Objective. The purpose of this study was to examine the current practice patterns of occupational therapists experienced in working with children with autism spectrum disorders.


Results. Of those contacted, 72 occupational therapists met the study criteria and returned completed questionnaires. Practice patterns included frequent collaboration with other professionals during assessment and intervention. Intervention services were typically provided in a one-to-one format with the most common techniques being sensory integration (99%) and positive reinforcement (93%). Theoretical approaches included sensory integration (99%), developmental (88%), and behavioral (73%). Evaluations relied heavily on nonstandardized tools and clinical observations. Educational methods identified as most helpful were weekend workshops (56%) and on-the-job training (52%).

Conclusion. This study clarified the nature of current occupational therapy practice patterns for 2-year-old to 12-year-old children with autism. Additional studies are needed to examine the efficacy of current evaluation and intervention methods, as well as to explore the relevance of available standardized assessments for this population.


Autism is a neurobiological disorder occurring in approximately 1 per 1,000 children (Bristol et al., 1996; Bryson, 1996). Children with autism spectrum disorders typically demonstrate dysfunction in perceptual and sensory processing, as well as in communication and neurological functioning, resulting in a variety of functional skill limitations in communication, social interaction, behavioral regulation, and play (Freeman, 1993; Ramm, 1988; Rapin, 1997). The etiology of this puzzling disability is unknown; however, hypotheses include both genetic and environmental causes (Bristol et al., 1996).

Children with autism may participate in an assortment of intervention services, including early intervention, discrete trial training and other behavioral procedures, speech therapy, dietary modifications, and craniosacral therapy. The importance of occupational therapy services for children with autism has been supported by professionals in the fields of medicine (Coleman, 1989; Mays & Gillon, 1993; Rapin, 1997), psychology (Dawson & Osterling, 1996), special education (Hulme, 1995), and occupational...
therapy (Clark, 1983; Huebner, 1992). However, in the professional literature, no current description of the breadth of occupational therapy services for children with autism spectrum disorders can be found.

The occupational therapy literature surrounding the topic of autism is varied. Areas that have been studied include play and adaptive abilities (Gralewicz, 1973; Restall & Magill-Evans, 1994), the impact of vestibular function on verbalizations (Ray, King, & Grandin, 1989; Reilly, Nelson, & Bundy, 1984), postrotary nystagmus as an indicator of change (Nelson, Nitzberg, & Hollander, 1980), and empathic ability (Davidson, Short, & Nelson, 1984). There are also descriptive reports (Stancliff, 1996a; 1996b), theoretical works (Bloomer & Rose, 1989; King, 1987; Llorens, 1974; Nelson, 1982), literature reviews (Cammissa, & Hobbs, 1993; Clark, 1983; Ottenbacher, 1982; Peterson, 1986), and studies citing the application of sensory integrative techniques for children with autism (Ayres & Mailloux, 1983; Ayres & Tickle, 1980; Baranek, Foster, & Berkson, 1997; King, 1987).

Despite a plethora of publications regarding interest to occupational therapists, empirical studies regarding the nature of occupational therapy services for children with autism are rare. A search of the professional literature since 1967 produced only six data-based studies relating to occupational therapy and autism. None described evaluation or intervention techniques or identified the nature of occupational therapy services for this population. In order to validate the importance of occupational therapy intervention for children with autism, initial efforts must be made to describe and define the responsibilities of occupational therapists, the relevant training that is needed, and the tools and techniques used to provide services for this population.

This study was designed to examine the practice patterns currently used by occupational therapists when working with children with autism spectrum disorders. A survey of practitioners was conducted to answer the following questions:

1. How do occupational therapists experienced in serving children with autism describe their current practice?
2. What assessments and intervention techniques are used by occupational therapists who are experienced in serving children with autism?
3. What education and training do occupational therapists who are experienced in serving children with autism consider most important to their practice?

**Method**

**Participants**

The target population for this study was occupational therapists who were experienced in providing services to children with autism. Inclusion criteria for occupational therapists to be considered experienced were defined as the following: (a) the therapist worked at least 10 hr per week in a program that provided services to 2-year-old to 12-year-old children with autism, (b) the therapist worked as an occupational therapist at the time of the survey, and (c) the therapist considered himself or herself to be competent in providing services to children with autism.

The survey questionnaire was initially sent to 158 programs in the United States identified by the Autism Research Institute. Twenty-five of these programs indicated that (a) they did not provide occupational therapy services or did not serve the identified population, or (b) they had a part-time occupational therapist who had already completed the questionnaire at his or her other place of employment. Another 6 were unreachable. Thus, the total sample was 127. The response rate was calculated by dividing the number of surveys returned and completed (87) by the sample size (127), and then multiplying by 100 (Dillman, 1978) which yielded a 68.5% response rate. Of the 87 returned questionnaires, 15 did not meet the specified inclusion criteria; the remaining 72 were usable for data analysis.

**Instrument**

A mail questionnaire designed specifically for this study was used to increase the probability of reaching qualified pediatric occupational therapists from diverse geographic locales. The questionnaire was comprised of four sections intended to address the study questions: (a) description of current practice; (b) evaluation and intervention methods; (c) continuing education, training, and experience; and (d) demographics. Questionnaire items were developed from a comprehensive review of the occupational therapy, education, and psychology literature and through consultation with two pediatric experts and one survey research expert.

Face and content validity were examined through review and pretesting of the questionnaire by three expert consultants, each of whom had published research in the area of occupational therapy and autism. In addition, a pretest of the questionnaire was conducted with a convenience sample of three occupational therapists who regularly worked with children with autism. The questionnaire was modified according to verbal and written feedback.

**Data Collection and Analysis**

A survey technique with structured follow-up mailings was used to optimize the response rate (Dillman, 1978). Surveys were coded with an identification number to ensure confidentiality while allowing for tracking of nonrespondents. A cover letter describing the purpose of the study and inclusion criteria, the survey questionnaire, and a postage-paid business reply envelope comprised the initial mailing that was sent to each of the 158 programs. Follow-up included a postcard reminder at 1 week, and mailings of
Data were analyzed using Microsoft Excel Version 5.0 (Microsoft Corporation, 1995) and Data Desk Version 6.0 (Data Description, 1997). Descriptive statistics, frequency counts, and percentages were calculated to describe practice patterns and demographic characteristics.

Results

Demographics

The 158 programs to which questionnaires were sent were distributed fairly evenly across the United States with 28% in the Midwest, 24% in the South, 30% in the Northeast, and 18% in the West. The 72 respondents in the final sample represented the four regions of the United States according to the following percentages: 32% from the Midwest, 21% from the South, 29% from the Northeast, and 18% from the West. This distribution roughly corresponds to the geographic distribution of the original 158 programs. The ineligible respondents were distributed as follows: 4 from the West, 4 from the Midwest, 6 from the South, and 1 from the Northeast.

Although 72 eligible surveys were returned, not all respondents completed the questionnaire in its entirety; therefore, the number of responses varies for some questions. Respondents’ (n = 71) levels of education were reported as follows: 61% had a bachelor’s degree, 34% had a professional master’s degree, 4% had a professional master’s degree, and 1% were certified occupational therapy assistants.

The level of experience working both in pediatrics and with children with autism was assessed by each respondent indicating the category that best matched the number of years worked in each area. As a group, respondents (n = 72) reported more general pediatric experience than experience with children with autism. The median category for number of years worked as a pediatric occupational therapist was 11 to 15 years, with 73% of respondents having 6 or more years of experience. Both the mode and the median category for number of years worked with children with autism was 6 to 10 years, with 65% of respondents having 6 or more years of experience with this population.

Respondents’ (n = 70) reports of their perceived level of competence in providing services to children with autism yielded ratings of competent by 39%; proficient by 49%; and expert by 13%.

Current Practice Patterns

The mean number of hours worked per week by respondents (n = 72) was 34, with a low of 12 and a high of 60. Of those hours, the mean percentage of time spent on work related to services for children with autism was 50%, with a median of 40%.

The ages of children with autism who were receiving occupational therapy services were reported by all 72 eligible respondents. A substantial number (88%) of respondents worked with 2-year-olds through 5-year-olds, 71% worked with 6-year-olds through 8-year-olds, 58% worked with 9-year-olds and 10-year-olds, and 39% worked with 11-year-olds and 12-year-olds. At the time of the survey, the respondents provided services to a total of 184 children with autism spectrum disorders.

In response to a question regarding the distribution of hours worked per week, respondents (n = 71) recorded the percentage of time spent in each of six service models as related to the total number of hours spent on care related to children with autism. As a group, respondents reported spending the greatest percentage of their time in one-to-one intervention. Many occupational therapists also provided consultation services. The complete results are displayed in Table 1.

Typical occupational therapy treatment sessions. To further describe occupational therapy services, each respondent (n = 72) was asked to report the primary format that he or she used to provide direct intervention services. Eighty-two percent reported primary use of a 1:1 format, 10% worked mainly in small groups (3 to 5 children), 4% in large groups (6 or more children), 3% in a 1:2 format, and 1% indicated that this question was not applicable. The typical length of a treatment session reported by 43% of respondents (n = 72) was 30 min. Four percent reported a treatment session less than 30 min, 31% reported 45 min, 15% reported 60 min, 3% reported more than 60 min, and 4% reported that this question was not applicable.

Site of occupational therapy service delivery. In describing the context of occupational therapy services for children with autism, respondents (n = 72) reported all of the settings in which they provided services to this population. Fifty percent reported working in an outpatient clinic, 39% worked in a private school, 38% worked in public schools, 26% traveled to the child’s home, 22% worked in unspecified community settings, 8% worked in early intervention programs, 7% worked in residential facilities, and 7% worked elsewhere. Because therapists were asked to indicate all appropriate responses, the sum exceeds the total number of respondents.

Frequency of collaboration with other professionals. Respondents reported the frequency with which they worked

<table>
<thead>
<tr>
<th>Service</th>
<th>n</th>
<th>M (%)</th>
<th>Median (%)</th>
<th>Low–High (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consultation</td>
<td>61</td>
<td>15</td>
<td>10</td>
<td>1–70</td>
</tr>
<tr>
<td>Evaluation</td>
<td>60</td>
<td>14</td>
<td>10</td>
<td>1–50</td>
</tr>
<tr>
<td>Family training</td>
<td>47</td>
<td>11</td>
<td>10</td>
<td>2–40</td>
</tr>
<tr>
<td>Group intervention</td>
<td>36</td>
<td>20</td>
<td>10</td>
<td>1–70</td>
</tr>
<tr>
<td>One-to-one intervention</td>
<td>68</td>
<td>55</td>
<td>60</td>
<td>4–100</td>
</tr>
<tr>
<td>Other</td>
<td>15</td>
<td>21</td>
<td>15</td>
<td>3–65</td>
</tr>
</tbody>
</table>

Note. n = 71. Percentages of time are calculated based on the total number of hours spent on care related to children with autism.

*a represents the number of respondents providing percentages of time for each service.

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with other professionals during both evaluation \((n = 45)\) and treatment \((n = 40)\) processes. Twenty-seven respondents did not report collaboration during evaluation and 32 did not report collaboration during intervention. Frequency was reported on a 3-point scale ranging from *sometimes* to *always*. For both evaluation and intervention, speech pathologists and schoolteachers received the highest frequency ratings. Collaboration during the evaluation phase with speech pathologists was reported by 98% and with schoolteachers by 84%. Collaboration during evaluation also was reported with psychologists (64%), neurologists (47%), developmental pediatricians (47%), psychiatrists (33%), physical therapists (29%), and other professionals (29%). Of the collaborating respondents, 100% reported collaboration during the intervention phase with speech pathologists, and 78% reported collaboration with schoolteachers. Physical therapists (33%), psychologists (18%), other professionals (18%), neurologists (8%), developmental pediatricians (5%), and psychiatrists (5%) also were identified. No respondents indicated collaborating with the child’s primary physician during either the evaluation or intervention phase of service delivery.

**Discontinuation of services.** Respondents \((n = 70)\) rated the frequency of six factors in determining when to discharge a child from services. The factor rated the highest was *child’s skill level/goals attained*. The factor rated as the least frequent reason for discharge was *parent request*. See Table 2 for details.

**Service differences.** Sixty-eight therapists responded to the open-ended question regarding how the delivery of occupational therapy services for children with autism differed from services provided to children with other disabilities within their workplaces. Of these, 10 respondents indicated that this question was not applicable because all children in their workplace had autism. Responses from the remaining 58 therapists clustered around several themes. Comments by 27 respondents suggested that intervention sessions included a substantial emphasis on sensory processing. Qualifying remarks indicated that sensory-based techniques often were used to affect the child’s state of arousal. Fourteen comments suggested that occupational therapists worked more closely with other professionals when working with children with autism than when working with children with other disabilities. More than 5 respondents noted that their practice with children with autism emphasized behavioral regulation, control of environmental demands, provision of parent training and education, and high levels of structure during the intervention process. Seven therapists reported that there was no difference in the delivery of services for children with and without autism.

**Evaluation and Intervention Practices**

Table 3 displays responses to questions regarding the skill areas assessed by occupational therapists when providing evaluation and intervention services for children with autism. Skill areas written-in by therapists \((n = 8)\) as being addressed during evaluation included praxis, self-regulation, language and communication, oral motor/feeding, and interaction style. Skill areas written-in by therapists \((n = 9)\) as being addressed during intervention included self-regulation, language and communication, oral motor, and interaction style.

**Use of assessments.** Respondents \((n = 70)\) rated the frequency with which each of 13 assessments, including informal questionnaires, checklists, and observational tools, were used during the evaluation. Because of restrictions of each assessment, none was appropriate for the entire age range of children represented by respondents (see Table 4). Some respondents \((n = 22)\) reported occasional to frequent use of assessments not listed on the questionnaire. Among these were the Developmental Test of Visual-Motor Integration (Beery, 1982), Early Intervention Developmental Profile (Rogers & D’Eugenio, 1981), Hawaii Early Learning Pro-

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**Table 2**

<table>
<thead>
<tr>
<th>Factor</th>
<th>Not Applicable</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Frequently</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child’s skill level/goals attained</td>
<td>70</td>
<td>7</td>
<td>19</td>
<td>34</td>
</tr>
<tr>
<td>End of school year</td>
<td>62</td>
<td>24</td>
<td>46</td>
<td>13</td>
</tr>
<tr>
<td>Transition to new school</td>
<td>65</td>
<td>12</td>
<td>22</td>
<td>38</td>
</tr>
<tr>
<td>Exhausted funding</td>
<td>63</td>
<td>38</td>
<td>27</td>
<td>24</td>
</tr>
<tr>
<td>Parent request</td>
<td>63</td>
<td>13</td>
<td>59</td>
<td>25</td>
</tr>
<tr>
<td>Other</td>
<td>13</td>
<td>0</td>
<td>8</td>
<td>38</td>
</tr>
</tbody>
</table>

---

**Table 3**

<table>
<thead>
<tr>
<th>Skill Area</th>
<th>Evaluation (%)</th>
<th>Treatment (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 2 3 4</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>Activities of daily living</td>
<td>72 1 4 21 74</td>
<td>69 20 39 39</td>
</tr>
<tr>
<td>Attention</td>
<td>72 0 6 15 79</td>
<td>71 0 10 28 62</td>
</tr>
<tr>
<td>Behavior</td>
<td>72 0 6 14 81</td>
<td>71 0 14 35 51</td>
</tr>
<tr>
<td>Coordination</td>
<td>72 0 1 22 76</td>
<td>72 0 19 39 42</td>
</tr>
<tr>
<td>Fine motor</td>
<td>72 0 4 18 78</td>
<td>72 0 21 32 47</td>
</tr>
<tr>
<td>General development</td>
<td>72 3 18 24 56</td>
<td>70 3 37 27 33</td>
</tr>
<tr>
<td>Gross motor</td>
<td>72 1 8 35 56</td>
<td>70 1 27 33 39</td>
</tr>
<tr>
<td>Play</td>
<td>71 0 8 31 61</td>
<td>71 1 13 25 61</td>
</tr>
<tr>
<td>Sensory processing</td>
<td>72 0 0 4 96</td>
<td>72 0 0 18 82</td>
</tr>
<tr>
<td>Social skills</td>
<td>69 1 17 26 55</td>
<td>71 1 21 34 44</td>
</tr>
</tbody>
</table>

*Note: 1 = never, 2 = occasionally, 3 = frequently, 4 = always. Because of rounding, all row totals do not equal 100.

\(n^*\) represents number of respondents providing ratings for each skill area during evaluation and treatment, respectively.

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file (Furuno et al., 1985), Motor-Free Visual-Perceptual Test (Colarusso & Hammill, 1972), and Test of Visual-Perceptual Skills (Gardner, 1988).

Respondents rated the frequency with which they used specific theories and intervention techniques to guide services provided to children with autism. In addition to the theories listed on the questionnaire, 4% of respondents reported frequent use of other approaches including humanism, dynamic systems theory, and a gestalt perspective of learning. Details of respondents' ratings related to frames of reference are displayed in Table 5.

When describing the use of direct intervention techniques, respondents \( n = 70 \) reported frequently or always using proprioceptive input (100%), vestibular input (99%), tactile media (100%), and positive reinforcement (93%). No respondents indicated that they never used these techniques. The majority of respondents indicated that they never or only occasionally used discrete trial training (82%) and computer technology (75%). Movement facilitation or inhibition techniques were never used by 22% of respondents, occasionally by 36%, frequently by 29%, and always by 13%. Twenty-three percent of respondents reported either frequently or always using other intervention techniques. Listed among these were auditory integration training, oral motor techniques, Project TEACCH methods, and craniosacral techniques.

### Table 4
Reported Use of Specific Assessments With Children With Autism

<table>
<thead>
<tr>
<th>Assessment</th>
<th>Frequency of Use (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ayres Clinical Observations (Ayers, 1981)</td>
<td>64 13 13 13 25 38</td>
</tr>
<tr>
<td>Bayley Scales of Infant Development (Bayley, 1993)</td>
<td>66 33 44 14 6 5</td>
</tr>
<tr>
<td>Bruininks-Oseretsky Test of Motor Proficiency (Bruininks, 1978)</td>
<td>65 9 34 40 14 6</td>
</tr>
<tr>
<td>Childhood Autism Rating Scale (Schopler, Reichler, &amp; Renner, 1988)</td>
<td>66 44 20 15 11 1</td>
</tr>
<tr>
<td>Coping Scale (Zeitin, 1985)</td>
<td>64 58 36 0 3 3</td>
</tr>
<tr>
<td>Informal Sensory Processing History (Beery, 1982)</td>
<td>68 3 4 6 18 69</td>
</tr>
<tr>
<td>Peabody Developmental Motor Scales (Folio &amp; Fwell, 1983)</td>
<td>70 9 16 24 40 11</td>
</tr>
<tr>
<td>Pediatric Evaluation of Disability Inventory (Haley, Coster, Ludlow, Halilwanger, &amp; Andrellos, 1992)</td>
<td>63 51 24 13 11 2</td>
</tr>
<tr>
<td>Scales of Independent Behavior—Revised (Bruininks, Woodcock, &amp; Weatherman, 1996)</td>
<td>61 66 30 2 3 0</td>
</tr>
<tr>
<td>Self-Care Checklist (Rogers &amp; D’Eugenio, 1985)</td>
<td>68 4 12 16 31 37</td>
</tr>
<tr>
<td>Sensory Integration and Praxis Tests (Ayers, 1989)</td>
<td>65 20 31 35 14 0</td>
</tr>
<tr>
<td>Sensory Profile (Dunn &amp; Westman, 1995)</td>
<td>68 6 3 10 31 50</td>
</tr>
<tr>
<td>Vineland Adaptive Behavior Scales (Sparrow, Ball, &amp; Cicchetti, 1984)</td>
<td>60 48 33 8 10 0</td>
</tr>
</tbody>
</table>

*Note: NA = assessment not available, 1 = never, 2 = occasionally, 3 = frequently, 4 = always. Because of rounding, all row totals do not equal 100.

*\( n \) represents number of respondents providing ratings for each assessment listed.

### Table 5
Reported Use of Theories or Frames of Reference When Working With Children With Autism

<table>
<thead>
<tr>
<th>Theory or Frame of Reference</th>
<th>Frequency of Use (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Behavioral</td>
<td>70 6 21 47 26</td>
</tr>
<tr>
<td>Biomechanical</td>
<td>69 41 30 26 3</td>
</tr>
<tr>
<td>Coping</td>
<td>65 28 22 35 15</td>
</tr>
<tr>
<td>Developmental</td>
<td>71 3 8 42 46</td>
</tr>
<tr>
<td>Model of Human</td>
<td>67 24 33 30 13</td>
</tr>
<tr>
<td>Occupation</td>
<td>71 7 38 31 24</td>
</tr>
<tr>
<td>Neurodevelopmental</td>
<td>72 0 1 17 82</td>
</tr>
</tbody>
</table>

*Note: Because of rounding, all row totals do not equal 100.

*\( n \) represents number of respondents providing ratings for each theory or frame of reference listed.

### Education, Training, and Experience

The final section of the questionnaire addressed the education, training, and experience that respondents believed had been most important in preparing them for work with children with autism. Respondents \( n = 63 \) reported a mean of three continuing education activities per year. The majority gave the highest rating available to both weekend workshops (63%) and on-the-job training (59%).

**Continuing education courses.** Five types of courses were rated on a scale from 1 (least helpful) to 5 (most helpful) in preparing therapists for work with children with autism. Ratings of most helpful were given to courses in sensory integration treatment by 63% of respondents; occupational therapy intervention by 61%; sensory integration theory by 57%; behavior management by 24%; and augmentative communication by 10%. Twenty (28%) respondents listed other courses as helpful, including auditory integration training, craniosacral therapy methods, Project TEACCH methods, and sensory defensiveness.

**Preferred method of obtaining knowledge and skills.** Four themes were identified from responses \( n = 47 \) to the open-ended question regarding preferred method of obtaining training specific to working with children with autism. Sixteen respondents reported a preference for hands-on mentoring opportunities in which experienced therapists provided specific feedback after observing the therapist in an intervention session. Thirteen respondents cited an interest in case presentations that demonstrated intervention methods and techniques. Nine respondents described multidisciplinary workshops that offered opportunities for discussion and problem solving, and nine others cited a preference for courses on the topic of sensory integration.

### Discussion

This study clarified the nature of current practice patterns for providing occupational therapy services to 2-year-old to 12-year-old children with autism. Results showed frequent collaboration between occupational therapists and other professionals; consistency in theory and treatment modali-

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ties used; and a need to examine the use of standardized assessments with this population. In addition, findings showed that occupational therapists preferred experiential opportunities for obtaining knowledge and skills relevant to providing services to children with autism.

**Current Practice Patterns**

The finding that a direct 1:1 intervention format was the most prevalent service model for providing occupational therapy services was consistent with Dawson and Osterling's (1996) recommendation for ratios of 1:1 or 1:2 adults to children, especially in the early stages of intervention and when working on skills such as attention, toy play, and imitation. These ratios have been shown to be the most effective format for early intervention programs (Dawson & Osterling, 1996; Rogers, 1996) and behavioral programs (Lovas, 1987). However, efficacy of this model within occupational therapy has not been studied systematically. Results of this survey indicated that many occupational therapists provided consultation services. From these findings, questions arise related to format of service delivery. With rising concerns regarding limited resources and cost containment, it seems necessary to determine which intervention format is optimal for children with autism in which situations. It also would be important to examine the implications of limited resources and the impact of various service delivery formats on outcomes for this population.

The high level of collaboration between occupational therapists and other professionals that was reported during both evaluation and intervention services conform to the recommendations of Greenspan (1992) and Huebner (1992) that occupational therapists work with other professionals when serving children with autism. These findings have important implications for the preparation of occupational therapists at entry levels and postprofessional levels. Development of skills in teaming and interpersonal communication need to be integrated into occupational therapy curricula, continuing education, and other professional development opportunities in order to prepare clinicians for interdisciplinary collaboration. Additionally, clinicians must possess sufficient knowledge of occupational therapy and effective teaching skills to educate other team members as to the scope of occupational therapy practice and the role of the occupational therapy practitioner.

Reasons identified by therapists for discontinuing occupational therapy services to children with autism were highly variable. It is likely that this variability reflected both the broad spectrum of deficits experienced by children with autism and the inconsistent response to treatment described by Coleman (1989), Freeman (1993), and Huebner (1992). The range of responses suggests that factors affecting discharge may vary according to practice setting or phase of intervention. Had the questionnaire distinguished between school-based respondents and non–school-based respondents, it is possible that trends could have been identified that delineated the most common reasons for discharge within these two practice arenas. It is interesting to note, however, that therapists gave the lowest available frequency rating to parent request. It may be valuable to explore this issue further and identify the aspects of occupational therapy intervention that are most valued by parents of children with autism.

**Assessment and Intervention Techniques**

Responses to questions regarding evaluation methods revealed a fairly consistent pattern of measuring fine motor skills, coordination, attention, behavior, and sensory processing. This finding is consistent with Nelson's (1982) suggestion that occupational therapists evaluate sensory, motor, perceptual, cognitive, emotional, social, and behavioral performance in their clients with autism.

When asked to rate the frequency with which various assessments were used to evaluate the skills of children with autism, respondents gave higher ratings to tools that were not norm-referenced than they did to norm-referenced or standardized tools. This finding is not surprising in view of the fact that many standardized and norm-referenced tools use verbal instructions and rely heavily on focused attention, skills that are generally compromised in children with autism. Perhaps structured observations and criterion-referenced tests, with their emphasis on ability to perform skills in natural settings and under natural conditions, are more relevant for this population.

With respect to intervention, occupational therapists reported providing services that focused on acquisition of skills such as attention, behavior, sensory processing, and play. The scope of skill areas addressed during the intervention phase suggests that occupational therapists provide comprehensive services that target many of the areas commonly identified as deficits for children with autism (Coleman, 1989; Freeman, 1993; Siegel, 1996). This information is relevant to both parents and professionals in planning and seeking out intervention programs that directly address an individual child’s areas of delay. This finding also has implications for the educational preparation of occupational therapists to work with children with autism. It suggests that continuing education offerings should include a host of opportunities for occupational therapists to gain knowledge in behavior management techniques as well as in a variety of intervention services believed to facilitate skill development.

As a whole, responses denoted a strong emphasis on issues pertaining to sensory processing. This is consistent with the common mention of sensory processing deficits in reports by other professionals (Coleman, 1989; Ornitz, 1974; Rapin, 1997; Wing & Wing, 1971), personal accounts (Grandin, 1995; Grandin & Scariano, 1986; McKeen, 1994), and the occupational therapy literature (Ayres, 1979; Baranek et al.,
Although this study successfully described and characterized sensory processing deficits, respondents reported using many sensory-based intervention techniques, most of which have not been definitively supported with empirical data. This points to the need to examine the efficacy of occupational therapy practice methods used with 2-year-old to 12-year-old children with autism.

Data suggested congruity among the frames of reference used most frequently, treatment techniques used most often, and the educational and training experiences perceived to be most helpful. This finding reflects strong consistency among theoretical approaches, intervention methods, and preferred training experiences. The uniformity in reported practice patterns of occupational therapists working with children with autism across the United States helps to clarify the nature of occupational therapy practice for children with this condition. This information may be particularly helpful to those occupational therapists who lack experience in working with this population. By being aware of the modalities and approaches used most frequently by occupational therapists who consider themselves competent in serving children with autism, novice occupational therapists may design their services similarly.

Education, Training, and Experience

Extended training or hands-on opportunities were perceived to be most beneficial in preparing occupational therapists for work with children with autism. This information has implications for continuing education and professional development opportunities and suggests that courses intended to prepare clinicians for work with this population should include experiential learning situations in order to meet the perceived needs of clinicians working with children with autism.

Limitations

The limitations of this study are inherent to the nature of survey research. The phrasing or terminology used may have affected responses because participants may have interpreted questions differently than intended, and the general validity of the findings may have been affected by non-response or response error. An effort was made to minimize the potential impact of these factors through pretesting and pilot-testing of the questionnaire. Another limitation related to the difficulty in locating the desired population of participants. However, once located and contacted, a 68.5% response rate strengthened generalizability of the results.

Directions for Further Research

Although this study successfully described and characterized current practice patterns of occupational therapists working with children with autism, additional research is needed. First, future research should examine practice patterns with greater depth. For example, studies should be conducted that delineate practice patterns as they pertain to school-based and non-school-based practitioners and to explore the collaboration between occupational therapists and other service providers. It is important to understand the differences between medically relevant and educationally relevant services for this population given the specific practice guidelines established by the American Occupational Therapy Association for school system practice as well as the federal and state laws that govern the delivery of therapy services in the public schools. Also, because multiple professionals work with children with autism and their families, it is important to understand the nature of the collaborative relationships between occupational therapists and other service providers. Second, although the current study identified the intervention strategies that are being used, further research should be conducted to determine the efficacy of those interventions in facilitating change in clients with autism. Understanding what therapists are doing is a first step, but it is not enough to know what is being done: Occupational therapists also need to know which of their interventions are effective and which are not. Increased understanding of the efficacy of intervention techniques will enable therapists to provide improved services for children with autism. Through a systematic program of research, it is hoped that occupational therapists will come closer to answering the question of how best to meet the needs of children with autism.

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