Pediatric Pain Psychology: Guidelines for Advanced Subspecialty Training

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This article describes our shared expertise and collaborative efforts to develop guidelines and recommendations for subspecialized training in pediatric pain psychology. First, we review the competency goals and standards relevant to subspecialized training in pediatric pain psychology. Next, we detail our shared understanding of competencies in pediatric pain psychology and the training experiences to foster their development. Third, we highlight collaborative activities of our subspecialized training programs in order to demonstrate ways each program can optimize training curriculum. We conclude with a reflection of the current state of subspecialized training, directions for further development, and implications for other subspecialty programs.

Keywords: special interest group, pediatric pain, training, curriculum, fellowship

Subspecialized postdoctoral training in pediatric pain psychology is a complex yet important endeavor, as the fellowship provides a capstone experience for trainees prior to becoming a “pediatric pain psychologist.” The pediatric pain psychologist must understand aspects of both acute and chronic pain, as well as the evidence base supporting diverse pain interventions including mind–body skills, medications, surgical/procedural interventions, and physical rehabilitation therapies. The psychologist must also successfully assess psychological comorbidities, develop and implement personalized but empirically supported treatment plans, and monitor relevant clinical outcomes (McGrath et al., 2008). Finally, the psychologist must function successfully as part of an interdisciplinary team, supporting, challenging, and teaching other professionals involved in the care of children with painful conditions.

As expected, subspecialty training in pediatric pain psychology is a relatively small field. Faculty often review and collaborate on research endeavors and national presentations. Fellows interested in pain medicine have a small pool of training programs to choose from and later compete for an equally small number of positions. While it is natural to assume competition for these rare training opportunities, we have advocated for collaborative action to enhance training and support both fellows and training programs. In 2013, 14 training directors came together to review training programs,
build a shared curriculum, and pool resources to strengthen fellowship training (Bhandari, Kao, & Logan, 2014). This initial review concluded that most pain psychology fellowships in the United States consist of a single fellow under the supervision of one to two supervising faculty, commonly in a 12-month training position. Key strengths of most programs were close supervision, focused and individualized person-centered training, and flexibility to tailor experiences according to the fellow’s professional goals and needs. However, some programs lacked formal training on pain-related topics; furthermore, some fellows lacked access to other specialists in the field, limiting training opportunities to a particular site.

As leaders and educators in the field of pediatric pain psychology, we are participating in the evolution of subspecialized training. We favor collaboration over competition. Our advanced training programs have benefitted from shared elements in fellowship curricula, including clinical competencies, didactics, and training opportunities. In this article, we offer our expertise and describe our collaborative efforts to develop guidelines for subspecialized training in pediatric pain psychology. It is our hope that this reflection of our collective actions serves as a model for other subspecialties in pediatric psychology. First, we review the competency goals and training guidelines that impact subspecialized training in pediatric pain psychology. Second, we demonstrate how collegial programs have responded to the call to develop an educational pathway for those interested in a career in pediatric pain psychology. This includes a discussion of pain-specific didactics, clinical experiences, and professional development, as well as development of broad-based “core” competencies. Finally, we reflect on the current state of subspecialized training in our field, directions for further development, and implication for other subspecialty programs.

A Foundation for Subspecialized Training: A Competency-Based Model

Compared to earlier phases of psychology training, standards for postdoctoral subspecialty training has been left relatively unattended—and therefore unstructured. There have long been attention to, and guidelines for, psychology graduate training in pediatric psychology (e.g., Roberts & Sobel, 1999; Spirito et al., 2003). Internship training is overseen by both the Association for Psychology Postdoctoral and Internship Centers (APPIC) and the American Psychological Association (APA), and accreditation is a virtual mandate for programs. Comparatively, fellowship training in pediatric psychology has not been held to the same rigor—consequently, only seven postdoctoral programs hold APA accreditation in clinical child psychology and only nine hold accreditation in health psychology. Currently, there are no criteria for fellowship accreditation in pediatric psychology—nor is there an established structure or guidelines for advanced training in pediatric pain psychology (Law, Palermo, & Walco, 2012).

However, there are a number of resources and recommendations that can strengthen the integrity and impact of specialized fellowship training in pediatric pain psychology. For example, the APA Council on Accreditation Guidelines and Principles for Accreditation of Programs in Professional Psychology (Domain B:3; American Psychological Association [APA], 2009) and the certification requirements from the American Board of Professional Psychologists (ABPP, specializations in clinical child and health psychology) both provide excellent guidance for training broad domains in postdoctoral training. Complementing this resource, the consensus summit on interprofessional core competencies in pain management provide four specific domains that inform postdoctoral training in pain management: the multidimensional nature of pain, pain assessment and measurement, management of pain, and specific conditions requiring pain management (Fishman et al., 2013). Likewise, the International Association for the Study of Pain (IASP; Charlton, 2005; http://www.iasp-pain.org/Education/CurriculumDetail.aspx?ItemNumber=2054) and Pain in Child Health (von Baeyer et al., 2014; http://paininchildhealth.dal.ca/pain-in-child-health-curriculum/) have recommended curricula for pain management education (Bhandari et al., 2014). The challenge for postdoctoral fellowship programs is integrating both broad-based and specialized competencies in order to provide excellent training curricula and experiences in a relatively brief span of time (in most cases, 1 year).
Our proposed approach to develop subspecialized training competencies in pediatric pain psychology is based in large part on the “Core Competencies” model forwarded by the APA Division 54 Task Force (Palermo et al., 2014). This model targets observable behaviors that apply to any field of pediatric psychology and can be enhanced with subspecialty targeted skills. These core and subspecialized competencies can be integrated into fellowship programs as evaluative benchmarks, as suggested by the Task Force (Palermo et al., 2014). We organized both broad-based and specialized competencies into one core overarching knowledge cluster (Cross-Cutting Knowledge Competencies in Pediatric Psychology) and six competency clusters (Science, Professionalism, Interpersonal, Application, Education, and Systems) that map onto the existing Core Competencies (see Table 1). This allowed us to represent subspecialized knowledge, skill, and training opportunities in a structure that can easily be interpreted by an outside reviewer (e.g., potential hospital employer).

Using these Core Competencies and other resources for training in clinical child psychology (APA, 2009; Steele, Borner, & Roberts, 2014) and interprofessional education (Oandas & Reeves, 2005a, 2005b), we first identified those clinical prerequisite skills that should be developed prior to one’s fellowship. Prior to, or soon after, admission to the fellowship program, the new fellow is evaluated on these competencies—if any prerequisite skill is not adequately demonstrated, remediation is provided early in the fellowship program. We then differentiated core competencies from identified subspecialized competencies in pediatric pain psychology, using the behavioral anchor “Readiness for entry into practice” within a subspecialized field as goal for program completion (Palermo et al., 2014). Based upon recommendations stated above, subspecialized competencies include: understanding theories of pain and terminology, pathophysiology and factors influencing pain, and outcomes to treating pediatric pain (Law et al., 2012; McGrath et al., 2008); cognitive–behavioral interventions (Palermo, Eccleston, Lewandowski, Williams, & Morley, 2010); research in pediatric pain (Charlton, 2005; Fishman et al., 2013); and interprofessional health care within pain treatment programs (APA, 2013; Charlton, 2005; Fishman et al., 2013). Table 1 details these subspecialized competencies: We have noted whether competencies are prerequisite, core competencies, and pain specific.

### Detailing a Subspecialized Curriculum in Pediatric Pain Psychology

In order to develop core and subspecialized competencies outlined in Table 1, each fellowship program provides formal and informal training activities through a combination of supervised clinical experiences, didactics/lectures, research projects, and exposure to leadership and administration opportunities. Below, we detail how training activities address competency clusters. Categories of training activities/experiences are italicized for emphasis (see also Table 2).

#### Cross-Cutting Knowledge

As with many areas of pediatric psychology, awareness and comfort with the language and taxonomy of pediatric pain is a necessary foundation of successful practice. Our programs provide training in this knowledge through didactic presentations, required and suggested readings, journal club, and case presentations. A sample reading list is available from the author by request. While many readings can be pulled from existing textbooks (McClain & Suresh, 2011; McGrath, Stevens, Walker, & Zempsky, 2013; McMahon, Koltzenburg, Tracey, & Turk, 2013), individual programs may choose specific readings to support didactics provided by staff. These readings also may change as the field develops and new literature is available.

#### Science

Not all pediatric pain psychology fellowships emphasize active research completion (Law et al., 2012), but mastery of the literature base should be required of all fellows. In addition, fellows should have adequate knowledge of pediatric pain research methods, including descriptive research, intervention protocols (e.g., single-case designs and randomized controlled trials), and research ethics specific to pediatric pain. These competencies are taught through journal clubs, writing literature reviews, conducting mentored peer reviews of manuscripts, participating in collaborative research programs, completing indepen-
Table 1
Using the Division 54 Task Force Core Competencies Structure to Organize Subspecialized Competencies in Pediatric Pain Psychology

<table>
<thead>
<tr>
<th>Competency cluster</th>
<th>Prerequisite competencya</th>
<th>Core competency in fellowship</th>
<th>Subspecialized competency in pediatric pain psychology</th>
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</table>
| Cross-cutting knowledge     |                           | • Understands pediatric acute and chronic illness, injury conditions, and medical management from the medical literature, including the effects of disease process and medical regimen on child emotional, cognitive, social, and behavioral development
• Understands how other systems (e.g., school, health care, state and federal policies) affect pediatric health and illness and a child's adaptation to illness
• Understands the roles of other disciplines in health service delivery systems
• Has knowledge of the transition of pediatric patients to adulthood and adult-oriented health care
• Appreciates the function of health information technology in children's health care | • Has knowledge of the epidemiology of pain
• Understands theories and science of pain
• Has knowledge of mechanisms of pain (anatomy and physiology of pain transmission and modulation)
• Has knowledge of terminology for describing pain and associated conditions
• Has knowledge of taxonomy of pain conditions: acute pain, cancer pain, visceral pain, headache and facial pain, neuropathic pain, and musculoskeletal pain
• Understands comparative differences among acute pain, chronic pain, and palliative care
• Has knowledge of pain in children (compared to adult literature)
• Has knowledge of impact of pain on society
• Understands cultural, institutional, societal, and regulatory influences on the assessment and management of pain
• Understands patient, provider, and system factors that can facilitate or interfere with effective pain assessment and management |
|                             |                           | • Values and understands the scientific foundation underlying the practice of pediatric psychology
• Has a strong foundation in clinical child psychology including an understanding of normative, adaptive, and maladaptive child emotional, cognitive, social, and behavioral development in the larger context of developmental expectations and caregiver behavior (i.e., family, schools, peers)
• Has knowledge of biological, cognitive, social, affective, sociocultural, and life-span developmental influences on children’s health and illness, including mechanistic and mediational pathways
• Has knowledge of the role and effect of families on children's health, and of health, illness, and medical management on family functioning
• Has knowledge of the effect of socioeconomic factors on health and illness, including issues associated with access to care, diversity, and health disparities in children | • Has knowledge of the scientific foundation underlying the practice of pediatric psychology
• Has a strong foundation in clinical child psychology including an understanding of normative, adaptive, and maladaptive child emotional, cognitive, social, and behavioral development in the larger context of developmental expectations and caregiver behavior (i.e., family, schools, peers)
• Has knowledge of biological, cognitive, social, affective, sociocultural, and life-span developmental influences on children’s health and illness, including mechanistic and mediational pathways
• Has knowledge of the role and effect of families on children's health, and of health, illness, and medical management on family functioning
• Has knowledge of the effect of socioeconomic factors on health and illness, including issues associated with access to care, diversity, and health disparities in children |

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Table 1 (continued)

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<thead>
<tr>
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<th>Prerequisite competencya</th>
<th>Core competency in fellowship</th>
<th>Sub-specialized competency in pediatric pain psychology</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Science</strong></td>
<td>Ethical conduct of research in children</td>
<td>Research and evaluation methodology</td>
<td>Dissemination and knowledge transfer</td>
</tr>
<tr>
<td></td>
<td>• Understands and applies local and federal regulations for the protection of children involved as subjects in research</td>
<td>• Conducts pediatric psychology research in multiple settings (e.g., medical, home, school) applying sound research methodology, data collection techniques, and data analytic approaches</td>
<td>• Demonstrates understanding of treatment outcomes and evaluation research related to pain</td>
</tr>
<tr>
<td></td>
<td>• Understands and appropriately handles ethical issues relating to interdisciplinary research in pediatric populations</td>
<td>• Effectively uses research skills to evaluate practice, intervention, and program outcomes and processes in community-based and health-care settings</td>
<td>• Demonstrates understanding of research related to measurement of pain</td>
</tr>
<tr>
<td></td>
<td>Interdisciplinary research</td>
<td>• Acquires familiarity with clinical trial methodology and reporting, systematic reviews, and search strategies to enable conduct of research to inform evidence-based practice</td>
<td>• Demonstrates knowledge of the current specialty pain literature and skills through a critical review of literature, design and execution of research, and communication of results</td>
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<thead>
<tr>
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</table>
| Professionalism   | Professional values and attitudes | • Exhibits professionalism in interactions with patients, research participants, and their families  
• Provides clinical care to children and families, implementing appropriate personal boundaries  
• Works effectively with colleagues from other disciplines (e.g., nursing, pediatrics, social work) to maintain a climate of mutual respect and shared values  
• Utilizes ongoing educational opportunities that are provided (e.g., seminars, lectures, grand rounds, workshops) to gain greater knowledge regarding the professional practice of pediatric psychology, and the areas of medicine relevant to pediatric psychology  
Individual and cultural diversity | • Applies professional standards associated with practice in pediatric care settings |
|                   | Ethical and legal standards and policy | Professional competency and identity | • Clarifies the distinct roles and services one provides involving pediatric pain psychology, and how these relate to those of other health care professionals  
• Demonstrates eligibility for board certification by the American Board of Professional Psychology  
Interprofessionalism | • Understands the internally and externally imposed expectations and requirements of the systems within which they practice  
• Provides consultation to professionals representing a variety of healthcare, legal, and educational disciplines  
• Demonstrates one’s special expertise in the administration and management of both psychological and other professional practice within health care delivery systems  
• Demonstrates involvement in the development of institutional policies regarding professional scope of practice and participation in service delivery  
Interprofessional healthcare | • Actively participates in multidisciplinary or interdisciplinary positions with diverse roles and responsibilities  
• Promotes the optimal delivery of collaborative healthcare services through effective and timely communication with other health care professionals  
• Describes patient, provider, and system factors that can facilitate or interfere with effective pain assessment and management  
• Describes the role of, scope of practice of, and contribution to the different professions within a pain management care team  
• Develops and implements an individualized pain management plan that integrates the perspectives of patients, their social support systems, and health care providers in the context of available resources |
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</table>
| Professionalism (Cont'd) | • Applies the local mental health laws and APA guidelines regarding the rights of children and caregivers especially pertinent to pediatric psychology practice Reflective practice/self-assessment/self-care  
• Engages in reflective practice conducted with personal and professional self-awareness, including attention to one’s health behaviors and reactions to working with children and families under stress  
• Conducts self-assessments to continuously improve services offered  
Professional competency and identity  
• Demonstrates organization, management, and administration skills pertinent to psychological service delivery and practice, training, and research  
• Has knowledge of social welfare, educational, mental health, and health care systems, laws, and policies as they pertain to the delivery of clinical child psychological services  
Interpersonal Communication  
• Uses and facilitates accurate, clear, and effective communication with and among patients, their families, other health care professionals, community institutions, and systems involving the patient  
Relational  
• Supports a team approach to the maintenance and promotion of health and treatment of disease  
• Develops and maintains relationships with patients, their families, other professionals, communities, and other systems involving patients  
• Effectively manages challenging relationships and interactions |
<table>
<thead>
<tr>
<th>Competency cluster</th>
<th>Prerequisite competency&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Core competency in fellowship</th>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>Application</strong></td>
<td><strong>Evidence-based practice</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Applies the concept and value of evidence-based practice and its role in scientific and applied psychology</td>
<td>• None required</td>
<td>• Applies the concept and value of evidence-based practice and its role in pain management</td>
</tr>
<tr>
<td></td>
<td>• Flexibly uses multiple methods of assessment to address presenting concerns in ways that are responsive and respectful of the diverse needs of children, caretakers, family, and referral sources</td>
<td><strong>Assessment</strong></td>
<td>• Effectively and efficiently documents measurement of pain, pain-related functioning, and functional disability</td>
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<td></td>
<td>• Effectively assesses biopsychosocial, developmental, environment, and family systems factors that can impact children’s coping and adaptation to health</td>
<td></td>
<td>• Differentiates physical dependence, substance use disorder, misuse, tolerance, addiction, and non-adherence</td>
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<td></td>
<td><strong>Intervention</strong></td>
<td></td>
<td>• Assesses patient preference and values to determine pain-related goals and priorities</td>
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<td></td>
<td>• Demonstrates treatment planning skills, including case conceptualization, appropriate to the health concern and developmental status of the patient and family</td>
<td></td>
<td>• Demonstrates empathic and compassionate communication during pain assessment</td>
</tr>
<tr>
<td></td>
<td>• Implements evidence-based biopsychosocial treatment interventions to support overall treatment goals</td>
<td><strong>Intervention</strong></td>
<td>• Effectively assesses and diagnoses psychological/psychiatric comorbidities of pain in children</td>
</tr>
</tbody>
</table>

<sup>a</sup> Evidence-based practice

Assessment

• Selects, administers, scores, and interprets biopsychosocial and cognitive assessment tools appropriate to the child’s developmental level and health concern for various purposes

• Effectively communicates the results of assessments in written and verbal form appropriately tailored for various consumers (e.g., patients, other medical professionals) and professional contexts (e.g., team meeting, disability evaluation, family meeting)

Intervention

• Implements evidenced-based wellness, health promotion, and prevention interventions appropriate to the health concern

• Integrates best available research with clinical expertise in the context of patient illness, characteristics, culture, and preferences

• Understands the impact of patient issues, caregiver issues health professional issues, political issues, and substance abuse issues on pain management plan

• Understands differences in treatment plans among acute pain, acute-on-chronic pain, chronic/persistent pain, and pain at the end of life

• Explains how health promotion and self-management strategies are important to the management of pain

• Effectively communicates the treatment of pain in pediatric patients compared to adults

• Develops appropriate goals of pain management

• Identifies pain treatment options that can be accessed in a comprehensive pain management plan

• Develops a pain treatment plan based on benefits and risks of available treatments
Table 1 (continued)

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<tbody>
<tr>
<td>Application (Cont'd)</td>
<td>• Effectively communicates about progress/treatment updates in written and verbal form appropriately tailored for various consumers (e.g., patients, other medical professionals) and professional contexts (e.g., team meeting, family meeting)</td>
<td>Consultation • Provides consultative/liaison services to health care professionals across disciplines and systems related to health and behavior • Translates and communicates relevant clinical findings as they bear on health care consultation/liaison questions</td>
<td>• Leads/facilitates pain management planning decisions • Assesses patient preference and values to determine pain-related goals and priorities • Assesses and enhances motivation to change • Demonstrates understanding and facilitation of complementary and alternative treatments in pain management • Demonstrates understanding and facilitation of functional and vocational rehabilitation • Effectively understands and applies nonpharmacological methods to treat pediatric pain, including: • Cognitive–behavioral therapy • Operant treatment approaches • Relaxation training • Biofeedback * • Hypnosis * • Effectively applies family therapy for pediatric pain • Facilitates school/vocational reintegration planning related to pain • Understands and intervenes to prevent child/adolescent disorders and family dysfunction • Monitors effects of pain management approaches to adjust the plan of care as needed Consultation • Effectively conducts pain history, interview/observations, and review of clinical records • Understand the assessment and management pain across settings and transitions of care • Describes the role of the psychologist as an advocate in assisting patients to meet treatment goals</td>
</tr>
<tr>
<td>Consultation</td>
<td>None required</td>
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</table>

\* Hypnosis is an option for consultation services in pediatric pain psychology.
### Table 1 (continued)

<table>
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<tr>
<td><strong>Teaching</strong></td>
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<tr>
<td></td>
<td>• Applies teaching strategies that demonstrate understanding of the knowledge, skills, and competencies required to be a pediatric psychologist</td>
<td>• Effectively communicates understanding of treatment outcomes and research through presentation/didactic</td>
<td>• Demonstrates knowledge of the literature related to pediatric pain through lectures to psychology and other disciplines in health care</td>
</tr>
<tr>
<td></td>
<td>• Provides education and training to psychologists, other health care professionals, and trainees on pediatric psychology approaches and biological, cognitive, affective, sociocultural, and life span developmental influences on children's health and illness</td>
<td>• Effectively communicates understanding of research related to measurement of pain through presentation/didactic</td>
<td>• Demonstrates knowledge of the literature related to pediatric pain through lectures to psychology and other disciplines in health care</td>
</tr>
<tr>
<td></td>
<td>• Models and encourages commitment to the profession through professional conduct and integration of ethical principles</td>
<td>• Models and encourages commitment to the profession through professional conduct and integration of ethical principles</td>
<td>• Models and encourages commitment to the profession through professional conduct and integration of ethical principles</td>
</tr>
<tr>
<td><strong>Supervision</strong></td>
<td>• Outlines competency expectations for pediatric psychologists and regularly provides feedback to trainees on progress&lt;sup&gt;b&lt;/sup&gt;</td>
<td>• Provides effective supervision to pediatric psychology trainees, as well as trainees and staff from other health professions pertaining to pediatric psychology principles&lt;sup&gt;b&lt;/sup&gt;</td>
<td>• Provides effective supervision to pediatric psychology trainees, as well as trainees and staff from other health professions pertaining to pediatric psychology principles&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>• Provides effective supervision to pediatric psychology trainees, as well as trainees and staff from other health professions pertaining to pediatric psychology principles&lt;sup&gt;b&lt;/sup&gt;</td>
<td>• Provides effective supervision to pediatric psychology trainees, as well as trainees and staff from other health professions pertaining to pediatric psychology principles&lt;sup&gt;b&lt;/sup&gt;</td>
<td>• Provides effective supervision to pediatric psychology trainees, as well as trainees and staff from other health professions pertaining to pediatric psychology principles&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td><strong>Interdisciplinary systems</strong></td>
<td>• Understands basic principles of systems theory as applied to pediatric psychology practice settings, including inpatient hospital, outpatient clinics and private practice, schools, and the larger community</td>
<td>• Understands both the unique and overlapping roles, responsibilities, and interrelationships of multiple disciplines within each of these service delivery systems</td>
<td>• Understands both the unique and overlapping roles, responsibilities, and interrelationships of multiple disciplines within each of these service delivery systems</td>
</tr>
</tbody>
</table>

<sup>a</sup> Competency expectations for pediatric psychologists in fellowship training programs and similar postgraduate training sites.

<sup>b</sup> Competency expectations for pediatric psychologists in fellowship training programs and similar postgraduate training sites.
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<tr>
<td>Systems (Cont’d)</td>
<td>• Understands the basic knowledge, perspectives, service delivery systems, and contributions of other health care disciplines</td>
<td>• Understands how systems collaboration enhances outcomes and how to evaluate effective outcomes in each of these contexts</td>
<td>• Is familiar with roles of management, administrators, and other peer team members in the medical setting, school setting, and community as they relate to pediatric pain psychology practice</td>
</tr>
<tr>
<td></td>
<td>• None required</td>
<td></td>
<td>Advocacy (local, state, national)</td>
</tr>
<tr>
<td></td>
<td>Advocacy (local, state, national)</td>
<td>• Has knowledge of systems-based assessment approaches and interdisciplinary interventions across different treatment settings, including outpatient and inpatient settings, schools, and the community</td>
<td>• Advocates for pediatric pain psychology as an evidence-based science and profession in outpatient and inpatient settings, schools, and communities at the local, state, and national level</td>
</tr>
<tr>
<td></td>
<td>• None required</td>
<td>• Has knowledge of and can apply continuous performance improvement methods</td>
<td>• Advocates for access to appropriate pain management at all levels of the health care system (i.e., individual, family, institutional, and political)</td>
</tr>
</tbody>
</table>

Note. Competency domains are stratified by level of specialization and noted if prerequisite to fellowship training. APA = American Psychological Association.

a All competencies were adapted from the following sources: APA, (2009, 2013); Charlton (2005); Fishman et al. (2013); Oandasan and Reeves (2005a, 2005b); Palermo et al. (2014).

b Depth of competency training may vary by site and available training resources.
dent research projects, and presentation at regional or national conferences. Given the collegiality among fellowship programs within a hospital, institutional research centers and interdisciplinary committees (e.g., scholarly oversight committees) can support fellow research (Frei, Stamm, & Buddeberg-Fischer, 2010). For fellows hoping to continue with a research-oriented career, research mentorship at the postdoctoral level is key to the development of necessary skills, such as understanding funding mechanisms, grant management and leading research teams.

### Table 2

**Guidelines for Training Curriculum in Pediatric Pain Psychology**

<table>
<thead>
<tr>
<th>Competency</th>
<th>Training activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cross-cutting knowledge</td>
<td>Didactics/staff lectures&lt;br&gt;Required readings&lt;br&gt;Journal club&lt;br&gt;Case presentations&lt;br&gt;Clinical/administrative supervision</td>
</tr>
<tr>
<td>Science</td>
<td>Journal club&lt;br&gt;Writing literature reviews&lt;br&gt;Mentored peer reviews of manuscripts&lt;br&gt;Hospital-wide research education programs&lt;br&gt;Collaborative research program participation&lt;br&gt;Independent research project&lt;br&gt;Presentation at regional/national conferences&lt;br&gt;Research mentorship</td>
</tr>
<tr>
<td>Professionalism</td>
<td>Shadowing professionals&lt;br&gt;Cotreatment&lt;br&gt;Interdisciplinary rounds&lt;br&gt;Interdisciplinary team participation&lt;br&gt;Leading interdisciplinary team activity&lt;br&gt;Mentored participation in hospital committee or professional organization&lt;br&gt;Clinical/Administrative supervision</td>
</tr>
<tr>
<td>Interpersonal</td>
<td>Mentored and supervised clinical care&lt;br&gt;Interdisciplinary teams&lt;br&gt;Didactics/staff lectures&lt;br&gt;Shadowing professionals&lt;br&gt;Leadership development training program&lt;br&gt;Clinical/administrative supervision</td>
</tr>
<tr>
<td>Application</td>
<td>Clinical care&lt;br&gt;Clinical/administrative supervision&lt;br&gt;Required readings&lt;br&gt;Didactics/staff lectures&lt;br&gt;Shadowing professionals&lt;br&gt;Cotreatment&lt;br&gt;Advanced training seminar in specific skill</td>
</tr>
<tr>
<td>Education</td>
<td>Residency lectures&lt;br&gt;Writing paper/literature review&lt;br&gt;Regional/national presentation&lt;br&gt;Structured program in resident education&lt;br&gt;Umbrella supervision&lt;br&gt;Group supervision&lt;br&gt;Administrative supervision</td>
</tr>
<tr>
<td>Systems</td>
<td>Clinical care&lt;br&gt;Clinical/administrative supervision&lt;br&gt;Required readings&lt;br&gt;Didactics/staff lectures&lt;br&gt;Shadowing professionals&lt;br&gt;Quality improvement projects</td>
</tr>
</tbody>
</table>

**Note.** Training activities are loaded onto competency clusters.
Professionalism

Professionalism is central to fellowship training, as interdisciplinary teams are essential to pediatric pain psychology practice. Fellowship training should include ample exposure to the knowledge and skills of other professions such as pain medicine, physical therapy, occupational therapy, social work, psychiatry, and nursing. This can be obtained through shadowing other professionals, cotreating patients, and discussing shared cases on interdisciplinary rounds in pain assessment clinics, consultation/liaison (C/L) teams, and intensive pain treatment programs. Participation in interdisciplinary teams help fellows understand the benefits of successful teamwork (Conroy & Logan, 2014). Leading teams is a further step in interdisciplinary development (Conroy & Logan, 2014). Finally, mentored participation in a hospital committee or professional organization focused on pediatric pain helps fellows develop professional networks and resources for career-long habits of continuing education. Examples of these organizations include Society of Pediatric Psychology (and the Pain Special Interest Group), American Pain Society, and the International Association for the Study of Pain (and its Special Interest Group Pain in Childhood).

Interpersonal

Similar to other areas of pediatric psychology, effective communication with patients of all ages, family members and other team members is imperative to a pediatric pain professional’s success. Within pediatric pain management, psychologists are often working with patients who are skeptical about the interventions we offer, and thus skills in psychoeducation and motivational interviewing become particularly important. Many patients feel misunderstood by the medical system during their pain treatment journey, and thus empathic communication is especially important. Beyond patients, many physicians often lack a full understanding of the acute and chronic pain experience in children given the brevity of general medical training on pain in childhood. The fellow must develop skills to effectively communicate to other professionals about the role of psychological factors in a child’s pain experience and to help other professionals speak with families about pain management in ways that help families feel understood and supported. Interpersonal skills are developed through mentored and supervised clinical care and interdisciplinary teams. In addition, specific lectures, observations, and supervision on leadership development address interpersonal competencies in detail.

Application

Given the breadth of empirical support (Eccleston, Yorke, Morley, Williams, & Mastroymannopoulou, 2003; Fisher et al., 2014), fellows must develop proficiency in cognitive-behavioral treatments for pain, particularly relaxation training, cognitive restructuring, and operant strategies (Lin, Lee, Kemper, & Berde, 2005; Palermo, 2012; Palermo et al., 2010; Patterson & Jensen, 2003). This includes both child-focused as well as parent/family focused interventions (see Table 1). Learning which techniques are more suited for mild pains (brief interventions) to disabling pains (intensive treatment) to pain associated with terminal illness (palliative care) can personalize and optimize treatment. Also, advanced training in biofeedback (Tan, Shaffer, Lyle, & Teo, 2016) and hypnosis (Patterson & Jensen, 2003) as evidence-based treatments for pain can supplement clinical skills. Fellows should also understand factors influencing assessment and treatment of pediatric pain, including developmental and cognitive level, pain severity and duration, trauma, poverty or other environmental determinants, and family dynamics.

During fellowship, it is important that fellows have ample opportunity to learn and apply skills in clinical care with patients from all developmental levels, disease conditions, and clinical settings. However, required readings, didactics, observations, cotreating, and clinical supervision contribute to developing the fellow’s competence. Some programs also financially support fellows attending training seminars on specialized skills such as biofeedback and hypnosis.

Education

A common limit to postdoctoral fellowship curriculum is the absence of (or limited supervision in) experiences teaching and supervising other learners (graduate students, interns, medical residents/fellows). While training guide-
lines in supervision exist (APA, 2015), individuals require the time and mentorship to transition into the new professional role. The postdoctoral fellowship is an appropriate venue for initial training in this skill—targeting a specialized skill may be an ideal entry point for development of competencies in supervision and teaching.

Fellows often assist and lead lectures for medical residents rotating through their department. In addition, fellows practice educating others at regional and national presentations or through manuscript preparation on pain-related topics. Some hospital offer structured training program for resident education that fellows can participate in. Finally, fellows may have opportunity to supervised practicum student or interns—umbrella supervision and group supervision allows them to develop this skill set, while their primary supervisor helps them to refine this skill.

Systems

Assessment and treatment of pediatric pain does not exist within a vacuum. The fellow must learn how to tailor their clinical care based upon the location/type of service provided (e.g., C/L service, specialty pain clinics, intensive treatment programs). Although it is unlikely that fellows will be able to gain experience in all settings, fellowship directors should ensure that they have basic knowledge of how pain psychologists work across settings, providing relevant readings, didactics, supervision, and shadowing opportunities. Technological advances allow fellows to experience and evaluate alternative care delivery systems such as Web-based interventions (Long & Palermo, 2009), smartphone interventions (Smith et al., 2015), and other telemedicine modalities (e.g., Desko & Nazario, 2014). As these become more prominent, it will be important for the pediatric pain psychologist to understand the impact of these new modalities on patients and the health care system. Furthermore, fellows have opportunities to participate in or lead quality improvement projects to help improve a system of health care. Additional competencies in this cluster (see Table 1) are also addressed in training opportunities for other competency clusters (mainly Professional and Interpersonal).

Implementing a Subspecialized Curriculum in Pediatric Pain Psychology

As stated by Palermo et al. (2014), the next step in competency-based education is determining how to teach, practice, and evaluate competencies in trainees. Given both the core and subspecialized targets of fellowship training, training directors across the country have pooled their resources (e.g., time, staff, and space) in an effort to provide a comprehensive learning environment for all fellows. Below we detail examples of how pediatric pain psychology faculty work across sites to ensure the breadth and depth of training in pediatric pain psychology is available to fellows.

Shared Didactics

First, a monthly Web-based didactic program was created to be facilitated by most training faculty in U.S. programs. Didactics are recorded for future use. Topics cover areas in which a particular faculty member has specialization, topics not adequately addressed by the current literature, and topics that would be most educational if group discussion were permitted (see Table 3). This didactic program encourages communication between fellows and other professionals, supports professional networking, and strengthens a sense of collegiality among fellows—preparing them for decades of professional relationships with each other. These didactics also help to standardize the knowledge base of fellows entering the professional workforce. Current feedback solicited from fellows is very positive. Specifically, fellows have valued the opportunity to become acquainted with future colleagues (both faculty and current fellows) and learn firsthand from experts in pain psychology research and practice. They also appreciated the sense of community that cannot be readily provided in such small programs (one to two pain psychology fellows per site).

Site Visits

Second, some fellows have participated in shadowing other programs in a 1- to 2-day site visit as a training objective. Site visits involve meeting other team members, shadowing clinical opportunities, participating in administrative meetings, and seeking consultation on their professional development. This helps the fellow
understand pain management at a systems level and gain a better appreciation for the varied roles of professionals within the field of pain management. It often helps them to refine or enhance the training activities at their home program. Funding for such visits are minimal; while not currently funded by a program directly, there is certainly opportunity for multiple programs to share costs related to this experience.

Assessment of Competencies

Assessment of competencies for pediatric pain assessment and intervention can occur through informal observation and feedback, formal observation such as live/videotaped sessions, and oral exams/presentations—all with timely constructive feedback. Ongoing supervision as formative evaluation ensures that knowledge is learned and applied successfully, and that the fellow has access to sufficient training opportunities to develop competencies. Summative evaluation forms completed by supervisors and faculty, targeting these specific competencies, allow for monitoring of progress and alterations in the training activities. One program also completes an ABPP-style case presentation and

Table 3

Sample Schedule for Monthly Didactics in Pediatric Pain Psychology

<table>
<thead>
<tr>
<th>Topic</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction to hypnosis</td>
<td>An introduction to hypnosis for pediatric pain patients. Video and case examples are utilized to demonstrate the core components of self-hypnosis for pediatric pain management.</td>
</tr>
<tr>
<td>Postdoctoral networking</td>
<td>Guided introductions and rapport building among pediatric pain postdoctoral fellows. Topics of discussion included postdoctoral clinical/research experiences, upcoming conferences, licensing, applying to jobs.</td>
</tr>
<tr>
<td>Inpatient/intensive rehabilitation</td>
<td>An overview of inpatient/intensive rehabilitation programs for chronic pain patients.</td>
</tr>
<tr>
<td>Life balance and time</td>
<td>A guided discussion of how clinical psychologists can prioritize time management and create life balance amidst a busy professional life, including the opportunity for fellows to reflect and share experiences and strategies.</td>
</tr>
<tr>
<td>Technology and pediatric pain</td>
<td>An introduction to technology and resources for pediatric pain patients, specifically highlighting technological tools that support pediatric pain management in clinical practice across various pain clinics (e.g., phone apps, biofeedback devices).</td>
</tr>
<tr>
<td>Opioid misuse and abuse</td>
<td>An introduction to opioid misuse and abuse among pediatric patients with chronic pain. Key concepts are reviewed (e.g., pertinent terminology, risk factors, importance of risk assessments, and monitoring), and case examples are provided to highlight common challenges associated with opioid misuse and abuse among pediatric pain patients.</td>
</tr>
<tr>
<td>POTS</td>
<td>An introduction to working with patients who have POTS in a pediatric pain management clinic (e.g., definition of POTS, treatment approaches for POTS treatment), highlighting a skills-based group intervention for youth with POTS. Details about session content and outcome data are provided for the group.</td>
</tr>
<tr>
<td>School functioning</td>
<td>Guided discussion on school functioning among children and adolescents with chronic pain. Case examples are discussed, illustrating school functioning challenges among patients and how pain psychologists address these challenges during interdisciplinary pain evaluations (e.g., providing psychoeducation to families about the importance of school functioning in treatment).</td>
</tr>
<tr>
<td>CAM</td>
<td>An introduction to the use of complementary and alternative medicine approaches for pediatric pain management, highlighting common and popular therapies (e.g., mind-body, biologically based, body based, energy therapies). This didactic also explores fellows' clinical, research, and personal experiences with CAM, as well as the barriers to access/implementation in respective clinics.</td>
</tr>
<tr>
<td>Conversion disorder</td>
<td>A guided discussion of the treatment of conversion disorder in the pediatric pain clinics and rehabilitation programs providing case examples and descriptions of interventions utilized by the interdisciplinary team.</td>
</tr>
<tr>
<td>Sleep and pain</td>
<td>A guided discussion of assessment and treatment of sleep disorders and sleep hygiene in the management of pediatric pain. Emphasis on clinical practice and areas of research are explored.</td>
</tr>
</tbody>
</table>

Note. POTS = postural orthostatic tachycardia syndrome; CAM = complementary and alternative medicine.
mock exam to ensure fellows are meeting the level of competency defined by the American Board of Clinical Child and Adolescent Psychology (Leffler, Harbeck-Weber, & Steele, 2016).

**Universal Notification**

In 2015, the directors of pediatric pain psychology fellowship programs agreed to honor the APPIC timeline for universal notification of fellowship offers (https://www.appic.org/About-APPIC/Postdoctoral/APPIC-Postdoctoral-Selection-Guidelines). This bypasses the anxiety and cut-throat nature often observed in fellowship matching. Current action in Society of Pediatric Psychology is already working toward this in other postdoctoral fellowship programs. While the universal notification date is later than other fellowship match dates, current fellows have welcomed this action as a symbol of the collegial relationship between pediatric pain psychologists. In addition, the rules of APPIC allow these programs to be competitive with programs that offer fellowship positions before the universal notification date.

**The Future of Subspecialized Training in Pediatric Pain Psychology**

Clearly, much progress has occurred in the development of training standards and educational pathways for pediatric pain psychology. This effort has been trainee oriented, with a cooperative attempt to integrate best practices from across the various training sites. Hopefully, our efforts toward collegiality and collaboration can further strengthen fellowship curricula and inspire other subspecialists in pediatric psychology who offer training. The following ideas are offered as suggestions for future directions in the further improvements of pediatric pain psychology training.

**Training Settings and Teaching Methods**

While past literature has supported the development of subspecialty curriculum in pediatric pain psychology (Bhandari et al., 2014; Law et al., 2012), the current state is still a “work in progress.” Our programs are still implementing and examining the initial guidelines and training activities we propose above. Currently, aspects of subspecialty training still vary across sites. In the effort to standardize an “optimal” training curriculum, however, identification and description of the ideal range of training opportunities for comprehensive pediatric pain psychology training may be important. The range of “best-practice” teaching methods and resources should be further developed and catalogued. For the present, it may be best to examine a variety of teaching strategies to ensure a good fit for each trainee as well as to utilize the new and emerging technologies available for training purposes. We encourage other fellowship programs in pediatric pain psychology to join in this collaborative venture as we all have something valuable to contribute.

**Enhancing Core Competencies**

While shared didactics and a literature base help training programs meet training in competency domains specific to pediatric pain, “core” competencies independent of pain require further refinement. Effective practice of pain psychology requires a strong foundation in clinical child and pediatric psychology as a whole. This is underscored by the known comorbidities associated with pain in children, including depression, anxiety, familial stress, and other psychosocial dysfunction (Machnes-Maayan et al., 2014; Tegethoff, Belardi, Stalujanis, & Meinlschmidt, 2015). Advanced postdoctoral education in comorbid features and greater exposure to other clinical approaches (e.g., family therapy) can enhance training in pediatric pain psychology. There remains a need to develop curriculum for advanced training in these core competencies at the postdoctoral level (Palermo et al., 2014). Advanced subspecialty training programs may benefit from ensuring their fellows have access to this core curriculum.

**Interprofessionalism**

As much as other pediatric psychology subspecialties, the practice of pain psychology requires an understanding and appreciation of not just interdisciplinary but interprofessional practice (Institute on Medicine, 2011; Retchin, 2008; World Health Organization, 2010). To be effective, the pain psychologist must be competent in working alongside, and in an integrated fashion with, other health care professionals who treat pediatric pain. Competence in collab-
orating with other professionals in the pursuit of shared treatment goals (e.g., return to daily school attendance) in line with a biopsychosocial model of health is essential. Opportunities exist to enhance this area of competency (e.g., other pain specialists leading lectures, joint educational seminars for multiple specialty areas). Didactics specific to interprofessionalism, as well as fellows learning as part of an interdisciplinary team (International Association for the Study of Pain, 2012; Young & Kemper, 2013), are a growing field that offers promise to pediatric pain psychology fellowships.

**Evaluation**

Fellowships are encouraged to evaluate how successful they are at accomplishing their treatment goals. The identification of developmental and mastery benchmarks, consistent with the targeted training competencies, will be an important next step for evaluating fellows as well as programs (see Palermo et al., 2014). This will help identify the training settings and methods that are most instrumental. Comprehensive evaluations following a large sample of fellows over the first 5–10 years of their early career may be particularly important in this regard.

**Beyond the United States**

Pediatric pain is not restricted to the continental United States nor are training programs. In fact, many excellent clinical programs and researchers in pediatric pain are found in Canada, Europe, and Australia. Though progress on international research collaboratives has occurred, the same has not been true in the area of clinical training. Our informal discussions with pediatric pain psychologists from other nations have revealed many similarities but also differences in the clinical issues seen and educational challenges faced. They suggest much common ground and the ripe potential for collaboration between training sites across the globe. While our guidelines and activities attempt to remain consistent with those from the IASP (Charlton, 2005; von Baeyer et al., 2014), there is opportunity for an international sharing of resources and expertise. Future symposia or working groups through the IASP may be a beneficial path for these efforts.

**Beyond Pediatric Pain**

Our fellowship programs in pediatric pain psychology have each been strengthened by this collaborative work to improve the quality of training. Given the number of other subspecialty training programs currently present (e.g., cancer, autism, diabetes, obesity) and those newer specialties (e.g., integrative primary care), our approach could benefit others. Certainly, the competencies presented and the curriculum suggested can benefit those programs who address pediatric pain as a minor aspect of their training. In addition, our method of applying existing core and specialty competencies, and sharing resources and curriculum activities, could equally enhance other training programs. Likewise, the field of pediatric pain psychology can benefit from the experiences and further development of other subspecialized fellowship programs, particularly in terms of curriculum structure, core didactics, and evaluation of competencies. Special interest groups or APA division-sponsored training consortia may help to add structure and strengthen resources for curriculum development.

**Conclusion**

The field of pediatric pain psychology is ripe with experienced faculty and enthusiastic trainees. While there is currently little external pressure and structure to shape successful fellowship programming, there is enough knowledge and opportunity for subspecialized training programs to develop and refine best training practices. Our field is fortunate to have a spirit of collaboration and support that can help strengthen each individual fellowship training program and the future of pediatric pain psychology. We hope that our summary and reflection of subspecialty training excites other training programs to unite and do the same.

**References**


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