Training Needs of Pediatric Occupational Therapists in Assistive Technology

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Over the past several decades, federal legislation that promotes greater use of assistive technology for children with disabilities has increased. Concurrent with this policy change, an explosion of new, more sophisticated assistive technology devices has become available to people with special needs. The training of providers currently working with children who need assistive technology devices or services has not kept pace with these changes. This article reports on a national survey of 272 pediatric occupational therapists, who responded to questions about their training needs in the area of assistive technology and delivering assistive technology services. A sizable percentage of these therapists reported less-than-adequate training in policies governing assistive technology services and the organization and function of the service system. The therapists would like training that is accessible and affordable in the areas of funding of technology and services; collaborating with families and other service providers; and accessing reliable, knowledgeable vendors. These findings underscore the need to develop pre-service and in-service training in assistive technology for providers who work with children who have disabilities.


The Rehabilitation Act Amendments of 1986 (P.L. 99–506), the Tech Act, the Individuals With Disabilities Education Improvement Act of 2004 (IDEA, P.L. 108–446), and the Americans With Disabilities Act of 1990 (P.L. 101–336) all promote the use of assistive technology and assistive technology services for children with disabilities. To increase children’s access to and use of assistive technology, the reauthorization of IDEA in 1997 (P.L. 105–17) required that individualized education program (IEP) and individualized family service plan (IFSP) teams consider the need for assistive technology and assistive technology services in the plan at the time of its development. Specialized skills and knowledge of the use of assistive technology are therefore key in ensuring that this need is addressed.

In spite of considerable advances in assistive technology and legal mandates, these interventions often remain underused and poorly integrated into plans for children with disabilities. According to Dusing, Skinner, and Mayer (2004), 9% of children with special health care needs in the United States have an unmet need for mobility devices and 24.7% for communication aids or devices. Although the number of children using assistive technology has increased by approximately 60% since 1992 (Wilcox, Bacon, & Campbell, 2004), this is just a fraction of the number of the children receiving therapeutic services. Early intervention providers report that not all the children who could benefit from assistive technology are receiving it (Wilcox et al., 2004). Throughout the United States, only about 7% of the children receiving early intervention services also receive assistive technology or assistive technology services. Additionally, early intervention providers and Part C coordinators are more likely to describe assistive technology as those devices that are considered high-tech and not readily available and that more often fit the definition of durable medical equipment (Wilcox et al., 2004). A growing body of literature indicates that the successful use of assistive technology by children is related to the experience, expertise, and attitudes regarding assistive technology and assistive technology services of the service providers (Michaels & McDermott, 2003).

As one of the first rehabilitative specialists to provide services to children with disabilities and special health care needs, occupational therapists are in an ideal position to recommend and implement the appropriate use of assistive technology. Occupational therapists’ training in the use of activity analysis and adaptation suggests a logical connection for the use of assistive technology as a modality to promote function. Occupational therapists need additional skills and training, however, to provide appropriate assistive technology services. Lesar’s (1998) work indicates that providers, including occupational therapists, believe that they are inadequately prepared to provide assistive technology and assistive technology services to young children.

The American Occupational Therapy Association (AOTA) recognizes the need for occupational therapists to be trained in the area of assistive technology and assistive technology services. AOTA has produced several publications on assistive technology and assistive technology services, including a self-paced, home-study course (Hammel, 1996). The Technology Special Interest Group of AOTA provides a forum for therapists to learn about technologies, discuss the use of technology, and support the continuing improvement and development of technology (see www.aota.org/nonmembers/area5/links/link05.asp#tech). In 1999, AOTA recognized the importance of assistive technology, established accreditation standards for professional preparation programs to include the study of assistive technology and assistive technology services in the curriculum. Specifically, the standards stated that occupational therapy students will be able to “Use therapeutic adaptation with occupations pertinent to the need of the client. This shall include, but not be limited to, family/care provider training, behavioral modifications, orthotics, prosthetics, assistive devices, equipment, and other technologies” (section B.5.10; p. 579).

Kanny and Anson reported in 1998 that occupational therapy educators were placing more emphasis on assistive technology education than they did in 1989 when first surveyed. They saw the greatest changes in content related to environmental access and robotics, sensory aids, augmentative communication, and prosthetics and orthotics.
Although assistive technology is considered a specialty area for occupational therapy practitioners, two studies of entry-level practice conducted by the National Board for Certification in Occupational Therapy (NBCOT, 1996, 2003) indicated that entry-level practitioners provide these services. On the basis of the results of these studies, NBCOT has included items on the certification examinations that test broad-based knowledge, skills, and tasks related to assistive technology and assistive technology services (P. Heeter, personal communication, November 18, 2004). Given the publications and the activities of AOTA in the area of assistive technology, clearly the occupational therapy community is striving to identify what is best practice in assistive technology and encouraging occupational therapists to recommend assistive technology to their clients.

The Rehabilitation Engineering and Assistive Technology Society of North America (RESNA), a multidisciplinary association that promotes the development and implementation of assistive technology, recognizes the need for specialized training in assistive technology and offers various educational programming at several levels, including a certification program. RESNA offers a Fundamental Assistive Technology Program for professionals interested in becoming a certified Assistive Technology Professional (ATP). According to RESNA (2005), 218 occupational therapists have become credentialed ATPs, which is 15% of all credentialed ATPs.

Although supported by various programs, improvement is needed in the training of occupational therapists in this arena. Faculty members ranked assistive technology education as marginal to satisfactory in most content areas related to assistive technology (Kanny & Anson, 1998), including understanding the potential of technological systems; evaluating systems; acquiring the system and finding a funding source; fabricating and modifying systems; and training in the use of the system. More recently, a small group of rural allied health professionals reported having had minimal or no training in assistive technology, although more than 50% reported having a moderate or significant need for information in this area (Gitlow & Sanford, 2003). The National Council on Disability (2000) also reported that pre-service and other training programs are not providing education in assistive technology and that this lack of education significantly affects the ability of the provider to recommend and help secure appropriate assistive technology.

Although occupational therapists appear to need more training in assistive technology and assistive technology services, it is unclear in which areas therapists need the most training. In this article, we report the results of a national survey to determine the specific training needs of pediatric occupational therapists. This survey was conducted as part of a larger effort to improve services and supports for children with disabilities, funded by the National Institute on Disability and Rehabilitation Research. By understanding the skills and competencies that service providers currently have in the area of assistive technology, training and technical assistance efforts can be developed that will allow children with disabilities to be better integrated into their communities.

**Methods**

*Survey Instrument*

We developed a questionnaire to assess the assistive technology training needs of occupational therapists working with children with disabilities and special health care needs. The survey consisted of 19 questions, most of which were multi-pronged, multiple-choice questions; three open-ended questions also were included. Respondents were asked to rate the adequacy of their training in assistive technology, the usefulness of potential training topics to their current practice, the effectiveness of different training methods, and their confidence in completing a variety of tasks related to assistive technology and assistive technology services.

The survey comprised four sections. Section A (Training and Access to Information Regarding AT [Assistive Technology]) determined how adequate the respondents thought their previous training was in assistive technology and assistive technology services, which training topics respondents believed would be most beneficial for them to more adequately provide assistive technology and assistive technology services, and what type of training methodology the respondents thought were most effective. Section B (Confidence Level in Providing AT or AT Services) asked respondents to rate how confident they were in performing specific assistive technology–related tasks such as evaluating a person for assistive technology, selecting a specific device, working with low-tech devices, and so forth. Section C (Population of Persons With Disabilities You Serve) asked respondents to describe practice setting and population served. Section D (Demographic Information) requested information about each respondent such as age, years in practice, and percentage of time spent in tasks related to assistive technology.

Likert scales were used to rate each of these four sections of the survey. The three open-ended questions asked respondents to identify their biggest challenges in becoming trained in assistive technology and assistive technology services, helpful strategies in training providers in assistive
technology and assistive technology services, and what they thought were the most critical training needs regarding assistive technology and assistive technology services. Demographic data about the occupational therapists and the clients they served also were gathered. The survey was developed by a team of physical therapists, occupational therapists, research psychologists, and RESNA-certified ATPs after a review of the literature. A focus group of 18 occupational therapists, physical therapists, and ATPs in the metropolitan Washington, DC, area reviewed the survey. The questionnaire was pilot tested with a group of pediatric occupational therapists after the focus group. No changes were made to the survey based on the results of the pilot testing. The survey tool demonstrated a high degree of internal consistency (Cronbach’s alpha = .90).

Sample

AOTA provided a random-sample mailing list of members who identified themselves as pediatric occupational therapists. This sample represented approximately 20% of all pediatric providers in the organization (n = 1,000). In fall 2002, the survey was sent to this group of pediatric occupational therapists. Only occupational therapists—not certified occupational therapy assistants—were surveyed because we were interested in those providers who were in positions to evaluate and recommend assistive technology, in addition to providing the device and providing assistive technology services. Postcards were sent to remind nonrespondents to complete the survey. A second mailing of the survey was conducted during early 2003 to those who still had not responded. A total of 272 surveys were returned, a response rate of 27%; this represented 5% of the total AOTA membership who provided services to children.

Of the 272 pediatric occupational therapists who responded to our survey, the vast majority were white (90%) and female (96%), which is consistent with the overall membership of AOTA. Sixty percent of the respondents reported 11 or more years of experience, and a majority of them (52%) had completed a master’s degree or more graduate training. Their primary work setting was a school system (54%), followed by an early intervention program (13%). Most respondents served a broad age range of children, adolescents, and young adults. When asked to estimate the percentage of their current job responsibilities that were directly related to assistive technology or assistive technology services or both, 14% rated it as greater than 40% of their duties.

Data Analysis

Various analyses were performed using SPSS statistical software, version 11.5. Descriptive statistics documented the characteristics of the survey respondents, including frequencies for categorical variables (i.e., type of graduate training or professional organization). A second series of descriptive statistics explored our two main outcome variables: (a) respondents’ perceptions of the quality of training in assistive technology they had received and (b) their overall confidence in performing certain tasks related to assistive technology. Our primary research question—Are there systematic differences in respondents’ ratings of their confidence based on their years of experience or the percentage of their current duties that focus on assistive technology?—was addressed through one-way analyses of variance with post hoc comparisons. Finally, additional descriptive statistics were calculated to assess respondents’ ratings of different training approaches.

Qualitative data analysis methods were used to examine the responses to the three open-ended questions on the survey. Responses were coded by three members of the research team. Initially, each coder independently reviewed a sample of responses and generated a list of preliminary codes. The research team then met to compare these codes and developed a coding scheme. This process was repeated until the coding classifications demonstrated reliability across coders. All responses were then recoded by all three coders. Agreement across the coders ranged from 89% to 93%.

Results

Prior Training in Assistive Technology

Respondents rated the adequacy of their training in five different topics: (a) working with clients with disabilities and with assistive technology and assistive technology services; (b) service delivery systems regarding assistive technology and assistive technology services; (c) working with families regarding assistive technology and assistive technology services; (d) collaborating with other service providers; and (e) legislation, regulation, and policy related to assistive technology and assistive technology services. Adequacy was rated on a 5-point scale, with not adequate and exceptional being the anchors and adequate being the midpoint. Participants also could indicate that they had not received any training on a particular topic.

Table 1 shows that a sizable percentage (40%–73%) of respondents reported inadequate or no training in each of the five categories. The respondents receiving no training ranged from 5% to 19%. The categories that fared the best were Collaborating with other service providers (60% of respondents reported adequate training) and Working with clients with disabilities and AT/AT services (56% reported
adequate training). Most respondents reported inadequate or no training for the remainder of the categories, with Legislation, regulation, and policy related to AT services faring the worst at 73% (54% inadequate and 19% none). This was followed by Service delivery systems regarding AT/AT services at 64% (55% inadequate and 9% none) and Working with families regarding AT/AT services at 55% (45% inadequate and 10% none).

Confidence in Providing Assistive Technology Services

Pediatric occupational therapists also were asked to rate their confidence in performing 11 different tasks related to the provision of assistive technology and assistive technology services to children with disabilities and special health care needs (see Table 2). Confidence level was rated on a 5-point scale with 1 representing not at all, 2 being not very, 3 reflecting somewhat, 4 indicating confident, and 5 representing extremely confident. The level of confidence reported by the occupational therapists varied widely across these different tasks. In only two of these areas did most of the therapists indicate that they were confident or extremely confident: (a) in their ability to recognize that a person with a disability may benefit from assistive technology and assistive technology services and (b) in working with low-tech devices. The majority of occupational therapists (67%–92%) lacked confidence in performing all other tasks. The lowest rates of confidence were reported in identifying sources of funding for assistive technology and assistive technology services (only 8% confident or extremely confident in this area) and working with high-tech devices (only 16% confident or extremely confident).

Most of the pediatric occupational therapists lacked confidence in their ability to conduct a broad array of essential tasks, including (a) assessing a person for assistive technology services, (b) matching or selecting a device to meet a person's needs, (c) evaluating the outcome of use of assistive technology services, and (d) working with culturally diverse clients.

Level of confidence was examined in relation to years of experience as well as percentage of each occupational therapist's job that was directly related to the delivery of assistive technology and assistive technology services (Table 3). For all but two of the questions—working with low-tech devices and working with culturally diverse clients—the same pattern was evident: People with 11 or more years of experience were overrepresented in the group that expressed the greatest levels of confidence. These differences were all statistically significant (p < .01). For example, although only 13% of the most experienced therapists reported being confident in their ability to identify funding sources for assistive technology, none of the therapists who had been in the field less than 6 years reported being confident in this area.

### Table 1. Pediatric Occupational Therapists Reporting on the Adequacy of Their Training Regarding AT and AT Services (N = 272)

<table>
<thead>
<tr>
<th>Topic</th>
<th>% No Training</th>
<th>% Less-Than-Adequate Training</th>
<th>% Adequate Training</th>
</tr>
</thead>
<tbody>
<tr>
<td>Working with clients with disabilities and AT/AT services</td>
<td>5</td>
<td>39</td>
<td>56</td>
</tr>
<tr>
<td>Service delivery systems regarding AT/AT services</td>
<td>9</td>
<td>55</td>
<td>36</td>
</tr>
<tr>
<td>Working with families regarding AT/AT services</td>
<td>10</td>
<td>45</td>
<td>45</td>
</tr>
<tr>
<td>Collaborating with other service providers</td>
<td>6</td>
<td>34</td>
<td>36</td>
</tr>
<tr>
<td>Legislation, regulation, and policy related to AT services</td>
<td>19</td>
<td>54</td>
<td>27</td>
</tr>
</tbody>
</table>

* Adequate, more than adequate, and exceptional combined.

Note. AT = assistive technology.

### Table 2. Pediatric Occupational Therapists Reporting on Their Confidence in Performing Tasks Related to AT and AT Services (N = 272)

<table>
<thead>
<tr>
<th>Tasks</th>
<th>% Lacking Confidence</th>
<th>% Confident</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recognizing that a person with a disability may benefit from AT/AT services</td>
<td>24</td>
<td>76</td>
</tr>
<tr>
<td>Evaluating an individual for AT/AT services</td>
<td>68</td>
<td>32</td>
</tr>
<tr>
<td>Developing a menu of possible AT/AT services</td>
<td>79</td>
<td>21</td>
</tr>
<tr>
<td>Matching and selecting a specific device to needs</td>
<td>79</td>
<td>21</td>
</tr>
<tr>
<td>Identifying sources of funding for AT/AT services</td>
<td>92</td>
<td>8</td>
</tr>
<tr>
<td>Identifying qualified suppliers of AT/AT services</td>
<td>83</td>
<td>17</td>
</tr>
<tr>
<td>Identifying or providing training in the use of AT for the child or youth</td>
<td>77</td>
<td>23</td>
</tr>
<tr>
<td>Evaluating the outcome of AT/AT services</td>
<td>69</td>
<td>30</td>
</tr>
<tr>
<td>Working with low-tech devices (e.g., mobility aids, ADL devices)</td>
<td>21</td>
<td>79</td>
</tr>
<tr>
<td>Working with high-tech devices (e.g., computerized communicator systems, power drive seating systems)</td>
<td>84</td>
<td>16</td>
</tr>
<tr>
<td>Working with culturally diverse clients who need AT/AT services</td>
<td>67</td>
<td>33</td>
</tr>
</tbody>
</table>

*1 Not at all, not very, and somewhat confident combined.

2 Confident and extremely confident combined.

Note. AT = assistive technology; ADL = activities of daily living.
Close to four times as many occupational therapists who had been in the field for more than 11 years reported being confident about their ability to match a device or service to a client’s need as those who had been in the field less than 6 years (29% vs. 8%, respectively).

Similarly, four times as many therapists with 11 or more years of experience reported being confident in their ability to work with high-tech devices as those with fewer than 6 years of experience (21% vs. 5%, respectively), but this still leaves more than three-quarters of the most experienced therapists lacking in confidence. Likewise, practitioners who reported that a higher percentage of their professional responsibilities were related to assistive technology and assistive technology services (41% or greater) were more confident in their ability to perform a variety of tasks. For 10 of the 11 items, these differences were statistically significant ($p < .01$).

Future Training on Assistive Technology

Participants were asked to assess the effectiveness of five methods that could be used to deliver additional training and information on assistive technology and assistive technology services, as well as the usefulness of a broad range of training topics. Each of these items was rated on a 3-point scale: for training methods, 1 represented not effective, 2 indicated effective, and 3 indicated very effective; for the training topics, 1 indicated that the topic would be useful in their practice and delivery of assistive technology and assistive technology services, 2 meant somewhat useful, and 3 reflected very useful.

Two training methods were rated as more effective than the other three: Person-to-person techniques (mean = 2.8, $SD = .42$) and group instruction (mean = 2.7, $SD = .49$) received the highest mean scores. The other techniques received somewhat lower ratings: classroom instruction (mean = 2.3, $SD = .69$), print resources (mean = 2.1, $SD = .53$), and online instruction (mean = 2.0, $SD = .61$).

All of the potential training topics were rated on a 3-point scale ranging from somewhat useful (1) to very useful (3); none had a mean score below 2.14. Of the 28 topics

<table>
<thead>
<tr>
<th>Tasks</th>
<th>Years of Experience $F$, Sum Squares</th>
<th>AT 40%+ of Duties $F$, Sum Squares</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recognizing that a person with a disability may benefit from AT/AT</td>
<td>9.25* (153.3)</td>
<td>15.20* (153.5)</td>
</tr>
<tr>
<td>services</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Evaluating an individual for AT/AT services</td>
<td>10.5 (237.3)</td>
<td>8.7 (225.4)</td>
</tr>
<tr>
<td>Developing a menu of possible AT/AT services</td>
<td>12.87* (264.4)</td>
<td>9.01* (237.6)</td>
</tr>
<tr>
<td>Matching and selecting a specific device to needs</td>
<td>22.8 (237.3)</td>
<td>33.8 (225.4)</td>
</tr>
<tr>
<td>Identifying sources of funding for AT/AT services</td>
<td>7.94* (239.0)</td>
<td>50.16* (222.4)</td>
</tr>
<tr>
<td>Identifying qualified suppliers of AT/AT services</td>
<td>14.8 (239.0)</td>
<td>42.0 (215.4)</td>
</tr>
<tr>
<td>Identifying or providing training in the use of AT for the child/youth</td>
<td>5.42* (239.0)</td>
<td>36.92* (215.4)</td>
</tr>
<tr>
<td>Evaluating the outcome of AT/AT services</td>
<td>12.0 (239.0)</td>
<td>21.5 (384.0)</td>
</tr>
<tr>
<td>Working with low-tech devices (e.g., mobility aids, ADL devices)</td>
<td>12.0 (239.0)</td>
<td>21.5 (384.0)</td>
</tr>
<tr>
<td>Working with high-tech devices (e.g., computerized communicator systems, power drive seating systems)</td>
<td>9.3 (239.0)</td>
<td>30.0 (243.7)</td>
</tr>
<tr>
<td>Working with culturally diverse clients who need AT/AT services</td>
<td>8.29* (239.0)</td>
<td>29.7 (280.9)</td>
</tr>
<tr>
<td>Working with low-tech devices (e.g., mobility aids, ADL devices)</td>
<td>18.25 (239.0)</td>
<td>15.74 (220.9)</td>
</tr>
<tr>
<td>Working with high-tech devices (e.g., computerized communicator systems, power drive seating systems)</td>
<td>25.0 (220.9)</td>
<td>16.6 (220.9)</td>
</tr>
<tr>
<td>Working with culturally diverse clients who need AT/AT services</td>
<td>6.09 (220.9)</td>
<td>6.4 (220.9)</td>
</tr>
<tr>
<td>Working with culturally diverse clients who need AT/AT services</td>
<td>3.4 (218.1)</td>
<td>32.60 (214.9)</td>
</tr>
<tr>
<td>Working with culturally diverse clients who need AT/AT services</td>
<td>4.69* (243.7)</td>
<td>32.60 (214.9)</td>
</tr>
<tr>
<td>Working with culturally diverse clients who need AT/AT services</td>
<td>1.60 (243.7)</td>
<td>6.04 (214.9)</td>
</tr>
<tr>
<td>Working with culturally diverse clients who need AT/AT services</td>
<td>3.4 (288.8)</td>
<td>6.4 (284.8)</td>
</tr>
</tbody>
</table>

*p < .01.

Note. AT = assistive technology; ADL = activities of daily living. Degrees of Freedom: Between Groups = 1, Within Groups = 268; Between Groups Sum of Squares (Within Groups Sum of Squares).
rated by the pediatric occupational therapists, 7 were rated particularly high in terms of usefulness for future training. Three of those highly rated topics pertained to information on specific types of devices: positioning devices (mean = 2.60, SD = .61), computer access devices (mean = 2.73, SD = .52), and ADL devices (mean = 2.88, SD = .63). Twenty-three respondents specified their interest in training in other types of devices, such as switches, scan and read software, and toy adaptations. The other highly rated topics were evenly distributed across other domains: assessing the client for use of the device (mean = 2.70, SD = .53), provider knowledge of funding sources (mean = 2.71, SD = .54), principles of fabrication (mean = 2.64, SD = .57), and provider skills in techniques to train others (mean = 2.71, SD = .54).

Challenges to Becoming Trained in Assistive Technology

In the present study, qualitative data were gathered through an open-ended question that asked respondents to identify their biggest challenge in becoming trained in assistive technology and assistive technology services. The pediatric occupational therapists indicated that access to training was the biggest obstacle. Practitioners indicated that too few courses were offered and that the timing and locations of the training programs often were not convenient. The lack of funding available to attend training also was listed as an obstacle. Finally, therapists indicated that attending training in assistive technology and assistive technology services was difficult to justify to their employers because the number and type of children served was not believed to be large enough to warrant the expenditure of training.

Helpful Strategies for Training

Additional qualitative data were analyzed in comments provided by the pediatric occupational therapists regarding training strategies they would find helpful. Most therapists indicated that hands-on practicum or lab experiences would be the most helpful. Although group instruction in the form of continuing education or in-service was preferred, occupational therapists were not interested in attending an academic program or class for further instructions, nor were they interested in online courses. The therapists also indicated that person-to-person mentoring would be the preferred training method, especially client-specific training.

Most Crucial Training Needs

Finally, respondents identified overall their most crucial training needs regarding assistive technology and assistive technology services. The pediatric occupational therapists indicated that their three most crucial needs were keeping current with advancements in technology and service pro-

Discussion

Children with disabilities and special health care needs often require and can benefit from the use of assistive technology and assistive technology services (Franks, Palisano, & Darbee, 1991). These services can help the child and family participate more fully in naturally occurring activities and routines at home and in the community. Unfortunately, these services are underused and may not be supported within programs serving young children with disabilities. Pediatric occupational therapists—as members of the interdisciplinary team responsible for the identification and implementation of assistive technology and assistive technology services—are in an ideal position to identify and promote assistive technology and assistive technology services.

To successfully promote assistive technology use, occupational therapists must possess the knowledge and skills to address the assistive technology needs of the children they serve. The results of our national survey underscore the challenges faced by these therapists in the area of assistive technology and assistive technology services. A national sample of AOTA members who identified themselves as serving children reported less-than-adequate training in assistive technology and assistive technology services and low levels of confidence in terms of providing these services.

Overall, nearly half of pediatric occupational therapists reported less-than-adequate training in three out of the five areas related to assistive technology and assistive technology services tapped by the survey: pediatric service delivery systems; collaboration with other service providers; and legislation, regulation, and policy. About 40% of the respondents indicated less-than-adequate training in the other two areas: knowledge about children with disabilities and working with families. The two areas that therapists thought they were the least prepared to address were knowledge about service delivery systems and legislation, regulation, and policy related to assistive technology and assistive technology services. Although most of the respondents reported high confidence levels in recognizing the benefit of assistive technology and assistive technology services and in working with low-tech devices, low confidence was reported for identifying sources of funding, identifying qualified suppliers of assistive technology and assistive technology services, and working with high-tech devices. These findings are consistent with the Weintraub, Bacon, and Wilcox (2004) study, in which early intervention providers rated themselves as novices in the area of assistive technology. These
providers reported five problem areas that were consistent with those in the present study: lack of training and on-site technical assistance, family involvement in evaluation and services, evaluation of assistive technology needs, selection of assistive technology devices, and delivery of assistive technology services.

In addition to lack of training in assistive technology and assistive technology services, it has been proposed that providers lack confidence in their knowledge and skill level and thus are hesitant to recommend or suggest assistive technology strategies. Weintraub et al. (2004) posited that, according to social-learning theory (Bandura, 1977), self-efficacy is related to training and experience; therefore, as experience or training increases, confidence in applying that knowledge should also increase. This relationship holds true in the present study. Occupational therapists with 11 or more years’ experience and those with a greater percentage of their job responsibilities related to assistive technology and assistive technology services were overrepresented in the group of therapists who reported high confidence levels. Thus, for these therapists, on-the-job training and experience may be the most common method of increasing confidence levels, which is consistent with social-learning theory. This pattern in confidence, however, was not seen in the study of early interventionists; according to Weintraub et al. (2004), the early interventionists’ confidence was related to years of experience only in the area of assistive technology evaluation.

Conversely, in the present study, practitioners with less experience and a smaller percentage of their job responsibilities devoted to assistive technology and assistive technology services reported less confidence. Although this is a logical pattern to emerge, it points to the need for further training and support in the area of assistive technology and assistive technology services. Therapists in this study indicated that they needed more training in basic information on assistive technology and assistive technology services. The most crucial training needs identified by the respondents were knowledge of devices, equipment, software, and so forth, and funding of the technology and services. These findings support those of Gitlow and Sanford (2003), whose survey of practitioners in rural Maine indicated that service providers did not describe themselves as competent in the area of assistive technology. Most of their sample indicated a need for information in knowledge of equipment, funding, and collaboration, all areas noted by the present sample of occupational therapists.

The field of occupational therapy recognizes that therapists need to be competent in the area of assistive technology and assistive technology services; however, therapists continue to indicate a need for more training in the area. Kanny and Anson (1998) indicated that occupational therapy programs have increased the content related to assistive technology and assistive technology services substantially since the late 1980s. Although 89% of occupational therapy educational programs include assistive technology content in their programs, therapists continue to report the need for ongoing training (Kanny & Anson, 1998). As previously mentioned, focus should be in the areas of identifying sources of funding, identifying qualified suppliers of assistive technology and assistive technology services, and working with high-tech devices. Keeping current with advancements in technology and service delivery and evaluating assistive technology needs also were identified as areas of training need. Barriers such as limited access to training must be overcome by continued and more intensive training at the pre-service level in educational curricula as well as continuing education in the style of hands-on workshops offered more frequently and throughout the country. As assistive technology and assistive technology services become accepted as standard practice, the training should become more available, less specialized, and integrated into training curricula.

A source of training available to service providers is the Technology Act Programs. The Assistive Technology Act of 1998 (P.L. 105–394) established grants to states to address the assistive technology needs of people with disabilities. These programs, available in all states, provide training and technical assistance to service providers. According to Campbell, Wilcox, Millborne, and Bacon (2004), the Technology Act Programs and the early intervention (Part C) programs collaborate in 65% of the states. Thus, early intervention providers have a source of training and technical assistance of which they may not be aware. This same collaborative relationship may be available with older children, through the collaboration between the Tech Act and school-age population (Part B). The Technology Act Programs may need to be more proactive in reaching practitioners and providing training that is available, accessible, affordable, and client-specific, all parameters that the occupational therapists believed were barriers to becoming trained and thus having confidence in using assistive technology and delivering assistive technology services.

Limitations

Our survey was sent to 1,000 people, but only 272 returned the completed instrument. Great efforts were made to increase the response rate, including multiple follow-up contacts with our sample. In addition, we do not have demographic data on nonrespondents to determine.
whether the people who returned the survey were representative of all of the pediatric occupational therapists in AOTA. Another source of possible error is a function of our sample size. In a sample of nearly 300 people, relatively small differences in the scores on individual items are statistically significant. Additionally, a large number of statistical analyses were performed on these data, meaning that some of the statistically significant differences may have occurred by chance. Another limitation is with the survey itself. Through focus group and pilot testing we determined that the questions were easy to understand and written clearly and tapped into the constructs we were interested in exploring; however, the survey has limited psychometric testing.

Conclusion
As the policy and practice context for providing assistive technology services has become more complex, practitioners are faced with a dizzying array of new devices that might promote higher functioning in their clients with disabilities. Most pediatric occupational therapists in this national sample rated their preparation in the arena of assistive technology and assistive technology services as being less than adequate. Additionally, they rated themselves as having low confidence in terms of delivering assistive technology and assistive technology services. This combination of responses underscores the need to intensify training at both the pre-service and in-service levels. Training in identification of funding sources and use of high-tech devices are among the most pressing training needs. Trainers should be aware that pediatric occupational therapists prefer hands-on and group instruction strategies.

Occupational therapists often use assistive technology to augment intervention strategies, support the acquisition of new skills, increase independence in ADL, and assist a child to compensate for impairments (Mistrett, Lane, & Ruffino, 2005). Occupational therapists must be adequately trained in assistive technology to provide quality services to children with disabilities.

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