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## Taxonomy for Education and Training in Clinical Neuropsychology: past, present, and future

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### ABSTRACT

**Objective:** Historically, the clinical neuropsychology training community has not clearly or consistently defined education or training opportunities. The lack of consistency has limited students' and trainees' ability to accurately assess and compare the intensity of neuropsychology-specific training provided by programs. To address these issues and produce greater 'truth in advertising' across programs, CNS, with SCN's Education Advisory Committee (EAC), ADECN, AITCN, and APPCN constructed a specialty-specific taxonomy, namely, the *Taxonomy for Education and Training in Clinical Neuropsychology*. The taxonomy provides consensus in the description of training offered by doctoral, internship, and postdoctoral programs, as well as at the post-licensure stage. Although the CNS approved the taxonomy in February 2015, many programs have not adopted its language. Increased awareness of the taxonomy and the reasons behind its development and structure, as well as its potential benefits, are warranted. **Methods:** In 2016, a working group of clinical neuropsychologists from the EAC and APPCN, all authors of this manuscript, was created and tasked with disseminating information about the taxonomy. Group members held regular conference calls, leading to the generation of this manuscript. **Results:** This manuscript is the primary byproduct of the working group. Its purpose is to (1) outline the history behind the development of the taxonomy, (2) detail its structure and utility, (3) address the expected impact of its adoption, and (4) call for its adoption across training programs. **Conclusions:** This manuscript outlines the development and structure of the clinical neuropsychology taxonomy and addresses the need for its adoption across training programs.

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## Background

Historically, a lack of consistency in definitions to describe education and training opportunities has existed across the professional psychology training community (American Psychological Association [APA], 2009a, Section 90-5). Professional organizations and groups

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have used different terminology in their description of doctoral, internship, and postdoctoral programs. For example, the Association of Psychology Postdoctoral and Internship Centers (APPIC) has used the terms 'major rotation' and 'informal/minor/external rotation' in describing internship training programs (<https://membership.appic.org/directory/search>; APPIC, 2016), whereas the APA accreditation regulations have allowed accredited programs to offer one or more 'areas of emphasis' (APA Commission on Accreditation, 2014). However, because these terms were never defined or regulated (APA Commission on Accreditation, 2014), there has been a significant lack of consistency in how they have been applied across training programs. To this point, a qualitative review of 35 randomly selected websites of APA-accredited graduate programs in clinical, counseling, and school psychology discovered inconsistent usage of terms used to describe training in recognized specialties (APA, 2011) and learning opportunities (Nutt, 2006). This lack of consistency has not only hindered students' and trainees' ability to accurately evaluate and compare prospective academic and training programs, it has limited efficient communication and thus a clear understanding of the education and training of professional psychologists beyond the broad and general training consistent with accreditation standards (APA, 2009b, 2015).

When implemented discipline-wide, taxonomies have the power to overcome these issues through the provision of a structured framework and common language for describing training opportunities. The potential benefits of a taxonomy for professional psychology have long been discussed by multiple groups and organizations, including the APA's Commission for the Recognition of Specialties and Proficiencies in Professional Psychology (CRSPPP), the Council of Specialties in Professional Psychology (CoS), and the Council of Credentialing Organizations in Professional Psychology (CCOPP). Unfortunately, despite best intentions, most early efforts to define clear and consistent terms to describe the profession of psychology and the education and training opportunities therein, failed to produce inter-organizational agreement or led to APA policy (Rozenky et al., 2015). In 2005, the APA Task Force on Quality Assurance of Education and Training for Recognized Proficiencies in Professional Psychology openly recognized these issues, stating that 'there appears to be a need for a clearer taxonomy of terminology in describing the structure of professional psychology, from its education and training foundations, through credentialing and practice representations to the public' (APA, Task Force on Quality Assurance of Education and Training for Recognized Proficiencies in Professional Psychology, 2005). Also directly recognizing the need for a taxonomy, in 2006 the APA's CRSPPP, CoS, and CCOPP held a series of discussions aimed at organizing and clearly defining the terminology used to describe education and training opportunities within professional psychology (APA, Task Force on the Assessment of Competence in Professional Psychology, 2006). One year later, an APA task force was formed and tasked with formally developing a taxonomy. The CRSPPP then built upon this task force's final work product. Via ongoing collaboration with multiple constituency groups, including the CoS, American Board of Professional Psychology (ABPP), and CCOPP, and after feedback on early iterations of the taxonomy was solicited and incorporated from professionals and the public (Rozenky, 2010a, 2010b), a final version of the taxonomy was created, adopted as APA policy, and published as *Education and Training Guidelines: A Taxonomy for Education and Training in Professional Psychology Health Service Specialties* (APA, 2012). For the first time, these guidelines established a structure and consistent set of terms and definitions related to education and training to be utilized across each of the health service psychology specialties (APA, 2011) recognized by the APA. Specifically, CRSPPP requested

that all specialties develop their own taxonomy using the terms 'Major Area of Study,' 'Emphasis,' 'Experience,' and 'Exposure' to define the intensity of training opportunities at each stage of the training sequence or decide whether these terms were applicable at a given training stage. Thus, CRSPPP authored the framework for the general APA taxonomy, individual specialties, including clinical neuropsychology, were tasked with defining the intensity levels for their respective specialties.

### **Development of the *Taxonomy for Education and Training in Clinical Neuropsychology***

In discussing the development of the *Taxonomy for Education and Training in Clinical Neuropsychology* (see Table 1), it is first necessary to place it in the context of other documents and efforts relevant to education and training. The taxonomy was, in fact, built upon an existing foundation of education and training guidelines, including the requirements for accreditation by the APA and the Canadian Psychological Association (CPA) and the Policy Statement from the Houston Conference on Specialty Education and Training in Clinical Neuropsychology (Hannay et al., 1998), or so-called 'Houston Conference Guidelines' (HCG). The latter specifically outlines clinical neuropsychology's overarching training guidelines, including delineation that specialization take place at all stages of training (i.e. doctoral, internship, and postdoctoral) and that completion of a two-year postdoctoral program is required for specialization. The clinical neuropsychology taxonomy was developed to be consistent with and supportive of the HCG, not to supplant them, by offering specific and common definitions for programs to apply to their HCG-consistent training. At the doctoral and internship training levels, it is recognized that all programs must meet the broad and general requirements for accreditation established by the APA or CPA. At the postdoctoral training level, the expectations for designation as a Major Area of Study are consistent with the training standards for specialty accreditation in clinical neuropsychology through the APA.

In the case of clinical neuropsychology, the request for the development of a specialty-specific taxonomy was conveyed to the Clinical Neuropsychology Synarchy (CNS), which serves as representative to the CoS. Participating members of CNS include the major professional and training organizations in neuropsychology in the United States: American Academy of Clinical Neuropsychology (AACN), the American Board of Clinical Neuropsychology (ABCN), American Board of Professional Neuropsychology (ABN), the Association for Doctoral Education in Clinical Neuropsychology (ADECN), the Association for Internship Training in Clinical Neuropsychology (AITCN), the Association of Postdoctoral Programs in Clinical Neuropsychology (APPCN), Society for Clinical Neuropsychology (SCN; APA Division 40), and the National Academy of Neuropsychology (NAN).

The CNS developed an initial taxonomy for clinical neuropsychology in Spring 2014 and subsequently sent this to the CoS who then forwarded it to CRSPPP. CRSPPP asked for additional clarity of terms at various levels of intensity and training. CNS then forwarded the initial taxonomy to the Education Advisory Committee (EAC) of the SCN, which comprised members that represent doctoral, internship, and postdoctoral training levels. Over a period of approximately six months, the EAC sought further input from members of the major training organizations in neuropsychology, including ADECN, AITCN, and APPCN. Each organization provided feedback with respect to the level of intensity within each stage of the education and training sequence. This resulted in vigorous discussion, deliberation, and

**Table 1.** *Taxonomy for Education and Training in Clinical Neuropsychology.*

Major Area of Study	Doctoral <sup>a</sup>	Internship <sup>a</sup>	Postdoctoral <sup>a</sup>	Post-licensure <sup>a</sup>
	Minimum of (1) three neuropsychology <sup>b</sup> courses, (2) two clinical neuropsychology practica <sup>c</sup> , (3) additional coursework, practica, or didactics in clinical neuropsychology <sup>d</sup> , AND (4) dissertation or research project in neuropsychology	(1) At least 50% of training time in clinical neuropsychology AND (2) didactic experiences consistent with Houston Conference guidelines for knowledge <sup>e</sup> and skill <sup>f</sup>	(1) Two-years full time (or the equivalent <sup>g</sup> ) of formal training in clinical neuropsychology, with relevant didactic, clinical, and research activities (including assessment and intervention that incorporate neuropsychological theories, perspectives, or methods and exposure to related healthcare disciplines)	N/A
Emphasis	(1) Two neuropsychology courses <sup>b</sup> AND (2) two clinical neuropsychology practica <sup>c</sup>	≥30% and <50% of experience in clinical neuropsychology supervised by a clinical neuropsychologist	N/A	N/A
Experience	(1) One or two neuropsychology course(s) <sup>c</sup> AND (2) one clinical neuropsychology practicum <sup>c</sup>	>10% and <30% of supervised experience in clinical neuropsychology	N/A	N/A
Exposure	(1) One neuropsychology course <sup>b</sup> OR (2) one clinical neuropsychology practicum <sup>c</sup>	5–10% of supervised experience in clinical neuropsychology and/or didactic training	N/A	Any hours of CE in clinical neuropsychology

Notes: As per APA guidelines all supervision in clinical neuropsychology must be provided by persons with competencies in clinical neuropsychology, aka, a clinical neuropsychologist.

<sup>a</sup>At the doctoral and internship training levels, it is recognized that all programs must meet the broad and general requirements for accreditation by the American Psychological Association (APA) or the CPA. At the postdoctoral training level, it is recognized that the Major Area of Study is consistent with training standards for specialty accreditation in clinical neuropsychology through the APA. Regarding all levels of training, guidelines for specialty education and training in clinical neuropsychology are specified in the Houston Conference Guidelines, Hannay, JH, Biellauskas, LA, Crosson, BA, Hammeke, TA, Hammsher, K. deS., & Koffler, SP. (1998). Proceedings of the Houston Conference on Specialty Education and Training in Clinical Neuropsychology, *Archives of Clinical Neuropsychology*, 13, 157–250.

<sup>b</sup>To be a neuropsychology course, the course content must prominently address areas outlined in the Houston Conference Guidelines policy statement, Section VI.3 and Section VI.4. Additionally, the number of courses listed above assumes that courses are three credit hours each, within a semester system. As such, the Major Area of Study would require a minimum of nine semester credit hours or 13.5 quarter credit hours, the Emphasis would require a minimum of six semester credit hours or nine quarter credit hours, and the Experience and the Exposure would require a minimum of three semester credit hours or 4.5 quarter credit hours.

<sup>c</sup>Defined by practicum experience for equivalent of one academic year (e.g. 9 months, in semester or quarter systems) consisting of supervised training for at least 8 h per week, with at least 50% clinical contact with patients in the provision of neuropsychological services.

<sup>d</sup>Additional training experiences can also include, but are not limited to, research experiences, lab meetings, brown bags, lecture/colloquia series, grand rounds, etc. and should be consistent with the guidelines for specialty education and training that are specified in the Houston Conference policy statement.

<sup>e</sup>Knowledge base. Clinical neuropsychologists possess the following knowledge. This core knowledge may be acquired through multiple pathways, not limited to courses, and may come through other documentable didactic methods. 1. Generic Psychology Core: A. Statistics and methodology B. Learning, cognition and perception C. Social psychology and personality D. Biological basis of behavior E. Life span development F. History. G. Cultural and individual differences and diversity 2. Generic Clinical Core: A. Psychopathology B. Psychometric theory C. Interview and assessment techniques D. Intervention techniques E. Professional ethics 3. Foundations for the study of brain-behavior relationships: A. Functional neuroanatomy B. Neurological and related disorders including their etiology, pathology, course and treatment C. Non-neurologic conditions affecting CNS functioning D. Neuroimaging and other neurodiagnostic techniques E. Neurochemistry of behavior (e.g. psychopharmacology) F. Neuropsychology of the practice of clinical neuropsychology: A. Specialized neuropsychological assessment techniques B. Specialized Neuropsychological intervention techniques C. Research design and analysis in neuropsychology D. Professional issues and ethics in neuropsychology E. Practical implications of neuropsychological conditions.

<sup>f</sup>Skills. Clinical neuropsychologists possess the following generic clinical skills and skills in clinical neuropsychology. These core skills may be acquired through multiple pathways, not limited to courses, and may come through other documentable didactic methods. Domains of skills and examples are: 1. Assessment: Information gathering. History taking. Selection of tests and measures. Administration of tests and measures. Interpretation and diagnosis. Treatment planning. Report writing. Provision of feedback. Recognition of multicultural issues. 2. Treatment and Interventions: Identification of intervention targets. Specification of intervention needs. Formulation of an intervention plan. Implementation of the plan. Monitoring and adjustment to the plan as needed. Assessment of outcome. Recognition of multicultural issues. 3. Consultation (patients, families, medical colleagues, agencies, etc.): A. Effective basic communication (e.g. listening, explaining, and negotiating) B. Determination and clarification of referral issues C. Education of referral sources regarding neuropsychological services (strengths and limitations) E. Communication of evaluation results and recommendations F. Education of patients and families regarding services and disorder(s) 4. Research: Selection of appropriate research topics. Review of relevant literature. Design of research. Execution of research. Monitoring of progress. Evaluation of outcome. Communication of results. 5. Teaching and Supervision: Methods of effective teaching. Plan and design of courses and curriculums. Use of effective educational technologies. Use of effective supervision methodologies (assessment, intervention, and research).

<sup>g</sup>The residency experience must occur on at least a half-time basis.

debate until a consensus was established at each stage of training. A final document was sent back to the CNS and was adopted in February 2015.

### Structure of the taxonomy

The taxonomy establishes hierarchical definitions of education and training opportunities within academic, clinical, and research domains at each of the four stages in the sequence of professional training: doctoral, internship, postdoctoral, and post-licensure. The parameters for the content and range of experiences necessary to meet each level of intensity are defined by the taxonomy. Importantly, as described in the 'Doctoral Program' section below, the taxonomy also establishes guidelines regarding the content that needs to be covered to constitute a neuropsychology course and provides much needed clarity as to what constitutes a 'practicum' in clinical neuropsychology. In this way, all programs now have a universal means of consistently describing the specific types and number of training opportunities they offer. Ultimately, the totality of each program's education and training offerings will meet the definition for only one of four levels of training intensity. In order from highest to lowest intensity, these levels are Major Area of Study, Emphasis, Experience, and Exposure. The specific definitions for each level at each stage of training are outlined in their respective sections below. In general, and in keeping consistent with the broad definitions established in the APA general taxonomy (APA, 2012), each level provides the following degree of training intensity within clinical neuropsychology:

- Major Area of Study: conveys the highest level of education and training opportunity available in clinical neuropsychology at each stage, with respect to both the intensity and amount of involvement in training.
- Emphasis: provides in-depth coursework and/or supervised training in clinical neuropsychology, but not at the level defined by Major Area of Study.
- Experience: affords individuals with a greater opportunity to obtain knowledge and skills than would be possible solely via an Exposure, but is still limited in scope.
- Exposure: represents an education or training opportunity that is limited in type and intensity. This may consist of a structured learning activity, such as a didactic, single course, or circumscribed clinical experience designed as an opportunity to acquaint an individual with neuropsychology.

### Doctoral programs

Within doctoral programs, a designation of neuropsychology as a Major Area of Study requires a minimum of (1) three neuropsychology courses with content that prominently addresses foundations for the study of brain-behavior relationships and foundations for the practice of clinical neuropsychology as outlined in the HCG, (2) two clinical neuropsychology practica, with a practicum defined as lasting the equivalent of one academic year and consisting of supervised training for at least 8 h per week, with at least 50% of time devoted to clinical contact with patients in the provision of neuropsychological services, (3) additional coursework, practica, or didactics in clinical neuropsychology, and (4) completion of a dissertation or research project in neuropsychology. The level of Emphasis requires two neuropsychology courses and two neuropsychology practica. In contrast, the level of Experience

requires one or two neuropsychology courses and one neuropsychology practicum, while the level of Exposure requires only one of either.

A practical example is provided in Table 2. As an additional exemplar, the future website of an APA-accredited doctoral program offering a Major Area of Study in Clinical Neuropsychology might read:

The internship program at X University is accredited by the APA and offers a *Major Area of Study* in Clinical Neuropsychology. Students in this training program will be required to enroll in at least three neuropsychology courses covering the foundations of brain behavior relationships and practice of clinical neuropsychology, and will complete a dissertation in the area of neuropsychology. Within the Department of Psychology, there is additional didactic training in specific areas of clinical neuropsychology in which the neuropsychology students will take part. Clinical training will include at least two clinical neuropsychology practica, with at least 50% of each being dedicated to the provision of clinical neuropsychology services to various patient populations.

### Internship programs

For internship programs, a Major Area of Study in neuropsychology requires (1) at least 50% of training time be devoted to clinical neuropsychology, and (2) didactic experiences consistent with the HCG for knowledge and skill. The involvement in supervised clinical neuropsychology experience reduces to 30–50% at the level of Emphasis and 10–30% at the level of Experience. A programmatic Exposure requires only 5–10% of supervised experience in clinical neuropsychology and/or didactic training.

A practical example is provided in Table 3. As an additional exemplar, the future website of an APA-accredited internship program offering an Experience or Exposure in Clinical Neuropsychology may read as follows:

Our APA-accredited internship program offers an *Experience* in Clinical Neuropsychology, with 25% of the intern's time dedicated to training in clinical neuropsychology. In addition to clinical training, the program offers didactic experiences focused in the area of

**Table 2.** *Taxonomy for Education and Training in Clinical Neuropsychology: doctoral example.*

- Professor Jane, University X: 'My doctoral program offers a "concentration" in neuropsychology. Is it an "Emphasis" or a "Major Area of Study" in clinical neuropsychology?'

*The program provides/requires:*

- Neuropsychology dissertation
- Two courses devoted to clinical neuropsychology
- One nine-month neuropsychology practicum
- University X's training program meets criteria for an 'Experience' in clinical neuropsychology. It does not meet the 'two practicum' requirement for a Major Area of Study or an Emphasis

**Table 3.** *Taxonomy for Education and Training in Clinical Neuropsychology: internship example.*

- Training Director Jim, Hospital Z: 'My internship program offers a "major rotation" in neuropsychology. Is it a Major Area of Study?'

*The program provides/requires:*

- 30% time in the provision of supervised clinical neuropsychology service
- Weekly didactic in brain-behavior relationships
- Hospital Z's training program meets criteria for an 'Emphasis' in clinical neuropsychology. It does not meet the '50% of training time in clinical neuropsychology' requirement for a Major Area of Study



neuropsychology. Alternatively, should an intern elect, our program offers an *Exposure* in Clinical Neuropsychology, which includes the option of participating in the aforementioned didactics and/or supervised clinical training in neuropsychology for 10% of the training year.

### **Postdoctoral programs**

Consistent with the HCG, specialization in clinical neuropsychology occurs only through postdoctoral programs offering a Major Area of Study. This level of education and training experience mandates two-years of full-time (or the equivalent) of formal training in clinical neuropsychology, with the inclusion of relevant didactic, clinical, and research activities. These activities include clinical assessment and intervention that incorporate neuropsychological theories, perspectives, or methods and exposure to related healthcare disciplines. The APA general taxonomy framework indicates that only Major Area of Study and Exposure can be defined at the postdoctoral level, and the Major Area of Study for all specialties must require 80% or more time spent in specialty training (APA, 2012, p. 7). In contrast, the clinical neuropsychology taxonomy requires that all training be within the specialty.

As a practical example, the future website of a postdoctoral program offering a Major Area of Study in Clinical Neuropsychology may read as follows:

The Postdoctoral Fellowship at Y Medical Center offers a *Major Area of Study* in Clinical Neuropsychology and meets all of the requirements outlined in the HCG. This two-year program offers full-time formal training in the area of clinical neuropsychology. Clinical experiences include clinical assessment and intervention and require collaboration with colleagues in the Departments of Neurology, Neurosurgery, and Physical Medicine and Rehabilitation as needed on a case-by-case basis. In addition to clinical training, fellows will attend a case conference and didactic series dedicated to Neuropsychology, in addition to optional didactics offered through the departments of Psychiatry, Neuropathology, Neurology, and Neurosurgery. Opportunities also exist for fellows to participate in clinical research.

### **Post-licensure**

Most state or provincial licensing boards require clinical neuropsychologists to engage in annual continuing education (CE). The goal of CE is to maintain or improve established competencies, either by updating previously acquired knowledge and/or skills or by developing new knowledge and/or skills. However, CE is not a method for acquiring core knowledge or skills to practice as a clinical neuropsychologist. As such, at the post-licensure stage, there is no mechanism for gaining education or training in clinical neuropsychology beyond the level of Exposure. Any hours of CE in clinical neuropsychology are considered at the level of Exposure.

### **Expected impact**

The collective use of the taxonomy's terminology and programmatic descriptors will help clinical neuropsychology training programs more accurately and consistently describe the content and range of training opportunities. This taxonomy will also help programs wishing to offer a certain level of training intensity know how to modify their program to meet the minimum specifications required for their desired level of intensity. Perhaps most

importantly, consistency in the language used when describing and promoting their education and training structure to prospective students/trainees will contribute to greater 'truth in advertising' across programs. This in turn may lead to less uncertainty and unease amongst prospective students/trainees about the actual available opportunities, experiences, and requirements inherent in each program, while simultaneously helping them to accurately compare the intensity of training opportunities available across different programs. Adoption of the taxonomy may also alleviate fear and uncertainty on the behalf of students/trainees as to whether or not admittance to a given program would sufficiently position them to successfully achieve their own personal goals, both in gaining future training positions and in the development of their career. Moreover, the taxonomy will make it easier to describe the depth of one's training experiences to institutions hiring neuropsychologists, state licensing boards, board certification review boards, and the public. It will simultaneously become easier for these agents to understand the intensity of each individual's training experience within clinical neuropsychology.

For the positive benefits of the taxonomy to ensue, broad acceptance and utilization among programs at all stages of training, as well as among practice organizations, is necessary. For several reasons, there may be some initial hesitancy to adopt the taxonomy. Academic and training programs may be understandably resistant to the experience of having outside forces define their specific education and training opportunities. Programs may also feel that a taxonomy infringes upon their ability to provide flexibility in training options for students/trainees within and across cohorts. Although these are reasonable concerns, it is important to underscore the fact that the taxonomy does not define the specifics of how programs choose to design their curricula or training. It does not eliminate flexibility or uniqueness in training. As has always been the case, such decisions rightfully remain in the hands of each individual program. The balance between clinical, research, and formal educational activities, as well as the focus and depth of opportunities offered within these areas will continue to be determined by each program. Thus, doctoral and internship programs retain the ability to offer a Major Area of Study or less intense training in clinical neuropsychology per their own preferences and capabilities. The taxonomy instead serves as a means of accurately and consistently defining the education and training opportunities that each program has to offer. In this way, implementation of the taxonomy should prove to be a catalyst for programs to conduct a self-evaluation of their training intensity so that they can accurately represent their education and training opportunities to prospective candidates and the broader community, and if necessary adapt the structure of their training to meet their desired level of intensity as defined in the taxonomy. Eventually, programs accredited by the APA may be expected to adopt the language of the taxonomy and their ability to deliver educational and training opportunities consistent with what they advertise may be reviewed by the APA as part of the accreditation process.

As previously noted, the taxonomy does not dictate what particular training sequence is 'correct' or appropriate for any one individual. A program's designation as a Major Area of Study in clinical neuropsychology does not itself reflect superiority over programs offering training at a less intense level. Participation in programs that offer a Major Area of Study does not alone indicate that a given student/trainee has superior training, skills, knowledge, or competencies relative to individuals participating in programs that offer an Emphasis, Experience, or Exposure in clinical neuropsychology. Thus, the responsibility remains with each student/trainee to do their due diligence in assessing and selecting doctoral and

training programs at each stage of training, by factoring in not only the level of training offered by each program, but also the quality of training offered and the fit between the program's training and their personal goals and aspirations. In this way, the taxonomy can be used as one of many tools to guide students/trainees in their choices of programs, as well as their choices of specific education and training sequences within a given program, so that they are poised to achieve competencies consistent with their professional goals and those requisite of entry-level practice.

### Next steps

The finalized *Taxonomy for Education and Training in Clinical Neuropsychology* provides clear definitions for what constitutes a specific level of education and training, in terms of intensity and involvement, across the educational and training sequence (CNS, 2014, see: <http://www.cospp.org/education-and-training-guidelines>). Its development was borne out of a clear need to create consistency in the description of education and training opportunities and its implementation has direct implications for programs involved in doctoral education, internship and postdoctoral training, and post-licensure education.

Broad acceptance and implementation of the taxonomy stands to benefit academic and training programs, students/trainees, and potentially professional and scientific organizations and the public. To help promote adoption of these criteria, the SCN's database of training programs (<http://training.scn40.org>) has been updated to reflect descriptions of listed training programs in a manner consistent with the language of the taxonomy. Other neuropsychology training organizations have also stated intent to update their online directory of training programs in order to achieve consistency with the language of the taxonomy. However, in order for these efforts to be successful, it is imperative that all clinical neuropsychology training programs and individuals responsible for promoting and disseminating programmatic information shift towards use of the taxonomy. To this end, programs are strongly encouraged to adopt the language of the taxonomy when advertising and discussing their education and training opportunities, in an effort to maintain intra-professional consistency and, ultimately, accountability to students/trainees and the public. This includes the updating of programs' websites and training materials and the use of taxonomy-consistent language in the drafting of training position announcements and during all recruitment and interview processes. Broad implementation may also be assisted by further presentations and discussion at conventions and national training council meetings, as well as via increased promotion on training organizations' websites, blogs, and newsletters.

### Conclusions

The taxonomy reflects the efforts and collaboration of many individuals and professional organizations within the recognized specialty of neuropsychology and provides an important consensus in the description of the various hierarchical training levels offered by training programs. At this point, what is needed is increased dissemination and education about the taxonomy and broad application by programs at all stages of education and training. Ideally, programs will take the transition to the taxonomy as an opportunity to conduct a self-evaluation of their training offerings, decide what level of training they wish to provide, and label their training program accordingly. More accurate and consistent representations of

the content and range of training opportunities offered across programs will in turn benefit students/trainees, as it will allow them the opportunity to accurately compare and apply to programs that provide training experiences consistent with their academic and professional aspirations. For programs, adoption of the taxonomy will provide specific parameters for the development and refinement of training tracks and opportunities, and it will provide a common language with which they can precisely describe what they offer. Adoption of the taxonomy by all training programs is therefore recommended.

## Disclosure statement

No potential conflict of interest was reported by the authors.

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