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# A Survey of Postdoctoral Training in Rehabilitation Psychology in the United States and Canada: 2019

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***Purpose/Objective:*** Survey psychology postdoctoral training programs involving patients with disability receiving rehabilitation services, and compare with similar data from 2007. ***Research Method/Design:*** Public data sources identified 297 potential postdoctoral training programs. Of these, 100 programs (34%) provided services for patients with disability in rehabilitation settings, and 92% returned a survey ($n$ = 92). ***Results:*** Programs reported having a primary rehabilitation involvement (42%), a secondary involvement (26%), or an optional involvement (23%). Programs were based in university settings (27%), VA/DoD settings (35%), or private/public health care settings (38%). A total of 433 faculty and 308 residents were involved in these programs. Fifty percent (50%) of programs had faculty with American Board of Rehabilitation Psychology (ABRP) certification, while 62% of programs had faculty with American Board of Clinical Neuropsychology (ABCN) certification. On average, programs formally taught 58% of the ABRP competencies. ***Conclusions:*** Compared to 2007, there has been a 200% increase in the number of training programs with rehabilitation involvement. However, there has been an overall decrease in the variety of populations with which residents work, and an overall decrease in the number of ABRP competencies that are formally taught, so that training has become more focused on specific populations and specific competencies to the exclusion of others. Many rehabilitation patients and teams receive services from psychologists whose professional concentration is not primarily in rehabilitation psychology, and many psychology residents involved with rehabilitation populations do not receive comprehensive training in rehabilitation psychology. There is an opportunity for rehabilitation psychologists to collaborate with these programs to enhance competent services to persons with disability.

***Impact and Implications***

This survey is the second survey of psychology postdoctoral training programs involving patients with disability receiving rehabilitation services, and provides data to compare against the first survey in 2007. It provides information regarding changes in psychology postdoctoral training over this 12-year period, and recommendations for future development.

*Keywords:* rehabilitation, psychology, training, education, disability



## Introduction

Health service psychology is defined as the integration of psychological science and practice into health promotion and disease prevention, and team-based assessment and treatment of psychological and other health-related disorders (American Psychological Association Commission on Accreditation, 2015). Health service psychologists, along with other health care colleagues, have a responsibility to provide competent care that is effective and responsive to individual and societal needs, and that addresses key issues affecting public health, including disease and illness prevention and treatment, as well as individual and group inequities in health (Thomasson, 2014).

Health care professional training programs can be considered in a program evaluation framework, examining the *structures*, *processes*, and *outcomes* of such programs. Training program structures are the inputs to the program, and include: mission statements and training objectives; policies and procedures for operation; service delivery setting and populations; staff and trainees and their relevant numbers, qualifications, and skills; and resources such as funding, physical facilities, and other infrastructure. Training program processes are how the program is actually operationalized, and include the numbers and types of experiential and didactic training activities that occur, the numbers and types of supervision and evaluation activities that occur, and the intensity and duration of training. Training program outcomes are the competencies that program graduates can reliably demonstrate.

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Nicholas Lecea, staff at Hurley Medical Center, constructed the online survey.

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Health care educators are responsible for training health care practitioners who can provide effective patient care, productive consultation with other professionals, and advocacy to improve health conditions, health care programs, and health outcomes. These trainee competencies are the training program outcomes, and program evaluation and improvement occur by comparing actual outcomes in relation to intended outcomes, and modifying training program structures and processes to improve outcomes.

General psychology practitioners are expected to have doctoral-level foundational and functional competencies in psychological service provision (Fouad et al., 2009). In addition, there are specialties within the domain of health service psychology that require competencies beyond the general doctoral-level competencies, and these are acquired through a specified sequence of education and training, and are defined by their focus on specialized populations, problems, and procedures (Stiers & Stucky, 2008).

Rehabilitation psychologists are specialty-trained practitioners within the domain of health service psychology who:

> "... develop and apply psychological knowledge and skills on behalf of individuals with disabilities and chronic health conditions in order to maximize their health and welfare, independence and choice, functional abilities, and social role participation. Rehabilitation Psychologists provide specialty services to individuals with congenital conditions, traumatic injuries, or chronic health conditions and their families, as well as to rehabilitation teams, institutions, and service agencies. Since disability is a function of a person-task-environment interaction, consideration is given to the network of biological, psychological, social, cultural, physical, and political environments in which the individual exists, and to the means of addressing barriers in these areas" (Stiers & Stucky, 2008, p. 536).

Guidelines for postdoctoral training in the health service specialty of rehabilitation psychology have been discussed in the professional literature for many decades. Gold and colleagues (1982) described how psychological training in physical rehabilitation settings differed from psychological training in mental health settings. They recommended didactic and experiential training in the physical and medical aspects of disability (specialized populations), the psychological and social issues of persons with disabilities (specialized problems), and the relevant diagnostic and intervention techniques for this population (specialized procedures). However, they did not discuss specific ways in which this type of training might be operationalized.

Patterson and Hanson (1995) published the first specific guidelines for postdoctoral training in rehabilitation psychology. These guidelines provided recommendations regarding training program structural elements (trainee entrance criteria, training curriculum and didactics, service delivery setting, patient populations, salary), training program process elements (length of training, supervision and mentoring, services delivered), and training program outcome assessment (measurement of the competencies of program trainees). These guidelines did not specify the competencies. In regard to trainee competencies, the American Board of Rehabilitation Psychology (ABRP) establishes the core competencies for the practice of rehabilitation psychology.

A 2007 survey of postdoctoral psychology training programs in the United States and Canada identified 46 programs involving rehabilitation populations, and used a program evaluation framework to collect information on these programs' structures, processes, and outcomes (Stiers & Stucky, 2008). Forty percent (40%) of these training programs had faculty with ABRP certification. These training programs ranged from 73 to 100% in meeting the general Patterson and Hanson, 1995 training guidelines. The 46 postdoctoral training programs involving rehabilitation populations, on average, formally or informally taught from 92 to 100% of the ABRP core competencies as defined in 2007, with programs formally teaching a mean of 75% of the competencies. Twenty programs (44%) had a primary rehabilitation involvement.

Stiers and Stucky (2008) suggested that in order to establish consistency and cohesion in training and practice in this specialty area, it would be necessary to develop a consensus about training guidelines, and promote their adoption by training programs. This led to the 2011 Baltimore Conference on Rehabilitation Psychology Postdoctoral Training (hereafter "Baltimore Conference"), which was a national conference to achieve consensus guidelines about the structures, processes, and outcomes of rehabilitation psychology postdoctoral training programs, and to create the Council of Rehabilitation Psychology Postdoctoral Training Programs (hereafter "Council of Training Programs") to promote training programs' abilities to implement the guidelines, and to formally recognize programs in compliance with the guidelines. The consensus guidelines for rehabilitation psychology postdoctoral training program structure and process were published in Stiers et al. (2012) and the guidelines for competency development and measurement were published in Stiers et al. (2015). The Council of Training Programs began formal operations in 2015.

This current study was conducted in order to examine the structures, processes, and outcomes of rehabilitation psychology postdoctoral training programs as they currently exist. Comparisons are made with the Patterson and Hanson (1995) guidelines and the current ABRP-required competencies, and to the state of rehabilitation psychology postdoctoral training as it was in 2007, prior to the Baltimore Conference and prior to the establishment of the Council of Training Programs. The evolution of rehabilitation psychology postdoctoral training is discussed, and recommendations are made for the continued advancement of the field.

## Method

The first author's institutional review board for research determined that this was an exempt study and did not require approval.

### Training Program Enrollment

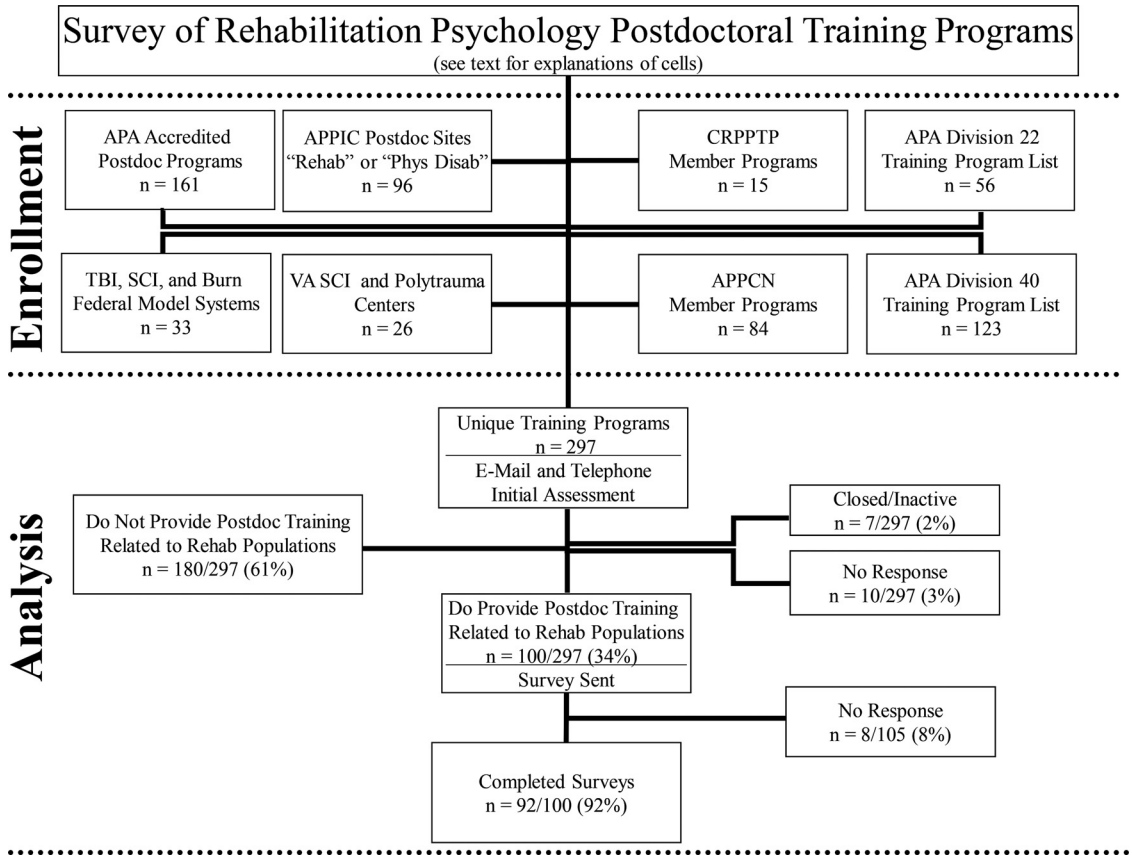
Programs that might potentially involve psychology postdoctoral training involving persons with disabilities receiving rehabilitation services were identified from eight public website data sources examined during June–December, 2018 (see Figure 1):

1. APA accredited postdoctoral training program directory: 161 programs (https://www.accreditation.apa.org/accredited-programs)

2. Association of Psychology Postdoctoral and Internship Centers (APPIC) directory: 227 postdoctoral psychology training programs, 96 of which self-identified as having training in rehabilitation psychology or involving persons with disabilities (http://www.appic.org/directory/4_1_directory_online.asp)

3. National Institute of Disability and Rehabilitation Research model Systems in Traumatic Brain Injury (TBI), Spinal Cord

**Figure 1**
*CONSORT Diagram of Study Sample*




Injury (SCI), and Burns: 33 centers (https://msktc.org/tbi/model-system-centers)

4. U.S. Department of Veterans Affairs Spinal Cord Injury Centers and Polytrauma Centers: 26 centers (https://www.sci.va.gov/VAs_SCID_System_of_Care.asp, https://www.polytrauma.va.gov/system-of-care/care-facilities/index.asp#:~:text=Polytrauma%20Rehabilitation%20Centers%20(PRC),related%20to%20polytrauma%20and%20TBI)

5. Council of Rehabilitation Psychology Postdoctoral Training Programs (CRPPTP): 15 programs (http://www.div22.org/crpptp-who-we-are)

6. APA Division 22–Rehabilitation Psychology directory: 56 programs (http://www.div22.org/fellowship)

7. Association of Postdoctoral Programs in Clinical Neuropsychology (APPCN) directory: 84 programs (http://www.appcn.org)

8. APA Division 40–Clinical Neuropsychology directory: 123 programs (http://www.div40.org).

These eight data sources provided 594 program listings, from which 297 unique programs were identified (many programs were included in more than one data source). Each of these 297 programs was contacted and asked whether they provided postdoctoral training that included work with patients with disabilities receiving rehabilitation services. Program directors were sent an email asking these questions, and those who did not respond received three follow-up emails, and then a series of telephone calls from the first author. This process identified 100 (34%) training programs that reported postdoctoral training involving patients with disability receiving rehabilitation services. There were 180 (61%) programs that did not work with patients with disabilities receiving rehabilitation services, seven (2%) programs that were closed or inactive, and 10 (3%) programs that did not respond. The nonresponsive programs were predominantly neuropsychology programs and programs at children's hospitals.

These 100 programs were sent a survey (described below). Programs that did not respond received three follow-up emails, and then a series of telephone calls from the first author. Ninety-two programs (92%) completed the survey, and eight programs (8%) did not. The programs that did not complete the survey were almost exclusively VA hospitals, but no further data were available.

## Survey Instrument

The survey gathered information about program characteristics, and also about program structures, processes, and outcomes. The survey had been previously used in a similar national survey in

2007, and was slightly modified for this study. The types of information collected are listed in Table 1 (interested readers can obtain the survey from the first author).

## Data Reporting and Analysis

Data are reported for the 92 programs that completed the survey. Results are reported in regard to training program structure, process, and outcome elements. Differences in these elements were examined in relation to program involvement (primary, secondary, or optional rehabilitation involvement), program type (public/private programs, university programs, VA/DoD programs), and APA accreditation status (yes/no) using general linear models analyses with posthoc comparisons in SPSS Statistics 27.

## Transparency and Openness

We report how we determined our sample size, all data exclusions (if any), all manipulations, and all measures in the study, and we follow Journal Article Reporting Standards (JARS; Kazak, 2018). All data, analysis code, and research materials are available upon request to the first author. Data were analyzed using SPSS 27. This study's design and its analysis were not preregistered. See Appendix for contributor roles.

# Results

## Geographic Distribution of Study Sample

Figure 2 shows the geographic distribution of the study sample. Program distribution by state was roughly congruent with state population, with California and Texas having the highest populations and most programs, followed by Florida, Michigan, and Ohio. States with smaller populations had fewer or no programs. The overall Pearson correlation between state population and number of programs was $r = .82$.

## Training Structure

### *Focus and Setting*

For the 92 postdoctoral training programs that reported working with persons with disabilities receiving rehabilitation services and that completed the survey, 41% programs reported a primary involvement in this area, 26% programs reported a secondary involvement, and 33% programs reported an optional involvement. Thirty-eight percent (38%) programs were in public–private health care settings, 35% were in Department of Veterans Affairs (VA) facilities, and 27% were in university medical centers (see Table 2). Thirty-two percent (32%) were accredited by the American Psychological Association (APA) in a specialty, while 68% were not. Program involvement did not differ by program type or APA accreditation. VA programs were more often APA accredited than were university or public–private programs, however university and public–private programs did not differ in APA accreditation.

### *Organization and Funding*

Fifty-one percent (51%) of programs were in a Level 1 trauma center and 27% were in a pediatric facility. Within the hospital setting, the psychology group was most often part of psychiatry, psychology, behavioral health, or mental health (42%), less often an independent psychology department (35%) or part of physical medicine and rehabilitation (PM&R; 32%), with some psychology groups being part of neurology (12%) or "other" (e.g., pediatrics, spinal cord injury, geriatrics; 14%). Programs with a primary involvement in rehabilitation more often had faculty who were members of a department of PM&R than programs with a secondary or optional involvement in rehabilitation. Psychology faculty were most often classified as medical staff (66%) or allied health staff (20%). Psychologists who were medical staff had voting privileges at 81% of the programs.

Residents[1] were most often funded by general hospital budget (34%) or VA federal funds (29%). Fewer residents were funded by service-line support (19%) or billings/collectables (16%), and very few programs were funded by Centers for Medicare and Medicaid Services (CMS) funds (7%), training grants (6%), or research grants (6%; see Table 3). Residents at programs with a primary or optional rehabilitation involvement were most often funded by general hospital budget or VA federal funds. Residents at programs with a secondary rehabilitation focus were most often funded through billings/collections, service-line support, general hospital budget, or VA federal funds.

### *Faculty Number and Qualifications*

Most programs had 3–12 total faculty members (median = 9, mode = 6). Number of faculty did not differ by program involvement or accreditation status; however, VA programs had significantly more faculty than did university or public–private programs, but university and public–private programs did not differ.

Most programs had 1–6 faculty working in rehabilitation (median = 4, mode = 3). A total of 433 faculty were involved in rehabilitation settings. Number of faculty did not differ by program involvement program type, or accreditation status.

Ninety percent (90%) of programs had faculty with some type of American Board of Professional Psychology (ABPP) specialty board certification, with most programs having one–four faculty with ABPP certification (median = 2, mode = 1). There were similar numbers of programs with faculty who were board certified in rehabilitation psychology (50%) and clinical neuropsychology (62%), with 18% of programs having faculty board certified in other ABPP specialty areas. Whether programs had faculty with ABRP or ABCN (American Board of Clinical Neuropsychology) certification did not differ by program involvement, type, or accreditation.

Fifty percent (50%) of programs had faculty with ABRP certification. Programs with a primary rehabilitation involvement had significantly more faculty with ABRP certification than did programs with secondary or optional involvement, and those programs with secondary and optional involvement did not differ.

[1] The American Psychological Association consistently uses the term *intern* to refer to trainees in 1-year predoctoral training programs that are broad and general in scope, and the term *resident* to refer to trainees in 1- or 2-year postdoctoral training programs that are focused in a specialty area (American Psychological Association Commission on Accreditation, 2015). Although the term *fellow* has been used by many psychology programs to refer to trainees participating in postdoctoral training, the term *resident* is consistent with APA standards and with medical postgraduate education, and is therefore used here.

**Table 1**
*Survey Elements*

| Structural elements | Process elements | Outcome elements |
|---|---|---|
| – Level of involvement and setting | – Length of training; hours of didactics and supervision | – Frequency and types of evaluation procedures |
| – Organization and funding | – Extent of training in relation to Patterson and Hanson (1995) guidelines | – Requirements for graduation |
| – Faculty number and qualifications | – Extent of training in relation to ABRP core competencies | |
| – Trainee number and qualifications | | |
| – Patient populations | | |
| – Goals and curricula | | |



### *Trainee Number and Qualifications*

Most programs had one–six residents (median = 3, mode = 1). This study found that 308 residents participated in these training experiences. Ninety-three percent (93%) of programs accepted trainees only from APA-accredited doctoral and internship programs. Resident salaries were generally $44,500 to $50,000 (25th to 75th percentiles), with a mean of $47,450 (*SD* $5,600; median = $47,500, mode = $45,000). Resident salary did not differ by program involvement, type, or accreditation.

### *Patient Populations*

Programs reported that they commonly treated patients with brain injury (82%), neurologic (81%), pain (74%), psychiatric (73%), orthopedics/musculoskeletal (58%), cardiovascular (58%), and substance abuse (56%) conditions. Programs reported that they seldom or rarely treated patients with HIV/AIDS (81%), blindness/deafness (74%), amputation (56%), cancer (56%), congenital disabilities (55%), developmental/intellectual disabilities (52%), spinal cord injury (49%), and burn injuries (47%). Many programs never treated persons with burn injuries (45%), congenital disabilities (28%), and developmental/intellectual disabilities (22%; see Table 4).

### *Goals and Curricula*

Most programs (95%) had specific written goals and objectives for trainees. Fewer programs (78%) had a written curriculum for didactics.

## Training Process

### *Length of Training, Hours of Didactics, and Supervision*

Length of training was 1 year (32%) or 2 years (68%). Most programs provided 3–4 hr of office-based and other supervision per week (median = 4, mode = 4), and 2–6 hr of didactics and other teaching per week (median = 4, mode = 4).

**Figure 2**
*Geographic Distribution of Study Sample*

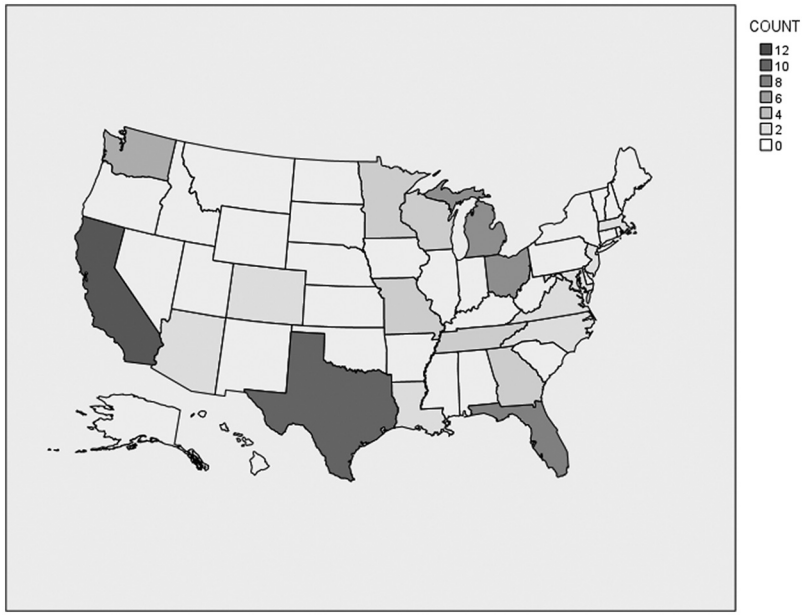


**Table 2**
*Number of Programs by Type and Level of Involvement (Percent of Total)*

| Program type | Primary rehabilitation involvement | Secondary rehabilitation involvement | Optional rehabilitation involvement | Marginal total |
|---|---|---|---|---|
| University hospital/clinics | 10 (11%) | 8 (9%) | 7 (8%) | 25 (27%) |
| Public/private hospitals/clinics | 15 (16%) | 10 (11%) | 10 (11%) | 35 (38%) |
| VA hospitals/clinics | 13 (14%) | 6 (7%) | 13 (14%) | 32 (35%) |
| Marginal total | 38 (42%) | 24 (26%) | 30 (23%) | 92 (100%) |

### *Extent of Training in Relation to Patterson and Hanson (1995) Guidelines*

The general Patterson and Hanson (1995) guidelines for postdoctoral training in rehabilitation psychology recommendations are listed in Table 5. All programs met the following guidelines: 2 or more hours of supervision, provided funding for their residents, and were 1 year or more in duration. Ninety-three percent (93%) to 97% of programs accepted students only from APA-accredited internships, had two or more evaluations per year, provided 2 or more hours of didactics, had written goals and objectives, and had at least annual program evaluations. Eighty-two percent (82%) to 84% of programs had at least two faculty, and worked with five or more common rehabilitation patient populations (SCI, burn, brain injury, neurologic, pain, amputation, orthopedic/musculoskeletal, cancer) and formally taught three or more primary rehabilitation psychology competencies (common rehabilitation populations, adjustment to disability, and cognitive functioning, personality functioning, family/couples functioning, educational/vocational/recreational functioning, sexual functioning, and pain as they related to persons with injury and illness). Most programs met 82 to 100% of the general Patterson and Hanson (1995) guidelines ($M = 93\%$).

### *Extent of Postdoctoral Training in Relation to the Current ABRP Core Competencies*

Postdoctoral training programs were asked about their provision of training in the specific ABRP core competencies, and whether training in each area was provided formally (didactics, journal clubs, conferences, or seminars), informally (during supervision and involvement with rehabilitation teams and disability groups), or not at all (see Table 6). Training programs always taught about individual and cultural diversity, interprofessional consultation, adjustment to disability, and personality functioning. Teaching about diversity and interprofessional consultation was most often formal, while teaching about adjustment to disability and personality functioning was equally often formal or informal.

Most programs taught about cognitive functioning, pain, ethical and legal frameworks, research and program evaluation, substance abuse, educational/vocational/recreational functioning, and family and couples functioning. Teaching about cognitive functioning and pain was most often formal, while teaching about ethical and legal frameworks, substance abuse, and research and program evaluation was equally often formal or informal. Teaching about educational/vocational/recreational functioning, and family and couples functioning was most often informal. Eighty-six (86%) of programs taught about sexual functioning, and this was most likely to be informal.

Training programs formally or informally taught from 67% to 100% of the specific ABRP competencies. On the average, programs formally taught 58% of the ABRP competencies.

**Table 3**
*Trainee Funding*

| Funding source | Percent of programs | % total funding for programs with this funding |
|---|---|---|
| General hospital budget | 34% | 77% |
| VA federal funds | 29% | 100% |
| Service-line support | 19% | 77% |
| Billings/collectables | 16% | 66% |
| Other | 10% | 82% |
| CMS funds | 7% | 89% |
| Research grants | 6% | 26% |
| Training grants | 6% | 44% |

*Note*. CMS = Centers for Medicare and Medicaid Services.

## Training Outcomes

### *Frequency and Types of Evaluation Procedures*

Most programs conducted evaluations from three–six times per year (median = 4, mode = 4). Almost all programs (97%) relied on written evaluations by supervisors to examine trainee progress. A significantly smaller group of programs used knowledge/skill/behavior checklists (26%) and written exams (22%). Some programs used

**Table 4**
*Percent of Programs Treating Populations*

| Patient populations | Commonly | Seldom/rarely | Never |
|---|---|---|---|
| Brain injury | 82% | 16% | 1% |
| Neurologic | 81% | 15% | 4% |
| Pain | 74% | 26% | 0% |
| Psychiatric | 73% | 23% | 4% |
| Ortho/MSK | 60% | 37% | 3% |
| Cardiovascular | 58% | 37% | 6% |
| Substance abuse | 56% | 38% | 6% |
| SCI | 44% | 49% | 7% |
| Amputation | 36% | 56% | 8% |
| Cancer | 34% | 56% | 10% |
| Developmental/intellectual | 26% | 52% | 22% |
| Congenital | 16% | 55% | 28% |
| Blindness and/or deafness | 11% | 74% | 15% |
| Burns | 8% | 47% | 45% |
| HIV/AIDS | 3% | 81% | 16% |

*Note*. MSK = Musculoskeletal; SCI = Spinal Cord Injury.

**Table 5**
*Percent of Programs Meeting Patterson and Hanson (1995) Guidelines*

| Patterson and Hanson Guidelines | Percent of programs |
|---|---|
| Residents accepted only from APA/CPA approved internships | 93% |
| Minimum length of training is 1 year | 100% |
| Minimum of 2 supervisors during training | 82% |
| Curriculum included supervised practice, seminars, and coursework | 100% |
| Minimum of 2 hours didactics per week | 97% |
| Minimum of 2 hours supervision per week | 100% |
| All trainees are funded | 100% |
| There are written objectives | 95% |
| Formal trainee evaluations occur at least twice a year | 94% |
| Program evaluations occur annually | 94% |
| Populations and didactics are related to disabilities and chronic health conditions | 100% |

oral exams (14%), peer/staff written evaluations (11%), observational checklists (10%), measurement of patient outcomes (8%), measures of patient satisfaction (7%), and written vignettes or simulated patients (7%).

### *Requirements for Graduation*

Most programs had written training goals (89%) and written competencies (80%) and residents were required to meet these criteria for graduation. Fifty percent (50%) required completion of a scholarly product, and 49% required faculty consensus. Few programs required that resident pass the EPPP (16%) or pass an oral examination (4%).

## Postdoctoral Training Programs With a Primary Involvement in Rehabilitation

Thirty-eight (38) programs (41%) had a primary involvement in rehabilitation. These programs would be expected to be those most representative of the specialty of rehabilitation psychology.

They were most often based in private–public hospitals (40%), VA/DoD hospitals (34%), and university medical centers (26%). Thirty-nine percent (39%) were in a Level 1 trauma center, and 18% were in a pediatric facility. They were most often found in hospital departments of PM&R (33%), independent psychology departments (31%), or scattered in a variety of other departments (36%). Psychology faculty were most often classified as medical staff (72%) or allied health staff (25%). Psychologists who were medical staff had voting privileges at 78% of the institutions. Thirty-two percent (32%) of training programs were APA accredited.

Most programs had 3–10 faculty involved in rehabilitation psychology training (median = 6, mode = 5). A total of 287 faculty were involved in programs with a primary rehabilitation involvement, which accounted for 66% of the 433 total faculty working in rehabilitation programs overall.

Ninety percent (90%) of programs had faculty with some type of ABPP board certification. Sixty-six percent (66%) of programs had faculty with ABRP specialty board certification, with most programs having zero–one faculty with ABRP certification (median = 1). Sixty-two percent (62%) of programs had faculty with ABCN board certification.

There were 154 residents in the programs with a primary rehabilitation involvement, which accounted for 50% of the 308 total residents working in rehabilitation programs overall. Most programs had two–five residents (median = 3.5, mode = 2).

These programs met a mean of 95% of the Patterson and Hanson (1995) guidelines, with 73% of the programs meeting 100% of the guidelines. These programs formally taught a mean of 69% of the ABRP competencies.

Residents were most often funded by general hospital budget (37%) or VA federal funds (27%). Fewer residents were funded by billings/collectables (13%), service-line support (10%), research grants (10%), CMMS funds (10%), or training grants (7%).

## Discussion

Rehabilitation Psychologists apply psychological knowledge and skills in collaboration with individuals with disabilities and chronic health conditions to maximize health and welfare, reduce secondary complications, promote self-care, and enhance caregiver functioning.

**Table 6**
*Percent of Programs Providing Training in American Board of Rehabilitation Psychology (ABRP) Core Competencies*

| ABRP competencies | Formal training | Informal training | Not provided |
|---|---|---|---|
| Cognitive functioning | 88% | 11% | 1% |
| Diversity and cultural | 85% | 15% | 0% |
| Interprofessional | 69% | 32% | 0% |
| Pain | 62% | 37% | 1% |
| Ethical and legal frameworks | 55% | 44% | 1% |
| Adjustment to disability | 52% | 48% | 0% |
| Personality functioning | 52% | 48% | 0% |
| Substance abuse | 47% | 49% | 4% |
| Research and program eval | 47% | 45% | 8% |
| Educational/vocational/recreational functioning | 36% | 60% | 4% |
| Sexual functioning | 32% | 55% | 14% |
| Family/couples functioning | 23% | 71% | 6% |

Because of this focus, the rehabilitation psychology workforce is an important component of the national health care workforce. Approximately 60% of American adults have at least one chronic health condition, with approximately 42% having more than one chronic condition, and approximately 90% of the $3.8 trillion in U.S. annual health care expenditures are for people with chronic health conditions (Buttorff et al., 2017; Martin et al., 2021). An estimated 12% of adults in the United States report a disability, over 40 million persons, and disability-associated health care expenditures account for approximately 36% of all health care expenditures for adults (Khavjou et al., 2020).

Rehabilitation psychology postdoctoral training is the pipeline to the rehabilitation psychology workforce. Such training has been occurring for over 70 years, with general consensus about the primary structure and process elements of these training programs, and with increasing definition of the specific competencies that are the expected outcomes of this training. However, a survey of rehabilitation psychology postdoctoral training programs in 2007 identified the need for a clear set of training guidelines (Stiers & Stucky, 2008). Following this recommendation, the rehabilitation psychology community coalesced around the 2011 Baltimore Conference in order to develop consensus guidelines about the structures, processes, and outcomes of rehabilitation psychology postdoctoral training programs, and to create the Council of Training Programs in order to promote training programs' abilities to implement the guidelines and to formally recognize programs in compliance with the guidelines. The Council of Training Programs began formal operations in 2015. The current study described here was conducted in order to examine the structures, processes, and outcomes of rehabilitation psychology postdoctoral training programs as they exist today, and to compare them with programs surveyed in 2007.

Using similar search strategies and survey procedures, in 2007 there were 46 psychology postdoctoral training programs identified involving persons with disabilities receiving rehabilitation services, and in 2019 there were 92 such programs identified, a 200% increase. The number of programs with a primary rehabilitation involvement increased from 22 to 38, an increase of 173%, however programs with a primary involvement remained at a nearly constant proportion of the total programs (48% in 2007 and 41% in 2019).

Table 7 shows the distributions of programs in 2007 by type (university hospital/clinic, public–private hospital/clinic, VA-DoD hospital/clinic) and by involvement (primary rehabilitation involvement, secondary rehabilitation involvement, optional rehabilitation involvement), and can be compared against Table 2, showing the same data for 2019. The greatest change over time was in VA-DoD programs, which increased from 10 to 32, with an increase in proportion from 22% of programs to 35% of programs, and an increase in those with a primary rehabilitation involvement from zero programs in 2007 to 13 programs in 2019. University programs remained at about the same number, 19 and 25, but their proportion decreased from 41% of programs to 27% of programs. Public–private programs increased from 17 to 35, maintaining a nearly constant proportional representation of 37% and 38%.

Tables 8 and 9 show comparative data for 2007 and 2019. The number of programs with primary involvement with persons with disability receiving rehabilitation services increased from 22 to 38, an increase of 173%. The number of programs with a secondary or optional involvement increased from 24 to 54, an increase of 229%. The number of residents participating in training in these programs at the times of the surveys increased from 138 to 308, an increase of 223%, and the number of faculty participating in these programs increased from 256 to 433, an increase of 169%.

The Baltimore Conference also recommend that the ideal length of training should be 2 years, and in 2007, 44% of programs were 2 years in duration while in 2019, 68% of programs were 2 years in duration, an increase of 24%. The percent of programs with ABPP certified faculty increased from 71 to 90%. The Baltimore Conference recommended that psychology postdoctoral training programs working with rehabilitation populations have faculty with ABRP certification, and in 2007, 41% of programs had faculty with ABRP certification, while in 2019, 50% of programs had faculty with ABRP certification, an increase of 9%. However, in 2007, 33% of programs had faculty with ABCN certification, while in 2019, 62% of programs had faculty with ABCN certification, a 29% increase.

Programs were asked about the patient populations with whom residents commonly worked, and Table 10 shows these data for 2007 and 2019. There was an overall decrease in the variety of populations with whom residents worked, so that residency training has become more focused on specific populations to the exclusion of others.

Programs were asked about the ABRP competencies that they formally taught, and Table 11 shows these data for 2007 and 2019. There was an overall decrease in number of competencies that are formally taught, so that residency training has become more focused on specific competencies to the exclusion of others.

Overall, these results show that there has been a substantial increase over the past 12 years in the number of psychology postdoctoral training programs involving work with persons with disability receiving rehabilitation services, and a substantial increase in the number of faculty and trainees working in these settings. This increase in psychologists and trainees working with these populations is a reflection of the increasing participation of psychologists in health care teams in

**Table 7**
*Number of Programs by Type and Level of Involvement: 2007 (Percent of Total)*

| Program type | Primary rehabilitation involvement | Secondary rehabilitation involvement | Optional rehabilitation involvement | Marginal |
|---|---|---|---|---|
| University hospital/clinics | 11 (24%) | 6 (13%) | 2 (4%) | 19 (41%) |
| Public/private hospitals/clinics | 11 (24%) | 4 (9%) | 2 (4%) | 17 (37%) |
| VA-DoD hospitals/clinics | 0 (0%) | 3 (7%) | 7 (15%) | 10 (22%) |
| Marginal | 22 (48%) | 13 (28%) | 11 (24%) | 46 (100%) |

**Table 8**
*Program Size and Change Over Time*

| Program characteristics | 2007 ($n$ = 46) | 2019 ($n$ = 92) | 12-year % change |
|---|---|---|---|
| Number of programs with a primary involvement | 22 | 38 | 173% |
| Number of programs with a secondary or optional involvement | 24 | 54 | 229% |
| Number of faculty | 256 | 433 | 169% |
| Number of residents | 138 | 308 | 223% |

general (American Psychological Association Center for Workforce Studies, 2018) and also a reflection of the importance of providing comprehensive interdisciplinary services to rehabilitation populations (Heinemann et al., 2012; Özdemir et al., 2001).

The biggest proportional growth in these programs has been in VA/DoD settings, with public–private settings staying proportionally the same, but with a decrease in the proportion of university programs. There has been an increase in the percent of programs with ABPP certified faculty, however this growth has been greater for ABCN faculty than for ABRP faculty.

There has been an overall decrease in the variety of rehabilitation populations with which residents work, so that residency training has become more focused on specific populations to the exclusion of others. Consider, for example, that fewer than half of the programs involve work with persons with spinal cord injury or amputation, both important traditional rehabilitation populations, and that only 60% of programs involve work with persons with orthopedic/musculoskeletal conditions, one of the most common causes of disability. Many programs involve work with brain injury and neurologic disorders, however this is only a small proportion of all patients receiving rehabilitation services. There appears to have been a growth in psychologists involved with specialty rehabilitation populations rather than general rehabilitation populations that are the majority of rehabilitation patients.

**Table 9**
*Program Elements and Change Over Time*

| Program characteristics | 2007 ($n$ = 46) | 2019 ($n$ = 92) | 12-year change in % |
|---|---|---|---|
| Percent of programs requiring APA-accredited internship | 74% | 93% | 19% |
| Percent of programs with ABPP-certified faculty | 72% | 90% | 18% |
| Percent of programs with ABRP-certified faculty | 40% | 50% | 10% |
| Percent of programs with ABCN-certified faculty | 33% | 62% | 29% |
| Length of training 2 years | 44% | 68% | 24% |
| Written curriculum for didactics | 63% | 78% | 15% |
| Program mean percent of informally or formally teaching the ABRP competencies | 98% | 97% | −2% |
| Program mean percent of formally teaching the ABRP competencies | 75% | 58% | −14% |

*Note*. APA = American Psychological Association; ABPP = American Board of Professional Psychology; ABRP= American Board of Rehabilitation Psychology; ABCN = American Board of Clinical Neuropsychology.

There has also been an overall decrease in number of ABRP competencies that are formally taught, so that residency training has become more focused on specific competencies to the exclusion of others. Consider, for example, that less than half of the programs formally teach issues related to sexual functioning, family/couples functioning, or educational/vocational/recreational functioning, all issues strongly related to quality of life for persons with disability, and that only 52% of programs formally teach adjustment to disability, which is a foundational construct in understanding the individual and social psychology of disability. Many programs formally teach about cognitive functioning, diversity and cultural issues; however, these are only part of a much larger set of competencies needed for work with persons experiencing disability.

The definition of a psychological specialty is that it is "characterized by a distinctive configuration of competent services for specified problems and populations" (American Psychological Association Commission for the Recognition of Specialties and Subspecialties in Professional Psychology, 2020). Persons experiencing disability have complex challenges involving impairments in body functions and structures, limitations in activities, and restrictions in social role participation (WHO, 2013). In order to provide competent services to persons with disability and chronic health conditions receiving rehabilitation services, residents should develop professional competencies related to health self-management, adjustment to disability, social role participation, and caregiver and team functioning. However, although there has been growth in the number of psychologists and trainees working with rehabilitation populations, many rehabilitation patients and many rehabilitation teams interacted with psychologists and psychology trainees who's primary professional concentration is not in rehabilitation psychology, and in many settings the work and training has become more narrowly focused on specific populations and specific competencies to the exclusion of others. This raises the concern that many of these patients and teams may not be receiving the complete range of appropriate specialized services.

**Table 10**
*Percent of Programs Where Trainees Commonly Worked With Populations*

| Patient populations | 2007 ($n$ = 46) | 2019 ($n$ = 92) | Change in % |
|---|---|---|---|
| Brain injury | 98% | 82% | −16% |
| Neurologic | 100% | 81% | −19% |
| Pain | 89% | 74% | −15% |
| Psychiatric | 84% | 73% | −11% |
| Ortho/MSK | 80% | 60% | −20% |
| Cardiovascular | 71% | 58% | −13% |
| Substance abuse | 80% | 56% | −24% |
| SCI | 91% | 44% | −47% |
| Amputation | 67% | 36% | −31% |
| Cancer | 67% | 34% | −33% |
| Developmental/intellectual disorders | 44% | 26% | −18% |
| Congenital | 58% | 16% | −42% |
| Blindness and/or deafness | 36% | 11% | −25% |
| Burns | 36% | 8% | −28% |
| HIV/AIDS | 35% | 3% | −32% |

*Note*. MSK = Musculoskeletal; SCI = Spinal Cord Injury.

**Table 11**
*Percent of Programs That Formally Taught Competencies*

| Competencies formally taught | 2007 ($n$ = 46) | 2019 ($n$ = 92) | Change in % |
|---|---|---|---|
| Cognitive functioning | 93% | 88% | −5% |
| Diversity and cultural issues | 96% | 85% | −11% |
| Interprofessional collaboration and consultation | 67% | 69% | 2% |
| Pain | 71% | 62% | −9% |
| Ethical and legal frameworks | 82% | 55% | −27% |
| Adjustment to disability | 80% | 52% | −28% |
| Personality functioning | 75% | 52% | −23% |
| Substance abuse | 74% | 47% | −27% |
| Clinical research and program evaluation | 74% | 47% | −27% |
| Educational/vocational/recreational functioning | 58% | 36% | −22% |
| Sexual functioning | 50% | 32% | −18% |
| Family/couples functioning | 59% | 23% | −36% |
| Program mean percent of formally teaching the American Board of Rehabilitation Psychology (ABRP) competencies | 75% | 58% | −14% |

## Pathway to the Future

Given the importance of the rehabilitation psychology workforce to national health priorities, it is encouraging that psychology postdoctoral training programs with a primary involvement in rehabilitation have increased by 170% over this 12-year period, and that the number of psychology trainees gaining experience in rehabilitation has increased by over 220%. However, it is evident that many of these training programs would benefit from greater interaction with rehabilitation psychology specialists, and greater availability of curricular materials to teach understanding of a wide range of rehabilitation patients and to increase formal teaching of a wide range of the specialty competencies that are essential for working in these settings.

The Council of Rehabilitation Psychology Training Programs has undertaken a number of efforts to support psychology training programs that involve work with persons with disability receiving rehabilitation services, including developing a series of didactic modules on core rehabilitation psychology populations, problems, and procedures, and developing guidelines for training program structures, processes, and outcome measurement in rehabilitation settings. There is a need and an opportunity for rehabilitation psychology specialists to provide support and resources to all psychologists and trainees working with rehabilitation patients and teams, and to help rehabilitation managers understand the differences among psychology specialists.

## Limitations

This study did not attempt to examine programs that provided research training only, or training related to persons with serious/persistent mental illness (what is commonly called psychosocial rehabilitation). Although programs of these types are important in considering the broad field of rehabilitation psychology, this current study focused only on postdoctoral programs providing training in rehabilitation psychology related to disabilities. However, with a 92% response rate from programs providing this type of training, these results can be considered useful.

Another significant limitation of this study is that information was not collected regarding faculty and trainee characteristics, specifically age, sex, gender, race, and ethnicity. Therefore, it is not possible to discuss the diversity of the psychology workforce in rehabilitation settings, and whether there is more or less diversity as compared to other settings.

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## Appendix

*Contributor Roles Taxonomy*

| Role | Contributor |
|---|---|
| Conceptualization: Ideas; formulation or evolution of overarching research goals and aims. | Stiers Stucky |
| Data curation: Management activities to annotate (produce metadata), scrub data and maintain research data (including software code, where it is necessary for interpreting the data itself) for initial use and later reuse. | Stiers |
| Formal analysis: Application of statistical, mathematical, computational, or other formal techniques to analyze or synthesize study data. | Stiers |
| Funding acquisition: Acquisition of the financial support for the project leading to this publication. | Stiers |
| Investigation: Conducting a research and investigation process, specifically performing the experiments, or data/evidence collection. | Stiers |
| Methodology: Development or design of methodology; creation of models. | Stiers Stucky |
| Project administration: Management and coordination responsibility for the research activity planning and execution. | Stiers |
| Resources: Provision of study materials, reagents, materials, patients, laboratory samples, animals, instrumentation, computing resources, or other analysis tools. | Stiers |
| Software: Programming, software development; designing computer programs; implementation of the computer code and supporting algorithms; testing of existing code components. | Stiers |
| Supervision: Oversight and leadership responsibility for the research activity planning and execution, including mentorship external to the core team. | Stiers |
| Validation: Verification, whether as a part of the activity or separate, of the overall replication/reproducibility of results/experiments and other research outputs. | Stiers Stucky |
| Visualization: Preparation, creation and/or presentation of the published work, specifically visualization/data presentation. | Stiers Stucky |
| Writing—original draft: Preparation, creation and/or presentation of the published work, specifically writing the initial draft (including substantive translation). | Stiers |
| Writing—review and editing: Preparation, creation and/or presentation of the published work by those from the original research group, specifically critical review, commentary or revision—including pre- or postpublication stages. | Stiers Stucky |

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