Defining the Specialization of Pediatric Occupational Therapy

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Key Words: child • competence • professional practice

Objectives. Occupational therapists who work primarily with children were surveyed regarding their skill levels in competencies that define pediatric practice.

Method. The subjects were 90 advanced practitioners who received specialty certification in pediatric occupational therapy in 1992 and 52 inexperienced practitioners with 5 or fewer years' experience. Respondents rated themselves from needs assistance to highly skilled on 94 competencies.

Results. A principle components analysis of the 142 surveys identified six primary constructs that described related areas of skill in the respondents: child evaluation, communication and consultation, working with families, understanding service provision systems, use of assistive technology, and neonatology and feeding. Child evaluation, with emphasis on developmental framework, analysis of sensory integration, and neuromotor function, was the strongest construct; respondents rated it the highest. Communication and consultation with team and family members also received high ratings. The advanced practitioner respondents rated themselves higher than the inexperienced practitioner respondents in 73 of the 80 competencies in the factors identified. The differences were greatest in the competencies of analysis of sensori processing and integration, analysis of neuromotor components, and consultation with other professionals.

Conclusion. Findings suggest that advanced practitioners develop expertise in sensory integration and neuromotor analysis, and that evaluation and consultation are important skill areas in advanced occupational therapy practice.

Occupational Therapy Practice With Children

The percentage of occupational therapists who work with children has increased in recent years and currently represents about one third of all certified occupational therapists (American Occupational Therapy Association [AOTA], 1991). One reason for this increasing number is the passage of legislation requiring that occupational therapy services be provided when necessary to help a child with disabilities benefit from his or her special education program (Individuals With Disabilities Education Act of 1990 [IDEA] [Public Law 101-476]). In the legislation on early intervention, occupational therapy is one of the direct services that families can access for their young children (Education of the Handicapped Act Amendments of 1986, Part H, Public Law 99-457).

Although pediatrics is a major area of occupational therapy practice, it is considered a specialty area, in which specialty certification has been developed (Joe, 1990). Leaders of the field have recommended that occupational therapists who enter practice in schools or early intervention obtain training beyond their entry-level program (AOTA, 1987b, 1989). Standards of pediatric prac-
practice have been developed by experts in the field (AOTA, 1987a, 1987b, 1989), but almost no descriptive research has studied the role of occupational therapists in pediatrics (Lawlor & Henderson, 1989). Standards of practice for interdisciplinary personnel (including occupational therapists) who provide early intervention services have been developed by content experts (Bennett, Watson, & Raab, 1991; Fenichel & Eggbeer, 1991; Hanson, 1990; Thorp & McCollum, 1988). A number of states have identified and officially adopted competencies necessary for early intervention and early childhood practice in compliance with Public Law 99–457 (Bruder, Klosowski, & Daguio, 1989). The competencies that have been developed are usually interdisciplinary and prescriptive. The broad skills needed to work with families, children, other professionals, and early intervention systems have been defined (Bailey, Simeonsson, Yoder, & Huntington, 1990; McCollum, 1987; Rowan, Thorp, & McCollum, 1990), with a growing consensus as to the essential skills that cross disciplines (Fenichel & Eggbeer, 1991; Hanson & Brecken, 1991).

Competencies specific to occupational therapists who work with young children and families have not been developed, although guidelines were developed by an AOTA task force (AOTA, 1989), and training projects to increase skills in early childhood practice have been developed (Hanft, 1989). The identification or definition of competencies serves several purposes. They can guide the development of training projects, early childhood course work, and fieldwork; they also become the basis for evaluation of training programs or of individual competency.

Advanced Practice Skills

Heightened interest in defining occupational therapy advanced practice has resulted from its maturation as a profession (Parham, 1987) and occupational therapists’ desire to improve continually the quality of our services (Burke & DePoy, 1991). The American Occupational Therapy Foundation has supported studies to enhance our understanding of advanced practice (Gillette & Mattingly, 1987; Mattingly, 1991). Using ethnographic methods and the framework of clinical reasoning, studies by Mattingly and Gillette (1991) and others (Hall, Robertson, & Turner, 1992) have enhanced our understanding of the therapist’s decision making and thinking during interactions with clients. The AOTA Intercommission Council completed a series of studies of advanced practice that resulted in a report to the 1992 Representative Assembly about the roles and types of employment of advanced practitioners (Hanson, Hinojosa, Schroeder, & Sands, 1992). Advanced practitioners were characterized by general communication and interpersonal skills, flexibility, and time management skills. The report provided some evidence of qualitative differences between advanced practitioners and beginning therapists; for example, the experienced practitioners demonstrated better problem-solving skills.

In a study to define excellence in practice, Burke and DePoy (1991) interviewed and observed 10 occupational therapists who were identified by graduate students as having qualities of mastery, excellence, and leadership. The advanced practitioner generally has a combination of these qualities. Burke and DePoy (1991) defined master clinicians as practitioners with extensive experience, creative reasoning abilities, professional commitment, clinical knowledge, confidence, and vision. The authors defined excellence as displaying vision and constantly striving to become better than a previously established standard. Although Burke and DePoy’s study provided insights into mastery and excellence, the study did not define specific skills of the master clinician that distinguish him or her from an inexperienced or novice clinician.

Slater and Cohn (1991) explained that experienced therapists are not rule bound; they use intuition based on reflection of past experiences. This intuition allows the therapist to sense when to push a client, when to set limits, and when to challenge or reward the client’s performance.

In summary, the literature on advanced practice primarily describes roles, reasoning abilities, decision-making skills, and general interpersonal qualities (Burke & DePoy, 1991; Gillette & Mattingly, 1987; Hanson et al., 1992; Parham, 1987); it does not define specific clinical or interpersonal skills that distinguish the advanced practitioner from the inexperienced one; and it does not focus on a specific specialty area. To address this gap, the present study examined practice in the specialty area of pediatrics, discriminating between advanced practitioners and inexperienced practitioners.

Self-Rating of Competency in Practice With Young Children

A number of researchers have advocated self-rating of competency as a valid and practical method of assessing skills in early childhood practice (Bailey, Buysee, & Palsha, 1990; Humphry & Geissinger, 1992). Self-rating of competency has been used in occupational therapy training (Humphry & Geissinger, 1992) and interdisciplinary training (Bailey, Buysee, & Palsha, 1990). Mabe and West (1982) studied the validity of self-rating by comparing self-rating scores of abilities and performance from 55 studies to actual skill performances. They found that under certain circumstances, self-evaluation of abilities closely corresponded to actual performance. Some of the conditions that increased validity were assurance of anonymity and use of a criterion-based rating scale. Persons who were high achievers and had a strong internal locus of control seemed to be most accurate in self-evaluation.
of abilities. Self-evaluation of performance had a higher correspondence with actual performance than self-evaluation of ability (Mabe & West, 1982). These research results on self-evaluation as a methodology were used in designing the survey for this study.

The purpose of this study was to describe advanced pediatric occupational therapy practice, using self-rating of competence as the methodology. Specific research questions were: (a) What are the constructs that emerge from a comprehensive list of competencies to define occupational therapy practice with children? (b) How do the self-reported competencies of advanced and inexperienced pediatric occupational therapy practitioners differ? and (c) Do the advanced practitioners' competency ratings differ by work setting, age of clients served, therapist's role, or years of experience?

Method

Sample

Two samples were obtained to represent advanced and entry-level pediatric practitioners. The advanced practitioner (AP) sample of 122 was selected from the total of 128 occupational therapists who had received AOTA specialty certification in pediatric occupational therapy in 1992. The other six were not included because they had participated in the development of the instrument used in the study. To qualify for the specialty certification examination, a therapist had to have 5 or more years of experience in pediatric practice and had to have done five of the following: been certified in a specialty related to pediatric occupational therapy (e.g., neurodevelopmental treatment [NDT]), participated in continuing education, completed an independent study, participated in professional presentations or publications, taught, or done research. The inexperienced practitioner (IP) sample of 100 was selected randomly from the population of therapists who had reported 1 to 2 years of experience in working with children (birth to 13 years of age) on the 1990 AOTA Member Data Survey (AOTA, 1991).

Instrument

A forced-choice survey instrument that I developed was used to identify competencies of pediatric practice and to identify differences in perceived skill level between inexperienced and advanced practitioners. The instrument consists of 94 items, each of which respondents rate from 1 (needs assistance) to 5 (highly skilled) on a Likert scale to indicate level of knowledge of family systems and child development and level of skills in child assessment, intervention, working with families, teamwork, and consultation.

The scale was developed over a 2-year period as part of a pediatric occupational therapy training project. The instrument's original 100 competencies were derived from the early childhood intervention interdisciplinary competencies identified in federally funded personnel preparation projects in California (Hanson, 1990; Hanson & Brekken, 1991) and North Carolina (Bailey, Palsha, & Huntington, 1990; Bailey, Simeonsson, Yoder, & Huntington, 1990). The competencies were then revised to 94 that were specific to occupational therapy practice by selecting the related competencies and by reviewing the pediatric occupational therapy literature (e.g., Dunn & Campbell, 1991; Lawlor & Henderson, 1990). Additional revisions were made after review of the instrument by 8 experts in pediatric occupational therapy practice and research. After the instrument was used for 1 year within the training project, a change in the rating system to create behavioral anchors was included in the final version. The lowest score (1) was changed from low to needs assistance and the highest score (5) from high to highly skilled.

Procedure

The instrument and a brief demographic form were sent to the 122 APs and 100 IPs. Cover letters explained that the purpose was related to development of the rating scale. A second survey was mailed 1 month later to those who did not respond. The usable surveys were coded by sample group and subject, and the ratings were entered into a computer file for analysis with a computer statistical package.

Results

Sample

Of the 122 AP surveys mailed, 99 (80%) were returned, but only 90 (73%) were used. Of the nine not used, three were returned after data analysis had begun and six were from therapists who worked with adolescents most of the time. All of the remaining respondents worked primarily with clients whose ages ranged from newborn to 13 years. Of the 100 IP surveys mailed, 55 (55%) were returned and 52 (52%) were usable for data analysis. The responses deleted were from therapists who no longer worked with children most of the time, one of whom gave incomplete data (see Table 1).

Principle Components Analysis

A principle components analysis was performed to define the constructs measured by the scale items by organizing them into factors of related items (Kerlinger, 1973). Eighteen factors with eigenvalues above 1.0 resulted. Examination of reversal of successive differences and the scree test (Cattell, 1966) indicated that five, six, and seven factor solutions should be retained for more detailed analysis; therefore principle component analysis forcing five,
Table 1

Demographic Data: Inexperienced Practitioner and Advanced Practitioner Samples

<table>
<thead>
<tr>
<th>Variables</th>
<th>Advanced (n = 90)</th>
<th>Inexperienced (n = 52)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency Percent</td>
<td>Frequency Percent</td>
</tr>
<tr>
<td>Type of work facility</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hospital-based</td>
<td>23 25.6</td>
<td>15 28.9</td>
</tr>
<tr>
<td>Community-based</td>
<td>5 8.9</td>
<td>16 30.8</td>
</tr>
<tr>
<td>Education-based</td>
<td>26 28.9</td>
<td>18 34.6</td>
</tr>
<tr>
<td>Private practice</td>
<td>28 31.1</td>
<td>2 3.8</td>
</tr>
<tr>
<td>University</td>
<td>5 5.5</td>
<td>1 1.9</td>
</tr>
<tr>
<td>Work hours per week</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30 or more</td>
<td>68 75.6</td>
<td>38 73.1</td>
</tr>
<tr>
<td>20–29</td>
<td>13 14.4</td>
<td>9 17.3</td>
</tr>
<tr>
<td>1–19</td>
<td>9 10.0</td>
<td>5 9.6</td>
</tr>
<tr>
<td>Highest degrees</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bachelor’s</td>
<td>40 44.4</td>
<td>37 71.2</td>
</tr>
<tr>
<td>Master’s</td>
<td>46 51.1</td>
<td>15 28.8</td>
</tr>
<tr>
<td>Doctoral</td>
<td>4 4.4</td>
<td></td>
</tr>
<tr>
<td>Primary work role</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Direct service provision</td>
<td>76 84.4</td>
<td>47 90.4</td>
</tr>
<tr>
<td>Teaching</td>
<td>5 5.6</td>
<td>1 1.9</td>
</tr>
<tr>
<td>Research</td>
<td>1 1.1</td>
<td>3 5.8</td>
</tr>
<tr>
<td>Management</td>
<td>8 8.9</td>
<td>1 1.9</td>
</tr>
<tr>
<td>Certifications completed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brazelton</td>
<td>11 12.2</td>
<td>1 1.9</td>
</tr>
<tr>
<td>Neurodevelopmental treatment</td>
<td>29 32.2</td>
<td>4 7.7</td>
</tr>
<tr>
<td>Sensory integration</td>
<td>47 52.2</td>
<td>5 9.6</td>
</tr>
<tr>
<td>Years of experience in pediatrics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0–5</td>
<td>0 0</td>
<td>52 100.0</td>
</tr>
<tr>
<td>6–10</td>
<td>33 36.7</td>
<td>0 0</td>
</tr>
<tr>
<td>11–15</td>
<td>33 36.7</td>
<td>0 0</td>
</tr>
<tr>
<td>16–20</td>
<td>16 17.8</td>
<td>0 0</td>
</tr>
<tr>
<td>More than 20</td>
<td>8 8.8</td>
<td>0 0</td>
</tr>
</tbody>
</table>

six, and seven factors was completed. The six factor solution was selected for further analysis because the components produced seemed to be the most logical and meaningful and had the highest number of singular loadings for items. In addition, the six factor solution had an eigenvalue greater than 2.3 and explained more than 57% of the data matrix. Internal consistency for the factors, as estimated using Cronbach’s alpha, ranged from .88 to .94 for the constructs produced by the principle components analysis (see Table 2).

Constructs Defining Pediatric Practice

The competencies that define each of the constructs are listed in Table 3. Those that listed had loadings greater than .35 on the factor and did not load with other factors. Typically items with loadings of .3 or above are used to define a factor. The more conservative coefficient of (.35) was selected due to the relatively low ratio of number of subjects to number of variables analyzed. Fourteen scale items that did not contribute unique information were eliminated. Respondents’ mean scores on the resulting 80 items are listed.

Child evaluation, with emphasis on evaluation of sensory processing and integration, was the strongest construct to emerge. Both IP and AP respondents rated their competencies in the child evaluation construct the highest of all the six constructs. For example, all indicated they were skilled to highly skilled in administering and

Table 2

Original Categories of the Scale Compared to the Constructs That Emerged from a Six Factor Principle Component Analysis

<table>
<thead>
<tr>
<th>Original</th>
<th>Constructs From Principle Components Analysis</th>
</tr>
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<tbody>
<tr>
<td>1. Family systems</td>
<td>1. Child evaluation</td>
</tr>
<tr>
<td>Understanding of the importance of early relationships and environmental influences</td>
<td>Sensory integration and processing</td>
</tr>
<tr>
<td>2. Child development</td>
<td>2. Communication and consultation with team and family members</td>
</tr>
<tr>
<td>Neonatal</td>
<td>Consultation skills</td>
</tr>
<tr>
<td>Typical</td>
<td>Relationships with team members</td>
</tr>
<tr>
<td>Atypical</td>
<td>Collaboration skills</td>
</tr>
<tr>
<td>3. Working with families</td>
<td>3. Working with families</td>
</tr>
<tr>
<td>Supporting family members</td>
<td>Providing support</td>
</tr>
<tr>
<td>Collaboration</td>
<td>Understanding the importance of child interactions</td>
</tr>
<tr>
<td>Communication skills</td>
<td>Assessing parent-child interaction and the environment</td>
</tr>
<tr>
<td>Assessment</td>
<td>Knowing laws, processes, and parental rights</td>
</tr>
<tr>
<td>Intervention</td>
<td>Understanding of rationale and importance of intervention</td>
</tr>
<tr>
<td>Program evaluation</td>
<td>Coordinating services across agencies</td>
</tr>
<tr>
<td>5. Understanding systems</td>
<td>5. Assistive technology</td>
</tr>
<tr>
<td>Knowledge of the public education laws</td>
<td>Assessing assistive technology needs</td>
</tr>
<tr>
<td>Knowledge of the service provision process</td>
<td>Instructing in use of assistive technology</td>
</tr>
<tr>
<td>Teamwork</td>
<td>Recommending assistive technology and equipment</td>
</tr>
<tr>
<td>6. Consultation skills</td>
<td>Using materials appropriately</td>
</tr>
<tr>
<td>6. Neonatal therapy</td>
<td>Using positioning</td>
</tr>
<tr>
<td>Knowledge of neonates and high risk factors</td>
<td>Assessment and intervention of oral motor skills</td>
</tr>
</tbody>
</table>
interpreting informal and formal assessment. All rated themselves as highly skilled in adapting assessment materials and in conducting the assessment in the least intrusive manner. In analyzing sensory, neuromotor, and musculoskeletal systems as these related to function, the IP respondents rated their competency as skilled (3.82), and the AP respondents rated their competency as highly skilled (4.59). Knowledge of occupational therapy, child development, neurodevelopmental theories, and self-care and adaptive behaviors in children were included in this construct.

The second construct that emerged through the principal components analysis described competencies in communicating and consulting with team and family members. In general, the respondents rated their level of competency in this area as skilled to highly skilled. The highest ratings were given to communication skills with other professionals, for example, establishing rapport and maintaining positive relations with team members and sharing knowledge with team members (IP = 4.39, AP = 4.62). On average, the respondents rated themselves as skilled in communicating the results of testing and in consulting with other team members regarding a child's plan and progress. They also rated themselves as skilled in pairing consultation with direct services. Included in this factor were ability to organize work, manage time, coordinate an intervention or care plan, modify the plan if necessary, and select an appropriate model of service provision. The importance of this construct to pediatric practice is evidenced by the strength of the factor and the number of items that loaded on the factor.

The third construct to emerge from the analysis was related to working with families. All of the respondents rated themselves as skilled or highly skilled in identifying family variables that influence a child's development and in identifying and using a variety of resources to provide support to the family. The highest competencies in this construct were understanding parent-child interaction and the variables that influence it, considering the strengths and needs of the family, active listening to family members, discussing the available services, and helping the family provide an environment that supports the development of the child. The mean scores for the respondents were lower in helping families obtain community services, building family support systems, and evaluating the effectiveness of family services.

The fourth construct was related to understanding the systems in which services are provided. Respondents rated themselves as relatively unskilled in explaining and interpreting the federal and state mandates that resulted from the early intervention legislation (Public Law 99–457) compared to other competencies. They reported being skilled in explaining intervention programs to families, collaborating with family and team members to develop goals, and recognizing and respecting the rights of families. They also rated themselves as skilled in establishing lines of communication among agencies, professionals, and families.

The fifth construct was related to competencies in using assistive technology. Included in this construct were assessing and recommending positioning, carrying, and lifting techniques. Self-ratings were lowest in evaluating for potential use of assistive technology (IP = 2.92; AP = 3.40). In identifying equipment to facilitate functional independence, instructing a family in use of assistive technology, assessing a child's self-care and functional needs, and documenting expected outcomes, IP respondents rated themselves as adequate to skilled (3.33 to 3.94) and AP respondents rated themselves as skilled (4.14 to 4.33).

The sixth construct that emerged from the analysis related to competencies in neonatology and feeding. The mean rankings for items within this construct were lowest compared to the other five constructs. (The mean score for the IP respondents was 3.53 and for the AP respondents, 3.93). Both IP and AP respondents rated themselves most skilled in understanding an infant's interactive, motoric, and organizational processes as these relate to child development and ability to establish relationships (IP = 3.69; AP = 4.02). They ranked themselves as skilled in describing the effect of early risk conditions on development (IP = 3.57; AP = 4.02). As for feeding, the respondents rated themselves as adequate to skilled in using the sequence of normal oral motor development and in assessing oral motor skill (IP = 3.27–3.37; AP = 3.90–4.02), they rated themselves as less skilled in demonstrating knowledge about nutrition as it relates to health (IP = 3.04; AP = 3.38). Respondents were skilled in recognizing the implications of sleep and arousal and feeding patterns in the neonate, and rated themselves as less skilled in defining etiologies and characteristics of neonatal high-risk conditions.

**Differences Between AP and IP Respondents**

Overall, the AP respondents rated themselves as skilled to highly skilled in the competencies associated with pediatric practice, whereas the IP respondents rated themselves as adequate to skilled. The demographic data (see Table 1) provided evidence that the APs had extensive experience (M = 13.2 years) and advanced educational background (55% had graduate degrees), in addition to specialty certification in pediatric occupational therapy. Therefore, this sample is suitable for a study of advanced pediatric practice. The IPs had less experience (M = 3.5 years), and fewer had obtained graduate degrees (28.8%) or specialty certificates (19.2%).

An analysis of variance (ANOVA) was computed to determine the differences between the ratings of the AP respondents and IP respondents (see Appendix). The AP respondents rated themselves as more highly skilled for each construct (p < .001). In a comparison of mean
scores of individual items, the APs were found to have rated their skills significantly higher than the IPs on all but 7 of the 80 scale items analyzed. The greatest differences in scores were for child evaluation skills (F = 6.11, p < .0001), specifically identifying developmental delay and assessing sensory, neuromotor, and musculoskeletal systems. The differences between AP and IP mean scores were also high (F > 6.00, p < .0001) for the competencies of relating a child’s sensory processing to functional skills; recognizing the implications of informally assessing sensory integration dysfunction for behavioral, developmental, and functional skills; consulting with other professionals; and selecting when and how to use consultation in combination with direct services.

The differences in self-ranked skill levels between APs and IPs were not supported (p < .01) for the following items: establishing positive relationships with team members and families, understanding the factors that influence parent-child interaction, consideration of cultural values in planning services, describing the individualized Family Service Plan process, defining comprehensive services, involving the family in transition from one program to another, and evaluating potential use of technology.

### Differences in AP Competency by Work Setting, Age of Clients, Therapist’s Role, and Years of Experience

A preliminary analysis was computed to determine whether the AP respondents had significantly different skills when the six constructs were compared to each other. An ANOVA revealed that the mean ratings for the constructs differed; however, a Tukey post hoc analysis (Winer, 1971) revealed only two true significant differences among the scores: (a) the first two constructs (child evaluation and communication and consultation skills) were higher than the other four (i.e., working with families, understanding service provision systems, assistive technology, and neonatology and feeding), and (b) the fifth and sixth constructs (assistive technology and neonatology and feeding) were significantly lower than the other four.

Four separate ANOVA and Scheffé post hoc analyses (Winer, 1971) considered the interaction among specific variables that described the AP respondents’ practice and their self-reported competencies. The respondents were categorized according to their work setting (hospital, school, community program, or university), the primary age of their clients (infants, preschoolers, or school-age), their role (administrator, educator, or therapist), and years of experience (6–25 years). The purpose of these analyses was to determine whether differences in competency in each of the constructs were influenced by these variables. In a comparison of construct scores across work settings, significant differences were found. AP respondents who worked in hospital settings, private practice, or universities reported higher skills in working with families than the AP respondents who worked in community programs. AP respondents who worked in community programs ranked child evaluation and use of assistive technology as the areas in which they were most skilled and working with families as the area in which they were least skilled.

The AP respondents were also compared across constructs according to the age of the clients served. AP respondents who worked with infants, preschoolers, and school-age children were significantly different in competency levels. AP respondents who worked primarily with infants ranked themselves significantly more skilled in competencies related to neonatology and feeding (construct 6) than did AP respondents who worked with older children. APs who worked with infants considered themselves the most skilled in explaining service provision systems (construct 4), and those who worked with older children were the most skilled in using assistive technology (construct 5). AP ratings of competency in child evaluation and working with families did not differ according to the primary client age group. The AP ratings did not differ by role or years of experience.

### Discussion

#### Pediatric Constructs: Describing Specialty Practice

The factors that emerged from the principle components analysis differed from the original categories of the scale. The original scale separated knowledge of families from skills in working with families and knowledge in child development from skills in child assessment and intervention. However, the original scale was not sensitive to differences between knowledge and skill because these competencies were rated at similar levels. Bailey, Buysee, and Palsha (1990) and Humphry and Geissinger (1992) had similar findings; it appears that in rating self-competence, respondents do not separate skills from knowledge about a specific topic.

The clusters of items that loaded together to define the skill areas of pediatric occupational therapy practice resulted in unexpected and unique combinations of skills. Competency areas that are not specifically occupational therapy clinical skills, such as knowledge about service provision systems and skills in communication and consultation, emerged as important constructs for the pediatric practitioner.

The emergence of child evaluation using a developmental framework with emphasis on sensory integration as the first construct in defining therapists’ competence in pediatric occupational therapy practice indicates the importance of such evaluation in providing services to children. It also suggests that the respondents were strongly influenced by the sensory integration frame of reference. The self-ratings of high competency in sensory integration and sensory processing evaluation may be...
related to the qualifications of the APs; more than half of the sample were certified in the Sensory Integration and Praxis Test (Ayres, 1989). Irrespective of the factors associated with competency in evaluation of sensory processing and sensorimotor systems, the high ratings indicate the importance of these skills in providing services to children.

Examples of the competencies that defined the child evaluation construct include administering both formal and informal tests and interpreting assessment information into implications for the child's play and function. Within this construct, the respondents rated themselves as highly skilled in awareness of factors that could affect the test results and able to conduct the assessment in the least intrusive manner.

Specific areas of evaluation did not relate to the child evaluation construct; that is, evaluation of assistive technology needs and use, parent-child interaction, and oral motor skills, loaded with the constructs that defined those respective specialty areas. Although the respondents reported higher competence in evaluation using a developmental framework than in evaluation of the child's functional skills (e.g., self-care), recent research (Coster & Haley, 1992; Haley, Coster, Ludlow, Haltiwanger, & Andrello, 1992) has emphasized the importance of functional assessment with children to establish meaningful goals and to evaluate progress. By developing greater skills in functional assessment to complement their expertise in developmental evaluation, APs can achieve more comprehensive assessment that leads to functional outcome planning (Coster & Haley, 1992). Assessment of caregiver-child interaction and use of technology are emerging areas of emphasis in evaluation as indicated by the literature (Case-Smith, 1993; Haley, Hallenborg, & Gans, 1989; Hanzlik, 1993; Smith, 1993; Swinth & Case-Smith, 1993), but are areas in which the respondents believed that they were less competent. Skill development in assessment of caregiver-child interaction would enable occupational therapists to demonstrate increased sensitivity to interactional issues. APs also need to develop skills in evaluation for assistive technology in order to identify and access the most appropriate equipment for the child.

The fact that the second construct emerged as skills in communication and consultation indicates the importance of these skills to pediatric practitioners. The AP ratings of items in this construct suggest that they are confident in their communication and consultation abilities. The finding that skills in interacting with team members were rated higher than skills in interacting with family members may indicate a greater comfort level with other professionals or more opportunities for long-term relationships with team members. The importance of relationships with other team members is suggested by the high ratings given to these items.

The great difference between the AP and IP ratings in consultation skills is not surprising because consultation skills are generally perceived to be more advanced skills (Dunn, 1992; Jaffe & Epstein, 1992). Given that the subject selection criteria for APs were based on a certification process that involves a written examination of knowledge in pediatrics, it is interesting that interpersonal skills, such as communication and consultation skills, emerged as the second strongest factor and that these skills were rated at the highest levels. Several literature sources confirm that communication and consultation skills are important competencies in pediatric practice (Case-Smith, 1993; Hanft, 1988; McGonigel, Kaufmann, & Johnson, 1991; Stewart, 1989; Summers et al., 1990; Turnbull & Turnbull, 1991).

The third construct (working with families) also reflects skills needed by all practitioners who serve children. This construct includes both general skills in interacting with families and specific competencies in evaluating family concerns and resources, understanding the importance of parent-child interaction and the caregiving environment, and helping parents provide an environment that supports the development of the child. The lack of significant differences between AP and IP ratings in competencies related to understanding cultural values indicates that cultural competence may relate more to general life experience and may not relate to specific pediatric occupational therapy skills. The literature suggests that understanding diversity and cultural values is of increasing importance, given the increasing diversity of the clientele served and the greater recognition of cultural sensitivity (Anderson & Fenichel, 1989; Hanson, 1992; Lynch, 1992; Turnbull & Turnbull, 1991). Perhaps pediatric occupational therapists need a greater emphasis in practice on cultural competence (Hanson, Lynch, & Wayman, 1990). The lack of significant differences between the IP and AP ratings may indicate that more recent graduates of occupational therapy educational programs (i.e., those with fewer years of experience) have received more training in cultural sensitivity.

The fourth construct, which encompasses an understanding of service provision systems and specific aspects of the early intervention and educational systems, such as planning, service coordination, transition, and interagency collaboration, addresses skills that are important to all professionals who work with children and families (AOTA, 1989; Bailey, Simeonsson, Yoder, & Huntington, 1990; McGonigel et al., 1991). Respondents' ratings of high competency in skills in this construct indicate that all respondents have developed competence in understanding and working within early intervention and educational systems and attest to the importance of these skills in pediatric occupational therapy.

The final two constructs to emerge from the analysis relate to specific clinical skills and technical aspects of treatment: evaluating for and using assistive technology and neonatal therapy and intervention for feeding and...
oral motor skills. Both IP and AP respondents rated themselves as competent in assistive technology, validating the importance of the skill. Smith (1991, 1993) underscored this skill’s importance to pediatric occupational therapy. Occupational therapists often serve as assistive technology coordinators, because they have knowledge of the devices and services that match the needs of the child and skills in determining how the child might best access and use technology (Smith, 1993).

The strong relationship of feeding and knowledge of neonates (construct 6) indicates that feeding interventions are an important part of occupational therapy with very young infants. Again this description of pediatric occupational therapy is verified in the literature. Feeding techniques to enhance oral motor skills are foci of intervention with high-risk young infants (Glass & Wolf, 1993; Wolf & Glass, 1992).

Comparison of AP Competencies by Work Setting, Age of Clients, Therapist’s Role, and Years of Experience

In comparing the level of competency in each of the constructs according to several variables of practice, I found that the results contradicted my assumptions. Because the community-based therapists have more opportunities to work with parents as team members for extended periods of time (Gilkerson, 1990; Case-Smith & Wavrek, 1993), I had assumed that these AP respondents would rate their competencies in working with families higher than hospital-based therapists, who had fewer opportunities. The finding was the converse. Perhaps as therapists become more aware of the complexities and difficulties in supporting and empowering families, they feel less competent in their abilities to implement a family-centered approach. The community-based AP respondents may have been more critical of their skills because they had more in-depth understanding of family-centered care and were aware of the difficulties incurred in developing equal partnerships with families (Bailey, Farel, O’Donnell, Simeonsson, & Miller, 1986; Fenichel & Eggebek, 1991). Hospital-based therapists may experience a smaller part of each family’s life and may feel competent in dealing with the medically based issues that brought the child and family into the hospital (Gilkerson, Gorski, & Panitz, 1989).

Differences in competencies according to the primary age of the child served seem congruent with pediatric practice across the age ranges. For example, APs who worked primarily with infants reported greater competency in identifying high risk factors and in evaluating and treating feeding problems. They also reported greater competency in understanding service provision systems. APs who worked with school-age children reported greater competence in assistive technology. Although technology is becoming increasingly important across the age span, it seems most relevant and important with older children who undergo fewer developmental changes. As children with disabilities enter school and are expected to function independently, the use of assistive technology increases, along with the responsibility of therapists to support its use (Rainforth, York, & MacDonald, 1992; Smith, 1993).

Ratings of competence according to the constructs identified did not differ according to the therapist’s role or number of years of experience. Due to the sampling procedure and the definition of advanced practice, these variables were similar across subjects. Almost all of the sample reported that direct service to children and families was their primary role and all had 6 or more years of experience. With skewed numbers in the roles performed and homogeneity in degree of experience, differences among the AP respondents in the constructs based on these variables were not found.

Study Limitations

Several limitations were related to use of the evaluation tool. The respondents were limited in how they could define their skills, and although the instrument was designed to be comprehensive, it may have missed skill areas or may have emphasized specific areas of practice. Competencies for specific interventions other than feeding, assistive technology, and neonatal therapy either did not load on any of the factors or correlated with two or more factors and therefore did not contribute to defining the constructs. Finally, the large number of items in the tool may have resulted in less thoughtful selection of competency ratings by the respondents. This limitation is countered by the fact that most respondents selected a range of responses from needs assistance to highly skilled, indicating that they were making discriminating choices.

Another limitation is related to the selection of the IP sample. Although the sample of IPs had significantly fewer years of experience than the APs, they were not newly graduated therapists. Because the 1990 AOTA Member Data Survey (AOTA, 1991) was used to obtain the sample, each respondent had at least 2 years of experience in a pediatric setting. In addition, more AP subjects responded to the survey than IP subjects (80% and 55% respectively). A lower response rate by the IPs was expected because they were likely to be less motivated to rate their competency levels. It is possible that those who did not return their surveys did not feel comfortable to rate their competency levels. The six factor solution seemed to be the most logical and valid...
representation of the data, but must be recognized as
only one way of interpreting the survey results. Use of
principle components analysis with a sample of 142 and
an instrument with 94 variables can produce unstable
results and should be interpreted with caution. Again, the
reported results were based on both the statistic proce-
dures and best fit of the data with concepts of pediatric
occupational therapy derived from the literature.

Conclusion
A description of pediatric occupational therapy practice
was obtained when 90 advanced practitioners (APs) and
52 inexperienced practitioners (IPs) who work with chil-
dren rated their competency in key areas of practice. The
picture that emerged indicated that therapists are highly
skilled in evaluation and that child evaluation is a critical
aspect of practice. Competency areas that are not specifi-
cally occupational therapy clinical skills, such as skills in
communication and consultation and knowledge about
service provision systems, emerged as important con-
structs for the respondents. In fact, these areas were
rated higher than specific clinical skills, such as use of
assistive technology or therapy for oral–motor and feed-
ing problems. The greatest differences between AP and IP
responses were in evaluation of sensory processing and
sensory integration, analysis of neuromotor function, and
skills in consultation. The APs rated themselves more
competent in these skills than did the IPs, which suggests
that expertise in sensory integration and neuromotor
analysis and in consultation are important skills areas that
define advanced occupational therapy practice with chil-
dren. ▲

Appendix A
Occupational Therapy Early Intervention. Self-Rated Competencies, Six Factor Solution

<table>
<thead>
<tr>
<th>Mean Scores ANOVA</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Factor 1</td>
<td>α = .94</td>
</tr>
<tr>
<td>IP</td>
<td>AF</td>
</tr>
<tr>
<td>12. Demonstrate knowledge of the development of the somatosensory, vestibular, and proprioceptive systems and their effect on child development.</td>
<td>3.53</td>
</tr>
<tr>
<td>15. Describe and demonstrate knowledge of the interrelationship of sensory processing and perception with developmental skills and play.</td>
<td>3.65</td>
</tr>
<tr>
<td>21. Recognize implications of sensory integration dysfunction on function and behavior.</td>
<td>3.55</td>
</tr>
<tr>
<td>54. Assess sensory processing as it relates to perception, play, and social–emotional development.</td>
<td>3.55</td>
</tr>
<tr>
<td>10. Explain and demonstrate knowledge of the interrelationship among the developmental domains (e.g., perceptual skills as related to eye–hand coordination, and fine motor control).</td>
<td>3.78</td>
</tr>
<tr>
<td>53. Assess sensory, neuromotor, and musculoskeletal systems as they relate to fine motor, self-help, and play skills and plan intervention according to findings.</td>
<td>3.82</td>
</tr>
<tr>
<td>9. Demonstrate knowledge of the specific sequence, range, and variability of development areas of physical growth, motor skills, perception, cognition, play, communication, and social–emotional skills.</td>
<td>3.67</td>
</tr>
<tr>
<td>48. Administer and interpret standardized or formal assessment instruments appropriate to age, population, disability, and setting.</td>
<td>3.96</td>
</tr>
<tr>
<td>3. Identify caregiver ability to provide a nurturing environment and developmentally appropriate activities.</td>
<td>3.88</td>
</tr>
<tr>
<td>8. Use the major theories of occupational therapy, neurodevelopment, and child development in evaluating, planning, and implementing intervention.</td>
<td>3.90</td>
</tr>
<tr>
<td>49. Demonstrate skills in informal assessment of functional and developmental skills through observation of play or parent–child interaction.</td>
<td>4.06</td>
</tr>
<tr>
<td>50. Adapt assessment materials, as appropriate, for children with disabilities, such as visual or motor impairments.</td>
<td>3.74</td>
</tr>
<tr>
<td>11. Demonstrate knowledge of the development of neuromotor components, transitional movements, quality and interplay of posture, movement, and muscle tone related to functional behaviors.</td>
<td>3.65</td>
</tr>
<tr>
<td>20. Recognize variations from normal neuromotor components and differentiate developmental delay, musculoskeletal deformity, and abnormal quality.</td>
<td>3.59</td>
</tr>
<tr>
<td>13. Demonstrate knowledge of self-care and adaptive behaviors including self-feeding and early dressing skills.</td>
<td>4.00</td>
</tr>
<tr>
<td>52. Conduct assessment in least intrusive manner possible.</td>
<td>4.04</td>
</tr>
<tr>
<td>51. Be aware of factors that may affect the assessment process and/or results.</td>
<td>4.16</td>
</tr>
<tr>
<td>Factor 2</td>
<td>α = .94</td>
</tr>
<tr>
<td>77. Establish priorities, organize tasks, meet deadlines, and manage time.</td>
<td>3.92</td>
</tr>
<tr>
<td>81. Direct, coordinate, and receive input from all staff members to the benefit of the child and family.</td>
<td>3.88</td>
</tr>
<tr>
<td>58. Demonstrate skills in team interaction, conflict resolution, and interpersonal communication.</td>
<td>3.92</td>
</tr>
<tr>
<td>79. Communicate effectively when speaking and writing to colleagues, administrators, and families.</td>
<td>3.88</td>
</tr>
<tr>
<td>83. Share knowledge and procedures of area of expertise with team members.</td>
<td>4.06</td>
</tr>
</tbody>
</table>
94. Demonstrate consultation skills in advocacy activities on behalf of infants, young children, and their families.

93. Demonstrate the communication skills needed in consultation.

70. Involve the family actively in designing and implementing the child's program to fit within their daily routine.

91. Explain how to pair consultation with direct services.

80. Establish rapport and maintain positive relations with team members, including the parent(s).

78. Describe the roles and functions of the other team members.

75. Involve the family actively in the evaluation of the intervention plan.

92. Participate in a consultation, including evaluation, collaborative goal setting, and planning.

63. Report assessment results.

30. Evaluate effectiveness of family services offered on an ongoing basis.

32. Demonstrate effective communication for building interpersonal relationships within the family.

68. Select appropriate model of service provision (e.g., consultation and/or direct services) to match family priorities, child's needs, and program's restraints.

76. Modify the intervention plan, with input from other team members, as determined by child and family change, including the family when modifications are made.

Factor 3 \( \alpha = .93 \)

2. Identify family variables that influence child, including sensitivity to cues, educational level, support networks, and amount of stress.

27. Identify and use a variety of resources that may provide support to the family and child.

28. Demonstrate ability to assist families in obtaining community services.

25. Use strategies for building family support systems.

60. Assess parent-child interaction and caregiving behaviors.

4. Understand that parent-child interaction is influenced by family and environmental factors, which include the social support network, economic, and cultural factors.

1. Demonstrate knowledge that parent-child interaction and the home environment are significantly related to developmental and behavioral outcomes.

30. Evaluate effectiveness of family services offered on an ongoing basis.

38. Assist family in identifying their priorities and resources.

26. Recognize possible effects of the child's disability on the child's future and the family's function.

32. Demonstrate effective communication for building interpersonal relationships within the family.

45. Discuss with parents the various medical, educational, social, and therapeutic services available.

34. Describe the IFSP process (referral, intake, screening, team planning, and evaluation).

35. Define comprehensive early intervention services (i.e. family support, home visits, instruction, mental health, therapies, etc.).

88. Explain the importance of establishing open lines of communication among agencies, professionals, and families.

Factor 4 \( \alpha = .90 \)

34. Describe the IFSP process (referral, intake, screening, team planning, and evaluation).

35. Define comprehensive early intervention services (i.e. family support, home visits, instruction, mental health, therapies, etc.).

86. Inform parents of their rights and provide information to family about the IFSP process.

37. Describe and explain intervention program(s) to family.

53. Explain rationale for family-centered early intervention services.

87. Involve the family (to the degree the family wishes) in the transition process (e.g., from early intervention to preschool, from the NICU to home).

31. Describe and interpret federal, state, and local mandates related to early intervention and education.

85. Recognize and respect the rights of families as equal partners in the process of service coordination.

39. Facilitate the family's participation in referral, screening, intake, assessment, staffing, program planning, program implementation, and evaluation.

2. Identify family variables that influence child, including sensitivity to cues, educational level, support networks, and amount of stress.

38. Assist family in identifying their priorities and resources.

26. Recognize possible effects of the child's disability on the child's future and the family's function.

32. Demonstrate effective communication for building interpersonal relationships within the family.

45. Discuss with parents the various medical, educational, social, and therapeutic services available.

34. Describe the IFSP process (referral, intake, screening, team planning, and evaluation).

35. Define comprehensive early intervention services (i.e. family support, home visits, instruction, mental health, therapies, etc.).

88. Explain the importance of establishing open lines of communication among agencies, professionals, and families.

Factor 5 \( \alpha = .88 \)

56. Identify equipment (e.g., wheelchairs, orthotics, and positioning equipment) to facilitate functional independence.

72. Instruct child, family, and staff members in the care and use of assistive technology and mobility and positioning equipment.

71. Instruct family and staff members in positioning, carrying, lifting, and transferring child appropriately with and without adaptive equipment.
55. Assess and recommend appropriate positioning, carrying, lifting, and transfer techniques for the child. 3.92 4.51 4.67 .000
57. Evaluate for potential use of assistive technology (e.g., adaptive switches, computers, powered mobility). 2.92 3.40 2.47 .015
59. Assess self-help and adaptive behavior, including self-feeding skills and dressing skills: plan intervention according to findings. 3.90 4.41 4.41 .000
60. Determine expected outcomes, criteria to determine progress, and recommended intensity of services (in IFSP, IEP). 3.94 4.43 4.24 .000

Factor 6 $\alpha = .88$

6. Recognize the implications of homeostatic functions (i.e., sleep-arousal-feeding patterns) of the neonate for caregiving. 3.29 4.02 3.84 .000
7. Understand that infant's interactive, motoric, homeostatic, and organizational processes are key elements in development and in forming relationships. 3.69 4.20 3.01 .003
8. Demonstrate knowledge of the risk factors in fetal development and the childbirth process. 3.57 3.86 2.70 .008
9. Define etiologies and characteristics of biological and high-risk conditions. 3.39 3.70 3.98 .000
10. Describe and demonstrate general knowledge of the health and nutritional needs for normal growth and development. 3.04 3.58 3.11 .002
11. Demonstrate knowledge of the sequence of normal oral motor development and feeding skills. 3.97 4.02 3.83 .000
12. Assess oral motor skills (e.g., sucking, chewing, swallowing). 3.27 3.90 3.36 .001
13. Describe the effects of disabling and high-risk conditions on the development of motor skills, perception, cognition, communication, play, and social-emotional skills. 3.47 4.13 5.21 .000

Note. IP = inexperienced practitioner, AP = advanced practitioner, ANOVA = analysis of variance, IFSP = Individualized Family Service Plan, NICU = neonatal intensive care unit, IEP = individualized education program.

References


