health offers postdoctoral training mechanisms (F32 and K99) and early career development awards (K series). In addition, the VA offers postdoctoral training grants and career development awards (CDA-1, CDA-2), although these training awards are meant for individuals who intend to remain in the VA system upon completion of their training. We recommend that potential trainees work closely with a primary research mentor to identify the appropriate funding mechanism and develop a strong research training plan. A key consideration when applying for individual training grants is the time delay between grant submission and the availability of funds. Typically, trainees should plan to submit applications a minimum of 18 months before their desired start date.

Summary

Postdoctoral training in clinical research offers a unique opportunity to gain additional skills and experience before embarking on an academic career in clinical psychology. Although such training is increasingly common, descriptions of effective models for research training

at the postdoctoral level are relatively rare in the literature. In our experience, successful training includes several key elements. First, a close relationship with a primary research mentor is essential. We also recommend that postdoctoral programs provide both standardized training, such as didactics and workshops, and individualized training tailored to specific interests and needs reflected in trainees' training plans. Also important to trainees' success is access to multiple existing datasets, which can foster research training and productivity during the postdoctoral years. This is facilitated by housing the program in a rich training environment with many faculty who are actively engaged in multiple funded research projects. Finally, even research-focused postdoctoral fellowships are advised to provide supervised clinical training opportunities. These clinical experiences often inform fellows' research and help them obtain the supervised postdoctoral hours necessary for licensure as a clinical psychologist in many states, which is important to the professional development of trainees. We believe that these aspects of our postdoctoral fellowship program are keys to the success of our graduates and are reflected in their satisfaction with the program. Given current trends, it is likely that postdoctoral training will be an increasingly common training experience for academically oriented clinical psychologists, and we hope that these recommendations may be useful to those developing postdoctoral programs in clinical research.

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Table 1

Results From Survey of Former Postdoctoral Fellows

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
The postdoctoral training experience provided opportunities for you to gain expertise in					
The phenomenology of traumatization and its sequelae	0 (0%)	0 (0%)	0 (0%)	2 (8%)	23 (92%)
Conceptual models for the etiology of PTSD	0 (0%)	0 (0%)	0 (0%)	7 (28%)	18(72%)
The assessment and treatment of PTSD	0 (0%)	0 (0%)	0 (0%)	2 (8%)	23 (98%)
Research methodologies used in the traumatic stress field	0 (0%)	0 (0%)	0 (0%)	3 (12%)	22 (88%)
The influence on gender, race, and ethnicity on research outcomes	0 (0%)	1 (4%)	1 (4%)	11 (44%)	12 (48%)
Ethical principles in the conduct of research	0 (0%)	0 (0%)	0 (0%)	8 (32%)	17 (68%)
Your postdoctoral training provided you the opportunity to gain					
Additional theoretical background in trauma and PTSD	0 (0%)	0 (0%)	0 (0%)	3 (12%)	22 (88%)
Additional trauma, PTSD, and functional assessment skills	0 (0%)	0 (0%)	0 (0%)	4 (16%)	21 (84%)
Additional training in different treatment approaches to PTSD	0 (0%)	1 (4%)	1 (4%)	8 (32%)	15 (60%)
Additional experience in clinical research	0 (0%)	0 (0%)	2 (8%)	5 (21%)	17 (71%)
Additional research skills to make original contribution to PTSD field	0 (0%)	0 (0%)	1 (4%)	2 (8%)	22 (88%)
Additional training in multicultural/diversity issues in PTSD research	0 (0%)	2 (8%)	2 (8%)	13 (52%)	8 (32%)
Additional education on scientific integrity and ethical standards	0 (0%)	0 (0%)	1 (4%)	7 (28%)	17 (68%)
To what extent do you agree with the following about the program?					
Program training activities met your individual training needs	0 (0%)	1 (4%)	1 (4%)	3 (12%)	20 (80%)
You had opportunities to integrate theory with clinical practice	0 (0%)	0 (0%)	0 (0%)	5 (20%)	20 (80%)
The program helped you become an independent PTSD investigator	0 (0%)	0 (0%)	3 (12%)	4 (16%)	18(72%)
Program staff helped you develop your clinical research skills	0 (0%)	0 (0%)	1 (4%)	3 (12%)	21 (84%)
You were able to interact with staff with varied research interests	0 (0%)	0 (0%)	0 (0%)	3 (12%)	22 (88%)
The training experience enhanced your previously existing skills	0 (0%)	0 (0%)	0 (0%)	3 (12%)	22 (88%)
The training experience allowed you to develop new skills	0 (0%)	0 (0%)	0 (0%)	5 (20%)	20 (80%)
Your training prepared you for your first postfellowship position	0 (0%)	0 (0%)	3 (12%)	4 (16%)	18(72%)
You were satisfied with your experience in the training program	0 (0%)	0 (0%)	1 (4%)	3 (12%)	21 (84%)
You would recommend the training program to other students	0 (0%)	0 (0%)	0 (0%)	2 (8%)	23 (92%)

Note. PTSD = posttraumatic stress disorder. Values presented as n (%).