The purposes of this organization shall be to advance the education and welfare of persons with developmental disabilities, research in the field of exceptional children, and professional growth, research, and the dissemination and utilization of research findings.

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Education and Training in Developmental Disabilities

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Manuscripts Accepted for Future Publication in Education and Training in Developmental Disabilities

September 2009


Pentop computers as tools for teaching multiplication to students with mild intellectual disabilities. Emily C. Bouck, Laura Bassette, Teresa Taber-Doughty, Sara M. Flanagan, and Kathryn Szwed, Purdue University, Dept. of Educational Studies, 100 N. University Street, West Lafayette, IN 47907-2098.

Multiculturalism, religion, and disability: Implications for special education practitioners. A. Brooke Blanks and J. David Smith, University of North Carolina at Greensboro, Department of Specialized Education Services, P.O. Box 26170, Greensboro, NC 27462-6170.

Evaluating the acceptability and effectiveness of family assessment portfolios. Hedda Meadan, James R. Thompson, Mayumi Hagiwara, Julie Herold, Sarah Hoekstra, and Samantha Manser, Department of Special Education, Illinois State University, 533 DeGarmo Hall Mail Code 5910, Normal, IL 61790-5910.

Research-based techniques for teaching early reading skills to students with intellectual disabilities. Jill Allor, Patricia Mathes, Tammi Champlin, and Jennifer P. Cheatham, Department of Teaching and Learning, Annette Caldwell Simmons School of Education and Human Development, Southern Methodist University, P.O. Box 750381, Dallas, TX 75275-0381.

Effects of instructional rubrics on class engagement behaviors and the achievement of lesson objectives by students with mild mental retardation and their typical peers. EunJung Lee and SoHyun Lee, 105 Sangsu-dong, Mapo-gu, Seoul, SOUTH KOREA.

Evidence-based social skills interventions for children with autism: A meta-analysis. Peisi Wang and Anne Spillane, Department of Educational and Community Programs, Powerdermaker Hall 032J, Queens College, City University of New York, 65-30 Kissena Blvd, Flushing, NY 11367.

Increasing comprehension of students with significant intellectual disabilities and visual impairments during shared stories. Pamela J. Mims, Diane Browder, Joshua N. Baker, Angel Lee, and Fred Spooner, Department of Special Education & Child Development, University of North Carolina at Charlotte, 9201 University City Blvd, Charlotte, NC 28223-0001.

Juvenile literature and the portrayal of developmental disabilities. Tina Taylor Dyches, Mary Anne Prater, and Melissa Leininger, Brigham Young University, 340-F McKay Building, Provo, UT 84602.

Effectiveness of Parent and Therapist Collaboration Program (PTCP) for teaching self-care and domestic skills to individuals with autism. Atilla Cakaytar and Elena Pollard, Anadolu University, Faculty of Education, Department of Special Education, Eskisehir, 26470 TURKEY.

Address is supplied for author in boldface type.
Comparison of Transition-Related IEP Content for Young Adults with Disabilities Who Do or Do Not Have a Legal Guardian

Dorothy Squatrito Millar
Saginaw Valley State University

Abstract: IEP transition-related content was compared between young adults with developmental disabilities who had or did not have legal guardians. It was found that students with guardians were more likely to earn a certificate of completion, and wanted to remain living with their families, in comparison to students without guardians who were more likely to earn a diploma, and wanted to live on their own. Regardless of whether they had a guardian or not, the majority of students had no post-secondary education goals. No significant differences in the number of objectives related to employment, transportation and self-care were observed. Differences were observed regarding teaching self-determination related skills; students without guardians had more objectives than those with. Additional findings are presented.

As presented in the Individuals with Disabilities Education Improvement Act of 2004, the purpose of IDEIA is to ensure that all children with disabilities have available to them a free and appropriate public education that emphasizes special education and related services designed to meet their unique needs and prepare them for further education, employment, and independent living [602(d)(1)(A)]. Of particular interest is the last part of the purpose statement that acknowledges the importance of the transition process, which in the most basic sense refers to when students change their status from being children to assuming emergent adult roles in the community (Halpern, 1994). The importance of the status change is evident throughout several sections of the IDEIA policy. As an example, IDEIA states that the term “transition services” refers to a coordinated set of activities that:

is designed to be within a results-oriented process, that is focused on improving the academic and functional achievement of the child with a disability to facilitate the child’s movement from school to post-school activities, including postsecondary education, vocational education, integrated employment (including supported employment), continuing and adult education, adult services, independent living or community participation, [602(34)(A)] and is based on the individual child’s needs, taking into account the child’s strengths, preferences, and interests [602(34)(B)].

Further, IDEA specifies that beginning not later than the first Individualized Education Program (IEP) to be in effect when the child turns 16 and then updated annually thereafter, the IEP must include:

1. Appropriate measurable postsecondary goals based upon age-appropriate transition assessments related to training, education, employment, and independent living skills, where appropriate;
2. Transition services needed to assist the child in reaching those goals, including courses of study; and
3. Beginning not later than one year before the child reaches the age of majority under state law, a statement that the child has been informed of the child’s rights under this title, if any, that will transfer to the child on reaching the age of majority.

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In Section 615(m), a special rule regarding procedural safeguards, states that the right of transfer is to occur for all students with disabilities, unless the student is determined incompetent by State law or considered unable to provide informed consent regarding educational programming. For these situations, when student competence is in question, IDEIA mandates that States establish procedures for appointing an individual (e.g., parent) to represent the educational interests of the student [Section 615(m); 614(d)(1)(A) VIII]. Although the special rule has been mandated for well over a decade, no systematic examination exists regarding the extent to which, or how, States have established these procedures. Upon a cursory inspection of state department of education IEP forms, some States have responded in part by adding a check box to the IEP template to indicate whether the student was informed that he or she would assume the educational rights once afforded to their parents at the time the age of majority was reached (see Nevada Department of Education, 2006). Other states, for example Michigan, included boxes on the IEP form to indicate that the student had reached the age of majority and that a guardian was appointed by court order; and/or had reached the age of majority and had appointed a legally designated representative (e.g., power-of-attorney, trustee) (Michigan Department of Education, 2005).

In addition to modifying the IEP form, some states have addressed the legislative mandate on web pages and/or manuals by using similar language as found in IDEIA (see Nebraska Department of Education, 34 CFR 300.517, 2006). In addition to using IDEIA language, some states clarified procedures. One state document, as an example, indicated that beginning at least one year before a student reaches 18 years of age, the student’s IEP must include a statement that the student:

has been informed that, unless the student’s parent or other individual has been granted guardianship of the student under the Probate Code, Chapter XIII, Guardianship, all rights granted to the parent under the Individuals with Disabilities Education Act (IDEA), Part B, other than the right to receive any notice required under IDEA, Part B, will transfer to the student upon reaching age 18 . . . a school district must notify in writing the adult student and parent of the transfer of parental rights . . . at the time the student reaches the age of 18. This notification is separate and distinct from the requirement that the student’s IEP include a statement relating to the transfer of parental rights beginning at least one year before the student reaches the age of 18. This notification . . . must include a statement that parental rights have transferred to the adult student and provide contact information for the parties to use in obtaining additional information (Texas Department of Education, 2002, §89.1049 Tex. Reg. 3061).

In the Michigan Department of Education IEP manual, the following information is presented “Guardianship issues (e.g., independence, decision-making, partial guardianships as appropriate) can be addressed in the student’s secondary education career in the IEP under Transition services (e.g., Courses of study, Adult living, Daily living)” (Michigan Department of Education, Section 1-2, 2005). Although the IEP manual suggests that guardianship-related issues be discussed, statements such as this may be interpreted that guardian appointments are needed (Millar & Renzaglia, 2002). This perceived need is of concern because it is has been learned that some parents and educators may not have complete or accurate information regarding the legal process (Millar, 2007), and dependent on the court’s ruling a young adult may unnecessarily lose several or all legal and civil rights (Millar, 2003).

For hundreds of years, guardianship has existed (Lisi, Burns, & Lussenden, 1994), however, limited research exists regarding how it impacts the lives of individuals involved (e.g., ward, petitioner, guardian). When considering IDEIA, and the impact guardian appointments may or may not have on the rights of school-aged individuals, research is even more sparse. Two studies (Millar, 2003; Millar & Renzaglia, 2002) reviewed over 220 Michigan guardianship court files of young adults who
had legal guardians appointed where it was learned that court petitions were most often completed by parents who claimed that their adult children needed a guardian because the student had a developmental disability, reached the age of majority, and/or had limited to no ability to make sound decisions. Additional findings included that evidence used to determine competence was unclear, and that the majority of guardians found their wards’ “conditions” of “having limited or no capacity to make decisions” remained unchanged following guardian appointments. This last finding is noteworthy because, as reported in the Mental Health Code Act 258 of 1974 mandates found in the Michigan Compiled Laws Annotated (MCLA), guardians are to assist the ward in the development of maximum self-reliance and independence (MCLA, 330.1602; 330.1631).

Using qualitative methods, Millar (2008; 2007) conducted two related studies. One study involved the facilitation of focus groups where young adults with disabilities (both who had legal guardians and who did not), their parents, and secondary teachers were questioned about their knowledge of self-determination, as well as, guardianship and its alternatives. Two main common findings across groups were that participants had limited understanding of the guardianship process and that they did not realize the extent to which guardianship contradicted their efforts to promote/exhibit self-determination related skills. It was also learned that students and parents first learned about guardianship at an IEP when a meeting member (usually a teacher) asked “Do you have a guardian?” when it came to that section on the IEP form. Following the IEP meeting, several parents went to court because they thought becoming their child’s legal guardian was something they were expected to do, even though they did not have a clear understanding of what guardian appointments entailed. Parents who went through the guardianship process wondered, years after their court involvement, whether a guardian appointment was necessary or of benefit (Millar, 2007).

Finally, using case studies, Millar (2008) explored how two families, with young adults with similar educational experiences and special education school labels, came to very different conclusions about guardianship after they attended an IEP meeting when it was time for the parents’ rights to potentially transfer to their adult child. One student had a legal guardian and one did not. Interestingly, it was learned that the young man who went through the court process and had a full (plenary) legal guardian appointment made several decisions at his residence and place of employment; whereas the other student who did not have a legal guardian had limited control over day-to-day decisions. Actions, values, and beliefs of others (e.g., parents, educators, service providers) impacted the extent to which the young men controlled aspects of their life.

Although the studies that have been conducted with respect to school-aged adults who have disabilities offer important information for scholars, policy makers, educators, members of the judicial system, and families, clearly, more research surrounding the complexity of guardianship and self-determination is needed. Therefore, the purpose of this research was to add to the literature base by reviewing the transition-related content of IEPs. As a result of the IDEIA mandates, several studies have examined the existence and quality of transition-related IEP goals and objectives, as well as, whether students and agency personnel attended IEPs (Everson, Zhang, & Guillory, 2001; Grigal, Test, Beattie, & Wood, 1997; deFur, Getzel, & Kregel, 1994; Powers et al., 2005). Without question, these studies have provided important information, however, they did not examine the impact guardianship appointments may or may not have had on IEP content. Specifically, this is the first study that has systematically compared the IEP content of adult students who had or did not have a legal guardian across the following areas: (a) post-secondary goals related to training, education, employment, and independent living; (b) transition services used to meet those goals including course of study, review of objectives, and agency connections; and (c) student participation in educational planning. Reasons for reviewing IEP content include that they (a) are required by law for all students who are eligible and receive special education services to ensure IDEIA legal requirements are being met; (b) have common elements (e.g., PLAAFP state-
ments, goals and short-term objectives) thus serve as management tools for guiding educational services; (c) are a contract, as well as, communication vehicle, for the planning and delivery of special education and related services; and (d) can serve as an evaluation device for determining the student’s progress toward educational goals (Simon, 2006).

Method

Districts and Student Information

At the time of the study, approximately 250,000 out of the 1,727,574 students enrolled in Michigan schools had IEPs; that is, about 14.5% of the student population was receiving special education services. Five regional district administrators were contacted in an effort to gain support for this research. One administrator declined participation in the study due to having a limited number of staff who might assist with document collection, and another, although personally interested, was unable to gain support of the project due to LEA/regional district policy and protocol. Overall, documents reviewed for this study were obtained from three regional school districts.

One regional district (District 1) coordinated and oversaw special education services for over 12 local school districts. Students in the region slightly exceeded 35,000, of which just over 6,500 had an IEP (18.6%). The region’s estimated demographic make-up of students receiving special education services was: 54% White, 35.75% Black, 9% Hispanic, 1% Asian/Pacific Islander, and 0.25% American Indian/Alaskan. Approximately 14% of students who had IEPs were considered to have a developmental disability (e.g., cognitive impairment, autism spectrum disorder, severe multiple impairments). Another regional district (District 2) coordinated and monitored special education services for at least six local school districts. Across the region, close to 3,000 students out of approximately 19,500 students (about 15%) had an IEP. The demographics of the second region’s student population who had IEPs approximated: White (89%), Black (4%), American Indian/Alaskan (1.5%), Asian/Pacific Islander (5.5%). Like District 1, close to 14% of the students who had IEPs were considered to have a developmental disability. Finally, District 3 coordinated and supervised special education services across at least seven local school districts. Close to 15,000 students were enrolled throughout the region, and just over 2,000 had IEPs (approximately 13% of the student population), of which 15% of the students with IEPs had a developmental disability. The demographic student population who had IEPs across District 3 approximated 98% White, 0.6% Black, and 0.4% Hispanic, as well as, 1% American Indian/Alaskan. Across all three regions, it was estimated that between 1-6% of the students who had IEPs were 18 years of age or older, and that approximately 65% were male, and 35% were female. These regions were selected because it was anticipated that they were representative of a variety of school settings (urban, suburban, rural) and student ethnic groups; and that the findings that resulted from this study might encourage state, regional, and local school officials to reflect on current procedures and practices related to enabling students to become self-sufficient adults.

IEP Selection and Data Collection

Criteria established for an IEP to be included in the document review for possible analysis were (a) the student had to be at least 18 years of age, (b) the primary disability of the student had to be listed as “cognitive impairment” or other developmental disability; and (c) evidence was available that a legal guardian was appointed for half of the sample. Other demographics of interest included gender, age, and ethnicity. The goal was to sample enough IEPs that were conducted between January 1, 2006 and March 1, 2007 to ensure sufficient numbers to investigate group differences between districts and more importantly, between students who had a guardian in comparison to those who did not.

At each regional district, a school administrator designated one or two staff members to generate a list of IEP documents that fit the criteria established for this study. To ensure anonymity of what IEPs would be reviewed, district staff removed all identifying student information (e.g., address, student identification number) and randomly selected no less
than 60 IEPs per district. Across the three regions, the author received 191 de-identified documents for possible analysis. Overall, 156 of the 191 documents were analyzed. Reasons for exclusion of analysis included the IEPs were not complete (e.g., missing PLAAFP statements or objectives), or the student did not have a developmental disability.

Among the 156 IEPs, 82 (52.6%) were designed for individuals who had a guardian in comparison to 74 (47.4%) who did not. The primary disability of record for 130 (83.3%) was “cognitive impairment” (mental retardation). Other students had a primary label of “autism spectrum disorder” (n = 8, 5.1%), or “severely multiply impaired” (n = 18, 11.6%). Seventy four (47.4%) and 82 (52.6%) were female and male, respectively. With regard to ethnicity, 114 (73.1%) were White, 26 (16.7%) were Black, 13 (8.3%) were Hispanic, and 3 (1.9%) were Asian American. A super-majority of IEPs (n = 118; 75.6%) indicated that students were attending a “moderate cognitive impairment program”, whereas, 14 (9%) students were in enrolled in a “severe cognitive impairment program”. Interestingly, 8 (5.1%) and 7 (4.5%) IEPs indicated that students were enrolled in a “secondary resource program” or “emotional impairment program”, respectively. The remaining nine students were reportedly enrolled in a “severely multiply impaired program” (n = 2, 1.3%), “learning disabilities program” (n = 3, 1.9%), or “physically or otherwise health impaired program” (n = 4, 2.6%). In terms of age at the time the IEP was held, 29 (18.6%) were 18, 34 (21.8%) were 19, 31 (19.9%) were 20, and 27 (17.3%) were 21. Thirty five of the students (22.4%) were at least 22 years of age.

**Instrumentation**

Once the sample of IEPs was determined, two main areas of the IEP were analyzed: present level of academic achievement and functional performance (PLAAFP) goals, as well as, objectives. Under the PLAAFP statement header found on the IEP form, the following goal-related questions were presented: (a) “adult living: as an adult, where do you want to live?,” (b) “career/employment: as an adult, what kind of work do you want to do?,” (c) “community participation: as an adult, what hobbies and activities do you want to have?,” and (d) “post-secondary education/training: after high school, what additional education and training do you want?” (MDE Manual and IEP form, 2005, section 3-3). The intent of having students’ responses to these four questions on the form was to ensure that their preferences and goals were driving the IEP content (MDE Manual, 2005, Section 3-3). In addition to the responses to the questions, the following PLAAFP statement elements were examined: (a) the baseline data, (b) explanation of assessment data for educational instruction and functional performance, (c) impact on involvement/progress in the general curriculum, and (d) description of areas of education need. A template to organize the data was created based off of the goal headers found on the IEP form (e.g., Career/employment). This template and organization strategy was piloted across six IEPs (two from each district). Due to the consistent use of headers used across districts, PLAAFP information was easily sorted and categorized and no adjustments to the template were needed.

With regard to IEP objective analysis, another template was created so that key terms written in objectives (e.g., problem-solving) could be sorted and categorized under powers typically afforded to guardians and/or areas of concern noted by petitioners, as found on petition forms as reasons why someone was believed to need a guardian. For example, guardians are often responsible for determining how far a ward can travel (Millar, 2003). Mobility/transportation, was therefore a category where related objectives (e.g., crossing streets, taking driver’s training) could be grouped. Other areas of concern found on petition forms and court documents involved the student’s ‘limited’ or ‘lack’ of capacity for self-care (e.g., meal planning and preparation) or ability to use/manage money (e.g., paying for purchases) (Millar & Renzaglia, 2002). Creating the template such that objectives could be sorted and categorized involved the assistance of an expert panel. That is, three individuals (e.g., educator, professor, parent), knowledgeable about guardianship and IEP content, worked on determining what main categories should be used for IEP objective categorization and analysis. After much discussion, review of key terms found in IEP
objectives, and three revisions made to the template, the objective sorting categories were finalized: (a) self-care (Table 1), (b) self-direction (Table 2), (c) language/communication, (c) capacity for independent living (Table 3), (d) vocational training, and (e) mobility/transportation. The IEP template is available on request by contacting the author.

**IEP tool training and inter-rater reliability.** Once the IEP templates were finalized, two assistants were trained on how to use them which included a review of the purpose of the study and template demonstration. After the orientation, the assistants were given an IEP from District 1 and were requested to independently complete the templates. Coding of the IEP content among assistants was compared with how the author coded the information, and disagreements between coding were discussed. Two additional IEPs (one from District 2 and one from District 3) were then used for additional training purposes to establish a standardized coding procedure. In total, 18 of the 156 IEPs (6 from each district, of which 3 students had a guardian and 3 did not) were used to establish inter-rater reliability. As was the case during the training, this was done by using an item-by-item analysis on

**TABLE 1**

Per District, number of IEP Objectives Related to Self-Care for Students With and Without Guardians

<table>
<thead>
<tr>
<th>Key Terms found in Objectives</th>
<th>District 1</th>
<th>District 2</th>
<th>District 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>With</td>
<td>Without</td>
<td>With</td>
</tr>
<tr>
<td>Sex Education/HIV-AIDS awareness</td>
<td>36</td>
<td>48</td>
<td>0</td>
</tr>
<tr>
<td>First aid</td>
<td>20</td>
<td>21</td>
<td>2</td>
</tr>
<tr>
<td>Personal health and fitness</td>
<td>23</td>
<td>35</td>
<td>8</td>
</tr>
<tr>
<td>Grooming/hygiene/dress</td>
<td>10</td>
<td>12</td>
<td>5</td>
</tr>
<tr>
<td>Total number of objectives</td>
<td>89</td>
<td>116</td>
<td>15</td>
</tr>
</tbody>
</table>

*Note. Total number of objectives in this area = 252; 121 objectives for students with guardians; 131 objectives for students who did not have guardians.*

**TABLE 2**

Per District, number of IEP Objectives Related to Self-Direction for Students With and Without Guardians

<table>
<thead>
<tr>
<th>Key Terms found in Objectives</th>
<th>District 1</th>
<th>District 2</th>
<th>District 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>With</td>
<td>Without</td>
<td>With</td>
</tr>
<tr>
<td>Appropriate attitude/behavior</td>
<td>43</td>
<td>51</td>
<td>22</td>
</tr>
<tr>
<td>Problem-solving/Decision making</td>
<td>42</td>
<td>59</td>
<td>11</td>
</tr>
<tr>
<td>Self-advocacy</td>
<td>18</td>
<td>26</td>
<td>14</td>
</tr>
<tr>
<td>Self-acceptance</td>
<td>16</td>
<td>18</td>
<td>0</td>
</tr>
<tr>
<td>Goal setting</td>
<td>15</td>
<td>26</td>
<td>1</td>
</tr>
<tr>
<td>Personal rights and responsibilities</td>
<td>26</td>
<td>19</td>
<td>0</td>
</tr>
<tr>
<td>Sexual Harassment</td>
<td>14</td>
<td>25</td>
<td>0</td>
</tr>
<tr>
<td>Total number of objectives</td>
<td>174</td>
<td>247</td>
<td>48</td>
</tr>
</tbody>
</table>

*Note. Total number of objectives in this area = 585; 277 objectives for students with guardians; 308 objectives for students who did not have guardians.*
the forced-choice responses, and calculating the differences using the formula: \( \frac{\text{# of agreements}}{\text{# of agreements} + \text{# of disagreements}} \times 100 \). Regarding the first template the inter-rater reliability was established at 95% or more across the three coders. The inter-rater reliability for the second template, content analysis of objectives, was lower (76.3–88.5%). When the reliability was lower than 85%, the author and assistants compared notes until differences were resolved. During the review process, the author randomly selected six IEPs assistants reviewed to ensure coding procedures were being followed. Inter-rater reliability regarding objective analysis for these IEPs was never below 89%.

### Results

Results of the IEP analysis are organized such that information pertaining to student post-secondary goals, as found on the PLAAFP statements, are presented first. This is followed by the presentation of findings regarding transition services used to meet those goals including course of study, review of objectives, and agency connections. Student participation in educational planning observations are then presented, as well as, other interesting findings.

**Comparison of PLAAFP Post-Secondary Goals**

**Training and education goals.** One-hundred and fifteen of the 156 students (73.7%) indicated on their IEPs that they were not interested in furthering their education beyond public schooling as they wanted to work \((n = 43\) without guardians, \(n = 72\) with guardians). It was observed, however, that students without guardians \((n = 24)\) were more interested than those with guardians \((n = 7)\) in attend-

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**TABLE 3**

Per District, number of IEP Objectives Related to Capacity of Independent Living for Students With and Without Guardians

<table>
<thead>
<tr>
<th>Key Terms found in Objectives</th>
<th>District 1</th>
<th>District 2</th>
<th>District 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>With</td>
<td>Without</td>
<td>With</td>
</tr>
<tr>
<td>Meal planning and preparation</td>
<td>158</td>
<td>172</td>
<td>31</td>
</tr>
<tr>
<td>Recreation and leisure</td>
<td>58</td>
<td>81</td>
<td>26</td>
</tr>
<tr>
<td>Basic consumer math (e.g.,</td>
<td>61</td>
<td>77</td>
<td>23</td>
</tr>
<tr>
<td>counting coins, dollars</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Household management</td>
<td>60</td>
<td>76</td>
<td>1</td>
</tr>
<tr>
<td>Relationships/friendships</td>
<td>51</td>
<td>81</td>
<td>6</td>
</tr>
<tr>
<td>Household safety</td>
<td>30</td>
<td>56</td>
<td>2</td>
</tr>
<tr>
<td>Advance consumer math (e.g.,</td>
<td>19</td>
<td>42</td>
<td>6</td>
</tr>
<tr>
<td>credit, debit</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Appliance use</td>
<td>17</td>
<td>22</td>
<td>10</td>
</tr>
<tr>
<td>Housekeeping skills</td>
<td>13</td>
<td>29</td>
<td>3</td>
</tr>
<tr>
<td>Clothing care (e.g., laundry,</td>
<td>13</td>
<td>29</td>
<td>1</td>
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<tr>
<td>repair)</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Simple household repair</td>
<td>6</td>
<td>18</td>
<td>0</td>
</tr>
<tr>
<td>(e.g. replace light bulb,</td>
<td></td>
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<td></td>
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<tr>
<td>heater filter)</td>
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<td></td>
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<tr>
<td>Outdoor maintenance and yard</td>
<td>4</td>
<td>3</td>
<td>0</td>
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<tr>
<td>(e.g., raking, lawn mowing)</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Basic car care</td>
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</tr>
<tr>
<td>Total number of objectives</td>
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</table>

*Note. Total number of objectives in this area = 1508; 670 for students with guardians; 838 objectives for student who did not have guardians.*
ing a vocational school. Two students with guardians and two students without guardians expressed their desire to attend a college or university. Five students expressed an interest in entering the military. These five people did not have guardians. Only one student who did have a guardian did not have a response to the question regarding postsecondary education goals.

Employment goals. With regard to employment, 21/156 (13.4%) of the students, specifically 12/74 (16.2%) who did not have a guardian and 9/82 (10.9%) who did, were employed and wanted to keep their jobs upon school completion. As stated on IEPs, 11/21 students were “competitively employed” \(n = 5\) who did have a guardian; and \(n = 6\) who did not have a guardian); and 4/21 were in “supported employment” settings (all of whom had guardians). Competitive employment positions involved food-service at fast-food restaurants \(n = 5\); greeting customers/straightening shelves at department stores \(n = 3\); custodial work at nursing homes and dance studios \(n = 2\); and washing cars as a part of a crew/team \(n = 1\). Two of the five individuals in food service had their jobs for 3–4 years, whereas the other students had their positions between 4–6 weeks. The supported employment positions were housekeeper, custodian, and car part assembly line crew. All jobs were part-time, however, detail regarding the hours worked per week, as well as pay, were not available. One hundred and twenty seven of the 156 students (81.4%) were not employed at the time the IEP was written but expressed an interest in having a job. Interestingly, in one district, for 9/127 students the IEP indicated that the students wanted to be in either a “sheltered workshop or supported employment situation” and for 8/156 IEPs, the following statement was presented “Employment is not appropriate for this student.”

Independent living goals. When comparing the differences between students who had or did not have a guardian plans regarding living options, a significant difference was observed, \(\chi^2 (5, N = 156) = 20.190, p < .001\). Students who did not have a guardian indicated that they wanted to live on their own \(n = 42/74; 56.7\%\) and 21/74 (28.3%) were living with their parents/family at the time they responded to question and wanted to continue living there. The opposite was observed for students who had legal guardians where 28% \((n = 23/82)\) wanted to live on their own and 44/82 (53.6%) wanted to stay with their family where they were living when posed the question. Twelve students, six with and six without guardians, were already living on their own, and wanted to continue to do so. Other observations included that six students, all who had guardians, stated they wanted to live in group homes and five students, three who had guardians, stated they wanted to live in adult foster care (AFC). Two of the five students already were living in an AFC, of which one wanted to move into a semi-independent living situation and one wanted to remain at the AFC facility. Finally, three students without guardians were unsure or did not respond to the question.

Comparison of Transition Services to meet Post Secondary Goals

Course of study. With regard to participation in the state assessment, only 1 of the 156 students (0.6%) participated. This student, who had a developmental disability, did not have a guardian and had plans to attend a four year university. Of the 156 students, 93 (59.6%) neither took the state assessment nor the state alternative assessment. Reasons for non-participation were not always disclosed. Three times it was noted that the student was over the required age for testing and 28 times it was simply stated on the IEP “N/A.” Sixty-two of the 156 (39.8%) did participate in the state alternative assessment.

When comparing the differences between who was earning a diploma or certificate of completion among students who had or did not have a guardian, a statistically significant difference was observed, \(\chi^2 (2, N = 156) = 8.341, p < .015\). Specifically, of the 74 students who did not have a guardian, 42/74 were earning a diploma, whereas, 51/82 student who did have a guardian were earning a certificate of completion. When examining district differences, District 1 had the majority of its students \((42/59; 71.1\%)\) earning a diploma, District 2 had the majority of students earning certificates of completion \((44/49; 89.7\%)\), and District 3 had 24/48 (50%) of its students earning a diploma and 45.9% (22/
48) earning a certificate of completion. Information for two students was unavailable in District 3. Those working on the diploma had specialized curriculum. The following statement reflects what was presented on IEPs: “Life skills training and content areas of daily living skills and community experiences will help the student accomplish his/her post-school adult goals, which will enhance his/her ability to live and participate in the community according to his/her expressed desires, needs, and interests.”

Objectives. When comparing the overall number of objectives \( (N = 3,127) \) across the 156 IEP forms, no significant differences were observed across the three districts for students who had \( (n = 82 \text{ students}; 1,456 \text{ objectives}) \) or did not have \( (n = 74 \text{ students}; 1,671 \text{ objectives}) \) a guardian. When examining individual districts, it was found that no significant differences in the number of objectives, whether a student had a guardian \( (n = 28 \text{ students}; 993 \text{ objectives}) \) or not \( (n = 31 \text{ students}; 1366 \text{ objectives}) \), were found in District 1. In District 2, where no significant differences were found between groups, it was observed that students who had a guardian \( (n = 29) \) had a total number of 266 objectives and students who did not \( (n = 20) \) had 171 objectives. Only the number significantly differed for District 3 where it was observed that students with guardians \( (n = 25) \) had more objectives \( (n = 197) \) than those who did not \( (n = 23 \text{ students}; 134 \text{ objectives}) \).

Self-care objectives. The total number of objectives \( (n = 252) \) related to self-care did not differ significantly from those who had a guardian \( (n = 121 \text{ objectives}) \) and those who did not \( (n = 131 \text{ objectives}) \). When examining district emphasis, only District 2 demonstrated a difference where those who had a guardian had more objectives \( (n = 15) \) to their comparative group \( (n = 1) \). In District 1, 89 or 116 objectives were noted for those with and without guardians, respectively. In District 3, those with guardians had slightly fewer objectives \( (n = 17 \text{ objectives}) \) than those without \( (n = 14 \text{ objectives}) \). Eighty five of the 156 students \( (54.4\%) \) had at least one objective in the self-care category, whereas 71/156 \( (n = 34 \text{ without a guardian}; n = 37 \text{ with a legal guardian had no objectives}) \). Twenty four of the 85 students had one objective, and the remaining \( (n = 61) \) had up to six objectives in the self-care area.

In District 1 \( (n = 59 \text{ IEPs}; 28 \text{ for student who had a guardian, and 31 who did not}) \), a total of 84 objectives related to students demonstrating an awareness of HIV-AIDS and sex education were found, regardless if the student had a guardian \( (n = 36/84) \) or not \( (n = 48/84) \). There were no objectives found in the sample for Districts 2 or 3 regarding these areas. Personal health and fitness \( (n = 58) \) were the second most commonly found objectives in the self-care category for District 1. Development and demonstration of first aid skills were the third most commonly found objectives in the self-care category \( (n = 41) \), followed by grooming/hygiene \( (n = 22) \). In Districts 2 and 3 where 49 and 48 IEPs were reviewed, respectively, grooming/hygiene objectives were emphasized \( (n = 5 \text{ for District 2, and } n = 10 \text{ for District 3}) \), as were personal health and fitness \( (n = 8 \text{ for each area}) \) for District 2, and \( n = 18 \text{ for District 3}) \), and first aid \( (n = 3 \text{ for both districts}) \). See Table 1 for details regarding number of objectives per area, per district.

Self-direction objectives. Significant differences were observed between those who had guardians \( (n = 277 \text{ objectives}) \) and those who did not \( (n = 308 \text{ objectives}) \) in the total number of self-direction related objectives \( (N = 585) \), \( \chi^2 (11, N = 156) = 25.98, p < .007 \). One hundred and twenty nine of the 156 students \( (82.7\%) \) had at least one objective in self-direction area, whereas 27 students had none. The median was 1 \( (n = 34 \text{ students}) \). No significant differences were observed for District 1 \( (n = 174 \text{ objectives for students with guardians}; n = 247 \text{ objectives for those without}) \) and District 2 \( (n = 48 \text{ objectives for students with guardians}; n = 29 \text{ objectives for those without}) \). Only in District 3 were significant differences noted where those students with guardians had 55 objectives and those without had 32.

In District 1, ‘problem solving/decision making’ objectives were emphasized as there were 42 objectives across the 28 students who had a guardian and 59 objectives across the 31 students who did not. ‘Appropriate attitude/behavior’ objectives also had a high number of objectives \( (n = 43 \text{ and 51 objectives}) \) across students with and without guardians, respec-
tively. Districts 2 and 3 also emphasized the same areas as District 1, however the overall number of objectives was dramatically less. See Table 2 for detail regarding the number of self-direction related objectives per district, and whether a student had a guardian or not.

Voting privileges are often questioned when guardians are appointed. Voting-related objectives, therefore, could be categorized under the header ‘self-direction’ as it takes initiative to determine who to vote for and how to actually vote. In only one district was it observed that students were learning about the voting process and encouraged to register to vote. Specifically in one district, 12 students with guardians, and 19 without guardians, had objectives related to the voting process and voter responsibility. For those students who had guardians, it was unclear whether their rights regarding voting privileges remained intact. Across the other two districts, it was observed in the PLAAFP statements for eight who did not have guardians, that they should be encouraged to register to vote, however, no objectives were found in the IEPs.

With regard to registering for the draft, it was noted on the PLAAFP statements for 15 students with guardians and 27 without that they needed to register for the draft. No specific objectives were found related to this issue. Also, it was unclear for students who had a guardian whether this was an appropriate action to encourage.

Language/Communication objectives. As was observed in the number of self-direction objectives, significant differences were found between those who had a guardian and those who did not with regard to the number of communication short term objectives \((n = 398), \chi^2 (7, N = 156) = 16.31, p < .022).\) Overall, 134/156 students had at least one communication objective, whereas 22 had none (15 students who had guardians, and 7 students who did not). Those that had a guardian overall had more objectives \((n = 219)\) than those who did not \((n = 179)\) objectives. The mode was one objective \((n = 39)\) and the remaining 95/134 students had up to 6 objectives. When comparing district emphasis, however, it was found that in District 1, significant differences were observed, \(\chi^2 (7, N = 59) = 15.94, p < .026\), those with guardians had fewer objectives \((n = 112)\) in comparison to those without \((n = 121)\). In contrast, it was found that for District 3, those with guardians had more objectives \((n = 51)\) in comparison to those without \((n = 34), \chi^2 (5, N = 48) = 18.11, p < .003).\) Finally, there were no significant differences in number for District 2 where those with guardians had 56 objectives and those without had 24. Samples of communication objectives are: (a) type an email; (b) use the phone to call home; (c) read vocabulary words found in a sentence; and (d) write name on lined paper.

Capacity for independent living objectives. With regard to the capacity for independent living objectives, no significant differences in the total number of objectives \((N = 1508)\) were observed between those students who had guardians \((n = 670)\) and those who did not \((n = 838)\), \(\chi^2 (27, N = 156) = 29.25, p > .348).\) Of the 142/156 students who had objectives in this area, the majority had between 3 and 7. Fourteen students of 156 had no objective in this area (11 who had no guardian; 3 who did).

District 3 was the only district where statistically significant differences were observed, \(\chi^2 (7, N = 48) = 16.92, p < .018)\) between the number of objectives for student with \((n = 66)\) and those without \((n = 46)\) objectives. In District 1, although not statistically significantly different, students without guardians were observed to have more objectives \((n = 700)\) than those who did \((n = 495)\); whereas the opposite was observed for District 2 where students without guardians had slightly fewer objectives, though not statistically significantly fewer, than those with \((n = 92)\), \(n = 109 \) objectives, respectively. All three districts had the most objectives related to meal planning and preparation, following by consumer math. Table 3 presents additional information on district emphasis, as well as, the number of objectives per students who did or did not have a guardian.

Vocational training objectives. The statement “The student will complete at least two community-based job training experiences in the following areas: childcare, custodial, maintenance, and/or restaurant work” was a common, or comparable, objective found in the IEPs reviewed. When comparing the overall
number of vocational training objectives ($n = 276$) obtained from the three districts, significant differences were found between those who had guardians ($n = 126$ objectives) and those who did not ($n = 150$ objectives), $\chi^2 (6, N = 156) = 18.76$, $p < .005$. Differences were observed in Districts 1 and 3, $\chi^2 (6, N = 59) = 21.22$, $p < .002$ and $\chi^2 (2, N = 48) = 12.04$, $p < .002$, respectively. In both of these two districts, those with guardians had fewer objectives than those who did not. In District 1, 91 objectives were written for students with guardians and 124 objectives were written for those without. Specifically, it was observed that all but one of the 59 students in District 1 had at least one vocational training objective. That one person did have a legal guardian and was “happily employed,” as indicated on his PLAAFP statement. Thirty one students who did not have guardians had a range between 1 and 6 objectives with a mode of 5 objectives; similarly, for the 27 students with guardians, that range of objectives per student was between 1 and 6, the mode, however, was 2. As for District 3, 8 objectives were written for students with guardians and 8 objectives were written for those without. Perhaps a more interesting finding for District 3 is that 36/48 students (75%) had no vocational training objective (19 without guardians and 17 with). Eight students with guardians had one objective, whereas, 4 students without had more than 1. In District 2, however, where no significant differences in the number of objectives were observed, those with guardians had more objectives ($n = 27$ objectives) in comparison to those that did not ($n = 18$ objectives). For District 2, 20 students did not have a vocational training objective (12 with guardians, and 8 without). For 12 students without guardians, they had between 1 and 3 vocational training objectives, with the mode of 1, found on their IEPs. Similar findings were observed for students with guardians ($n = 9$) where the range of objectives was 1–3, with there being a bi-modal of 1 and 2 objectives.

Mobility/Transportation goals and objectives. Of the 156 PLAAFP statements reviewed, 106 (67.9%) had reference to student needs and interests regarding mobility and transportation. In the PLAAFP statements, it was observed that 5 students, who did not have guardians had driver’s licenses, 28 wanted to take driver’s training, 41 relied on others (e.g., family members/friends) either all or some of the time, 18 were proficient at using the public transportation system, whereas 11 wanted training, and finally, 27 stated they walked or biked to get around. Three students used wheelchairs. Although 106 IEP PLAAFP statements addressed mobility issues, and 5 of those statements were for students who were self-reliant as they drove, only 59 students in total had mobility/transportation-related objectives.

The overall total number of mobility objectives ($n = 108$) between those that had guardians ($n = 43$ objectives) and those that did not ($n = 65$) were not found to be significantly different. Statistically significant differences were observed only in District 1, $\chi^2 (3, N = 59) = 8.10$, $p < .044$). In District 1, 58 mobility objectives were found for students who did not have a guardian, in comparison to those who did ($n = 32$ objectives). Those without guardians had objectives related to completing a driver’s training class ($n = 19$), using the bus/public transportation system ($n = 20$); and moving around the community safely (e.g. walking, biking) ($n = 19$). With regard to those who did have a guardian, only six students were found to have objectives related to completing a driver’s training class. Using the public transportation system ($n = 12$ objectives) and moving safely around the community via walking and biking ($n = 14$) were emphasized.

Eighteen objectives were found in IEPs for District 2 ($n = 11$ objectives for those with guardians and $n = 7$ objectives for those without). No objectives in District 2 related to driver’s training, rather it was observed that 5 or 6 objectives related to students with guardians needing to learn to cross the street or use the bus system, respectively. Seven objectives for students who had no guardians targeted learning the public transportation system.

By reviewing the District 3 PLAAFP statements, it was found that only one student, who did not have a guardian, had a license. For three students who had a guardian, it was stated in the PLAAFP statement that they “should get a state identification card.” An additional three students with a guardian indicated that they would like to take driver’s training, and another seven students shared
they used their bikes and/or walked around the community. For 15 students who had guardians, no information was found in the IEP regarding how they got around the community. In comparison, six students without guardians indicated they would like to take driver’s training, and another eight stated that they used their bikes and walked around their community. Finally, eight students, without guardians, had no explicit information regarding how they moved around their community. Across the IEPs reviewed from this district, there were no objectives that corresponded, or addressed the student transportation interest or needs.

**Adult Service Connection**

Connecting students and families with adult services is emphasized in IDEIA. When comparing the extent to which students with and without guardians were connected with agencies, no significant differences in the number of students connected were observed. Overall, 88/156 students (56.4%) were reported to have an open case with at least one adult agency. Although the overall number of connections was not observed, differences were observed with regard to which agencies were utilized by students. When examining the sample of IEPs obtained from District 1 more closely, where a total of 48/59 (81.3%) of the students had open cases with agencies, it was learned that Social Security Administration (SSA) was the most often listed agency so that students could receive SSI and Medicaid. Specifically, 33 students had an open case with SSA. Not only did the district have SSA listed as an agency, some students also had open cases with community mental health, rehabilitation services, regional advocacy organizations, department of social services, and centers for independent living. In comparison, District 2 had reported that students (14/49; 28.5%) had open cases with community mental health, rehabilitation services, department of social services, and/or centers for independent living. The final district’s IEPs noted that three organizations were used by students: an advocacy organization, rehabilitation services, and community mental health. In District 3, 26 of the 48 students (54.1%) had an open case with at least one agency.

**Student Participation**

Of the 156 students, 131 (84%) reportedly attended their IEP meetings, whereas 23 (14.7%) did not. In two instances (1.3%), student attendance information was not clear. Towards the end of the IEP form, an item exists that states: “Adult Providing IEP Consent—I have been informed of all procedural safeguards and sources to obtain assistance, and understand the contents of this IEP; and agree with the IEP and its implementation.” It was found that in 125/156 (80.1%) students along with their parents signed this section. Of the 125 students, 63 did not have guardians and 62 did. On 23 IEPs, it was observed that only the student, without a parent or guardian, signed the form (n = 21 student who had no guardian; n = 2 students who did have a guardian). There was no evidence that a student disagreed with any IEP content. Similar to student attendance, a supermajority of parents (n = 124, 79.5%) attended, whereas 32 (20.5%) did not. In three instances, just parents signed the consent section of the form, and in 14 situations, neither the student nor the parent signed the form indicating that they consented to the IEP content and its implementation.

**Guardianship Reference in IEP Content**

IEP content was reviewed to see whether there was any mention of guardianship appointments or alternatives other than the information found on the first page of the form that addressed transfer of rights. Interestingly, in only 11/82 PLAAFP statements for students who had guardians mentioned guardianship-related issues. For example, in one PLAAFP statement, the following was presented “She has a payee to help her with finances. She also has a partial guardian for medical and financial decisions.” In another example, where a parent was a partial guardian, the following statement was presented: “The parent wants full guardianship of the individual.” For three individuals, the following statement was found: “His/Her guardian has waived further formal testing. He/She is dependent on other for all areas of daily living, personal care, and safety.”

For 7 of the 74 students who did not have
guardians, information pertaining to the topic of guardianship was found in the PLAAFP section of the form. For example, for one student, the following statement was found “In the process of receiving a public guardian” and for four students, a statement similar to the following was found: “Looking into guardianship.” One person was “Provided information on guardianship.” As a final example, “Exploring alternatives to guardian” was found on an IEP for a student who did not have a legal guardian.

**Discussion and Implications**

This is the first study that has systematically compared the transition-related IEP content between students who had or did not have a legal guardian. Although the findings from this study are important and raise issues not previously discussed in the literature, generalizations should be made with caution as the sample and districts represented in this study are limited. In addition, while reading the information to follow, it is important to keep in mind that there are inherent limitations when reviewing documents such as IEPs. For example, what is written on an IEP form may not fully convey the comprehensive services provided to a student. Frequently, educators claim that much detail is not found on IEP forms. IEP forms, however, are legal documents and serve as a means to communicate how students, at the time the IEP is written, are performing academically and functionally. The documents also state what it is hoped students will achieve through the goals and objectives (Powers, et al., 2005). In light of these limitations, the main findings and implications are presented below.

**Course of study.** A major finding of this study was that students with guardians were more likely to earn a certificate of program completion in comparison to students without guardians who were more likely to earn a diploma. Regardless of whether they had a guardian or not, the majority of students did not participate in state assessments and had a specialized curriculum. This finding is interesting given that provisions in both No Child Left Behind Act (2001) and IDEIA (2004) mandate that students across all categories of disability have access to the general education curriculum (Maccini & Gagnon, 2006). This finding, rather, is more consistent with those made by Agran, Alper, and Wehmeyer (2002) who found that educators considered functional and social skill development more important than having their students with disabilities access and participate in the general education curriculum. Perhaps the teams who designed the IEPs in this study were more concerned about life outcomes rather than test score outcomes, and did not see how a general education curriculum could sufficiently prepare their adult students for life after their public schooling.

Although policy makers maintain that improvement in academic achievement will consequently result in better post-school outcomes for individuals with disabilities, others have argued that the use of the general education curriculum should be cautiously emphasized as it may encourage in practice the use of a watered down, remedial, school work that does not necessarily prepare individuals for life beyond the public schools (Baer, Flexer, & Dennis, 2007; Turnbull, Turnbull, Wehmeyer, & Park, 2003). At the time these IEPs were designed, evidence which suggests that access to the general education curriculum improves the post-school outcomes of individuals with developmental disabilities, in comparison to a life-skill oriented curriculum, was limited. Research in this area regarding if and how access to the general education curriculum positively impacts post-school outcomes is a continued need as educators are challenged with teaching both academic and life skills.

**Goals and objectives.** One interesting finding related to IEP content was the vast differences observed regarding the overall number of objectives found in IEPs across districts (e.g., District 1 had substantially more objectives for each student in comparison to the other two districts). Not only were the number of objectives of interest (Table 4), but also were the topics addressed. Interestingly, only one district, regardless if students had guardians or not, addressed sex education, sexual harassment and HIV/AIDS awareness. This was an interesting finding. Perhaps the limited number of students being advised of the issues is due in part to the teachers’ lack of comfort and/or capacity to provide such in-
Differences in school and community needs relative to family values may also play a part in the lack of instruction (Spears, 2006). One reason guardians are appointed is that individuals are perceived as being vulnerable (Millar & Renzaglia, 2002). Because of this potential vulnerability, topics related to sex education and social interactions are needed to help prevent abuse.

Everson, et al., (2001) found in their review of IEPs a limited number of objectives that addressed student health and medical issues. The researchers, therefore, suggested that health-care and medical related needs become a priority in transition-related IEP content as students, dependent on their age, as well as personal and family insurance, will transition from pediatric health-care systems to adult health-care systems. The findings from this present study also found limited numbers of health care related objectives, and as a result, support Everson et al.’s call that transition-related IEP content address issues related to health care as medical concerns are often reasons for guardian appointments (Millar, 2008; 2003).

It was not surprising to find that the overall number of objectives for students with and without guardians was not significantly different. It was, however, expected that objective emphasis would vary. For example, it was anticipated that students with guardians would have goals and objectives that were clearly linked to the reasons why a guardian was appointed. That is, by effectively working on the needs, the reason for the appointment would become moot, or less restrictive alternatives to guardianship could be used. This clear link was not observed. It was also anticipated that those with guardians would have more communication and self-determination goals and objectives in comparison to those without. The idea was that those without guardians already had acquired and exhibited skills associated with being a self-determined individual. This was also not observed. Rather, those without guardians had more objectives. With this observation, IEP content was reviewed to see if those without guardians may be at risk of being appointed one. As previously presented, some students were, but documents may not have been complete or detailed.

With regard to independent living, those without guardians were more likely to want to live on their own, whereas students who did have guardians reported they wanted to continue living with their families. Since the 1960s, the residential options for individuals with disabilities have shifted from that of institution placements to that of individuals with disabilities living in family homes. More recently, it has been found that individuals with disabilities are owning or renting their own homes and given individualized supports to succeed (Millar, 2003). With regard to this finding, the following questions are raised (a) were students and IEP team members informed of living options in their communities?, (b) what were the family values (i.e., family takes care of family)?, and (c) were students’ responses impacted by others and how questions were posed? Given that students had guardians, their actual preferences, in comparison to those potentially identified by their guardians, would be better assessed in venues other than meetings. Repeated direct

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observations and interviews to determine preferences are just a couple of ways to assess preferences (Cobigo, Morin, & Lachapelle, 2007).

School documents. Some parents may, due to child’s disability, believe they are their child’s guardian, yet may not be actually legally appointed (Millar, 2007). During this study, while obtaining district support of the project, it was learned that some LEA districts have a policy to have court issued documents in student files, whereas others do not as school personnel take the parent’s word that a student has a legal guardian. It is imperative that all schools have a policy that court orders be placed in student files. In the documents, the rights of the guardian and term limit of the guardianship must be known so that IEP content and education can address the areas of concern. If documents are not accessible, it is possible that schools will allow guardians to have more ‘control’ than that actually ordered by the court. As an example, it is possible that a limited guardian has the authority to only make medical and dental decisions. If the school does not know this, however, then the schools may be assuming that all rights of the student have been restricted.

Student participation and consent. Another interesting finding was that over 80% of the 156 students attended their IEP meetings. What was unclear, however, was the extent to which these students exhibited leadership behaviors. Martin, et al., (2006) found in their IEP observations that students seldom exhibited leadership skills. This research supports Martin et al.’s suggestion that future research is needed with regard to expanding student roles in their educational planning; as well as having them aware of their legal rights, such as those they will have once they reach the age of majority. This research also supports the concern raised by Millar (2008) that if a young adult has a guardian, do they in turn become less likely to attempt to be a leader and demonstrate self-determination during educational planning decisions?

Another interesting finding was the content observed on the “Commitment Signatures” page, one of the last pages of the IEP. Amazingly, of the 125 students who signed this section, 62 had legal guardians and were legally declared incapable of making informed decisions. Specifically, the form states “I have been informed of all procedural safeguards and sources to obtain assistance, and understand: (a) understand the contents of the IEP and (b) agree with the IEP and its implementation.” (MDE Manual section 9-2, July, 28, 2005). There were no disagreements with IEP content found on any IEP document. This finding raises the question as to whether the IEP team understands what a guardian appointment means, and if they do, how the knowledge impacts the team members’ interactions with the student. It has been suggested that knowing someone has a guardian may negatively impact how that person is treated (Millar, 2008).

School evaluations. In the implication section of a study conducted by Millar (2003), it was advocated that the evaluation procedures used to determine whether someone was in need of a legal guardian be revised. Additionally, it was advocated that should a guardian be appointed, ongoing assessment occur to determine whether a guardian continued to be needed and whether an individual was furthering their skills to be as self-sufficient as possible. Comparably, based on findings from this study, it is now suggested that the school evaluations be used to help identify what skills a student needs to avoid unnecessary guardian appointments. With regard to reevaluation, IDEIA states that:

a local educational agency (LEA) must ensure that a reevaluation for each child with a disability is conducted in accordance with Sections 614(b) and 614(c) if the LEA determines that the educational or related services needs, including improved academic achievement and functional performance, of the child warrant a reevaluation; or the child’s parents or teacher requests a reevaluation [614(a)(2)].

If a school finds that one of its students has a guardian, then the (re)evaluation process can be used to help determine what skills could be worked on with the aim of the student becoming a self-sufficient adult. In addition, alternatives to guardianship appointments can be considered.

Perhaps more importantly, prior to the student reaching the age of majority, the school
evaluation process can be proactive and specifically discuss the strengths and weaknesses of a student with regard to that individual becoming a self-sufficient adult. Assessment results could inform the IEP team as to what should be worked on to ensure that unnecessary guardianship appointments do not occur. Least restrictive alternatives to guardianship that are specific to the student should be suggested based on assessment results. The alternatives could be implemented and evaluated to determine their effectiveness and adjusted if needed.

Revise IEP form. The IEP manual suggests that ‘age of majority’ issues should be an ongoing educational topic for the student well before the student becomes of legal age (Michigan Department of Education, Section 1-2). Concern has been raised that such a statement may be interpreted that guardians appointments should be considered (Millar, 2007), without information regarding alternatives. Perhaps the IEP form could be modified. Either the deletion of the term guardian could occur as it may wrongly be interpreted that a guardian is recommended/required, or the form could indicate what alternatives are available to students to assist them with decision making. And if a guardian has been appointed, as noted above, IEP goals and objectives could focus on development of skills which may lead to modification or termination of a guardian appointment. Specifically, guardian alternatives to assist students in relation to their post school goals could be systematically explored.

Summary of performance. Once the student’s eligibility under IDEIA terminates due to graduation or exceeds age eligibility, IDEIA 2004 mandates that local educational agencies provide students (if the student has reached the age of majority) or parent/guardian a summary of the student’s academic achievement and functional performance [614(c) (5)(B)]. The summary must include recommendations that suggest how students could be assisted to meet their postsecondary goals. Although the legislation is vague regarding specific content of the SOP, this document has the potential to serve many purposes as it could include information regarding the extent to which the student possess self-determination skills, where support is needed, and what guardianship alternatives are effective. As suggested by Martin, Van Dyke, D’Ottavio, and Nickerson (2007) students can direct what is included in the document that describes their strengths and areas in need of support.

Summary

Although this research presents interesting findings, more research regarding guardianship practices as it relates to young adults during their schooling is essential. For example, research regarding the extent to which PLAAFP statements, goals and objectives interrelate is without question needed. Although there were connections between the IEP elements found in this study, more often than not, goals and objectives did not always address student stated post school goals. Also, IEP forms that use the term “guardian” should be reviewed, and potentially revised. At this point, it is difficult to gauge the impact the IEP language has on practices. The place where IEP members sign the document to indicate consent to its content must also be reviewed so that all IEP members, as well as future members, understand what the signatures imply while acknowledging the rights and roles of young adults. There is an ever increasing research base that suggests that the more self-determined individuals are, the better their educational and post school outcomes are. Paying attention to the impact guardianship could have on an individual’s life is needed to avoid unintended consequences. Supporting youth as they assume adult roles may be challenging for all involved, however through information sharing, exploration, and collaboration, the challenges can be effectively addressed.

References


Baer, R. B., Flexer, R. W., & Dennis, L. (2007). Examining the career paths and transition services of students with disabilities exiting high


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Secondary and Postsecondary Community Activities of Youth with Significant Intellectual Disabilities

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Abstract: We conducted semi-structured interviews with family members of 45 young adults with significant intellectual disabilities who were enrolled in or had graduated from transition-focused programs designed for students ages 18–21. We examined the types of community and social activities in which the young adults engaged. We also explored the resources and supports they used to enable participation in the community, and other activities or resources they desired. In general, families reported that the young adults participated in a wide variety of typical and specialized activities. There were few differences between those students currently enrolled and those who had graduated. Families provided the primary supports for their participation, and the activities tended to be those in which the family also engaged. Families reported that they and the young adults were mostly satisfied with their current community and social situations. However, family members identified several types of activities and public services they wished were more readily available. Findings suggested the importance of increasing young adults’ access to a wider circle of peers beyond their current school and family networks while also advocating with families for specific public services and activities.

Transition-focused educators have long advocated for a vision of postschool life for young adults with disabilities that includes preferred community and social activities, in addition to employment and continuing education (Halpern, 1994). Social and community outcomes are critical to young adults’ quality of life, yet the second National Longitudinal Transition Study (Wagner, 2005) found that students with disabilities are less likely to participate in community activities after leaving school. Youth with intellectual disabilities who have exited the public school system often experience isolation and limited social interactions (Gallagher et al., 2000; Kraemer, Blacher, & Marshal, 1997; Neubert, Moon, & Grigal, 2004).

The Individuals with Disabilities Education Improvement Act (IDEA, 2004) indicates that transition services should be designed to facilitate movement to postschool activities, including community participation. IDEA’s transition assessment and planning requirements require Individualized Education Program (IEP) teams to identify transition services that will help youth with disabilities attain their postschool goals. Some school systems have attempted to support this transition to meaningful adult life in the community for youth with intellectual disabilities by providing community-based education services. The intent of community-based education services is to help students expand their opportunities for community and social engagement while learning to use critical skills and supports in typical environments.

The purpose of this study was to learn more about the community living and social activities of young adults with significant intellectual disabilities who had participated in transition-focused school programs with a community-based component. We hoped to get a clearer picture of the community and social situations of these current and former students, and then, use that information as a springboard for discussion about how educators and others might further support the inclusion of young people with intellectual disabilities in the social life of their communities, especially as they transition from school. Specifically, we examined (a) the types of community affiliations that young adults with signifi-
cant intellectual disabilities had before and after exiting the school system; (b) resources and supports they used to enable participation in the community; and (c) changes they desired in community and social activities.

**Method**

**Participants**

Students were identified through contacts with school personnel who were responsible for providing community-based services to students ages 18–21 and whose programs had provided such services for at least five years. We purposively targeted three school programs in different regions of the state to capture potential differences in urban, suburban and rural areas. The schools sent introductory letters about our study along with consent forms to current and former students and their families. Former students were those who had completed the program within the last four years. We initiated contact through family members with whom all but one of the young adults resided. Follow-up telephone calls were used to confirm receipt of the letters and the family members’ and students’ interest in participating in an interview.

Table 1 presents demographic information for the 45 current and former students, ages 18 to 25, whose experiences we examined. All students had been deemed eligible for participation in the state’s alternate assessment due to significant cognitive disabilities. We did not have access to information about the complete pool of potential participants. However, school personnel told us that our respondent sample of current students generally reflected the demographics of their programs but, in regard to former students, African-Americans and those out of school for more than a year

### Table 1

**Student Demographics**

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>ALL (N = 45)</th>
<th>Current (n = 24)</th>
<th>Former (n = 21)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Male</td>
<td>28</td>
<td>13</td>
<td>15</td>
</tr>
<tr>
<td>Female</td>
<td>17</td>
<td>11</td>
<td>6</td>
</tr>
<tr>
<td><strong>Ethnicity</strong></td>
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<td></td>
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</tr>
<tr>
<td>Caucasian</td>
<td>32</td>
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<td>16</td>
</tr>
<tr>
<td>African-American</td>
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</tr>
<tr>
<td>Hispanic/Latino</td>
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<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Asian-American</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Other</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td><strong>Primary Language</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>English</td>
<td>44</td>
<td>24</td>
<td>20</td>
</tr>
<tr>
<td>Spanish</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>*<em>School Label</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trainable</td>
<td>32</td>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td>Unknown</td>
<td>8</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>Severe</td>
<td>4</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Educable</td>
<td>1</td>
<td>0</td>
<td>1</td>
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<tr>
<td><strong>Exceptional Support Needs</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medical</td>
<td>5</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Behavioral</td>
<td>5</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Both</td>
<td>2</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td><strong>Average Age</strong></td>
<td>20.9 yrs</td>
<td>19.4 yrs</td>
<td>22 yrs</td>
</tr>
</tbody>
</table>

*Note. These categories are used by the state and roughly correspond to an old mental retardation classification system of mild (educable), moderate (trainable), severe, and profound. “Unknown” refers to student labels that were unconfirmed or variously reported.
were less well represented among respondents, probably due to out-of-date contact information and limited replies from their families. Twenty-seven (27) of the participants resided in more densely populated urban and suburban areas of the state, and eighteen (18) resided in areas that were less densely populated suburban or rural.

**Interviews**

Interviews were primarily conducted in English by telephone, although families were offered face-to-face interviews if they preferred. A research assistant completed one interview in Spanish and provided written responses in English. Respondents in most cases were the youths’ mothers. On average, interviews lasted 45 minutes. We used a semi-structured interview to elicit detailed information about each youth’s community and social activities, as well as those they might desire or need. The interview included the following major sections:

**Part I**: Identifying and demographic information about the young adult and respondents, including exceptional behavioral or medical needs of the youth;

**Part II**: A list of all the young person’s current community and social activities. Three of these activities—identified as most important or frequent by the respondents—were discussed in depth including length of involvement, location, transportation, other people involved, and required supports;

**Part III**: Satisfaction (rated as “okay” or “could be different”) with current community living and social activities presented from a structured list of possible activities, and comments about desired or needed community situations; and

**Part IV**: List of other people in the young adult’s social network as a means to identify other activities or community resources that might not have been mentioned in earlier parts of the interview.

The list of exceptional behavioral or medical needs included in Part I and the list of community living and social activities included in Part III were adapted from components of the American Association on Intellectual and Developmental Disabilities (2004) *Supports Intensity Scale*. The *Scale* is an assessment of the kinds of supports that individuals with intellectual disabilities use or need in order to meaningfully participate in their communities. A copy of the Interview form used in this study is available from the first author.

**Analyses**

We used descriptive analytic techniques recommended for survey and case study research (Miles & Huberman, 1994). Specifically, we examined the youths’ community and social activities by creating a series of within- and across-case tables displaying the dimensions of activities and issues identified by respondents. We repeatedly tallied, cataloged and compared experiences across multiple factors including student status, student gender, geographic location, activity type, activity entry age, participant roles during activity, and supports used. Decisions about how to categorize ambiguous comments (e.g., a respondent said a situation was “okay”, but then complained about the situation) were flagged by the interviewer and then discussed by the researchers to reach consensus. All interview records and summary data tables were independently reviewed by a second researcher to identify and correct incomplete or inaccurate information.

**Results**

Respondents identified an average of 5.02 total community activities per student (5.28 for former students; 4.83 for current). There was little difference, on average, between the total number of community activities for females and males (5.17 vs. 5.08) or for more or less densely-populated areas (4.50 vs. 5.54), although these averages were skewed slightly due to the fact that one young woman residing in a less densely populated area of the state reported a total of twelve community activities. All youth engaged in at least one weekly community activity. Forty percent reported at least two weekly activities, and slightly more than one-third (35.6%) reported three or more weekly community activities.

Tables 2 and 3 show how many of the current or former students were reported as participating in various activities, from most to
least frequently mentioned. The tables are least frequently mentioned. The tables are
separated into “generic” and “specialized,” indicating whether the activities were described as being especially designed for people with disabilities. While Table 3 contains all specialized activities identified in the interviews, Table 2 presents only the ten most often mentioned generic activities of current and former students. Individual respondents mentioned a wide variety of other generic activities such as volunteering, camping, martial arts, attending concerts, horseback riding, and going to a fitness center. During generic activities, current and former students interacted primarily with family members. When engaged in specialized community activities, youth interacted more often with their peers — typically others with disabilities rather than those without.

Each respondent was asked to select three activities reported in the first part of the inter-

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<tbody>
<tr>
<td>15 Shopping</td>
<td>15 Family</td>
<td>2 D</td>
<td>13 Shopping</td>
<td>12 Family</td>
<td>8 W</td>
</tr>
<tr>
<td></td>
<td>1 Peers</td>
<td>6 W</td>
<td></td>
<td>1 Peers</td>
<td>4 M</td>
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<td></td>
<td></td>
<td>3 M</td>
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<td>1 O</td>
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<td></td>
<td></td>
<td>4 O</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12 Visit Family/Friends</td>
<td>9 Family</td>
<td>3 W</td>
<td>9 Church</td>
<td>9 Family</td>
<td>8 W</td>
</tr>
<tr>
<td></td>
<td>3 Peers</td>
<td>5 M</td>
<td></td>
<td></td>
<td>1 Acquaint.</td>
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<td></td>
<td></td>
<td>4 O</td>
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<td>1 O</td>
</tr>
<tr>
<td>9 Church</td>
<td>8 Family</td>
<td>7 W</td>
<td>7 Movies</td>
<td>4 Family</td>
<td>2 W</td>
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<tr>
<td></td>
<td>1 Peers</td>
<td>2 O</td>
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<td>3 Peers</td>
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<td>1 Peer &amp;</td>
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<td>Family</td>
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<tr>
<td>5 Eat at a Restaurant</td>
<td>4 Family</td>
<td>3 W</td>
<td>5 Visit Family/Friends</td>
<td>5 Family</td>
<td>2 W</td>
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<td></td>
<td>1 Peers</td>
<td>1 M</td>
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<td>3 O</td>
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<td></td>
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<td>1 O</td>
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<tr>
<td>4 Play outside/Basketball, Swimming</td>
<td>1 Family</td>
<td>1 D</td>
<td>4 Eat at a Restaurant</td>
<td>4 Family</td>
<td>1 W</td>
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<tr>
<td></td>
<td>3 Peers</td>
<td>1 W</td>
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<td>2 M</td>
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<td></td>
<td>2 O</td>
<td></td>
<td></td>
<td>1 O</td>
</tr>
<tr>
<td>4 Watch Video/TV/Games</td>
<td>1 Family</td>
<td>3 D</td>
<td>4 Family Trips</td>
<td>4 Family</td>
<td>4 O</td>
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<tr>
<td></td>
<td>1 Peers</td>
<td>1 W</td>
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<td></td>
<td>2 Solo</td>
<td></td>
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<tr>
<td>3 Listen to Music/Play Music</td>
<td>1 Family</td>
<td>2 D</td>
<td>4 Play Outside/ Basketball/Swimming</td>
<td>2 Family</td>
<td>1 D</td>
</tr>
<tr>
<td></td>
<td>2 Peers</td>
<td>1 W</td>
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<td>1 W</td>
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<td>1 O</td>
</tr>
<tr>
<td>3 Movies</td>
<td>3 Family</td>
<td>1 W</td>
<td>3 Family Outing</td>
<td>3 Family</td>
<td>2 M</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 M</td>
<td></td>
<td></td>
<td>1 O</td>
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<td></td>
<td></td>
<td>1 O</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 Walking</td>
<td>1 Family</td>
<td>1 D</td>
<td>3 Walking</td>
<td>1 Family</td>
<td>1 D</td>
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<tr>
<td></td>
<td>1 Solo</td>
<td>2 W</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2 W</td>
</tr>
<tr>
<td>2 Ride Bike (to Store, Friends)</td>
<td>1 Peers</td>
<td>1 D</td>
<td>3 Bowling</td>
<td>2 Family</td>
<td>1 W</td>
</tr>
<tr>
<td></td>
<td>1 Solo</td>
<td>1 D/W</td>
<td></td>
<td>1 Peers</td>
<td>1 M</td>
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<td></td>
<td></td>
<td>1 Peer</td>
<td>1 O</td>
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<td></td>
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<td></td>
<td></td>
<td>(Boyfriend)</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>&amp; Family</td>
<td></td>
</tr>
</tbody>
</table>

Note: D = Daily; W = Weekly; M = Monthly; O = Occasionally.
view to discuss in more detail. The chosen activities were favorite or frequent activities of the young person. Because not all the 45 young adults participated in three or more community activities, only 124 activities in total were identified. For 42% of these selected activities, the youth participated with no special supports. When the youth required support, it was provided most frequently by family or friends (82% of selected activities requiring support) and usually in the form of verbal or gestural prompts. For a few selected activities (18% of those requiring supports), the youth required physical assistance or assistive technology to enable meaningful participation.

Table 4 shows at what age and by whom the young adults were connected to the selected activities in which they were currently engaged. The majority of the selected activities had been introduced to the young adults in childhood (before twelve years of age) and typically by their families. Specialized activities were most often introduced by schools.

Table 5 shows how respondents felt about the young adults’ community and social activities. We prompted respondents to tell us whether they believed the young adult might report something differently than they had as a family member, and if this was the case, we counted the “student” response. Also, if a respondent first reported a situation was “okay,” but then went into further discussion of some things that could make it better, we counted the response in the “could be different” column.

What could be Different

Desire for more peer interactions. Some families wished for the young adults to have a wider circle of friends and activities. Interactions with peers tended to be through specialized activities (i.e., those designed especially for people with disabilities). Families said that they knew of few social activities that were age-appropriate for young adults and not also

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**TABLE 3**

Specialized Activities of Current and Former Students

<table>
<thead>
<tr>
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<tr>
<td>9 Special Olympics</td>
<td>9 Peers</td>
<td>6 W</td>
<td>9 Special Olympics</td>
<td>10 Peers</td>
<td>10 W</td>
<td></td>
</tr>
<tr>
<td>6 Sports Camp</td>
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<td>4 W</td>
<td>5 Dances</td>
<td>5 Peers</td>
<td>3 M</td>
<td></td>
</tr>
<tr>
<td>3 Boy Scouts</td>
<td>3 Peers</td>
<td>3 W</td>
<td>4 Theater Group</td>
<td>4 Peers</td>
<td>4 W</td>
<td></td>
</tr>
<tr>
<td>3 Tap Dancing</td>
<td>3 Peers</td>
<td>3 W</td>
<td>2 Father/Son Night Out</td>
<td>2 Peers</td>
<td>1 M</td>
<td></td>
</tr>
<tr>
<td>2 Special Fund Raisers (Fashion Show, Concert)</td>
<td>2 Peers</td>
<td>2 O</td>
<td>2 Sports Camp</td>
<td>2 Peers</td>
<td>1 W</td>
<td></td>
</tr>
<tr>
<td>1 Teen Night</td>
<td>1 Peers</td>
<td>1 W</td>
<td>1 Boy Scouts</td>
<td>1 Peers</td>
<td>1 W</td>
<td></td>
</tr>
<tr>
<td>1 Music Class</td>
<td>1 Peers</td>
<td>1 W</td>
<td>1 Religious Education</td>
<td>1 Peers</td>
<td>1 M</td>
<td></td>
</tr>
<tr>
<td>1 Father/Son Night Out</td>
<td>1 Family</td>
<td>1 W</td>
<td>1 Movie Night</td>
<td>1 Peers</td>
<td>1 O</td>
<td></td>
</tr>
<tr>
<td>1 Community Outing</td>
<td>1 Peers</td>
<td>1 W</td>
<td>1 Summer Camp (1 week)</td>
<td>1 Peers</td>
<td>1 O</td>
<td></td>
</tr>
<tr>
<td>1 Family “Fun Day”</td>
<td>1 Family</td>
<td>1 W</td>
<td>1 Speaking Engagements</td>
<td>1 Acquaint.</td>
<td>1 O</td>
<td></td>
</tr>
</tbody>
</table>

Note. D = Daily; W = Weekly; M = Monthly; O = Occasionally.
dependent upon family participation. Some suggested that it was difficult to overcome physical or communication challenges when young adults tried to connect with friends after school or work in person, by telephone, or e-mail. Many noted that their young adults had or expressed interest in having romantic girl- or boy-friend relationships.

**Ambivalence about public transportation.** Most families used personal vehicles to get to and from activities. Some noted that their young adults would probably go more places if they weren’t dependent upon family transportation. However, they had mixed feelings about their young adults using public transportation or paratransit services for commu-

### TABLE 4

**Percentages of Selected Activities: Age Started? Connected by Whom?**

<table>
<thead>
<tr>
<th>Factors</th>
<th>Totals (N = 124)</th>
<th>Current Students (n = 46)</th>
<th>Former Students (n = 36)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Entry Age</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0–12</td>
<td>54.8%</td>
<td>56.5%</td>
<td>27.8%</td>
</tr>
<tr>
<td>13–17</td>
<td>24.2</td>
<td>28.3</td>
<td>55.6</td>
</tr>
<tr>
<td>18–21</td>
<td>16.9</td>
<td>15.2</td>
<td>16.7</td>
</tr>
<tr>
<td>Post-21</td>
<td>4.0</td>
<td>n/a</td>
<td>5.6</td>
</tr>
<tr>
<td><strong>Connection</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Family</td>
<td>60.5%</td>
<td>71.7%</td>
<td>16.7%</td>
</tr>
<tr>
<td>School</td>
<td>15.3</td>
<td>4.3</td>
<td>38.9</td>
</tr>
<tr>
<td>Friend</td>
<td>9.7</td>
<td>13.0</td>
<td>22.2</td>
</tr>
<tr>
<td>Other</td>
<td>14.5</td>
<td>10.9</td>
<td>22.2</td>
</tr>
</tbody>
</table>

### TABLE 5

**Percent of Respondents Indicating a Situation “Could be Different”**

<table>
<thead>
<tr>
<th>Community Living Activities</th>
<th>All (N = 45)</th>
<th>Current (n = 24)</th>
<th>Former (n = 21)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Getting from place to place throughout the community</td>
<td>40%</td>
<td>33%</td>
<td>48%</td>
</tr>
<tr>
<td>Using public services in the community</td>
<td>38%</td>
<td>38%</td>
<td>38%</td>
</tr>
<tr>
<td>Interacting with community members</td>
<td>38%</td>
<td>33%</td>
<td>43%</td>
</tr>
<tr>
<td>Participating in recreation/leisure activities in the community settings</td>
<td>33%</td>
<td>33%</td>
<td>33%</td>
</tr>
<tr>
<td>Participating in preferred community activities</td>
<td>31%</td>
<td>33%</td>
<td>29%</td>
</tr>
<tr>
<td>Shopping and purchasing goods and services</td>
<td>29%</td>
<td>25%</td>
<td>33%</td>
</tr>
<tr>
<td>Going to visit friends and family</td>
<td>16%</td>
<td>13%</td>
<td>19%</td>
</tr>
<tr>
<td>Accessing public buildings and settings</td>
<td>16%</td>
<td>13%</td>
<td>19%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Social Activities</th>
<th>All (N = 45)</th>
<th>Current (n = 24)</th>
<th>Former (n = 21)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Socializing outside the household</td>
<td>29%</td>
<td>29%</td>
<td>29%</td>
</tr>
<tr>
<td>Making and keeping friends</td>
<td>29%</td>
<td>29%</td>
<td>29%</td>
</tr>
<tr>
<td>Communicating with others about personal needs</td>
<td>27%</td>
<td>29%</td>
<td>24%</td>
</tr>
<tr>
<td>Using appropriate social skills</td>
<td>22%</td>
<td>17%</td>
<td>29%</td>
</tr>
<tr>
<td>Engaging in loving and intimate relationships</td>
<td>22%</td>
<td>25%</td>
<td>19%</td>
</tr>
<tr>
<td>Engaging in volunteer work</td>
<td>20%</td>
<td>21%</td>
<td>19%</td>
</tr>
<tr>
<td>Socializing within the household</td>
<td>13%</td>
<td>13%</td>
<td>14%</td>
</tr>
</tbody>
</table>
nity and social activities. They expressed concerns about service reliability as well as a lack of supervision for the young person.

**Access to public spaces and services.** Several respondents expressed concerns about supervision of young adults during activities that involved monetary or social interactions with strangers. Physical accessibility of public spaces was a challenge for those who used wheelchairs or who had other mobility issues. Individual families identified several types of public services they wished were more readily available, including: additional employment options; access to expanded medical, dental, or eye services and coverage; reading tutor services; additional support for school transition services; better communication with adult service agencies; and help connecting to new agencies following a move.

**Discussion**

**Limitations**

This study provided a snapshot of the community and social situations of a statewide sample of youth with significant intellectual disabilities who had received transition-focused, community-based educational services during their final years in school. This picture may be incomplete in several respects that should be considered when interpreting the results. First, the experiences of some groups, especially African-American former students and students who had graduated more than two years prior to the study, may be less well represented. Current contact information was less often available for those groups. Second, family members may have responded differently to questions than the youth would have. For example, during the interviews family members might not have recalled some activities in which the youth were engaged. Or, they might have had a different perspective or information than the youth about a community or social situation. We attempted to correct for this potential limitation by asking about activities in several ways and by prompting the responding family member to state whether they thought the student might have responded differently to questions. This questioning often resulted in further clarification of the responses with additional detail provided about the young person’s interests.

**Acknowledging Family Contexts**

Current and former students engaged in a variety of preferred community living and social activities. Most were involved in both generic and specialized activities. Activities tended to be those in which the families also engaged. Families provided the primary supports for their participation and dominated most youths’ social networks. These findings are consistent with prior research suggesting that families’ interests and activities have a strong impact on the extent of community inclusion experienced by youth, and they are a primary outlet for recreation/leisure activities (Fennick & Royle, 2003; Gallagher et al., 2000; Kleinert, Miracle, & Sheppard-Jones, 2007; Kraemer et al. 1997). Individuals with disabilities often spend a large amount of their time participating in home and family activities (Cordes & Howard, 2005; Kraemer et al.).

A remarkable finding in this study was that students were most likely to be engaged as young adults in activities introduced to them in childhood by their families. We speculated that those activities persisted because they met broader family needs and could be woven into the fabric of daily life. This suggests that when developing community-based curricula and conducting transition planning schools must attend to the fact that the availability, affordability and accessibility of community activities are likely to influence families’ and youths’ continued involvement in such activities post-graduation (Certo et al., 2003; Schloss, Smith, & Kiehl, 1986). Further, families’ concerns about the safety and availability of public transportation and access to alternative transportation must be discussed as part of transition assessments and planning.

**Implications for Facilitating Transitions**

In this study, families reported that they and the young adults were mostly satisfied with their current community and social situations. However, family members identified several types of activities and public services they wished were more readily available. As noted
in other studies, families may lack knowledge of community resources, or they may experience a gap in service connections as students move from the school system into the more limited arena of adult services (Aveno, 1987; Certo et al., 2003; Neubert, Moon, & Grigal, 2002; Roessler & Peterson, 1996). Schools may need to advocate with families for specific public services and activities and actively assist them to establish community-based supports before students exit school (Certo et al., 2003; Hamre-Nietupski et al., 1992; Modell & Valdez, 2002; Neubert et al., 2002). Schools’ provision of community-based services and supports to students with intellectual disabilities during the transition years is important, but insufficient. Although not mandated, we think that the concept of a family service plan, which is familiar in early childhood education, is a relevant model for students who by choice or circumstance are likely to continue residing with their families as adults. Transition planning conducted with a family-support focus also may be more likely to address cultural factors that influence goal-setting, service delivery and community integration.

It was curious to us that schools, despite their community-based curricula, were more likely to introduce students to specialized activities in which other students with disabilities were engaged. This may be due to the “substantially separate” structure of many programs for 18–21 year olds, in which students are present in integrated settings, but largely engaged in activities parallel to or separate from those of their peers without disabilities (Hart, Grigal, Sax, Martinez, & Will, 2006). Further, these youth, like most other youth, may have enjoyed opportunities to make friends and engage in activities with peers they perceived as having similar goals and interests.

Families in this study stressed the importance of sustaining and expanding the young adults’ circle of peers with and without disabilities. As students transition from school to adult life, schools must make intentional efforts to increase students’ access to a wider peer group by supporting social interactions during community activities with peers who do not have disabilities. Further, schools and adult service agencies must assist students and families to strategize about how to preserve friendships and initiate other social connections in the postsecondary environment. Even as community-based programs meet the challenge of providing a greater emphasis on meaningful educational interventions in naturalistic, community-based settings they must also set their sights on creating connections to community organizations and adult services that emphasize the continued development of young adults’ social relationships with friends and other community members.

References


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Review of Recent Research Using Constant Time Delay to Teach Chained Tasks to Persons with Developmental Disabilities

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Abstract: We reviewed twelve studies that used the constant time delay (CTD) procedure to teach chained tasks to individuals with developmental disabilities from years 1996–2006. Variables analyzed include types of tasks that have been taught with the procedure, how effective CTD has been in teaching participants, and whether researchers have investigated maintenance, generalization, and social validity variables. Results across studies indicate that CTD is an effective strategy for teaching chained tasks to individuals with developmental disabilities including food preparation, purchasing skills, and leisure skills. Furthermore, the generalization data indicated that skills learned through CTD procedure generalized across settings, materials, and persons. Implications for practitioners and future researchers are discussed.

Issues of adaptive competence and functional independence have been identified as particularly challenging for individuals with developmental disabilities (Niccols, Atkinson, & Pepler, 2003). Consequently, educational programming for students with developmental disabilities must include functional skills. Functional skills are those required in domestic, vocational, and community environments in which every individual will be required to operate. Functional skills facilitate independence and are crucial if individuals with developmental disabilities are going to have access to least restrictive environments. The Individuals with Disabilities Act 2004 (IDEA) requires that all students have access to the general education curriculum. Consequently, there is an increasing focus on teaching functional skills in general education classrooms. The challenge for teachers is how to identify and use instructional strategies that are effective for teaching functional skills that would result in generalized outcomes for students with developmental disabilities. Consequently, teachers need information about instructional strategies that are validated, and efficient in terms of time and use. Time delay is one of such strategies.

The “time delay” is the amount of time between a teacher’s cue for a student to engage in a target behavior (e.g. “Allison, pick up the shoe”) and the delivery of a prompt (a gesture by the teacher towards the shoe). Time delay is a response prompting, near errorless learning approach that provides frequent opportunities for the student to respond and for the teacher to provide immediate feedback or consequences for student responses. Time delay procedures begin with 0 s (seconds) delay trials. When the student is successful with the 0 s delay trial, a predetermined time (a delay) is inserted between the task request and the prompt (Kratzer, Spooner, Test, & Koorland, 1993). During 0 s delay trials the student receives assistance from the teacher and the delay intervals provide opportunity for the student to perform the desired response independently. When teaching for acquisition or learning a new task, prompts are usually provided simultaneously with the task request. This minimizes errors and increases the student’s success.

There are two types of time delay proce-
dures: constant time delay (CTD) and progressive time delay (PTD). In CTD, the time interval between the cue to perform a task and the controlling prompt is delivered after a specified amount of time has elapsed (e.g., 2, 3 or 4 s wait time). This time interval remains constant throughout the remaining trials until criterion is attained (Kratzer et al., 1993; Schuster, Morse, Ault, Doyle, & Crawford, 1998). Wolery et al. (1992) found that the most frequent delay duration used was 4 s. In the PTD procedure, however, the time interval between the cue and the prompt is varied as student responding increases. For example after successfully completing the 0 s trial, the delay interval could be extended to 2 s. If the student does not initiate a response within 2 s, the teacher provides prompting and the student is reinforced for waiting for the prompt instead of performing an incorrect response. Both time delay strategies allow the student to progressively transfer stimulus control from the prompt (i.e., responding correctly after the prompt) to the stimulus (responding correctly before the prompt).

Touchette (1971) was the first researcher to investigate using the time delay procedure to teach three severely retarded students to discriminate between objects of different color and form. Since then it has been used to teach students with varied disabilities including learning disabilities (Stevens & Schuster, 1987); mental retardation (Bozkurt & Gursel, 2005; Knight, Ross, Taylor, & Ramasamy, 2003; Malley, Datillo, & Gast, 2002); multiple disabilities (Wolery et al., 1992); development disabilities (Schoen & Sivil, 1989), and autism (Ault, Wolery, Gast, Doyle, & Eizenstat, 1988). CTD has also been effective in teaching a variety of tasks such as sightword reading (Gast, Ault, Wolery, Doyle, & Belanger, 1988; Knight et al., 2003), spelling (Stevens & Schuster, 1987), numeral identification (Ault et al., 1988), verbalization (Matson, Sevin, & Box, 1993), cooking (Schuster, Gast, Wolery, & Guiltinan, 1988), banking (Donnel & Ferguson, 1989), and laundry skills (Miller & Test, 1989), purchasing skills (McDonnel, 1987), snack and drink preparation (Bozkurt & Gursel), and in minimizing disruptive behaviors (Heckaman, Alber, Hooper, & Heward, 1998).

Although there have been many studies conducted using the CTD, there have been only two reviews (Schuster et al., 1998; Wolery et al., 1992). Wolery and colleagues reviewed studies that used the CTD procedure to teach discrete tasks from the year 1978 to 1992. The authors defined discrete tasks as “behaviors that have a relatively short duration, are taught as a single unit, and do not involve a task analysis” (p. 242). Examples of discrete tasks include sight word reading, spelling, initiating verbalization, manual signing, etc. The disability groups included in the review were learning disabilities, behavior disorders, and developmental disabilities. Learning disabilities made up 45% of all disability types. In addition, 10 of the 36 studies reviewed were unpublished masters or doctoral theses. The investigators concluded that the CTD was effective for teaching skills to almost all participants in the studies reviewed.

Schuster et al. (1998) also reviewed studies using the CTD to teach chained tasks. Chained tasks were defined as tasks that involve a series of behaviors linked together to form a complex skill. Examples of chained tasks include baking cookies, dressing, purchasing, etc. Chained tasks often require some degree of task analysis to identify the required steps in the process. In their review, Schuster et al. did not establish any inclusion criteria for disability types. However, since chained tasks are mostly used for individuals with moderate to severe disabilities, the majority of participants in the studies reviewed were individuals with moderate to severe developmental disabilities.

The two reviews discussed above (Schuster et al., 1998; Wolery et al., 1992) have undoubtedly provided us with an understanding of the trends on the use of CTD for teaching individuals with disabilities. However, since the publication of these two articles, there has been more research on the use of CTD for teaching individuals with disabilities, especially those with developmental disabilities. Therefore, there is a need to know the current status of CTD research.

We reviewed studies that used the CTD instructional procedure to teach functional skills specifically to individuals with developmental disabilities from 1996 through the first half of 2007. Our focus for this review was to evaluate the effectiveness and social validity.
data, and the measures taken by researchers to ensure generalized outcomes for participants. We answered the following questions in this review: (a) what is the effect of CTD? (b) what steps have the researchers taken to ensure that training resulted in generalized outcomes for the participants? and, (c) have the investigators measured social validity?

Method

A computer search was conducted using the PsycInfo and ERIC databases with the following descriptors: time delay, constant time delay, delayed prompt, delayed cue, chained responses, chained tasks, functional skills, disability, developmental disability, mental retardation, autism, and severe disability. The studies were included for analysis based on three criteria. First, that a CTD procedure was used to teach a chained task. CTD was defined as an instructional procedure involving trials of 0 s delay between the task direction and the controlling prompt in initial stages followed by fixed second delay trials. In this respect, studies in which variable amounts of delay seconds were used at any point after the 0 s delay trials were excluded. Second, the study must have had at least one participant with a developmental disability. The third criterion was that the study was published in a peer-reviewed journal within the time frame 1996 to 2006. Ancestral search did not reveal any further studies. Twelve studies that met the criteria were analyzed. We excluded a study by Wall and Gast (1997a) because the CTD was used to train caregivers and not individuals with developmental disabilities. See Table 1 for details of studies included and variables analyzed.

Results

Demographics

Subjects. Fifty-six individuals with developmental disabilities participated in the 12 studies reviewed. Thirty-four of the 56 (65.4%) were males, 18 (34.6%) were females, and the gender of 4 (7%) participants was not specified. The participants varied in age. The teenage group (13–19 years) represented the largest group (n = 24), followed by elementary age students (6–12 years; n = 18), and adults (above 19 years) representing the smallest group (n = 14). The functioning levels reported for all participants were in the moderate to severe mental retardation except for one participant who was reported to be functioning in the mild mental retardation range (Dipipi-Hoy & Jitendra, 2004). Researchers in some studies reported some of their participants as having comorbid conditions of Down syndrome (Bozkurt & Gursel, 2005; Graves, Collins, Schuster, & Kleinert, 2005), autism (Wall & Gast, 1997b; Yilmaz, Birkan, Konukman, & Erkan, 2005), and cerebral palsy (Dipipi-Hoy & Jitendra) along with mental retardation.

Settings. The studies were conducted in a variety of settings. Two of the 12 studies were conducted in elementary school setting, and another two in secondary school setting. Also, five studies took place in two settings: one in home and school, two in school and community settings, another one in home and community settings, yet another one in home and university unit. Others studies were conducted in single settings: one in a university unit, two in residential facility (2 of 12), and three in rehabilitation facility.

Trainers. Interventions were conducted mostly by adults. Investigators in three of the 12 studies utilized classroom teachers as trainers, in another four, the trainers were researchers, and in one study, the trainer was a caregiver. In two other studies, the investigators reported collaborations between the researcher and classroom teacher (Morse & Schuster, 2000), and researcher and parents (Dipipi-Hoy & Jitendra, 2004). Finally, in two other studies the investigators did not specify the status of the trainers (Wall & Gast, 1997b, 1999). Overall, this data shows that in six of the 12 studies, the trainers were teachers, parents and/or caregivers.

Target behaviors and instructional format. Six categories of target behaviors were taught in the 12 studies reviewed. The most frequent skill category taught was leisure and recreation in 4 of 12 studies (Wall & Gast, 1997b; Wall, Gast, & Royston, 1999; Yilmaz et al., 2005; Zhang, Cote, Chen, & Liu, 2004). Food preparation skills were taught in three studies (Bozkurt & Gursel, 2005; Fiscus, Schuster, Morse, & Collins, 2002; Graves et al., 2005). Researchers in other studies examined pur-
## TABLE 1
Summary of Demographic and Procedural Variables of Reviewed Studies

<table>
<thead>
<tr>
<th>Authors</th>
<th>Participants Age/Disability</th>
<th>Target Behavior(s)</th>
<th>Setting</th>
<th># of Seconds of delay interval</th>
<th>Design</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bozkurt &amp; Gursel</td>
<td>1. 14y, Mod. MR</td>
<td>Snack, &amp; drink preparation</td>
<td>Rehabilitation center</td>
<td>4</td>
<td>Multiple probe</td>
<td>All participants learned and generalized skills</td>
</tr>
<tr>
<td>(2005)</td>
<td>2. 16y, Down</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. 17y, Mod. MR</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dipipi-Hoy &amp; Jitendra</td>
<td>1. 16y, CP</td>
<td>Purchasing skills</td>
<td>Community settings, and home</td>
<td>2</td>
<td>Multiple probe</td>
<td>Parents successful in teaching skills to daughters</td>
</tr>
<tr>
<td>(2004)</td>
<td>2. 20y, Mod. MR</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. 16y, Down, Mod. MR</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Fiscus et al.</td>
<td>8y–12 y Mod/ Sev MR</td>
<td>Food preparation</td>
<td>Elementary school classroom</td>
<td>5</td>
<td>Multiple probe</td>
<td>3 of 4 participants acquired skill. 4th participant did not meet criterion on first skill</td>
</tr>
<tr>
<td>(2002)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Graves et al.</td>
<td>1. 16y, Mod. MR</td>
<td>Cooking skills</td>
<td>Secondary school</td>
<td>5</td>
<td>Multiple probe</td>
<td>All participants learned and generalized skills</td>
</tr>
<tr>
<td>(2005)</td>
<td>2. 18y, Mod. MR</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. 20y, Mod. MR</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Morse &amp; Schuster</td>
<td>1. 12y, MR (4)</td>
<td>Shopping for groceries</td>
<td>Elementary school Grocery store</td>
<td>4</td>
<td>Multiple probe</td>
<td>6 students learned and generalize skills. 2 students improved their skills but did not complete the study. 2 could not start the study at all due to end of school year</td>
</tr>
<tr>
<td>(2000)</td>
<td>2. 8y, MR (1)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. 9y, Autism (1)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4. 9y, Down (1)</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>5. 5y, MR (1)</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>6. 6y, Autism (2)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stonecipher et al.</td>
<td>1.12y, Mod. MR</td>
<td>Gift wrapping</td>
<td>Elementary school</td>
<td>5</td>
<td>Multiple probe</td>
<td>3 of the 4 students learned and generalized skills Fourth student learned 2 of 3 skills</td>
</tr>
<tr>
<td>(1999)</td>
<td>2. 9y, Mod. MR</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. 9y, Mod. MR</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4. 9y, Mod. MR</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wall &amp; Gast</td>
<td>1. 15y. Autism</td>
<td>Leisure Skills</td>
<td>Homes</td>
<td>4</td>
<td>Multiple probe</td>
<td>Caregivers were able to teach the skills to their adolescent sons successfully</td>
</tr>
<tr>
<td>(1997b)</td>
<td>2. 16y. Autism</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. 37y. Mod. MR</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4. 43y, Sev. MR</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wall &amp; Gast,</td>
<td>1. 16y Mod. MR</td>
<td>Vocational skills</td>
<td>Community school classroom</td>
<td>4</td>
<td>Multiple probe</td>
<td>All participants learned the target skills and some incidental information</td>
</tr>
<tr>
<td>(1999)</td>
<td>2. 17y Mod. MR</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. 18y Mod. MR</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>4. 19y Mod. MR</td>
<td></td>
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<tr>
<td></td>
<td>5. 20y Mod. MR</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>6. 22y Mod. MR</td>
<td></td>
<td></td>
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<tr>
<td>Wall et al.</td>
<td>1. 20y, Sev. MR</td>
<td>Leisure skills</td>
<td>Secondary school</td>
<td>4</td>
<td>Multiple probe</td>
<td>All participants learned 2 or 3 leisure skills. Increase in choice making and social behaviors</td>
</tr>
<tr>
<td>(1999)</td>
<td>2. 21y, Autism</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>3. 20y Sev. MR</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4. 20y, Sev. MR</td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>Yilmaz et al.</td>
<td>1. 9y, Autism (3)</td>
<td>Aquatic play skill</td>
<td>University unit</td>
<td>4</td>
<td>Multiple probe</td>
<td>All participants acquired the aquatic play skills</td>
</tr>
<tr>
<td>(2005)</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>
chasing skills (Dipipi-Hoy & Jitendra, 2004; Morse & Schuster, 2000), gift wrapping (Stonecipher, Schuster, Collins, & Grisham-Brown, 1999), vocational skills (Wall & Gast, 1999) and motor skills (Zhang, Gast, Horvat, & Dattilo, 2000).

Several behaviors were taught in three instructional formats: 1:1; dyads; and small group. Researchers in some of the studies used two levels of training formats. For example, Dipipi-Hoy and Jitendra (2004) trained mothers, who in turn trained their daughters. Similarly, Wall and Gast (1997b) trained caregivers, who also trained the individuals in their care. As a result, four categories were reported: 1:1 only (9 of 12), 1:1 plus dyad (2 of 12), small group only (1 of 12) (Stonecipher et al., 1999).

Procedural Parameters

Number of 0 s delay sessions and delay intervals. Zero second delay sessions were implemented in all but one study (Dipipi-Hoy & Jitendra, 2004). In a study by Yilmaz et al. (2005), the number of 0 s delay trials implemented was not specified even though the investigators reported using them. Investigators in 5 of 12 studies implemented 0 s delay trials during two sessions and in two studies 0 s delays were used during three sessions. Zero second delay was used in four sessions in one study (Stonecipher et al., 1999), while in two other studies the 0 s delays were varied based on the task and rate of student response. For example, Bozkurt and Gursel (2005) reported using one or two 0 s sessions depending on the task, and participant involved, while Graves et al. (2005) used the 0 s delay until the students achieved 100% correct responses for two consecutive sessions.

The delay intervals used in the studies ranged from 2 s to 5 s. The majority of studies used the 4 s delay interval (7 of 12) followed by 5 s delay interval (4 of 12), and 2 s delay interval (1 of 12). It is evident from the analysis that regarding the number of sessions during which 0 s was used; the majority of the studies used 0 s delays for two sessions. Similarly, the 4 s delay interval was the most frequently used.

The 0 s delay sessions were used for acquisition and subsequent delay intervals were used for maintenance.

Control prompts. The control prompts used in the reviewed studies varied in type and form. A control prompt is a form of assistance meant to increase the probability of correct responding. Four types of prompts were used: verbal, visual, physical, and modeling. However, these prompts were provided in different combinations such as verbal and model prompts (Bozkurt & Gursel, 2005; Fiscus et al., 2002; Stonecipher et al., 1999), verbal plus physical prompts (Wall et al., 1999), physical prompt only (Zhang et al., 2004; 2000) model prompt only, verbal prompt only (Dipipi-Hoy & Jitendra, 2004; Morse & Schuster, 2000), verbal plus visual prompts (Wall & Gast, 1997b, 1999), and video model plus verbal prompts (Graves et al., 2005). Researchers in

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### TABLE 1—(Continued)

<table>
<thead>
<tr>
<th>Authors</th>
<th>Participants Age/Disability</th>
<th>Target Behavior(s)</th>
<th>Setting</th>
<th># of Seconds of delay interval</th>
<th>Design</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zhang et al. (2000)</td>
<td>16–19y Sev. MR Motor skill completion durations Residential facility</td>
<td>4 Multiple probe</td>
<td>All participants reduced motor skill completion duration</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zhang et al. (2004)</td>
<td>39y Bowling skill Residential facility</td>
<td>5 ABAB</td>
<td>Participant acquired bowling skill</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. Numbers appearing in parentheses after a participant under the disability and age column indicate the number of participants with same disability and age in a study. Mod. = moderate; Sev. = severe; MR = mental retardation.
one study did not specify the type of prompt used (Yilmaz et al., 2005).

Consequences. The CTD procedure yields five types of responses: (a) unprompted correct response occurs when the student responds correctly before the prompt is given; (b) prompted correct response occurs when the student responds correctly after the prompt is delivered; (c) unprompted incorrect response occurs when the student gives an incorrect response even before the prompt is issued; (d) prompted incorrect response occurs when the student makes an error after the prompt was given; and (e) no response (Wall & Gast, 1997b). In all of the studies, researchers had some consequences for each of these responses, particularly for the unprompted correct responding and prompted correct responding. In the majority of the studies (10 of 12) consequences in the form of verbal praise alone on a continuous or variable reinforcement schedule. However, in one study (Wall et al., 1999) the researchers did not specify the type of reinforcement used.

Outcomes and outcome measures. Outcome measures analyzed in this review include (a) percentage of participants for which the procedure was found to be effective, (b) efficiency measures, (c) maintenance procedures used, and (d) generalization procedures and types of data collected.

Researchers in the majority of the studies (8 of 12) used CTD alone to teach target skills while in four other studies CTD procedure in combination with other procedures was used. Bozkurt and Gursel (2005) measured the effectiveness of CTD in teaching snack and drink preparation skills to children with mental retardation using percent of correct responses as the efficiency measure and found CTD to be effective for all participants. Stonecipher et al. (1999) modified the CTD procedure by using a quadruple instructional arrangement (each participant performs a fourth of the task) to teach four participants gift-wrapping. Three of the four participants who completed the study met criterion on number of sessions to criterion (STC), trials to criterion, training errors to criterion, and training time to criterion efficiency measures. The remaining four studies (Wall et al., 1999; Yilmaz et al., 2005; Zhang et al., 2000, 2004) found the CTD procedure to be effective for all of the participants. Yilmaz et al. (2005) used STC, percentage of training errors to criterion, and amount of training time to criterion efficiency measures. In the Zhang et al.’s (2000) study, the efficiency measure used was skill completion duration, while in another study Zhang et al. (2004) used number of correct responses to criterion.

Four of the 12 studies combined CTD with other procedures. Dipipi-Hoy and Jitendra (2004) trained parents to deliver the CTD instructional procedure in a mother-daughter dyad format and found that all of the three participants learned the target skills to criterion on a percent of correct responses efficiency measure. Also, Fiscus et al. (2002) measured the effectiveness of the CTD procedure while embedding verbal feedback in the prompt and consequent event on the percent of correct responses and STC efficiency measures. The authors reported that three of their students met criterion, while the fourth student did not meet criterion on the first skill before the end of the study. Similarly, Morse and Schuster (2000) evaluated the effectiveness of in vivo training using CTD and simulation training using a pictorial board. The study began with 10 participants, however, only 6 completed training and all 6 met criterion on the measure of percentage of errors to criterion, while two others who started training also improved. In a study by Wall and Gast (1999), the effects of the CTD on the acquisition of target skill and incidental information presented as instructive feedback were measured using error percentage as the efficiency measure. The results reported the participants acquiring the target skill with very low percentage errors; 0.64%, and 0.75%. In another study, Graves et al. (2005) used CTD with video prompting to teach cooking skills to their participants and found that the procedure was effective for all participants.

Effectiveness of CTD

In sum, the CTD has been found to be effective for teaching individuals with developmental disabilities. Of the 12 studies reviewed, researchers in 10 (83.3%) reported that the CTD was effective for all their participants. Two other studies reported 75% effectiveness rate with explanation that at least one partic-
participant could not complete the study due to time constraints. For example, Morse and Schuster (2000) started with 10 participants and ended the study with 8 participants, and they reported that the CTD procedure has been effective for all 8 participants. Stonecipher et al. (1999) also reported 75% effectiveness rate since the fourth participant could not complete the study but found CTD to be effective for the participants who completed the study. Therefore, the use of CTD for teaching chained tasks to the participants resulted in positive outcomes for the majority of the participants.

Maintenance and Generalization

Maintenance sessions were reported for all but two of the studies (Stonecipher et al., 1999; Zhang et al., 2004). The authors who reported maintenance data used review trials and thinning of reinforcement schedules. Follow-up sessions were conducted at varied intervals ranging from one to eight weeks. Investigators in 7 of 12 studies reported that the researchers investigated generalization measures. Generalization was measured across settings (Dipipi-Hoy & Jitendra, 2004; Graves et al., 2005; Morse & Schuster, 2000), settings and materials (Bozkurt & Gursel, 2005; Stonecipher et al., 1999), and across trainers (Yilmaz et al., 2005). For example, in a study by Dipipi-Hoy and Jitendra, the participants were able to transfer their purchasing skills to local grocery stores beside the ones in which they were trained. In Graves et al.’s study the participants generalized preparation of macaroni and cheese in microwave to the home setting. In a study by Bozkurt and Gursel, the participants generalized their sandwich and hot drink preparation, and serving skills to different settings using different materials. Finally, in Yilmaz et al.’s study the participants engaged in aquatic games of kangaroo, cycling, and snake in the presence of different trainers.

Social Validity

Of the 12 studies reviewed, investigators in four studies (Dipipi-Hoy & Jitendra, 2004; Morse & Schuster, 2000; Stonecipher et al., 1999; Wall & Gast, 1999) measured social validity. The social validity data was collected by questioning peers without disabilities (Stonecipher et al.), using parent survey (Morse & Schuster), and by asking parents to complete likert questionnaires (Dipipi-Hoy & Jitendra; Morse & Schuster). Some of the information gathered from respondents included perceptions about the overall effectiveness of the intervention, the ease of implementation, and the impact of the intervention on parent-child relationship, and the time involved in implementing the intervention (Dipipi-Hoy & Jitendra). All participants in Dipipi-Hoy and Jitendra’s study reported favorable responses regarding overall effectiveness of the intervention, impact of intervention on parent-child relationship, and time involved in implementing the intervention. Furthermore, one of the student participants noted that breaking the skills into parts, providing sufficient time for learning each step and verbal praise feedback were very helpful, while one thought the ability to use money and purchase items independently was very enjoyable. In a study by Stonecipher et al., the results of the survey indicated that about 94% of the students wrapped gifts, and the parents wanted their children to continue learning how to perform the skill. In Morse and Schuster’s study, parents and participants thought teaching grocery shopping to students with moderate and severe disabilities was very important and the parents expressed satisfaction that their children received grocery shopping skills. Both classroom personnel and parents in Wall and Gast’s study were found to be excited about the opportunity to teach leisure skills or have their children learn leisure skills, and noted positive changes in student behavior and perception as a result of the skills acquired.

Discussion

Results in the 12 studies reviewed showed that the CTD was effective for teaching chained tasks to students with developmental disabilities. Every participant that received the full training cycle using the CTD was able to acquire and maintain the targeted skill. Based on the review, we can conclude that the CTD has been effective for teaching the majority of the participants in the reviewed studies. In addition, the participants were able to gener-
alize the skills across materials, settings, and trainers.

The results are similar to the reviews conducted by Wolery et al. (1992) and Schuster et al. (1998). Results from the previous reviews indicate that CTD has been effective for teaching a wide range of tasks to individuals of varied ages and with varied developmental disabilities. The generalization data from the past reviews and this review are also similar.

A variety of delay seconds have been used in the CTD procedure, however, the 4 s delay was the most frequently used in the majority of the studies reviewed. This finding is consistent with previous reviews: Wolery et al. (1992) found in their review study that the 3 s and 4 s were the most frequently used while Schuster et al. (1998) reported the 5 s as being the most frequently used. The literature, however, does not specify that any specific delay second is more efficient than the other. Therefore, practitioners should use data from the reviews presented as the gauge for how many delay seconds they should use when teaching chained tasks to persons with developmental disabilities.

Investigators of studies in the current review and those reviewed by Schuster et al. did not teach academic tasks as chained responses. It may be possible to teach some academic tasks as chained responses. We are inclined to agree with the assertion of Collin (2007) that tasks are not in themselves discrete or chained. It is the functioning level of the student which should determine whether a task is taught as chained or discrete task. Consequently, research needs to be conducted to evaluate the effectiveness of using CTD to teach academic tasks as chained response.

Instructional grouping is one of the variables that impacts student learning. The most frequent instructional format used in the studies reviewed is the 1:1 format (92%). However, none of the investigators used a group format to teach persons with developmental disabilities using the CTD. It is evident from the literature that students with developmental disabilities have been found to benefit from both one-to-one instructional and small group formats (Collin, 2007; Logan & Keefe, 1997). Therefore, more research needs to be conducted using CTD in small group instructional formats.

In the reviewed studies, five types of skills were successfully taught using CTD including vocational, leisure, food preparation, gift wrapping, and purchasing. Investigators in five of the 12 studies taught leisure skills. This is contrary to the findings of Schuster et al. (1998) who found only one study in which leisure skills were taught. The indication is that since 1998, there has been a surge in using CTD to teach leisure skills. Another difference between the current review and that of Schuster et al. was in the range of skills taught. In the later, 13 categories of skills were taught in the 20 studies (65%) among which were safety, application of first aid, packing of suitcase, dressing up, cleaning a hotel room, using a duplicating machine, and using a washer and a dryer. In the current review however, five categories of skills were taught in 12 studies (41.7%). One possible reason could be that the number of studies reviewed in the current study is small.

Programming for generalization is an important component when teaching persons with developmental disabilities. A strategy for facilitating generalization is to teach skills that are meaningful and relevant for the learners. Since all of the studies were conducted in the natural settings, it appears that the investigators programmed for generalization even if they did not evaluate generalization data. Even studies that were conducted in the school or clinical settings were carried out in simulated situations (Morse & Schuster, 2000) or in the kitchen areas of the classroom (Fiscus et al., 2002; Graves et al., 2005). In Schuster et al. (1998) however, 11 out of the 20 of the studies were conducted in public schools, while only 6 were conducted in community settings including private home, park, business, bank, and hotel. This indicates that there has been a shift towards conducting studies for individuals with developmental disabilities in natural settings as opposed to clinical settings. This trend supports the assertion that since 1990s more and more investigations are being conducted in natural settings instead of in clinical settings. Teaching in natural settings enhances the meaningfulness and usefulness of skills taught, and improves the quality of life for individuals with developmental disabilities (Collin, 2007).

One of the questions this review sought to
answer was whether the investigators evaluated generalization and social validity. In the current review, investigators in 11 of the 12 studies probed for generalization. However, slightly more studies (14 out of 20; 70%) reported generalization data in Schuster et al.’s (1998) review than in the current review (7 of 12; 58%). One would have expected that more investigators would program for generalization in more recent studies. Similarly, the social validity data in this review is quite low. Investigators in four studies collected social validity data. Future researchers should continue to assess generalization and also investigate social validity.

Implications for Practice

This review has built on the research base established in earlier studies about the efficacy of the CTD instructional procedure and expands the instructional technology base for practitioners. This review further strengthens the support for using CTD procedure to teach chained tasks to persons with developmental disabilities. Practitioners planning to implement the CTD procedure should use natural materials and teach in natural environments. This may promote generalization. Practitioners may consider using 0 s delay intervals for a number of sessions for acquisition of tasks before moving on to higher delay intervals for maintenance and generalization. Indication from the literature is that delay intervals of 4 s and 5 s have been effective for learners with developmental disabilities for maintenance and generalization of learned tasks.

Conclusions

In summary, the reviewed studies support the use of the CTD as an effective instructional strategy for teaching a wide variety of functional skills to individuals with moderate to severe disabilities. CTD is an effective procedure that can be used as a single strategy or in combination with other strategies. Future research should investigate the delay second that is most effective for individuals with moderate to severe disabilities. Researchers should continue to investigate the effects of CTD on generalization and social validity.

References


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An Assessment of Treatment Integrity in Behavioral Intervention Studies Conducted with Persons with Mental Retardation

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Abstract: The purpose of this study was to assess the degree to which behavioral intervention studies conducted with persons with mental retardation operationally defined the independent variables and evaluated and reported measures of treatment integrity. The study expands the previous work in this area reported by Gresham, Gansle, and Noell (1993) and Wheeler, Baggett, Fox, and Blevins (2006) by providing an evaluation of empirical investigations published in multiple journals in the fields of applied behavior analysis and mental retardation from 1996–2006. Results of the review indicated that relatively few of the studies fully reported data on treatment integrity.

The field of applied behavior analysis has been steadfast in promoting evidence-based research as one of its central tenets toward ensuring sound scientific practice, yet in spite of this rigorous adherence to principle, the absence of uniformity found among behavioral intervention studies with respect to treatment integrity has been disappointing as documented in the literature. Treatment integrity, also commonly referred to as treatment fidelity, has been defined as the degree to which an independent variable has been implemented as intended (Peterson, Horner, & Wonderlich, 1982).

The lack of emphasis on reporting treatment integrity in intervention studies is alarming. The obvious ethical and methodological dilemmas imposed on researchers, practitioners and most importantly consumers, i.e., persons with disabilities, by these marginal research practices are disconcerting. Research in applied behavior analysis has strongly reinforced the importance of determining the presence of a functional relationship as a means of evaluating empirically-derived treatment outcomes (Peterson et al., 1982). Yet if one examines the trend in the literature from comprehensive reviews that have been conducted related to this question the rate at which treatment integrity has been reported remains abysmally low. Consider the findings from reviews that have been conducted to examine this practice in the literature.

Gresham et al., (1993) conducted a comprehensive review of applied behavior analysis studies published in The Journal of Applied Behavior Analysis between the years 1980–1990. Gresham and colleagues found that approximately 16% of the reviewed studies (n = 158)
assessed the accuracy of independent variable implementation, whereas two-thirds of the studies did not operationally define the independent variable. In a subsequent review, Gresham, MacMillan, Frankenberger, and Bocian (2000) examined this question as it pertained to intervention studies in the area of learning disabilities across a five-year period and published within three major journals in the field of learning disabilities. Gresham et al. also concluded that only 18.5 percent of reviewed studies assessed treatment integrity.

In a subsequent study conducted by Wheeler et al. (2006), behavioral intervention studies were reviewed that had been conducted with children ages 18 or younger who were diagnosed with autism. These studies had been published across nine different journals prominent in the area of autism spectrum disorders and/or developmental disabilities between the years 1993–2003. Of the studies reviewed (n = 60), only 11 studies (or 18%) operationally defined the independent variables and assessed treatment integrity.

In a more recent study, McIntyre, Gresham, DiGennaro, and Reed (2007) reviewed school-based intervention studies conducted with children ages 0–18 years and published in the Journal of Applied Behavior Analysis between the years 1991 and 2005. Of the 142 studies reviewed, only 30% provided data regarding treatment integrity. One could surmise from this investigation and the others preceding it that the absence of treatment integrity in behavioral intervention studies represents a consistent trend across journal sources and disability categories.

From a methodological standpoint, treatment integrity is important to both the internal and external validity of a study. The inability to draw reasonable conclusions concerning effects of the independent variable on treatment outcomes given the absence of such data is obviously hampered (Gresham et al., 1993; Kazdin, 1998). The absence of data concerning the implementation of the independent variable among published studies does not conclusively support a functional relationship and significantly impairs the ability of researchers to identify treatment efficacy (Wheeler et al., 2006). The second most obvious limitation imposed on researchers by the absence of treatment integrity is that it effects replication of the study by other researchers. Replication in a field such as applied behavior analysis is vitally important given that single subject research has often been criticized concerning its presumed lack of external validity, or the inability to generalize findings beyond a single experiment (Kazdin, 1982). Gresham et al. emphasized, “... failure to assess the degree to which treatments are implemented as planned compromises the science of building a replicative history” (p. 238). This is also important when considering that most single subject experimental studies have small n sizes by design, thus making replication most important for understanding the efficacy of an intervention across the range of settings, participants and conditions.

The purpose of this review was to assess the presence of treatment integrity as reported in behavioral intervention studies conducted with persons with mental retardation published in multiple journals across the years 1996–2006. Specifically, the study examined whether the reviewed studies operationally defined the independent variables, adequately reported interrater reliability data and evaluated and reported measures of treatment integrity.

Method

Criteria for Inclusion

The studies selected for review had to be published, experimental studies that: (a) utilized a single subject research design, (b) utilized behavioral treatments, and (c) were conducted with children and youth (ages birth to 18) and or adults (ages 18+) with a primary diagnosis of mental retardation (studies with participants who had dual diagnoses were rejected), (d) were found within the following peer-reviewed journals published from 1996 to 2006: American Journal on Mental Retardation (AJMR), Education and Training in Developmental Disabilities (ETDD), Journal of Applied Behavior Analysis (JABA), Mental Retardation (MR), and Research in Developmental Disabilities (RDD). Articles within these journals were located by first searching a series of online databases (PsychLit, ERIC, Info Trac, and the journals’ respective websites) and then following up to find any missing journals by searching collections of print copies.
Procedure

Once selected, studies were coded using a matrix that contained the following fields: (a) journal name, (b) article title, (c) year published, (d) number and ages of participants, (e) presence or absence of an operational definition of the independent variable(s), (f) type of experimental design, (g) interrater reliability by sessions and overall percentage, and (h) an assessment of treatment integrity. If a study assessed treatment integrity, provided information regarding the method of assessment utilized, and provided relevant data, the study was coded as “yes.” If treatment integrity was discussed but either or both the assessment method and/or data were not provided, the study was coded as “monitored.” If there was no mention of treatment integrity within a study, it was coded as “no” (see Table 1).

Interrater Agreement

The first and second authors independently read and scored 50% of the studies to determine interrater reliability. Agreement was calculated by dividing the number of agreements plus disagreements and multiplying by 100. Percentage of agreement across all studies for all variables within the coding matrix was 98%.

Results

Treatment Integrity

Once collected and codified, treatment integrity data were analyzed across the following variables: (a) by journal, (b) year of publication, (c) age of participants, and (d) by age and journal. This descriptive analysis was performed to reveal any trends or variances within and among these variables that could be used in a broader discussion of the utilization of treatment integrity procedures.

By journal. Figure 1 displays the treatment integrity reporting trends for each of the five journals examined in this study. The three journals that had the most studies matching search criteria were JABA, ETDD, and RDD (N = 81, 48, and 22, respectively). Among these journals, ETDD had the highest percentage of studies reporting treatment integrity procedures and results (65%). JABA and RDD had very similar profiles across yes, no, and monitored classifications, though it should be noted that the RDD search revealed significantly fewer behavioral studies than did the search of JABA. Results derived from the remaining journals, AJMR and MR, should be interpreted with caution due to the relatively low number of studies identified.

By year of publication. Figure 2 displays the treatment integrity reporting trends for each calendar year included in the present study. Over the eleven-year examination period, the number of studies that failed to report treatment integrity data (or even mention that such procedures were conducted) appears to drop in frequency (for the first five years, M = 12.6, compared to M = 4.2 over the last six years), but so does the overall number of behavioral studies (for the first five years, M = 46.2, compared to M = 8.8 over the last six years). However, a visual comparison of the yes and no classifications within each year reveals that more recent years (e.g., 2005 and 2006) show a greater majority of studies that

<table>
<thead>
<tr>
<th>Journal</th>
<th>Behavioral Studies Identified (1996–2006)</th>
<th>Total Participants</th>
<th>Mean Participants Per Study</th>
<th>Children &amp; Youth Ages Reported (0–18)</th>
<th>Adults Ages Reported (19+)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AJMR</td>
<td>9</td>
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<td>7</td>
<td>64%</td>
<td>23%</td>
</tr>
<tr>
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<td>48</td>
<td>179</td>
<td>4</td>
<td>56%</td>
<td>35%</td>
</tr>
<tr>
<td>JABA</td>
<td>81</td>
<td>217</td>
<td>3</td>
<td>44%</td>
<td>52%</td>
</tr>
<tr>
<td>MR</td>
<td>3*</td>
<td>24</td>
<td>8</td>
<td>8%</td>
<td>21%</td>
</tr>
<tr>
<td>RDD</td>
<td>22</td>
<td>62</td>
<td>3</td>
<td>65%</td>
<td>29%</td>
</tr>
</tbody>
</table>
reported treatment integrity procedures and results than that found in previous years.

By age of participants. Figure 3 compares trends in reporting treatment integrity between the children and youth and adult categories. Studies involving children and youth (ages 0–18) as participants reported treatment integrity data a little more often (an 11% difference) than studies involving adults (ages 19+). Percentages of studies that either failed to mention treatment integrity at all or reported only that treatment integrity procedures had been conducted looked very similar in both general age groupings. The 11% difference in the yes condition for studies including adult participants appears to be evenly distributed across no (5% difference) and monitored (6% difference) conditions.

By age and journal. Figure 4 displays the trend in reporting treatment integrity data for children and youth and adults by each journal included in the present study. ETDD and RDD both had larger numbers of studies that reported treatment integrity procedures and results for participants in the children and youth category (17% and 36% more, respectively). In the adult category, however, ETDD had a near even split between yes and no treatment integrity ratings (55% yes, compared to 45% no), while RDD had a much higher number of articles receiving a no rating (a 49% difference between yes and no). MR received mostly monitored ratings for both age categories (across three studies that included five adults and two children, with one study failing to report individual ages of participants), and the AJMR data reported more treatment integrity information for children and youth than for adults, although frequent monitoring of treatment integrity appeared for adults (87%).
Operational Definitions of Independent Variables

Figure 5 displays the trends in reporting operational definitions of independent variables by each of the journals included in the present study. JABA, ETDD, and RDD had acceptably high percentages of operational definitions of reported independent variables (91–96%), though any study that does not adequately describe independent variables makes replication unlikely. The extremes within these results (100% and 67%) were derived from the two journals with the fewest number of identified behavioral studies and should therefore be interpreted with caution.

Interrater Reliability

Interrater reliability (IRR) data were collected from each article and analyzed to determine the following for each journal: (a) the minimum and maximum percentages of sessions examined for IRR, (b) the mean percentage of sessions examined for IRR, (c) the percentage of articles that failed to report the percentage of sessions examined for IRR, (d) minimum and maximum IRR, (e) mean IRR, and (f) the percentage of articles that failed to report IRR. These data were then tabulated for comparative examination (see Table 2).

Kennedy (2005) recommended that a minimum of 20% of observations/sessions be examined for IRR. Results of the current study showed that minimum sessions examined for IRR ranged from 7% (AJMR) to 19% (MR), and the maximum for all journals was 100%. Mean sessions for all journals were in the acceptable range (40.9%–72.8%).

Zirpoli (2008) stated that an IRR of 70–80% is adequate, though results become increasingly desirable as they approach 100%. Results of the current study showed that minimum IRR across all journals ranged from 70% (RDD) to 93% (AJMR), and the maximum for all journals except one was 100%.
Mean IRR for all journals was in the desirable range (90%–98.4%).

**Summary and Conclusions**

The purpose of this review was to determine to what extent treatment integrity had been addressed in behavioral intervention studies (n = 163) conducted with persons with mental retardation published within multiple journal sources (n = 5) during and between the years of 1996–2006. This study extends previous work in the area, most notably Gresham et al., (1993), however with the main difference being the present study examined behavioral intervention studies conducted with persons with mental retardation across both children/youth and adults and published across multiple journal sources.

Of the 163 studies that were analyzed, only 36% (n = 58) fully reported data on treatment integrity. These results are slightly improved from previous studies, for example, Peterson et al., (1982), who reported 20% across 530 studies, Gresham et al., (1993) who reported 16% of 158 studies, and Wheeler et al., (2006), reporting 18% of 60 studies. Although the current results suggest an improvement, there remains significant need for better performance outcomes in this area.

Considering the trend reported from other reviews, one can only speculate as to the reasons surrounding the lack of treatment integrity data in the treatment literature. Perhaps the problem stems from a lack of understanding as to the importance of such data or is due to the fact that these data are simply not reported due to space considerations imposed during the review process, leaving one to question how reviewers weigh treatment integrity on the scale of importance when reviewing a

![Figure 3. Treatment integrity by age.](image-url)
manuscript. Results from the current investigation and previous reviews lead one to believe that treatment integrity is not an essential piece when considering whether to publish a paper.

Nonetheless, when implementing a behavioral intervention study, researchers should be advised to assess treatment integrity in a reliable manner by first operationalizing their respective treatments in measurable and observable terms. Gresham et al., (2000) has provided some meaningful recommendations for researchers pertaining to this. First, they stated that treatment integrity should be measured over time, similar to the concept of time generalizability. This method will result in repeated measures that can assist in the analysis of treatment integrity over time (Gresham et al.). They also recommended that two measures of treatment integrity be taken, the first being a measure of each treatment component across days of treatment, and a second measure taken to yield session integrity. Greshman and colleagues asserted that a failure to realize significant treatment effects can be potentially explained by either less than optimal component integrity or less than optimal session integrity measures. Secondly, treatment integrity involves the direct observation of treatment implementation by trained observers, or through the use of videotape analysis (Gresham, et al.; Wheeler, Carter, Mayton, & Thomas, 2002).

Methods used in ensuring treatment integrity include the training of those personnel responsible for the implementation of the treatment using a pre-identified protocol that outlines the various component steps that comprise the treatment. One example of this can be found in a study conducted by Wheeler

Figure 4. Treatment integrity by age and journal.
et al. (2002). As a means of ensuring treatment integrity, the teacher who was responsible for implementing the treatment, during a structural analysis in this case, was provided with a structured presentation of procedures. This training consisted of: (a) rationale, (b) directions on how to present the task, (c) directions on how to respond to the child during the condition, (d) modeling of the procedures and (e) rehearsal of the procedures with performance feedback provided. This training was conducted one day prior to the actual assessment, with a brief rehearsal being conducted 30-minutes prior to the session. For observers monitoring treatment integrity, a checklist or behavior rating scale can

![Figure 5. Percentage of articles reporting operational definitions of the independent variables.](image)

**TABLE 2**

<table>
<thead>
<tr>
<th>Journal</th>
<th>Min/Max Sessions</th>
<th>Mean Sessions</th>
<th>Not Reported</th>
<th>Min/Max IRR</th>
<th>Mean IRR</th>
<th>Not Reported</th>
</tr>
</thead>
<tbody>
<tr>
<td>AJMR</td>
<td>7–100%</td>
<td>72.8%</td>
<td>11%</td>
<td>93–100%</td>
<td>98.4%</td>
<td>11%</td>
</tr>
<tr>
<td>ETDD</td>
<td>16–100%</td>
<td>44.3%</td>
<td>13%</td>
<td>86–100%</td>
<td>97.2%</td>
<td>2%</td>
</tr>
<tr>
<td>JABA</td>
<td>17–100%</td>
<td>40.9%</td>
<td>9%</td>
<td>81–100%</td>
<td>95.8%</td>
<td>4%</td>
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<tr>
<td>MR ($N = 3)^*$</td>
<td>19–100%</td>
<td>59.5%</td>
<td>33%*</td>
<td>90%*</td>
<td>90%</td>
<td>33%*</td>
</tr>
<tr>
<td>RDD</td>
<td>15–100%</td>
<td>46.9%</td>
<td>0%</td>
<td>70–100%</td>
<td>95%</td>
<td>0%</td>
</tr>
</tbody>
</table>
be developed that will provide observers with a mechanism to evaluate the implementation of treatment (Gresham et al., 2000; Wheeler et al., 2002) either through in-vivo observations or through videotape analysis.

In summary, the field needs to be more steadfast in promoting the inclusion of treatment integrity measures in behavioral treatment studies, as a measure of quality research that is evaluated before publication. If we are to truly advance the concept of evidenced-based practices, the work begins at home, in this case, with those who conduct and review research.

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Why Individuals with Intellectual Disability Turn to Religion: Behavioral and Psychological Motives of Adolescents and Adults

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Abstract: This study compared behavioral (fulfillment of religious commandments), and motivational components of religiosity among 54 Jewish adolescents (aged 13–21 years) and 35 adults (30–60 years) with intellectually disability (ID) (IQ = 40–69). A special questionnaire was constructed. Results yielded similarities between the religious profile of individuals with ID and those of the general population. A different pattern was found between the age groups. Adolescents fulfilled Jewish commandments to a greater extent than the adults. Social psychology theories regarding religious change/stability over the lifecycle can serve as an explanation for these findings. Adults exhibited a more mature motivational component of fulfilling commandments (dependence on God) than the adolescents (Divine decree—obedience to God and receiving external rewards). Regression analysis indicated that among adolescents, the cognitive level contributed to the explained variance of the behavioral components, whereas among adults, chronological age contributed to the explained variance of the behavioral components.

Religion is not a uniform phenomenon. Prayer, attendance at religious services, beliefs about God and life after death, affiliation with a church, synagogue, or temple, the feeling of mystical union with a divine presence, and the efforts to bring others into the faith are only a few of the ways religion can be experienced and expressed. James (1902) and Allport (1955) put forth the idea that individuals turn to religion for different reasons. Why do individuals with intellectual disability (ID) turn to religion? What are the psychological motives that drive them to fulfill Jewish commandments? These are the two main questions on which our study focuses.

The main goal of the current study was to explore behavioral and motivational components of religious concepts among individuals with mild and moderate ID in two age groups: Adolescents (aged 13–21 years) and adults (aged 30–60 years). Another goal was to examine whether different patterns in these religious components would be found between the two age groups.

Theoretical Background

How do people’s religious commitments, behaviors, and identities change as they pass through adulthood? Religious change and stability throughout life cycle has concerned social scientists for decades (Fowler, 1981; Hites, 1965; Ingersoll-Dayton, Krause, & Morgan, 2002; McCullough, Enders, Brion, & Jain, 2005). It was found that religiousness is quite stable in the general population (Idler & Kasl, 1997; Lubinski, Schmidt, & Benbow, 1996; Wink & Dillon, 2001). However, the absolute levels of religiousness of many adults also change over the course of life. McCullough et al. (2005) identified three discrete trajectories of religious development during adulthood in the general population (ages 27–80): Increases in religiosity until midlife and declines in later adulthood; very low religiosity in early adulthood and an age-related decline; and high religiosity in early adulthood and an age-related increase.

The above studies focused on adults. Another group of studies indicates an increase in
religious faith in typically developed adolescents compared to younger ages (King, Elder, & Whitbeck, 1997). For example, conversion, which is defined as a change from one religious affiliation to another or from a non-religious background to an intense commitment to religious belief (Galanter, 1982; Levine, 1984), occurs during adolescence (Argyle, 2000). The cognitive and emotional experience of adolescents, their tendency to view the world in black and white, and ordering things in absolutes and polarities can serve as an explanation for this phenomenon. The new boastfulness and commitment to extremes may reflect emergence to the formal operations stage in which reasoning becomes more abstract and less tied to the here and now. During adulthood, the tendency to extremism is moderated and a gradual decline in religiosity may occur. It should be noted that other research found the opposite: King et al. (1997) and Tamminen (1991) found that religious belief declines sharply during adolescence.

While the issue of trajectories in religious development through the life cycle was studied in the general population, it has never been studied among individuals with ID. An ERIC and Psych-Info search yielded only a few empirical studies dealing with religious concepts among Christian individuals with low cognitive levels. These studies focused on emotional components: The role of religion among individuals with ID (Hoeksema, 1995) or the cognitive component: The concept of God in this population (Stubblefield & Richard, 1965). Gaventa (1986) and Hoeksema (1995) claimed that religion plays the same role for people with ID as it does for the general population. While the traditional approach to faith is cognition-based, Gaventa (1986) and Hoeksema (1995) use Fowler’s (1996) observation, defining faith as a multidimensional system of relationships where the individual-self is connected to others by trust, loyalty, support, and concern. This dyadic relationship is associated with a spiritual relationship—God as its unifying factor. Therefore, according to Gaventa (1986) and Hoeksema (1995), faith and connecting to religion are possible among individuals with ID.

Participation and involvement of individuals with ID in the religious life of a community fulfills the need to worship and provides a feeling of belonging, fraternity, friendship, tranquility, solace, and encouragement, together with the opportunity to help others (Hoeksema, 1995). Dennis and Schurter (1994) adapted Fowler’s stages of faith to adults with ID: Those with mild/moderate ID are capable of cognitive understanding of religious concepts, whereas those with severe/profound ID focus almost exclusively on ceremonial and experiential-emotional components. However, the above thesis was not empirically examined. Our study aims to fulfill this void.

The study goals were as follows:

**Definition-behavioral component.** To investigate the extent of fulfilling Jewish commandments among adolescents and adults and whether differences would be found between the two groups.

**Motivational components.** To investigate the psychological motives for being religious and fulfilling Jewish commandments and to determine whether differences would be found between the two groups.

We also sought to investigate the extent to which the participants’ background characteristics (age, religiosity level, cognitive level) predict the participants’ religiosity and their fulfillment of commandments.

**Method**

**Participants**

The study sample was composed of 89 individuals with ID in two age groups: adolescents (aged 13–21; N = 54; M = 19.27; SD = 1.4); and adults (aged 30–60; N = 35; M = 49.00; SD = 11.1). The oldest participant was 60 years old, followed by 54 and 50 years old. The adolescents were enrolled in special-education schools for pupils with ID and lived at home. The adults worked in vocational workshops in the morning and participated in afternoon social and leisure activities and lived at home. Of the total sample, 69% were males (N = 61) and 31% were females (N = 28). A chi square test revealed no gender differences between the two groups. All subjects were independent in their daily living skills, used...
public transportation and had no history of maladaptive behavior.

Based on the traditional AAMR definition of intellectual disability (Grossman, 1983), 50% of the participants (N = 24) were classified as having mild ID (IQ = 55–69) and the other 50% (N = 24) as having moderate ID (IQ = 40–54). Data were collected from the residents' personal files. Chi-square analysis revealed no significant differences in the ID level between the two groups ($\chi^2 = 1.33; df = 1; p = ns$).

Level of cognitive ability. Raven’s Color Matrices (Raven, 1968) were used to measure basic cognitive levels. No significant differences ($t = 9.7; p < .001$) in Raven scores were found between the adolescents ($M = 10.50; SD = 2.40$) and the adults ($M = 11.60; SD = 5.15$).

Level of religiosity of participants’ families and facilities. The official status of the schools and the vocational centers (including the families) were defined as modern orthodox. Laws pertaining to kosher food, Sabbath, and prayer were observed, but there was no gender separation in the schools and vocational centers, and boys and girls studied and worked together.

Measurements

Both qualitative and quantitative tools were used to examine three components of the religious concept, as follows:

Definitional-behavioral component. A questionnaire adapted to the study population was constructed based on the Levi, Levinson, and Katz (1994) scales designed for examining beliefs and fulfilling commandments among the Jewish population in Israel. The initial questionnaire included 14 questions about commandments related to God and three regarding human relations. A factors analysis yielded a low reliability in the last three. Almost all participants responded negatively to “Do you lie or speak evil of others?” and positively to the question “Do you honor your parents?” These questions were therefore excluded. Of the 14 commandments related to man/God, three were applicable only to males and one only to females. The answers were coded on a three-point scale: 1 (never), 2 (sometimes), 3 (always). Alfa coefficient reliability was .83. Since all participants belonged to religious families, the participants defined their religiosity as (1) somewhat/traditional (2); or yes (3).

Factors analysis of the 11 commandments shared by both genders yielded four factors that explained 50% of the variance: Factor I—4 items—Supervised (by facility or home) commandments ($\alpha = .75$). Factor II—3 items—Autonomous and unsupervised commandments ($\alpha = .77$). Factor III—2 items—Observing fast days ($\alpha = .63$). Factor IV—2 items—Observing dietary laws ($\alpha = .66$). The mean scores for the four factors were calculated for each group.

Motivational component. Goldman (1965) examined the religious emotional component of Christian children using pictures and interviews. Rosenberg (2001) also used pictures for examining the concept of prayer among Jewish pupils. This method requires analogical strategies which might be difficult for individuals with ID. Lazar, Kravitz, and Kedem-Friedrich (2004) studied the motivation for being religious among Jews from various sectors using open interviews. We examined the motivational component with focused interviews and asked the participants direct, verbal, open-ended questions as to why they fulfill each commandment, while they filled out the behavioral section.

The focused interview (Merton, Fiske, & Kendall, 1990) is applicable here because the motivational loaded questions personally involve the participants. The interview provided in-depth information on thoughts, motives, and feelings toward the behavior of religion and explained and interpreted facts that interviewees raised in the interview.

A content analysis (Bartlett & Payne, 1997; Burgess, 1997; Cohen & Manion, 2000) was performed on the information gathered from the interviews. Units of analysis were sentences or phrases that addressed each topic. Data were tabulated and analyzed for central categories and subdivisions. When an additional category or subdivision seemed necessary, all previous interviews were rechecked and any information gleaned was added to the table. After this stage all interviews were checked by another researcher for reliability, and a report was written only after it was clear.
that analyses and classifications were consistent (Carspecken, 1996).

Answers of the motivational component were grouped into six categories according to the Reiss (2000) psychological religious motivation scale. Reasons indicated by each participant were counted. The seven most frequently cited reasons were: Commitment to worship because of a Divine decree—obedience to God (74.6%); dependence on God (56%); obedience to parents, family (50%); social acceptance, fraternity and belonging to a religious community (32%); expecting fulfillment of personal wishes (33%); (31%); national motivations for prayer (22%).

Procedure

The study was commissioned by the Division of Religious Education of the Israeli Ministry of Education and the Division for Mental Retardation, Ministry of Social Affairs. A preliminary study was conducted among religious persons (aged 21+ years) with ID. The final sample was composed of adults who worked in two religious vocational centers and adolescents enrolled in special education schools. Due to literacy difficulties, questionnaires were administered to participants on an individual basis, with the interviewers writing down the answers. The 3-point scale was explained and interviewers encouraged participants to give full answers to the open-ended questions.

Results

Behavioral (and religious definition)

Self definition: 38% (N = 35) of the participants defined themselves as traditional and 62% (N = 54) as religious, with no significant differences in religious ranking between the two groups.

Behavioral component: A 2X2 ANOVA (groups X religiosity) was performed in order to examine whether there are differences in observing the four behavioral factors between adolescents and adults in relation to the level of religiosity. Results yielded a significant main effect for age \( F(1,85) = 3.25; p < .05 \), \( \chi^2 = .13 \) and for level of religiosity, \( F(4,82) = 19.14; p < .000, \chi^2 = .48 \). No significant age X level of religiosity interaction was found, \( F(4,82) = 2.38; p > .05, \chi^2 = .10 \). Means, SD and \( F \) values of the four behavioral factors in relation to age and level of religiosity are presented in Table 1.

Results indicate that the mean scores for all participants for all commandments ranged between 2.15 to 2.25 on a three point scale, indicating that the participants often fulfilled Jewish commandments.

Age: Univariate analysis indicated signifi-
significant differences between the two age groups in all behavioral factors except the autonomous factors: The mean scores of fulfilling supervised commandments, fast days, and dietary laws were significantly higher among the adolescents than the adults.

Religiosity: Univariate analysis indicated that the scores of the religious participants were significantly higher than the scores of the traditional participants in three out of the four factors: The supervised and autonomous commandments and dietary laws.

ANOVA with repeated measures between the four factors was performed for the whole sample in order to examine whether differences would be found between the four factors. The results yielded significant differences, $F(3,99) = 53.05; p < .001$. Paired comparison indicated significant differences between supervised, autonomous, and fast days versus dietary laws ($p < .05$). The mean score of the dietary laws commandments was significantly higher than the mean scores of the other commandments.

Motivational Component

Only six of the psychological motives were frequent. Chi square analyses revealed significant differences between the two age groups in four motives. Commitment to worship because of a Divine decree—obedience to God ($\chi^2(df = 2) = 3.84; p < .05$); personal wishes ($\chi^2(df = 2) = 5.48; p < .05$), and social needs ($\chi^2(df = 2) = 3.29; p < .05$) were significantly more frequent among the adolescents than the adults, whereas the frequency of dependence on God was significantly higher among the adults than the adolescents ($\chi^2(df = 2) = 13.29; p < .001$). Figure 1 depicts the different patterns of motives for being religious of the two age groups.

Prediction of Fulfilling the Commandments and Understanding the Cognitive Factors

We employed hierarchical regression to determine the extent to which each of the following variables (chronological age, level of reli-
giosity, cognitive baseline level according to the Raven) could explain the participants’ fulfilling Jewish commandments (supervised and autonomous commandments, fast days, dietary laws). At the first step, the predictor variables were the above background variables. The second step included the interactions between these characteristics. Dependent variables were participants’ scores in the four factors of the behavior component. Regression coefficients for the behavioral factors are presented in Table 2 (the table presents the regression coefficients of the second step including the main effect and the interactions).

Table 2 indicates that 40% of the variance of the supervised commandments, 23% of the autonomous commandments, and 19% of the diary laws could be explained. Only 12% of the variance of the fast days could be explained. Results yielded a significant contribution of chronological age to the explained variance of supervised commandments, diary laws, and fast days, with negative regression coefficients, the older the subjects the less they fulfill the commandments. Level of religiosity also contributed to the explained variance of the behavioral factor, except for fast days. In these factors the regression coefficients are positive, i.e. the higher the level of religiosity, the higher the fulfillment of commandments. The main effect of cognitive level did not contribute significantly to the explained variance of the behavioral factors. However, the regression yielded a significant age X Raven interaction with regard to supervised commandments and fast days. Pearson’s correlations were calculated between Raven and supervised commandments and fast days among the adolescents and the adults separately. Results yielded significant negative correlations among the adolescents for the supervised commandments and fast days, respectively ($r = -0.30; r = -0.27; p < .05$), i.e. the higher the Raven scores, the less they fulfill these commandments. In contradistinction, the correlations among the adults were low and non-significant for the supervised commandments and fast days ($r = 0.01; r = 0.13; p > .05$, respectively).

**Discussion**

The study’s objective was to explore the behavioral and motivational components of religious concepts among adolescents (aged 13–21 years) and adults (aged 30–60 years) with mild/moderate ID. Two important attributes emerged from the findings. Results yielded similarities between the religious profile of individuals with ID and those of the general population, i.e. individuals with ID do fulfill commandments and are connected to religion for motivational reasons similar to the general population. The other relates to the differences between the age groups: the adolescents fulfilled Jewish commandments to a greater extent than the adults. However, the adults exhibited more mature motivational reasons for being religious.

**Definitional-Behavioral Component**

The whole sample’s mean scores for fulfilling the commandments ranged between 2.15–2.25 on a three point scale, indicating that they often fulfilled Jewish commandments (all participants belonged to modern orthodox...
dox religious families). However, ANOVA and regression analyses indicated that religious participants fulfilled the supervised and autonomous commandments to a greater extent than traditional participants. This is self-evident. However, no significant difference was found between traditional and religious participants in observing fast days and dietary laws. This finding is consistent with the religious trends of the Israeli general population (Levi, et al, 1994), which demonstrate that 90% of Israeli Jews adhere to at least one dietary rule and 71% of Israeli Jews fast on the Day of Atonement regardless of their religious self-definition. Findings thus revealed similarities in the type of commandments observed between individuals with ID and traditional/religious sectors of the Israeli society.

Results showed that 23% of adults defined themselves as traditional, i.e. less religious, compared to 4% of adolescents. ANOVA also indicated that adolescents fulfilled the supervised commandments, fast days and dietary laws more than adults. This group was also more diligent in observing unsupervised autonomous commandments.

The regression analysis pointed to another phenomenon. Among adolescents the cognitive level (according to Raven test) contributed to the explained variance of fulfilling the commandments. Those with higher cognitive levels observed supervised commandments and fast days to a lesser degree. The regression did not yield contribution of the cognitive level to observing commandments among the adults. These findings thus indicated that among the adolescents religion is expressed by fulfilling Jewish laws related to cognitive levels and among the adults—to chronological age.

Social psychology theories mentioned in the theoretical background can serve as an explanation for the difference between the two age groups. As stated earlier, McCullough et al. (2005) identified three discrete trajectories of religious development during adulthood (ages 27–80): Increases in religiosity until midlife and declines in later adulthood; very low religiosity in early adulthood and an age-related decline; and high religiosity in early adulthood and an age-related increase. The above studies focused on adults, whereas another group of studies indicated an increase in religious faith in adolescents compared to younger ages (King et al., 1997). It was found that religious conversion occurs during adolescence (Argyle, 2000).

The level of religiosity of the two ID age groups that were studied in this research, i.e. higher religious level of the adolescents compared to the adults, apparently represents the trajectory of religious decline in adulthood according to McCullough et al. (2005). Caution should be exercised since this study was cross-sectional. The participants’ age ranged between 15–21 and 30–60 years. We did not study ages younger than adolescence or early adulthood (age 20–30) as McCullough et al. (2005) did with the general population. Furthermore, our population was different from the gifted subjects studied in McCullough et al. (2005). However, our argument is that religious change of individuals with ID throughout the course of life is a phenomenon common to that of the general population and that several religious trajectories over the course of life may also exist in populations with ID. Our study yielded a decrease in religiosity from adolescence to adulthood. Perhaps other studies will show another trend in religiosity between different age groups. Further research examining the religious development of people with ID throughout the stages of life may shed light on this issue.

The pattern of fulfilling commandments between the adolescents and adults questions the source of both groups’ commitment to worship—does it stem from autonomous decisions or is it associated with their motives of obedience to God or loyalty to their parents? Would differences be found between the two age group in their motives for worshipping God? The answers to these questions are anchored in the motivational component.

**Motivational Component**

Results yielded internal and external motives for being religious. Internal motives included commitment to worship, dependence on God, and obedience to parents. External motives included expectation of personal wishes and fulfilling social needs. Findings indicated that external motives were less dominant than internal ones in observing commandments in both groups.
Both groups expressed a need for someone to lean on and a spiritual anchor. They have a sense of security that they have someone to rely on and believe that everything is directed by God (“In case of trouble I know He’s with me,” said a girl with ID; “He helps me, so that I have the courage to do the right thing, gives me confidence,”). However, this motive was found at a higher rate among the adults than the adolescents. Reiss and Havercamp (1998) and Reiss (2000) studied the psychological motives for being religious among students and service providers of individuals with ID. Findings indicated that the need to rely on outside forces and dependence was the dominant motive for becoming religious.

In contradistinction, the motive of obedience to God and parents was found at a higher rate among the adolescents than the adults. Adolescents also expressed the extrinsic benefit at a higher rate, i.e. the need for social belonging to a religious community and the need to be granted personal wishes.

Results of the motivational part can serve as an explanation for findings in the behavioral part. Adolescents’ fulfilling Jewish commandments to a greater extent than the adults may stem mainly from Divine decree—obedience to God and receiving external rewards.

We did not empirically measure participants’ moral stage. According to Kohlberg, the heteronomy stage is characterized by acceptance of moral laws originating in an adult and imposed from the outside as undisputable. Their validity is eternal and holy. In the autonomy stage (age 11+), morality is freed of external pressure and the individual acts out of self-choice according to behavior laws which he has internalized. The answers indicate that the adolescents’ motives for fulfilling Jewish commandments are heteronymous according to Kohlberg (1964), whereas the adults’ motives were autonomous.

The rational choice theory—a new paradigm in the sociology of religion (e.g., Sherkat & Wilson, 1995; Stark & Finke, 2000), can explain the adults’ motives for being religious. According to this theory, people make rational choices that are consistent with their preferences and tastes insofar as the available information, their ability to understand that information, and external constraints on their choices permit (Finke & Stark, 2003). In determining the religious trajectory, McCullough et al. (2005) found that in the United States, where religiosity is generally high in spite of the freedom of religion, the preference to be religious is autonomous, although it is caused in part by proximity to others (family members, coworkers, or social class) who have similar preferences (Sherkat & Wilson, 1995). Thus, people who were raised in highly religious homes are expected to acquire a strong preference for religion as adults (McCullough, Tsang, & Brion 2003; Sherkat & Wilson, 1995).

The free choice paradigm can be applied to our adult group. Cea and Fisher (2003) asked adults (aged 30–65) with mild and moderate ID to explain the essence of a hypothetical medical treatment (psychiatric, medical, and dental treatments) to three patients. Participants pointed out pros and cons, made the appropriate choice, and explained their choice to the patient. Our results coincide with the above, showing that adults with ID can rationally explain their decisions regarding their fulfilling various Jewish commandments.

Since the present study did not examine the participants’ background, we cannot determine parental influence. However, the adults’ motives for fulfilling commandments point to a degree of autonomy. Further research is recommended. According to Jewish theology, faith in God is not just a theological thought, but a commitment to worship and fulfill Jewish commandments (Leibowitz, 1982). Discussion of the religious obligations of people with ID is also germane to their integration within society. Regardless of how outsiders might view this, a religious family will find it extremely difficult to cope with a situation of violation of Sabbath laws. Educating toward fulfilling commandments and accepting God is therefore part of the religious commitment of facilities for students with low cognitive levels (Farbstein, 1995; Feinstein, 1996).

The findings of this section coincide with those of Gaventa (1986) and Hoeksema (1995) indicating that religion plays an important role for people with developmental disabilities. In light of the above, religious schools, sheltered residences, and vocational centers should relate to the needs of religious persons with ID with the appropriate care.
Persons with ID attend religious services (synagogue, church) whether as adults or children. It behooves professionals to contact congregational services and invite congregations to visit facilities and create mutual acquaintances and joint activities.

**Conclusion, Limitations, Practical Recommendations and Further Research**

The pattern of fulfilling Jewish commandments between the two age groups seemed to reflect McCullough et al.’s (2005) trajectory of religious decline in adulthood. In other words, the decline in fulfilling Jewish commandments in the transition from adolescents to adulthood that was found in our study could reflect a normative phenomenon. Furthermore, the adults exhibited more mature motives for being religious (dependence on God) than the adolescents (obedience to Divine decree). Thus, our study indicates that chronological age-related experiences exert a significant effect on behavioral and motivation components of the religious concept of individuals with ID.

Our study was cross-sectional. Our interpretation of the different pattern of fulfilling Jewish commandments between the adolescents and adults should therefore be viewed with caution. A longitudinal study that will evaluate the same participants starting in adolescence until adulthood will shed light on the religious trajectory of individuals with ID through the life cycle.

Although our study was conducted among Jewish individuals with ID, the implications should be applied in other religions as well. Action should be taken in order to maintain and strengthen religious belief and faith, so as to reduce a decline in faith after the adolescents leave school and move to a more independent lifestyle as adults. Furthermore, a comparative study of individuals with ID of Christian, Muslim or other religions is recommended.

We have no information on the answers that typically developed religious students with the same mental age might have given on the specific study variables, especially on the motivational ones, and further investigation is necessary. The current study focused on the behavioral and motivational components of religion. It is recommended to also examine the cognitive component, i.e. participants’ level of understanding cognitive concepts such as God, prayer efficacy, righteousness and evil, and Providence.

Discussion of the religious identity of adolescents is associated with their identity configuration in other areas (Erickson, 1975; Marcia, 1980; Marcia & Archer, 1993). An investigation of the formation of religious identity according to Marcia (1980; 1993) is recommended. Such a study would explain the question of autonomous religious decision making in this population.

This study raised the following question: The behavioral component of the religious concept among adolescents was found to be associated with mental age (basic cognitive level according to Raven), whereas in adulthood it was found to be associated with chronological age. Is this phenomenon limited only to religion or does it also apply to other areas of life? Further research is recommended to shed light on this issue.

**References**


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Abstract: We conducted a functional analysis of challenging behavior for two students with autism using widely available videoconferencing equipment (laptop computers equipped with web cameras). Observers used the videoconferencing facilities to collect data on challenging behavior and to instruct the therapist conducting the assessment. Results of the functional analyses suggested that challenging behavior was associated with escape from academic demands and access to attention for both students. An intervention, derived from the results of the functional analyses, was implemented in the classroom for both students. This intervention was compared to typical classroom instruction using a multi-element treatment design. Results indicated that the intervention derived from the functional analysis produced substantial reductions in challenging behavior with concomitant increases in academic engagement over typical classroom instruction for both students. These findings provide preliminary support for the use of videoconferencing equipment when conducting functional analyses and developing behavioral support plans for students with autism.

Children with autism and other developmental disabilities often engage in such challenging behaviors as aggression, stereotypy, and self-injury (Baghdadli, Pascal, Grisli, & Aussiloux, 2003; Conroy, Dunlap, Clarke, & Alter, 2005; Horner, Carr, Strain, Todd, Reed, 2002; Kiernan & Kiernan, 1994; Mc Clintock, Hall, & Oliver, 2003; Murphy, Hall, Oliver, & Kissi-Debra, 1999; Odom, Brown, Frey, Karasu, Smith-Canter, & Strain, 2003). Without appropriate attention, these behaviors tend to persist over time and can influence a child’s access to educational and social opportunities (National Research Council, 2001; Reichle, 1990). Challenging behavior can also complicate the teacher’s efforts to provide instruction (Carr, Taylor, & Robinson, 1991), can negatively affect the well-being of teachers (Hastings & Brown, 2002), and may contribute to the high attrition rate of special educators (Lane & Canosa, 1995).

We wish to thank the Autism Treatment Center of San Antonio for their support in conducting this research. Correspondence concerning this article should be addressed to Mark O’Reilly, Department of Special Education, 1 University Station D5300, The University of Texas at Austin, Texas 78712, USA. Email: markoreilly@mail.utexas.edu

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the assessment and treatment of challenging behavior for students with severe disabilities. The Individuals with Disabilities Education Act of 1990 (IDEA) requires that a functional behavior assessment (FBA) be conducted prior to the development of a behavior support plan for students who engage in challenging behavior (IDEA, 1990; 1997; 2004). An FBA often consists of interviews with stakeholders, direct observation of the student, and functional analysis. This latter assessment protocol (i.e., functional analysis) involves directly manipulating social contexts to determine maintaining consequences and is usually reserved for students with the most severe topographies of challenging behavior (Sigafoos, Arthur, & O’Reilly, 2003). Functional analysis also requires a fairly high level of expertise on the part of staff to conduct it properly (Horner, Albin, Todd, & Sprague, 2006).

Previous researchers have shown that teaching staff can learn to implement functional analysis procedures when training and direct supervision is provided (Durand, 1999; Iwata et al., 2000; Taylor, Hoch, & Weissman, 2005; Watson, Ray, Turner & Logan, 1999). This type of training requires the assistance of a specialist who is knowledgeable about evidence-based assessment and treatment strategies for challenging behavior. However, such specialists may not be readily available to a school district. The use of videoconferencing facilities may be one method by which schools could avail of such specialist support in conducting functional analyses.

Videoconferencing as a means of conducting assessment and providing ongoing patient support is not new within the health care professions (Hilty, Luo, Morache, Marcelo, & Nesbitt, 2002). For example, videoconferencing has been used to conduct psychiatric assessments (Elford, 2000; Zarate, Weinstock, & Baer, 1997); to conduct psychotherapy and supervise trainee psychotherapists (Gannon, Sorlie, Bergvik, & Sorensen Hoifodt, 1998); and to provide follow up care for older adults following discharge from hospital (Tousignant, Boissy, Corriveau, & Moffet, 2006). Despite the emerging popularity of this technology in the health care professions there is an acute need for empirical research to demonstrate the effectiveness of assessments and interventions conducted in this manner (Glueckauf & Ketterson, 2004; Monnier, Knapp & Frueh, 2003).

Very little research has been conducted on the use of videoconferencing within the field of education (Ludlow & Duff, 2002). To date, it appears that only one study has reported on the use of videoconferencing facilities to conduct a functional analysis with children with challenging behavior (Barretto, Wacker, Harding, Lee, & Berg 2006). These authors used a fiber-optic telemedicine network that was available through a medical center to instruct novice clinicians on how to conduct functional analyses.

In the current study we attempted to extend the literature on the use of videoconferencing to conduct functional analyses in a number of ways. First, we wanted to examine the use of widely available videoconferencing equipment, such as laptop computers and basic web cameras, to conduct a functional analysis. The previous research by Barretto et al. (2006) made use of a telemedicine network located at a major medical facility. While many specialists and schools do not have access to telemedicine networks, most probably have access to less expensive videoconferencing equipment (e.g., laptop or desktop computers, Internet connection, and web cameras). Second, the findings of Barretto et al. suggest that future research should determine the efficacy of functional analysis results conducted via videoconferencing by examining the power of behavior support plans derived from such results. In this study we developed and evaluated interventions in the classrooms that were derived from the functional analyses conducted via videoconferencing.

**Method**

**Participants and Settings**

Juanita was an 11-year-old Hispanic female and Jesse was a 7-year-old Caucasian female. Both girls were diagnosed with moderate intellectual disability and scored in the severe range of the Childhood Autism Rating Scale (Schopler, Reichler, DeVellis, & Daly, 1980). Neither girl had any spoken language. The functional analyses were conducted in an assessment room at the school the girls attended. The assessment room was equipped...
with a table and several chairs. Observation, data collection, and supervision/coaching of the functional analysis procedures were conducted in a separate room at the same facility that will be referred to as the observation room. While observation and data collection could have been conducted in any locale where broadband facilities were available we decided to conduct the observations in the same facility. As a functional analysis had not been conducted using this technology before we wanted doctoral supervisors to be physically available in case there were unforeseen difficulties during the assessment process. Graduate students in special education with no experience implementing functional analyses served as implementers, conducting the functional analyses in the assessment room. Advanced doctoral students (board certified behavior analysts with extensive experience conducting functional analyses) served as supervisors and observers in the observation room.

Both girls attended a special school for students with autism. The girls attended the same classroom. Five other students with similar disabilities and four staff (including one certified special education teacher) were typically present in the classroom. The interventions, derived from the results of the functional analysis, were conducted in the classroom.

Target Behaviors

Challenging behaviors were measured during the functional analysis and classroom intervention for both girls. For Juanita challenging behavior included, aggression (striking the therapist with an open hand or closed fist), property destruction (throwing or tearing instructional items), and self-injury (mild striking the side of her head with her hand). For Jesse challenging behavior included, dropping and lying on the floor, screaming (loud noises significantly above the conversational level), and self-injury (mild striking the side of her head with her hand). These challenging behaviors did not cause physical injury to the participants or the therapists during the study. Engagement was also measured during intervention in the classroom. Engagement was defined as being actively and appropriately involved with instructors or items (e.g., responding appropriately to teacher prompts and manipulating materials appropriately).

Videoconferencing Equipment

The functional analysis was conducted in the clinical assessment room while data collection, guidance, and supervision were conducted in the separate observation room via videoconferencing facilities. Videoconferencing was achieved using two 2.0 Ghz MacBook™ laptop computers with Mac OS X operating system, 2 external iSight™ cameras, iChat™ videoconferencing software, and a broadband Internet connection. The iSight™ camera has a 640X480-pixel video graphics array (VGA) and has auto exposure, auto focus, and video capture at 30 frames per second. Internal microphones of the iSight™ cameras were used to transmit sound and these cameras were placed on plastic standing mounts so that the experimenters could move them around as needed. One laptop computer with iSight™ camera connected via a single FireWire 400 (IEEE 1394a) cable was placed in the assessment room where the functional analysis was conducted. In the assessment room the computer was placed on a chair that was secured under a table. The camera was then placed on the table and adjusted to capture the area in which the assessment was to take place. The other laptop computer and iSight™ camera was placed in the observation room for data collection purposes. Data were transmitted via a wireless local area network (LAN) with Wi-Fi protected network access (WPN) maintained by the agency where the research was conducted. The confidentiality of data transmission was additionally secured through subscription to an Internet service providing a virtual private network (VPN) with 128-bit encryption.

Phase I: Functional Analysis

Procedure and Experimental Design

A functional analysis was conducted to determine the contingencies maintaining challenging behavior for Juanita and Jesse. A series of three functional analysis conditions
were examined (i.e., attention, demand, and play). Individual sessions of each of these conditions were 5 min in length and challenging behavior was recorded using a 10 s partial interval procedure during sessions. The expert supervisors in the observation room instructed the implementer who was conducting the functional analysis via the videoconferencing equipment. The supervisors collected the data on challenging behavior, indicated which conditions were to be implemented (e.g., attention condition), when to change conditions (e.g., move from an attention condition to a play condition), and provided corrective feedback when errors in implementation occurred. Individual participant multi-element designs were used to demonstrate experimental control.

In the **attention condition** the girls were free to engage with preferred materials, and the implementer ignored Juanita or Jesse unless challenging behavior occurred at which point the implementer delivered attention for approximately 10 s. This condition assessed whether challenging behavior was sensitive to positive reinforcement in the form of attention from others. In the **demand condition** the girls were engaged in a variety of instructional activities that were derived from their classroom curriculum (e.g., complying with verbal requests, identifying items from an array of pictures). Contingent upon challenging behavior the instructional items were removed for a minimum of 10 s and then immediately re-introduced once challenging behavior had ceased. This condition assessed whether challenging behavior was maintained by negative reinforcement in the form of escape from task demands. During the **play condition** the girls engaged in a variety of activities (e.g., playing with favorite toys) that they appeared to enjoy during observations prior to the assessment. The implementer interacted pleasantly every 10 s with the girls irrespective of their behavior during play. This condition served as a control condition for the other conditions as demands were absent and attention was freely available. An alone condition was not conducted as staff reported that challenging behavior did not occur when Juanita and Jesse were alone.

**Interobserver Agreement**

A second observer simultaneously yet independently observed 60% and 33% of functional analysis sessions for Juanita and Jesse respectively. These observations were also conducted via videoconferencing (the primary and secondary observers simultaneously viewed the functional analysis sessions on the same MacBook™). The number of agreements (occurrence and non-occurrence) for each 10 s interval during a 5 min session were divided by the total number of 10 s intervals for that session and multiplied by 100%. Interobserver agreement for Juanita and Jesse was 95% (range, 80% to 100%) and 90% (range, 83% to 97%), respectively.

**Results and Discussion**

The results of the functional analyses for Juanita and Jesse are presented in Figures 1 and 2 respectively. For Juanita, challenging behavior appeared to be maintained by access to attention (M = 28%) and escape from demands (M = 28%), with little challenging behavior occurring in the play condition (M = 5%). Challenging behavior for Jesse also seemed to be maintained by access to attention (M = 22%) and escape from academic demands (M = 79%) while challenging behavior was less frequent during the play condition (M = 8%).

This first phase of the study demonstrated that it was possible to supervise, guide, and collect reliable data during a functional analysis conducted via videoconferencing facilities. The expert supervisors periodically communicated with the implementers via videoconferencing for procedural reasons (to indicate a change in condition), to resolve minor technological difficulties (the web camera required adjustment), and to provide constructive feedback. During each communicative exchange, the implementers received both auditory feedback via the microphone connection and visual feedback from the videoconferencing window on the computer screen. Similarly, the supervisors were able to hear and see the implementers acknowledge instruction or feedback. The most frequent reasons for communication were to indicate a change in functional analysis conditions, or to
correct an error in implementation. If the implementer failed to correctly implement the procedures of a condition, they were immediately interrupted by the supervisor and instructed to engage in the correct action. For instance, if the implementer failed to respond correctly to a target behavior during a demand condition, the target behavior was first pointed out to them by the supervisor (“Jane, she just hit her head.”), and then the supervisor indicated the correct response (“remove the task demand”). More infrequently, the implementers initiated communication with the supervisor to elicit feedback (How am I doing?). In these instances, the supervisor responded with a brief statement of praise. The quantity and quality of interactions during videoconferencing were similar to the type of interactions one would expect when supervising a functional analysis in person.

In the next phase of the study we attempted to examine the efficacy of the results produced by these functional analyses. Ultimately, the applied efficacy of functional analysis results should be determined by their ability to dictate intervention strategies that reduce challenging behavior in real world settings.

Phase 2: Classroom Interventions

Procedure and Experimental Design

In this phase of the experiment we examined the effects of a behavioral intervention, derived from the results of a functional analysis, on Juanita’s and Jesse’s challenging behavior during regular classroom routines. Results of the functional analyses indicated that challenging behavior was maintained by escape from academic demands and access to attention from others. The functional analysis results also demonstrated that challenging behavior was relatively low for both girls during the play condition. During play sessions attention was freely available and no demands were placed on the girls. Based on these results we hypothesized that an intervention incorporating high levels of attention with academic demands interspersed among preferred activi-
ties might reduce challenging behavior and increase academic engagement during classroom instruction (cf., O’Reilly, Sigafoos, Lancerini, Edrisinha, & Andrews, 2005).

Sessions in this phase of the experiment were 30 min in length and were conducted in the girls’ classroom during normal classroom routines. In this phase we compared adapted instruction (based on the results of the functional analysis) versus typical classroom instruction. Both types of instruction (adapted versus typical) were conducted in a one-to-one format in the classroom. Observations of Juanita’s and Jesse’s behavior were conducted through a one-way mirror. Challenging behavior was measured using a 10 s partial interval procedure described in phase I of the study. Engagement was measured using a 10 s whole interval procedure. These measures were mutually exclusive (i.e., if challenging behavior was scored during a given interval then engagement could not be scored for that interval and vice versa). Sessions of adapted instruction and typical instruction were implemented in a multi-element treatment design fashion in order to demonstrate experimental control. This phase of the study was conducted over an 8-week period for each of the girls.

Typical Instruction
During the typical classroom instruction condition instructional goals derived from each girl’s Individualized Education Plan (IEP) were taught using a one-to-one instructional format. Educational activities included complying with verbal requests, identifying items from an array of pictures, and motor tasks. Instructional trials were delivered approximately every 12 s using either a time delay or least to most prompt system. Challenging behavior was ignored and instruction was continued until the end of each session.

Adapted Instruction
The adapted instruction condition was similar to the typical instruction condition. Instruc-
tional trials were again delivered every 12 s. Educational tasks and instructional strategies were the same as the typical instruction condition. However, between instructional trials the children were given access to preferred toys and received continuous positive attention. In effect, we replicated the play condition of the functional analysis (where challenging behavior was seen to be minimal) between teaching trials in the adapted instruction condition. Challenging behavior was ignored throughout these instructional sessions.

Interobserver Agreement

A second observer simultaneously yet independently observed 47% and 33% of instructional sessions for Juanita and Jesse respectively. The number of adapted and typical instructional sessions observed for reliability purposes was approximately equal for each girl. The number of agreements (occurrence and non-occurrence) for each 10 s interval during a 30 min session was divided by the total number of 10 s intervals for that session and multiplied by 100%. Interobserver agreement for Juanita and Jesse was 89% (range, 77% to 95%) and 84% (range, 75% to 95%) respectively.

Results and Discussion

Results of the typical instruction versus adapted instruction conditions on levels of challenging behavior and engagement are presented in Figures 3 and 4 for Juanita and Jesse respectively. There were clear differences in performance for both girls under the typical instruction versus the adapted instruction conditions. Challenging behavior was lower and engagement was higher under the adapted instruction condition for Juanita and Jesse. For Juanita, challenging behavior was low under the adapted instruction ($M = 13\%$) and high under typical instruction ($M = 39\%$). Engagement was high under adapted instruction for Juanita ($M = 70\%$) while engagement was low during typical instruction ($M = 25\%$). These findings were similar for Jesse.
Overall, results for phase II seem to indicate that an educational intervention, derived from the functional analysis, proved effective in terms of reducing challenging behavior and increasing academic engagement for both girls. These findings seem to demonstrate the efficacy of the prior functional analysis. Further, these findings in Phase II provide support for conducting a functional analysis via simple and widely available videoconferencing technology. Ultimately, the efficacy of a functional assessment should be defined by its ability to dictate effective interventions in applied settings. It seems that conducting functional assessments via videoconferencing may offer a viable strategy for clinicians and teachers.

General Discussion

In this study we demonstrated that widely available videoconferencing equipment could be used to provide supervision, guidance, and collect reliable functional analysis data and that these data can then be used to develop behavioral support plans to decrease challenging behavior and increase academic engagement in classrooms for students with autism. Expert supervisors were able to reliably collect data by watching the functional analysis in real time on a laptop computer screen. The supervisors were also able to both unobtrusively communicate the sequence and transition times of social conditions to the implementers and provide corrective feedback without being physically present in the assessment setting. These findings may have implications for future research on the use of videoconferencing technology to support assessment and intervention for students with autism and other severe disabilities.

In terms of the applied implications, this preliminary demonstration suggests that videoconferencing might provide teachers with a means of gaining support from specialists in a way that does not necessarily require the specialist to be physically present at the school. This could be an advantage in terms of financial cost and time commitment, as it re-
duces the need for travel. And, as mentioned in the Introduction, conducting pre-intervention functional behavioral assessment is considered best practice and is required under IDEA. For students with severe challenging behavior, functional analysis can be an important component of the FBA process (Sigafoos et al., 2003). However, teachers have reported difficulty implementing this type of assessment (Applegate, Matson, & Cherry, 1999; Ayres, Meyer, Erevelles, & Park-Lee, 1994), and state-developed FBA standards tend to provide more limited information and resources on functional analysis methodology in comparison to other FBA methods such as informant interviews and direct observations (Weber, Killu, Derby, & Barretto, 2005).

The technology reported in this paper has the potential to address some of the difficulties teachers face in implementing functional analysis methodology in educational settings and could enable educators to undertake the complex assessments that are required by legislation. As shown in this and other research, functional analysis can play a critical role in the development of effective, function-based interventions for reducing problem behavior and increasing appropriate behavior in students with severe disabilities. Further, given the emphasis in the functional behavior assessment literature on integrating information from multiple sources and methodologies (e.g., indirect assessments, direct observations, functional analysis) in developing a function-based intervention, it seems critical to develop strategies to support the use of functional analysis procedures, in addition to informant and observational methodologies, in educational contexts. An important area for future research would be to also evaluate whether this same technological approach would enable teachers to implement evidence-based practice in other areas of education for students with autism and other developmental disabilities, such as assessment and instruction of communication, social skills, and other adaptive behaviors.

Videoconferencing might also facilitate the supervision of pre-service teachers during their practicum experiences. University instructors are typically in charge of supervising large numbers of pre-service teachers, which often requires travel to numerous practicum sites and this can limit the number of on-site supervision sessions available to each pre-service teacher. For the purposes of learning to conduct such complex assessments as functional analysis, immediate feedback is preferred, but not always available for pre-service teachers. The use of videoconferencing to supervise teachers may facilitate the immediate feedback called for by researchers (cf., Lang & Fox, 2003) and could facilitate lengthier and more frequent supervision.

There are a number of limitations with the current research. First, this study was conducted with two participants thus limiting the generalizability of the findings. Future research should attempt to replicate this methodology with additional students. The implementers conducting the assessment had some prior exposure to functional analysis procedures during university classes. This exposure may have increased the likelihood of their successful implementation of the procedures. Ultimately, the applied veracity of this method can only be demonstrated by showing that it can positively affect the skills of practitioners such as teachers. Future research should directly examine the use of such technologies as a means to train such skills to teachers. In the present study videoconferencing was conducted within the same facility. Future research should replicate this methodology over greater physical distances. For example, wider access to specialists would arise if the approach proved workable when the specialist is based in a different state or country than practitioners.

References


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Assistive Technology User Group Perspectives of Early Childhood Professionals

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Abstract: With the increasing usage of assistive technology (AT) usage in early childhood education settings serving children who are at-risk or who have developmental disabilities, there is a corresponding need for effective professional development experiences such as user groups to develop skills in using AT. Using a collective case study approach, 10 teachers who had participated in AT user groups and who were using an AT toolkit in their classrooms were interviewed and provided responses regarding (a) perspectives of user groups, (b) use of the toolkit, (c) benefits of user groups, (d) concerns regarding user groups, (e) perceived effects of AT on teaching and decision-making, and (f) perceived effects of AT on the classroom. Themes of interviews are presented, supported by statements from teachers.

The role of instructional technology (e.g., computers, software, learning manipulatives) and its implementation in early childhood education has been repeatedly noted in the professional literature (Anderson, Grant, & Speck, 2008; Hains, Belland, Conceição-Runlee, Santos, & Rothenberg, 2000; Hohmann, 1994; National Association for the Education of Young Children [NAEYC], 1996; Tsantis, Bewick, & Thouvenelle, 2003). A vast array of new and emerging instructional technologies has assumed a powerful presence in the educational marketplace, calling attention to the fact that “Technology is not going away” (Appel & O’Gara, 2001, p. 36). This presence is often embraced by administrators, education professionals, and family members alike, reflecting a general societal acceptance of the potential for technology in education settings for young children (Loveless & Bore, 2002). As noted by Tsantis et al., “Well-prepared teachers, who recognize the power and limitations of technology, are needed now more than ever” (p. 8).

Similarly, a wide array of assistive technology (AT) applications for young children with disabilities is increasingly being used in early childhood settings nationwide (Judge, 2006; Mistreet, Lane, & Ruffino, 2005). An AT device is defined by the Individuals with Disabilities Education Improvement Act of 2004 (IDEIA) as “any item, piece of equipment or product system, whether acquired commercially or off the shelf, modified, or customized, that is used to increase, maintain, or improve functional capabilities of individuals with disabilities” [20 U.S.C. 1401 § 602(1)]. AT devices may be both low-tech (e.g., picture boards, adapted writing tools, switches) or high-tech (e.g., computers and software, augmentative and alternative communication [AAC] devices) in design. Potential benefits to young children who are at-risk or who have developmental disabilities and who use AT devices include increased (a) access to the curriculum and development of emergent literacy skills; (b) opportunities for play, movement, and communication; and (c) parental care giving (Campbell, 2004; Judge & Parette, 1998; Mistreet et al.; Moore & Wilcox, 2006; Sandall, Hemmeter, Smith, & McLean, 2005).

However, the mere presence of technology, whether instructional or assistive, is inadequate to ensure its effective use and implementation in early education service settings (Hutinger & Johanson, 2000). Professional development is a critical component for de-
veloping the requisite knowledge base and skill sets to use technology effectively in classroom milieus (Bruder, 1998; Epstein, 1993; Parette, Peterson-Karlan, Smith, Gray, & Silver-Pacuilla, 2006; Smith & Allsopp, 2005; Robinson, Schneider, & Hutinger, 2007). In considering professional development needs for teachers of young children to be able to use technology effectively, Epstein (1993) recommended that effective approaches should include (a) practical experience, (b) workshops, (c) models and mentors, and (d) supervisory follow-up. The importance of repeated opportunities to develop new skills has also been noted (Joyce & Showers, 2002), with particular emphasis on the importance of additional professional development after an initial workshop has been presented (Fullan, 2002; Joyce & Showers).

One approach that has been demonstrated to have great potential to develop AT knowledge and skills among early childhood education professionals is through implementation of user groups (Parette, Peterson-Karlan, Wojcik, Watts, & Stoner, 2007; Parette & Stoner, 2008). Parette et al. defined a user group as:

- a group of education professionals who (a) have a shared interest in AT, (b) are committed to developing new skill sets about an array of AT devices and implementation in the learning community, (c) are supported for their participation in the user group setting, and (d) share [emphasis added] their learning with other education professionals in the community. (p. 30)

In essence, the user group is a learning community (i.e., a group of people sharing common values and beliefs and who are actively learning together; Wikipedia, 2007) that relies on the expertise of one or more professionals having advanced AT skill sets, and who work/s with other education professionals seeking to develop new AT competencies for classroom implementation (Parette & Stoner, 2008). Group sessions are conducted using one or more of the following formats: (a) open-ended (that respond to issues and concerns solely identified by users); (b) scaffolded (to allow user input regarding direction of the group, while also communicating expectations for performance or accomplishments by the end of the session); or (c) highly structured (to allow specific content to be delivered based on assessed needs of participants). In each session, participants have opportunities to learn and use specific technology applications (e.g., specialized software for producing instructional materials to promote communication or literacy skills)—learning which can be immediately applied in their respective classroom settings. This new approach to learning is supported by the user group leader/s who provide instruction, information, resources, and who encourage individual and group problem-solving. Sharing of products that have been created in the sessions is also encouraged. At the core, then, user groups have the potential to (a) culminate in a dynamic learning community in which individuals develop advanced technology skill sets, (b) use these skills in developing and implementing the early childhood curricula, (c) consult with others within the learning community to jointly develop curricula products, and (d) make newly created classroom products available to others. The resulting learning community that evolves from the implementation of user groups has not been systematically explored, nor do we understand what education professionals who have participated in such a professional development approach perceive to be the benefits of user groups and the resulting learning community.

The purpose of the current study was to examine the perceptions of teachers and aides who had participated in a series of AT user groups. Specifically, the aim of this examination was to provide a better understanding of the perceived benefits of these user groups related to the development of AT knowledge and skill sets that were translated into early childhood education classroom practices. To further focus the study, three research questions were proposed:

1. How do teachers describe their perspectives regarding AT user groups?
2. What are the perceived benefits and concerns of user groups?
3. How do teachers describe the effect of AT on their teaching, decision making, and students?
Method

Participants

Participants were 10 teachers at an early childhood center in a Midwestern city. Five of the teachers were teaching children with identified developmental disabilities; four of these teachers taught full time, teaching one class in the morning and one class in the afternoon, and one teacher only taught in the morning. The remaining five teachers taught children who were identified as being ‘at-risk.’ One of these teachers taught in a bilingual classroom with a Spanish interpreter. Eight of the teachers participated in user groups and their perspectives are reported. The remaining two teachers (one taught the bilingual class and one taught children with developmental disabilities in the morning) were new to the school and did not attend user groups. Their perspectives are also reported since they offer valuable insight about entering a school “midstream” that was infused with AT. All teachers hold state teaching certificates and had varying levels of education and experience. Teaching assistants were staffed in each classroom (see Table 1).

Each of the teachers were participants in a 3-year project, Making a Difference Using Assistive Technology (MDAT), funded by the Illinois Children’s Healthcare Foundation (Parette, Stoner, & Watts, 2007; Parette, Watts, & Stoner, 2005; Parette, Wojcik, Stoner, & Watts, 2007). This project provided AT toolkits (Edyburn, 2000; Lahm & Case, 2003; National Center for Technology Innovation and Center for Implementing Technology in Education, 2006) to help develop children’s emergent literacy skills in 10 preschool classroom settings. The toolkit contained a (a) Dell™ personal computer and keyboard, (b) microphone, (c) scanner, (d) digital camera, and (e) ceiling-mounted projection system with Bluetooth keyboard and wireless mouse. Software included in the AT toolkit included the Intellitools® suite, Boardmaker™ with Speaking Dynamically Pro®, Writing with Symbols 2000, and Clicker® 5.

User Groups

Four morning two-hour user groups were offered in Summer, 2006, and four after school two-hour user groups were offered in Fall, 2006. Both sets of user groups were held at the university campus in the assistive technology center and teachers had access to computers with all the toolkit components installed on them. One member of the research team facilitated all user groups sessions, with the remaining researchers provided additional support when schedules allowed. Typically there was the user group facilitator and at least two other researchers in attendance at session. Teachers received a stipend of $250 for attending at least six out of eight sessions and program assistants were given $150 for attending three out of four Fall sessions. At each

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**TABLE 1**

Teacher Demographics

<table>
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<th>Teacher</th>
<th>Education Level</th>
<th>Yrs Experience</th>
<th>Classroom</th>
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<td>At-risk</td>
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<td>Teri</td>
<td>B.A.</td>
<td>3</td>
<td>At-risk</td>
</tr>
</tbody>
</table>

1 All teachers hold state teaching certificates
session a primary facilitator having an Assistive Technology Practitioner (ATP) credential led each user group session. Prior to user group sessions, both teachers and program assistants were queried via email regarding their preferences and interests in using the AT toolkit. This enabled the facilitator and other participating faculty members to ‘customize’ the user group content. CDs containing information used at the group meeting were provided to participants that included listings of Web resources, Microsoft PowerPoint™ files, PDF files, multimedia productions, and other supports.

At most sessions, participants could discuss their learning needs and issues at the beginning of the user group session, followed by a response on the part of the facilitator and support faculty to meet those articulated needs. User group sessions focused on direct training in the use of each of the applications to create classroom literacy products, coupled with use of multiple tools to develop products. Specific topics for user group sessions included (a) Using Boardmaker™ and Speaking Dynamically Pro®, (b) Social Stories™ and Power Cards for supporting positive behavior change, (c) Using Writing with Symbols 2000, (d) Multimedia Interactive Books, (e) Microsoft PowerPoint™, and (f) Introduction to Clicker® 5 and Intellitools®.

TABLE 2

Interview Questions

1. Describe your impressions of the user groups.
2. What experiences within the user groups did you value the most? Why?
3. What experiences were the least valuable? Why?
4. In each user group you set individual goals—Can you talk about that process and the outcomes?
5. Describe how the AT has affected your students.
6. How have you used AT in the classroom?
7. Describe any collaboration that has resulted from the user groups. Have you shared and has anyone shared with you?
8. How has this AT experience influenced your teaching and decision making?

Research Design

Qualitative methodology was used to allow the researchers to deeply explore the perspectives and gain insight into the feelings, emotions, and thought processes of the participants (Creswell, 2002; Strauss & Corbin, 1998). Numerous researchers (e.g., Bogdan & Biklen, 1998; Leedy & Ormrod, 2001; Millan & Wergin, 2002) note the benefit of using qualitative research to investigate a phenomenon or experience about which little is known. Specifically, no research has investigated the perspectives of teachers about AT user groups. Additionally, understanding the perspectives of teachers as user group participants was deemed essential to the MDAT project.

Interview questions were developed to address the research questions (Kvale, 1996) and semi-structured interviews lasting approximately a half-hour were conducted with all participants individually. Semi-structured interviews allowed the researchers to ask for clarification or additional information. (See Table 2 for a list of interview questions.) All interviews were audio-taped and transcribed verbatim to ensure accuracy. The user group facilitator did not interview the teachers. Two researchers, who had been present at the school for the past two years conducting assessments, collecting writing samples, and working on other training aspects of the MDAT project conducted the interviews. This procedure was intentionally implemented to remove any hesitancy on the part of the participants to express concerns to the user group facilitator and to ensure a level of familiarity with the interviewer.

Data Analysis

This study employed collective case study methodology (Stake, 2000), involving the study of more than one case in order to “investigate a phenomenon, population, or general condition” (p. 437). This approach as-
sumes that investigating a number of cases will lead to better comprehension and better theorizing. Cross-case analysis was used to analyze each individual participant responses as a whole entity. A comparative analysis of all participant responses was then conducted which allowed researchers to see processes and outcomes across many participants, thereby developing a deeper understanding of the emerging phenomena through more powerful descriptions and explanations (Miles & Huberman, 1994).

After completion of the interviews, the data were analyzed using a line-by-line multiple coding approach (Barbour, 2001). The researchers analyzed each interview independently and then met frequently as a group and developed categories based on their individual line-by-line coding. Disagreements about the categories were discussed, categories were refined, expanded, and/or deleted as needed, and concordance was reached (Barbour). The constant comparative method by which researchers continually returned to the data for analysis was used as an overall methodological framework (Charmaz, 2000). Three members of the research team (i.e., three faculty members in a Midwestern university’s Department of Special Education) analyzed the data. Outside expert validation was completed by the fourth member of the research team, who was presented with the categories and transcripts and concurred with the findings.

Confirmability

Confirmability of the findings was achieved through three approaches: (a) triangulation (Creswell, 2002) of incidences that occurred across cases and confirmed through observations in the classroom, (b) respondent validation (Creswell, 2002), i.e., confirmation of graphic and textual findings presented to participants regarding the researchers’ understanding of observations; and (c) member checks (Janesick, 2000), or allowing participants and the school principal the opportunity to review and quotes used in this report. All participants confirmed the findings.

Findings

The findings are organized by the research questions: (a) perspectives of user groups, (b) use of the AT Toolkit, (c) benefits of user groups, (d) concerns regarding user groups, (e) perceived effects of AT on teaching and decision-making, and (f) perceived effects of AT on the classroom. In addition, interviews with two teachers who were new to the school, had not participated in the user groups, but had begun teaching at the school with the AT in their classrooms, are discussed.

Teacher Perspectives of User Groups

When asked to describe their impressions of the user groups, teachers spoke of the knowledge they had gained and the camaraderie they had enjoyed. Initial responses were overwhelmingly positive.

I’ve really enjoyed the user groups. I think they’ve been very helpful. This year after the user groups I really feel like the first year, we were just inundated with stuff, which we fully appreciated, but then this year after the user group I really felt like I got the time to implement it in the classroom and learn about it. And become proficient in it, you know?

Responses like Barbara’s above were indicative of the overall positive perspectives the teachers held. Subsequent questions elicited more details of user group benefits and specific concerns.

Use of AT Toolkit

Teachers were asked to describe their use of the AT toolkit and a wide variety of AT was mentioned and is listed in Table 3 with quotes illustrating how each was used.

Benefits of User Groups

Benefits of user groups emerged in response to the first question as well as in responses to the question that specifically asked teachers to describe what was most valuable. Responses were categorized and the resulting categories included benefits of time, individualized support, collaboration, and an increase in knowledge, skills, and self-confidence. Each of these categories is discussed in detail.
Benefit of Time

Anyone who has ever been in an early childhood classroom understands the response of all teachers that focused on the benefit of having a large block of time set aside to learn and use AT. Jane spoke specifically of the pressure she feels during the school day due to lack of time, “So, that’s why the user groups are so beneficial to us because we only have, sometimes a half an hour before school, maybe a half an hour during lunch and planning time, and then a half hour at the end of the day. And that’s not really a lot of time . . . where do I begin and then have to stop in 15 or 20 minutes because I’m out of time.”

Benefits of time included the time to learn a specific AT and have the opportunity to practice and explore that AT. Toni stressed this in her response, “And you got to practice the skill so that you knew that skill and you kept that skill rather than doing something new every time but never having enough practice to actually acquire it.” The value of time was intertwined with the organization of the user groups and exposure and time to practice were unanimously viewed as a benefit.

Additionally, teachers spoke of the benefit of having the time to actually produce a product that addressed the needs of their classroom. Carole stated, “Anytime I felt like I could complete something that I knew I would use, that just made all the difference to me. It made it all worthwhile, going to the user groups.”

Benefit of Individualized Support

The structure of the user groups allowed each participant to produce an individual class-

### Table 3

<table>
<thead>
<tr>
<th>Selected AT Tools</th>
<th>Selected Quotes Exemplifying AT Use</th>
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| Boardmaker™                | We’re using a lot of the pictures, the Boardmaker™ pictures, for requests and you know things like snacks. We usually make a lot of them and we’ve got them for everything. We’ve got little visual prompts outside of the classroom because they can’t remember what they’re supposed to do when they get to school. *Donna*
|                            | We had an intervention meeting [on a particular student] and I’m using Boardmaker™ cards specifically for her intervention. And in the meeting they said ‘Well, who wants to make them?’ and I said ‘I’ve already got it done!’ Anytime I felt like I could complete something that I knew I would use, that just made all the difference to me. It made it all worthwhile, going to the user groups. *Carole*
| Writing with Symbols       | Using Writing with Symbols, I can produce something to put on their locker with their art project and their words are there. And they say, ‘That is what I said!’ And they remember what they said. *Jane*
|                            | Writing with Symbols has been awesome with the students who are more verbal especially as far as telling me a story about something. Like my dinosaur in New York. And then having them see their words coming up on the screen and matching some words with pictures and knowing the value of their words. And they can’t always read it back but the pictures help them remember what they’ve talked about. *Ellen*
|                            | Well, if there’s a picture of them on a power point you’ve captured their interest forever. I will say that. I mean the [projection] screen has been really fun. We’ve had a really good time with that. *Toni*
| Projection Screen          | I think the students enjoy it, like what I did with power points, they’re excited and they want to watch it over and over again on the screen. *Barbara*
room product. These products were designed by the teachers and varied in complexity of technology. For example, one teacher who had no experience or knowledge of PowerPoint™ before the MDAT grant, was thrilled with her PowerPoint™ product which contained clipart and sound effects. Another teacher, with more advanced technology skills, produced a power point that had digital pictures of students embedded with the student voices. Yet, each of these teachers was appreciative of the support that addressed their abilities, gave them knowledge to gain more skills, and focused on their individual classroom needs. Donna’s response highlights the importance of support to produce her own product:

Because the training has to be hands-on, particularly for me, and then we were allowed to work on things that were of our own interest. And that is much more motivating, much less frustrating, than sitting in a classroom and talking about, you’re going to do this and by the time you get back to work you’ve forgotten.

Ellen, who was the teacher with the highest level of AT skills, also stressed the benefit of having support available:

The user group, first of all it was nice to have a defined time that you knew that you were going to be working on something at that time and that place. So, that was good. Also, to have resources and people available to answer your questions right on the spot so that you didn’t give up something in frustration and put it off for a later time and then never get back to it. So that was a good opportunity.

Individualized support coupled with blocks of time to create a functional product was highly valued by all teachers.

Collaboration

Sharing of products was encouraged throughout user group sessions. Individual products were available on a shared network drive at the preschool. In addition, teachers readily shared created products with each other via email. As Toni states, “People are very quick to share.”

All teachers spoke of the benefit of sharing products (e.g., PowerPoint™ presentations, Boardmaker™ visual charts) when individual products were sent to all teachers in the building. Karen spoke of the value of receiving products and AT information from other teachers,

We [all the teachers] had sent emails when we finished a PowerPoint. We just said ‘you’re welcome to use this’ and then you get feedback saying the kids liked it. Or even the websites, you know, ‘Hey, I found a good website, check into it’. So, just sharing what works and what doesn’t, or if we’re talking about a theme and someone says ‘Oh yeah, I did this.’ It’s just really opened up another door as far as using the technology.

Teri stressed the time saving component of collaboration, “So, it’s really easy, you know, everybody makes one for winter and suddenly you’ve got eight books to read with the kids and you only had to spend the time to make one.”

However, collaboration encompassed more than just sharing products. Teachers spoke of being more comfortable with asking others for technical assistance. Jane illustrated this,

I mean if we created anything before [user groups] we might, if we had a ditto or something, we might leave one down at the mailbox with a note saying feel free to copy this or whatever. But now, we’re really using our skills and then if we see something, if someone puts sounds or a movie or something on the PowerPoint for instance then you’re more inclined to go to that person and say, ‘That was really cool. Can you show me how to do that?’ And it kind of opens it up a little bit more for communication.

Teachers worked in the same room during the user groups and that close proximity sparked an interest in their colleagues’ products and ideas. Barbara excitedly talked about learning from others, “I came [to the user groups] with some ideas and sometimes I still came without much. But being with fellow teachers, there was, you know, a lot of buzz in there and I
thought, oh yeah, here is something that someone else is talking about.”

Collaboration encompassed sharing products as well as technical skills. Collaboration was appreciated by all and became an underlying value of user groups that transferred to the school setting.

**Increase in Knowledge, Skills, and Self-Confidence**

One of the most predictable benefits of user groups was that of an increase in knowledge and skills related to AT. All teachers, regardless of their pre-existing skills, identified numerous areas of growth in AT knowledge and skills. Carole, who acknowledged her low technical skills:

“I felt like I wasn’t on the same page or level as some of them [teachers]”, reported major gains in her technical ability. Well, the most valuable thing to me was just to get a sense that I can do these things, you know. That I felt like I had some training. That I felt like I had some training. That I could go to a computer, turn it on, go to Websites. I can use Boardmaker™!

An increase in skills, regardless of initial technical ability, was confirmed by Ellen, who may had more technical knowledge because she had an university course in AT, “The opportunity to have people to answer questions and at the same time giving you as much help or as little help as you needed was of great value.”

Yet, beyond the technical aspects of using AT, teachers gained insight into application of AT to meet class and individual student needs. AT was used to supplement teaching materials and also to assess IEP objectives. Donna describes how she uses AT with assessing her students, “When I test students on things like shape identification, interactive things on the computer are just more interesting to them.”

Each user group began with teachers setting individual goals for themselves and then at the end of the user group they evaluated how well they met that goal and what they had produced. While not all teachers liked this process, many found they were able to focus on learning a specific aspect of AT and had the added benefit of leaving with a product. Jane favorably described this process:

We were given a piece of paper that kind of helped us write out what we wanted to accomplish that day and then at the end of time, what did I accomplish, what did I produce? It was good to be able to put it on paper. Okay, I have all of this at my disposal, all these new software and materials that I’m not familiar with or not familiar with at all. ‘What do I want to master today?’ A lot of mine just started out, like the social story, I don’t know what a social story is. I want to know what that is and how I can use it in my classroom. And I did and I created some of those . . . setting goals was a good way to hold yourself accountable.

Teachers identified an increase in AT knowledge and skills, an increase in AT application, and an overall increase in their self-confidence with AT. When coupled with the previously discussed benefits of time, individualized support, and collaboration, the user groups were perceived as a significant benefit. However, concerns also emerged about the user groups.

**Concerns Regarding User Groups**

Teachers identified three primary concerns regarding user groups: (a) lack of time, (b) feelings of frustration based on varying technical abilities, and (c) logistical concerns. Each of these is discussed in the following section.

**Lack of time.** Lack of time emerged specifically over the introduction of a particular AT product system that included specialized software with numerous templates and activities for use with an adaptive keyboard, and the resulting difficulty in achieving operational competence. This AT was introduced during the last user group; however, it was complex and truly required more time for practice than the teachers were given. Toni described her frustration in stating, “It [the product system] was introduced to me. I do not know how to use it. We didn’t spend enough time on it, we didn’t get to review it, and we didn’t actually use it.”

Lack of time to practice with this AT was an unintentional error on the part of the trainers. Yet, this situation illustrates and reinforces the perceived value of practice that offers nov-
ice users a sense of operational competence enabling them to effectively learn to use the
technology and then apply it when developing
and implementing functional classroom activ-

Frustration. As mentioned previously,
to there were varying levels of abilities and expe-
ience regarding AT among the teachers. While the user groups were designed to offer
individualized support and allow participants
to work at their own speed, there were times
when all had to proceed as a group. This was
especially evident at the beginning of the user
groups when software had to be installed and
the basic elements explained to all. Interest-
ingly, this led to feelings of frustration among
those with advanced as well as basic technical
skills. One participant, Teri, who may have
been very proficient with AT because she com-
pleted an university course in AT, explained
her perspective, “Sometimes though, we spent
so much time on installing a program or
something that I knew pretty well . . . that gets
a little old. I’m fairly good with that stuff so,
sometimes we started a little too slow for me
and I got a little impatient.” Similarly, teachers
who had less advanced technical skills some-
times felt uncomfortable. Toni described this,
“I think that there’s a wide variety of abilities
and there’s a wide variety in terms of abilities
for us and for our kids. And when we’re all
trying to do the same thing and it was just
something new, it wasn’t comfortable.”

Carole spoke of this at a more personal level
by noting,

I felt a little . . . like ‘oh, man, they’re really
getting something done here’ and I was still
back on stage one. So, I felt a little awkward
or sometimes felt like my time wasn’t as
useful to me. You know, I saw some of the
other ones [teachers] completing their
projects or a whole project and I’m still
back on stage one.

Teachers were keenly aware of their own
shortcomings and the higher skills of some of
the other participants. This concern was not
expressed openly during user group activities,
but emerged during the individual interviews.

Logistical concern. The third major concern
teachers identified was logistics. Many teach-
ners were producing products that required
materials housed at their school such as, card-
stock, colored paper, or digital photos of their
students. Teachers realized the benefit of be-
ing in the same room at the AT center with
computer access for all, but desired to have
materials available to complete their projects
as they wanted. Jane shared her desire about
this, “I think that being able to use our own
computers and then all of our pictures and
things are on there at our disposal.”

The concerns teachers expressed concerning
the user groups were a lack of time to
learn a specific AT device, feelings of frustra-
tion with varying abilities in the user groups,
and logistical concerns about availability of
materials needed for production of a product.

Perceived Effect of AT on Teaching and Decision-
Making

When teachers were asked if AT had affected
their teaching and/or decision making their
responses were positive. Ellen responded that
AT had influenced, “Everything I do. I’m us-
ing visuals and pairing pictures with words
and it just is an appropriate means of educa-
tion for the level of the students that come
through my door.” Toni explained the effect
AT has on her teaching:

I think it enhances the curriculum. I think it
has been interesting to find different ways
to bring it in. And when we do a unit, we
stop and think Is there a good PowerPoint
that goes with this or which one of us wants
to make these cards so we can share, this
bingo game, or whatever it is you’re mak-
ing.

Carole described how she automatically thinks
about AT when she is teaching:

I just think that I strive for, ‘How can I put
it into technology?’ So, I’m constantly
thinking, what will make this be a bigger
picture? Like when they’re laughing be-
cause they see a groundhog going through
a tunnel. We talk about fast and slow or I
bring in all the actions. It’s real life to them
on the computer and the animation that
comes through instead of stick figures. I
think I just see an increase in their desire to
participate in the activities as students.
Teri cited a personal example of how AT has increased her awareness of and ability to respond to the vocabulary needs of her students:

Like the word ‘igloo’. Nobody knew what it was and a lot of typical kids know what an igloo is. So we used AT to get a picture in Boardmaker™ and used it in a Bingo game. And then I used the cards for vocabulary and big pictures with a pocket and we might say ‘In winter I see . . .’ and then we go through them and put them in [the pocket].

Several teachers described situations with individual students that prompted either a change in their approach with that student or the ability to create an intervention support that was appropriate for a particular student. Donna spoke of a situation that changed her expectations and approach with one student with autism spectrum disorder (ASD) due to his response to a sentence completion task that was projected onto the large screen:

Well, we had just talked to parents and asked if they heard him speak more than one word because we weren’t hearing it. He came over to tell me a story and usually he doesn’t, but he came this day. I was modeling for him ‘Tell me what you really like’. And I couldn’t get anything out of him and I was typing and it was showing on the big screen and he was watching and then I typed, ‘I love . . .’ and just waited. He reached for the keyboard and he typed d-i-n-o-s-o-r. Yes! The previous student’s story had a picture, you know the picture popped up of a dinosaur and he saw that on the screen. So I went back and respelled it so the picture would come up and that was quite a moment with that child and then he read, he read, ‘I love dinosaurs’. And he is hyperlexic but usually he just writes, he’s not verbal.

Now that Donna knows he is capable of verbalizing she says “Poor kid, he is going to be doing a lot of stories”.

Another benefit of AT was the ability to immediately produce a product to respond to a specific situation. Jane spoke of a student who was exhibiting inappropriate behavior on the school bus. Since one of the user groups had focused on social stories, their purpose and how to produce them easily, Jane was familiar with this intervention. She describes the use of AT:

After I learned how to do a social story, a problem came up with a student on the bus and within 15–20 minutes, using pictures I had taken from our memory book (digital pictures of the students at various locations in school) I could create a social story quickly. I had a child that had good days and bad days on the bus with behavior, laying down on the floor, being very disruptive and disrespectful and one day he was not allowed to ride home. He had to sit in the office until his mother came to get him. So, in that time, I came down to the classroom, put together a social story about good choices on the bus and how Miss Jones wants me to make good choices on the bus, my mom wants me to make good choices on the bus, I want to make good choices on the bus. You know things like that. And within 15 minutes I was back in the office reading it with him, show his Mom and have her read it to him at home. He was just so thrilled that he had his own story and it really clicked with him. I haven’t heard of any bad days in weeks, so it’s been effective.

Perceived Effect of AT on Classroom

While teachers spoke of situations where AT affected individual students they also conveyed their excitement about how AT affected their entire class during group activities. The overwhelming response was that students were more engaged when LCD computer images were projected onto the large screen. Teachers reported that students would request using AT and when the large screen was pulled down they were captivated. Ellen offers an example of the effect on her class of students with developmental delays,

I think it has helped get their attention. Assistive technology, as far as using the projection unit has been phenomenal for attending, with a power point or a game. I think it goes back to our society where television and technology is such a big part at home. But this way of having the projection unit with things that I want to put on there
has a direct purpose for the unit. I’ve got their attention and it is not just sitting mindlessly. They’re doing something, they’re reviewing, and we’re talking about colors. So it’s using something they’re familiar with and motivated to use. And it is for goal purposes or my intent on their growth and thinking.

Numerous teachers thought that the attention students gave the LCD projection on the large screen was due to the immersion some students have with television, movies, or computers in their homes on a regular basis.

**Perspectives of New Teachers Regarding AT in Their Classrooms**

There were two teachers who were hired after the MDAT grant was in place, one was hired at the beginning of the year and had a bi-lingual classroom and one was hired mid-year to teach a class with developmental delays. The new teachers were invited but did not choose to attend the user groups. The teacher who was hired at the beginning of the academic year conveyed the reasons for non-attendance to be personal, (i.e., he lived out of town, had a young daughter he had to care for, and was busy learning his new job). The first-year teacher who was hired mid-year gave no reason for non-attendance. However, she talked about her use of AT in the classroom and the benefit to her students with developmental delays. She was a recent graduate of the local university and had learned AT during her teacher education program. She described the benefit of using visuals with her students, and talked knowledgeably about the use of Boardmaker™, Writing with Symbols, and Intellitools®.

The teacher of the bi-lingual classroom described his frustration with the AT in his classroom:

You know, I’ve basically had to teach myself in a lot of ways how to use it. And I’m still very confused with some of the programs and I want to use it to the best of my abilities. You do what you can do. Plus, being new to the district, I’ve got other things that I’m trying to learn.

However, he did seek assistance from other teachers once he saw the projects teachers in the school were making with the AT. As he noted:

There’s two teachers here that I usually go to ask for help that I know have used it a lot. I will go into Ellen’s room a lot and ask her help and she’s pretty good about helping me and stuff. So I go in before or after school and ask them how to use it. Or if I see something they’ve done I’m like, ‘Well how did you do that?’ A lot of the stuff was in my room and I didn’t know what it was and I had to be the one to ask ‘What does this do?’

Consequently, this new teacher did use AT, appreciated the benefit of AT with his students, and sought out assistance when he did not know a program. Yet, he did not attend the subsequent summer user groups.

**Summary of Findings**

Teacher responses yielded five primary categories: (a) overall perception of user groups, (b) benefits of user groups, (c) concerns regarding user groups, (d) perceived effect on teaching and decision making, and (e) perceived effect on the classroom. In addition, Table 2 summarized toolkit use with teacher explanations of how they use that piece of the AT toolkit with in their classrooms. Overall, user groups were perceived positively with teachers illustrating the positive effects of AT and user groups on themselves and their students.

**Conclusion**

Current education mandates present immense challenges to early childhood education professionals regarding the use of AT in classroom settings with students who are at-risk and who have developmental disabilities. Growing concerns regarding child (or user) ‘outcomes’ (i.e., documented data to demonstrate the effectiveness of specific AT solutions) subsequent to AT implementation in the curriculum have been noted (Assistive Technology Outcomes Measurement System, 2007; Consortium on Assistive Technology Outcomes Research, n.d.; Edyburn, 2006; Edy-
burn, Fennema-Jansen, Hariharan, & Smith, 2005; Parette & Dikter, 2006; Parette et al., 2006). Compounding the importance of documenting child outcomes is the emphasis of the No Child Left Behind Act of 2001 (P.L. 107-110) on achievement for all students—including those with disabilities. Preparation for success in public school classrooms begins in early childhood settings, and given the compensatory aspects of an AT device (i.e., it allows a child to do something he or she could not do without the device at the expected performance level; Parette, Peterson-Karlan, Wojcik, & Bardi, 2007). This places considerable responsibility on preschool education professionals to have the requisite skills to successfully be able to participate in the general education curriculum (National Early Childhood Technical Assistance Center, 2006). Since AT is required to be ‘considered’ when developing individual family service plans (IFSPs) and individual education programs [IEPs; Individuals with Disabilities Improvement Act of 2004; 20 U.S.C. 1401 § 614(B)(v)], there is an even greater obligation on the part of preschool education professionals to develop an AT knowledge base and to implement AT with children. Arguably, however, child outcomes in classroom settings are contingent upon teacher knowledge and skills regarding AT consideration and implementation.

Given the increasing emphasis on AT outcomes in educational settings, teachers have expressed support for user groups as a professional development venue to help them develop knowledge and skills to more effectively use AT in educational milieus with young children. This is particularly important given that relatively little research is available regarding the use of AT devices with this population (cf. Campbell, Milbourne, Dugan, & Wilcox, 2006; Lankshear & Knobel, 2003), even though consideration of AT is mandated by IDEIA.

Although this paper has focused on teacher outcomes subsequent to a targeted professional development experience, there is still an immense need to examine how the user group experience of these early childhood teachers impacted child outcomes in their respective classroom settings (i.e., how did the skills they acquired and used in the delivery of instruction result in specific child outcomes?). In the MDAT project, an emphasis has been placed on emergent literacy activities using the AT toolkit. Writing samples, standardized tests, and other measures have systematically been collected on more than 300 preschool-age children served in the project, though correlational and other statistical analyses have not been conducted to understand the relationship between the amount of user training received and child outcomes. Such analyses will provide the field with a better understanding of the professional development potential of user groups.

**Limitations**

This study involved a small sample of teachers serving young children who are at-risk or who had developmental disabilities, and thus the findings may not be generalizable outside the educational milieu described herein. No attempt was made to examine variations in preservice teacher training experienced by the participants, nor was an effort made to differentiate young versus older technology users. Recent studies have reported substantial differences in technology preferences and use patterns between Baby Boomers and Gen Xers (Oblinger & Oblinger, 2005; Parette, 2006; Peterson-Karlan & Parette, 2005; Parette et al., 2008). Examining the demographics of the teachers participating in this study indicate two distinct groups of professionals representing both Baby Boomers (born between 1946 and 1964) and Gen Xers (born between 1961 and 1981). Whether or not generational influences affected perceptions of user groups and AT use patterns that followed afterwards cannot be determined.

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National Association for the Education of Young...
Predicting the Learning Ability of Children with Autism: The Assessment of Basic Learning Abilities Test versus Parents’ Predictions

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Abstract: The Assessment of Basic Learning Abilities (ABLA) test is a useful assessment and training tool for persons with developmental disabilities. The present study assessed the predictive validity of the ABLA test with 16 children diagnosed with an autistic spectrum disorder, eight who performed at ABLA Level 4 and eight who performed at ABLA Level 6. Twenty criterion tasks were selected, four at each of five ABLA levels. Predictions were made based on ABLA test performance and by parents as to whether each child would learn each of the criterion tasks (given certain conditions). The researchers then attempted to teach the 20 criterion tasks to each child until they reached either the pass standard or the fail standard of the ABLA test. Ninety-four percent of predictions based on ABLA performance were confirmed, and the ABLA test was significantly more accurate for predicting a child’s performance than were parents.

As a result of extensive research since the 1960s, ABA was recognized by the Surgeon General of the United States as the treatment of choice for children with autism (New York State Department of Health, 1999). Intensive early intervention (approximately 40 hours per week for at least two years) can lead to substantial improvements in young children with autism, with approximately 40% of the children receiving such treatment going on to become indistinguishable from their peers in regular educational settings (Cohen, Amerine-Dickens, & Smith, 2006; Connor, 1998; Rogers, 1998; Schreibman, 1997; Lovaas, 1987; McEachen, Smith, & Lovaas, 1993; Sallows & Graupner, 2005). For the remaining 60% of such children, however, treatment gains have varied, and in many cases have been quite limited. A part of the problem is that children with autism present severe deficits in discrimination learning ability. What is needed for many children with autism are better methods for assessing their discrimination learning abilities, and for matching the training demands of different tasks to the discrimination learning abilities of individual children, in order to improve the efficiency and effectiveness of training.

The Assessment of Basic Learning Abilities (ABLA) was developed in order to assess the ease or difficulty with which individuals with intellectual disabilities are able to learn one imitation task and five basic two-choice discriminations thought to be prerequisites for learning many self-care, education, and pre-vocational tasks (Kerr, Meyerson, & Flora,
The ABLA

The ABLA assesses the ease or difficulty with which individuals with intellectual disabilities are able to learn: (a) Level 1, a simple imitation – a client demonstrates imitation ability if the teacher’s behavior of placing an object into a container is imitated; (b) Level 2, a two-choice position discrimination – when two containers are in a fixed position a client consistently places an object in the container on the right hand side; (c) Level 3, a two-choice visual discrimination – two different containers are randomly presented in left-right positions and a client consistently places an object in the correct container regardless of its position; (d) Level 4, a two-choice visual match-to-sample discrimination – a yellow can and red box are placed in front of a client, and when given a yellow cylinder or red cube, the client puts the object into the corresponding container when the teacher says, “red box” or “yellow can;” and (f) Level 6, a two-choice auditory-visual combined discrimination – a client correctly places an object into a yellow can or a red box when the position of the containers and the teacher’s requests are randomly alternated.

Kerr et al. (1977) designed a set of testing rules for determining if a client would pass or fail each of the above six tasks. A task (such as Level 4) is introduced with a demonstration, a guided practice trial, and an opportunity for the client to respond independently. After a correct, independent response, scoring on that task begins for that client. On each trial, a client is reinforced with praise and an edible following a correct response, and errors are followed by a correction procedure. The error correction procedure is a repeat of the demonstration, practice trial, and opportunity for an independent response. Testing on a task continues until the client achieves a pass standard of eight consecutive correct responses, or a failure standard of eight cumulative errors. For many clients, all six tasks can be assessed in approximately 30 minutes.

Generalizations from Research on the ABLA with Persons with Intellectual Disabilities

Research on the ABLA indicates the following: (a) the six ABLA levels are hierarchically ordered such that individuals who are able to pass a specific level of discrimination (e.g., Level 3) are also able to pass at lower levels (e.g., Levels 1 and 2) and individuals who fail a specific level of discrimination (e.g., Level 4) also fail at higher levels (e.g., Levels 5 and 6) (Kerr, et al., 1977; Wacker, 1981; Wacker, Kerr, & Carroll, 1983; Wacker, Steil, & Greenbaum, 1983); (b) failed ABLA levels are very difficult to teach using methods of standard prompting and reinforcement and often require hundreds of training trials before the level is acquired (Tharinger, Schallert, & Kerr, 1977; Stubbings & Martin, 1998); (c) training tasks that are matched to an individual’s ABLA level result in fewer aberrant behaviors than do training tasks that are mismatched to an individual’s ABLA level (Vause, et al., 2000; Vause, Martin & Yu, 1999); and (d) the ABLA test has demonstrated high test-retest reliability (Martin, Yu, Quinn, & Patterson, 1983).

Predictive Validity of the ABLA with Persons with Intellectual Disabilities

Six studies (reviewed by Martin, Thorsteinsson, Yu, Martin, & Vause, 2008) have evaluated the extent to which ABLA results predicted performance on a variety of simple imitations and two-choice discriminations. During such studies, several training (criterion) tasks were identified for one or more ABLA levels. For example, learning to match a sock to an identical sock (rather than a shoe) and matching a shoe to an identical shoe
(rather than a sock) would be considered an ABLA Level 4 criterion task. In those studies, researchers typically made two predictions: a) if a participant passed a particular ABLA level, then, using the standard prompting and reinforcement procedures of the ABLA test, it was predicted that the participant would achieve the pass standard (before meeting the failure standard) on criterion tasks at that level and lower levels; and b) if a participant failed a particular ABLA level, then, using the standard prompting and reinforcement procedures of the ABLA, it was predicted that the participant would reach the failure standard before achieving the pass standard on criterion tasks at that level and higher levels. Across the six studies, involving 69 participants, ABLA results predicted learning performance on the criterion tasks with 92% accuracy (Martin et al., 2008). In addition, two of the six studies demonstrated that ABLA results were a more accurate predictor of a participant’s performance on everyday tasks than the judgments of experienced staff members (Stubbings & Martin, 1998; Thorsteinsson et al., 2007). Also, ABLA results were a more accurate predictor of an individual’s performance on everyday tasks than global measures of intellectual ability such as standardized intelligence tests (Richards, Williams, & Follette, 2002; Stubbings & Martin, 1995, 1998).

The ABLA and Children with Autism Spectrum Disorders

To date, two studies have shown that the hierarchical order of the ABLA demonstrated for persons with intellectual disabilities also occurs for children with autism (Morris, 2002; Ward & Yu, 2000). In addition, Condillac (2002) assessed the predictive validity of the ABLA test for children with autism. Forty-six children with a diagnosis of both intellectual disability and autism spectrum disorder participated, including 2 children who failed all 6 ABLA levels, 1 child at Level 1, 5 at Level 2, 7 at Level 3, 16 at Level 4, and 15 at Level 6. Each child was administered the ABLA and then an attempt was made to teach each individual one everyday criterion task at each of the six levels. The results indicated that, across the six everyday tasks, predictions were confirmed for 72% of the children for the task at Level 1, 57% of the children for the task at Level 2, 80% of the children for the task at Level 3, 85% of the children for the task at Level 4, 87% of the children for the task at Level 5, and 87% of the children for the task at Level 6.

This study differed from the Condillac (2002) study in several respects. First, we used a greater variety of criterion tasks than were assessed by Condillac. Second, criterion tasks were only included after formal agreement by two ABLA experts regarding their designated ABLA level. Third, we assessed the predictive validity of the ABLA for children at Levels 4 and 6, rather than for each of the ABLA levels as did Condillac. Fourth, the accuracy of the ABLA results for predicting the performance of the children on the criterion tasks was compared to predictions made by the children’s parents. It was hypothesized that the ABLA test results would be significantly more accurate than the parents for predicting the performance of the children on the criterion tasks.

Method

Participants and Setting

The first group of participants included 16 children diagnosed with an autistic spectrum disorder who were between three and eleven years of age. Two girls and fourteen boys participated. Eight of the children passed ABLA Level 4 and failed Level 6, and eight children passed both ABLA Level 4 and Level 6. Five of the children were recruited from Children’s Special Services Manitoba and five from the St. Amant Applied Behavior Analysis Program for Children with Autism. In order to be accepted in the St. Amant Program for Children with Autism, children have to have been diagnosed by a licensed psychiatrist or psychologist. Six of the children were recruited from the Hamilton Niagara Regional Autism Initiative, Parent Support Groups such as Autism Ontario (Niagara Chapter), and from professionals in the field. The diagnosis for these six children was confirmed by a licensed psychologist. Children were tested and trained at their homes during half-hour sessions; for some children, these sessions were embedded in their regular training programs. The child-
rences’ characteristics are summarized in Table 1.

The second group of participants included one parent of each of the 15 children. Eleven mothers and four fathers participated (see Table 1). We did not ask the parents of Child 4 to make predictions about her performance on the training tasks because both parents saw and heard the testing being done. Thus, they were both aware of the child’s abilities to learn the training tasks.

### Materials

The ABLA test materials included a large yellow can approximately 15 cm in diameter and 17 cm in height, a red box with black diagonal stripes approximately 14 cm × 14 cm × 10 cm, a white irregularly shaped piece of foam that is approximately 5 cm in diameter, a yellow wooden cylinder approximately 9 cm long and 4 cm in diameter, and a red wooden cube with black diagonal stripes that is approximately 5 cm × 5 cm × 5 cm.

Four criterion tasks were identified for each of five ABLA levels. ABLA Level 5 tasks were not included. In six studies (cited in Martin & Yu, 2000) involving 197 participants who passed ABLA Level 5, 96% of those participants also passed ABLA Level 6. Thus, the original ABLA Level 5 is not very informative, and Martin and Yu recommended that it be deleted from the ABLA test.

The first author initially prepared a pool of potential criterion tasks. Two ABLA experts were then asked to assess the tasks to confirm their ABLA levels. Individuals were considered an ABLA expert if they met the following criteria: (a) a minimum of three years working with individuals with intellectual disabilities and or autism; (b) a minimum of 5 hours studying descriptions of each of the ABLA tasks and scoring criteria; (c) a minimum of 10 hours observing clients being assessed on the ABLA; and (d) a minimum of 30 hours of personal experience administering the ABLA (Stubbings & Martin, 1995, 1998). Criterion tasks were included only when both ABLA experts agreed with the first author on the ABLA levels.

Four criterion tasks at each of 5 ABLA levels were chosen so that two of the tasks per level were similar to the ABLA test materials and two of the tasks were different. For example, at ABLA level 3, two of the criterion tasks involved boxes and cans of different colors than the ABLA. The third task involved placing a yellow spoon into a measuring cup.

### Table 1

<table>
<thead>
<tr>
<th>Child</th>
<th>Age</th>
<th>Gender</th>
<th>ABLA Level</th>
<th>Parent Who Participated</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>5</td>
<td>F</td>
<td>4</td>
<td>Mother</td>
</tr>
<tr>
<td>2</td>
<td>5</td>
<td>M</td>
<td>4</td>
<td>Mother</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
<td>M</td>
<td>4</td>
<td>Mother</td>
</tr>
<tr>
<td>4</td>
<td>11</td>
<td>F</td>
<td>4</td>
<td>N/A</td>
</tr>
<tr>
<td>5</td>
<td>10</td>
<td>M</td>
<td>4</td>
<td>Father</td>
</tr>
<tr>
<td>6</td>
<td>6</td>
<td>M</td>
<td>4</td>
<td>Mother</td>
</tr>
<tr>
<td>7</td>
<td>9</td>
<td>M</td>
<td>4</td>
<td>Mother</td>
</tr>
<tr>
<td>8</td>
<td>4</td>
<td>M</td>
<td>4</td>
<td>Mother</td>
</tr>
<tr>
<td>9</td>
<td>7</td>
<td>M</td>
<td>6</td>
<td>Mother</td>
</tr>
<tr>
<td>10</td>
<td>6</td>
<td>M</td>
<td>6</td>
<td>Father</td>
</tr>
<tr>
<td>11</td>
<td>11</td>
<td>M</td>
<td>6</td>
<td>Father</td>
</tr>
<tr>
<td>12</td>
<td>4</td>
<td>M</td>
<td>6</td>
<td>Mother</td>
</tr>
<tr>
<td>13</td>
<td>8</td>
<td>M</td>
<td>6</td>
<td>Father</td>
</tr>
<tr>
<td>14</td>
<td>11</td>
<td>M</td>
<td>6</td>
<td>Mother</td>
</tr>
<tr>
<td>15</td>
<td>3</td>
<td>M</td>
<td>6</td>
<td>Father</td>
</tr>
<tr>
<td>16</td>
<td>4</td>
<td>M</td>
<td>6</td>
<td>Mother</td>
</tr>
</tbody>
</table>
rather than a silver can, when the right-left positions of the cup and the can were randomly alternated across trials. The fourth task involved placing a red square on a black and white index card with a picture of a cat on it, rather than on a white index card, when the positions of the two index cards were randomly alternated across trials. (A complete list of the materials used for the criterion tasks is available from the third author.)

Procedure

ABLAL assessment procedure. The 16 children were each assessed on the ABLA test. During testing, a child was seated at a table or on the floor facing and directly across from the researcher. Testing at each ABLA level was introduced with a demonstration trial, a guided trial, and a practice trial. Testing and recording began only after the child made an independent correct response on the practice trial. Correct responses were reinforced with praise and preferred edibles and tangibles. Errors were followed by a correction procedure that included a demonstration trial, a guided trial, and a practice trial. Testing continued on each ABLA level until the child met either the pass standard of eight consecutive correct responses or the failure standard of eight cumulative errors. In some instances, testing was terminated when, based on behavioral observations, it was uncertain as to whether accurate performance was being attained (e.g., if the child was fatigued or had a cold). In such instances, the child was retested and the retesting data was then used for data analysis.

Predictions of child performance based on the ABLA. After the 20 criterion tasks were selected, the first author used the ABLA results to make 320 predictions (20 tasks × 16 children). The researchers then used training procedures (described below) to attempt to teach each criterion task to each child. It was hypothesized that children who passed Level 4 would learn the tasks from Levels 1, 2, 3, and 4 and fail the tasks at Level 6, and that children who passed Level 6 would learn all the tasks. The pass and failure standards were those of the ABLA.

Predictions of child performance by parents. The procedure used to obtain predictions of child performance by parents was modeled after the procedure described by Stubbings and Martin (1998) for obtaining predictions of participant performance by experienced staff. After the 20 criterion tasks were selected, one parent of each of the 15 children was given a written description of each task which included the materials required to perform that task, the position of each of the stimulus objects in relation to each other and the child for that task, the instruction given to the child to perform the task, and the response(s) required of the child to perform the task correctly. A parent was also given a written description of the training procedures (described below) that were to be used to attempt to teach that task to that parent’s child. For practical reasons, in several cases, an experimenter read the written descriptions to the parent. For each task, the parent was asked to predict which standard the child would likely reach first, the pass standard of eight consecutive correct responses or the failure standard of eight cumulative errors.

Training procedures on the criterion tasks. The researchers attempted to teach a criterion task to a child during half hour sessions; these sessions were often embedded in the children’s regular training program. Training consisted of the standardized ABLA procedures, and included: an initial demonstration, guided trial, and a practice trial; praise and/or edibles following every correct response; and an error-correction procedure involving a demonstration trial, a guided trial, and a practice trial. Training continued on each criterion task until the child met the pass standard of eight consecutive correct responses or until the child met the failure standard of eight cumulative errors. For each child, the 20 criterion tasks were presented in random order.

Reliability Assessments

Interobserver reliability (IOR) checks were conducted for each child on the dependent variables throughout the study. During the assessment or training sessions, the first or second author and a research trainee independently recorded child responses on each
An IOR for a session was computed by dividing the number of agreements that a behavior occurred by the number of agreements plus disagreements, and multiplying by 100%. IORs were obtained during 71% of the sessions. The mean IOR score was 99%. Procedural integrity (PI) checks were also conducted for each child throughout the study to ensure assessment and treatment integrity. A checklist of assessment and/or intervention steps to be followed by the researchers was prepared. During the assessment and training sessions, a research trainee independently recorded whether or not the researcher followed the steps on the checklist. A PI check for a session was computed by dividing the number of steps on the checklist that the experimenter performed correctly by the total numbers of steps and multiplying by 100%. PI scores were obtained during 71% of the sessions. The mean PI score was 98%. It was not possible for the researchers to be blind to the ABLA levels of children and tasks. However, to minimize observer bias, the research trainees conducting IOR and PI checks were, in many instances, blind to these variables.

Results

Predictions by ABLA and Parents

Table 2 shows the percentage of predictions of performance confirmed for each child. Child 3 was assessed on 13 of the 20 criterion tasks, and was then terminated from the study because of the repeated occurrence of severe behavioral problems during testing sessions. Out of 313 predictions made (15 children × 20 tasks and 1 child × 13 tasks) on the basis of ABLA performance, 94% were confirmed with a phi coefficient of .69. In contrast, out of 293 predictions made by parents (14 parents × 20 tasks and 1 parent × 13 tasks), 85% of the predictions were confirmed, with a phi coefficient of .43. The proportion of accurate predictions made using ABLA results was significantly larger than the proportion of accurate predictions made by parents, McNemar’s χ²(1, N = 320) = 19.14, p < .001.

Predictions by ABLA Level

For the seven children at ABLA Level 4 (excluding Child 4), the ABLA was a better predictor than parents for six of the children (see Table 2). Of 133 predictions made for children at Level 4 (6 children × 20 tasks and 1 child × 13 tasks), 89% of ABLA predictions were confirmed, whereas only 67% of parent predictions were confirmed. For the eight children at ABLA Level 6, ABLA and parent predictions were equally accurate for seven children. Of 160 predictions made for children at Level 6 (8 children × 20 tasks), 100% of ABLA predictions were confirmed and 99% of parent predictions were confirmed.

Predictions by Criterion Task

The ABLA was more accurate than parents for 15 of the criterion tasks, less accurate than parents for two tasks, and equal to parents for three tasks (see Table 3). ABLA and parent predictions were both highly accurate for Level 1 tasks (imitation) (Means of 100% for the ABLA and 98% for parents). They were the least accurate for Level 4 tasks (match-to-sample discrimination) (Means of 86% for the ABLA and 76% for parents).

<table>
<thead>
<tr>
<th>Child</th>
<th>ABLA Test Level</th>
<th>Predictions Confirmed from ABLA (%)</th>
<th>Predictions Confirmed from Parents (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4</td>
<td>80</td>
<td>70</td>
</tr>
<tr>
<td>2</td>
<td>4</td>
<td>85</td>
<td>70</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
<td>85</td>
<td>69</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>85</td>
<td>n/a</td>
</tr>
<tr>
<td>5</td>
<td>4</td>
<td>95</td>
<td>50</td>
</tr>
<tr>
<td>6</td>
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<td>100</td>
<td>100</td>
</tr>
<tr>
<td>16</td>
<td>6</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Mean</td>
<td></td>
<td>94</td>
<td>85</td>
</tr>
</tbody>
</table>
Across all children, 94% of the predictions based on ABLA performance were confirmed, and the ABLA test was significantly more accurate for predicting a child’s performance than were parents. Although a large number of predictions based on the ABLA were confirmed, there were a small number that were not for children at ABLA level 4. In 13 of 128 instances, children at ABLA level 4 failed a task that their performance on the ABLA predicted that they would pass. Such discrepancies were often the result of behavioral difficulties. Testing was discontinued if a child engaged in excessive aberrant behaviour. If such behaviour persisted over several testing sessions, the tester considered the child to be un-testable on that specific task. The child was then considered to have failed that task. Three children who performed at ABLA Level 4 failed the same Level 3 criterion task. That task involved a red square and two white index cards; one blank and one with a black and white picture of a cat. The correct response was to place the red square on the index card with the picture of the cat. The correct response was to place the red square on the index card with the picture of the cat. The criterion task may be more difficult than ABLA Level 3 because the criterion task items were two dimensional, whereas the ABLA Level 3 task items are three dimensional.

For the Level 4 children, when they were presented with the Level 6 criterion tasks, there were four out of 32 instances in which a child passed a criterion task that the ABLA test

### TABLE 3
ABLA and Parent Prediction Accuracy by Criterion Task

<table>
<thead>
<tr>
<th>Criterion Tasks</th>
<th>ABLA Prediction Accuracy</th>
<th>Parent Prediction Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Correct</td>
<td>Incorrect</td>
</tr>
<tr>
<td>Level 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>16</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>16</td>
<td>0</td>
</tr>
<tr>
<td>3</td>
<td>16</td>
<td>0</td>
</tr>
<tr>
<td>4</td>
<td>15</td>
<td>0</td>
</tr>
<tr>
<td>Level 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>16</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>16</td>
<td>0</td>
</tr>
<tr>
<td>3</td>
<td>15</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>15</td>
<td>0</td>
</tr>
<tr>
<td>Level 3</td>
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<td>2</td>
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<td>0</td>
</tr>
<tr>
<td>3</td>
<td>15</td>
<td>0</td>
</tr>
<tr>
<td>4</td>
<td>12</td>
<td>3</td>
</tr>
<tr>
<td>Level 4</td>
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</tr>
<tr>
<td>1</td>
<td>13</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
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</tr>
<tr>
<td>3</td>
<td>16</td>
<td>0</td>
</tr>
<tr>
<td>4</td>
<td>12</td>
<td>3</td>
</tr>
<tr>
<td>Level 6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>14</td>
<td>2</td>
</tr>
<tr>
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<td>3</td>
<td>14</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>15</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>296</td>
<td>17</td>
</tr>
<tr>
<td>Total Predictions</td>
<td>313</td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>94</td>
<td></td>
</tr>
</tbody>
</table>
results predicted that he or she would fail. In such instances, parents typically reported that the child had previous everyday experience with the task materials. For example, Child 7 who performed at ABLA Level 4 passed a criterion task at ABLA Level 6 which involved a roll of tape and a stapler. The parent reported that the child frequently heard the names of these items as they were regularly used in arts and crafts training sessions.

Although the ABLA was significantly more accurate for predicting a child’s performance than were parents, the largest difference occurred for children at ABLA Level 4. The ABLA was more accurate than parents for predicting a child’s performance for six of the seven children at Level 4. However, both the ABLA and parents were 100% accurate for predicting performance of seven of the eight children at Level 6. A limitation of this study is that it was not possible to determine how recently children had passed ABLA Level 6. Results might be different for those who only recently passed Level 6 as opposed to those who had experienced several months of training for tasks at Level 6 and beyond. Future research should compare the prediction accuracy of the ABLA and parents for children who only recently passed ABLA Level 6, as well as for children who perform at lower levels of the ABLA (e.g., Levels 1, 2, and 3).

In conclusion, the findings of this research suggest that ABLA results of children with autism spectrum disorders at ABLA Levels 4 and 6 are an accurate predictor of learning performance on a variety of educational tasks, and that ABLA predictions are more accurate than parents’ for children at ABLA Level 4. If future research confirms these findings for children at ABLA levels 1, 2, and 3 and perhaps for children who only recently passed ABLA Level 6, then the ABLA may be an effective tool for matching the training demands of different tasks to the discrimination learning abilities of children with autism spectrum disorders, in order to improve the efficiency and effectiveness of training.

References


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Assessment of Leisure Preferences for Students with Severe Developmental Disabilities and Communication Difficulties

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Kent State University

Abstract: The purpose of this study was to develop and to evaluate the Preferences for Leisure Attributes (PLA) Assessment, a forced-choice computer software program for students with severe disabilities and communication difficulties. In order to determine content validity of the PLA Assessment, four experts in related fields assigned critical attributes to pictures of leisure activities, resulting in an overall agreement rating of 90%. Retest reliability resulted in a correlation coefficient of .87 for the entire assessment. Transition-age youth (14 to 22 years old) with severe developmental disabilities and communication difficulties do indeed have leisure preferences; and the PLA Assessment (a forced-choice presentation of leisure activity photographs) can assist them in indicating their leisure preferences.

People with developmental disabilities need the same balance of work, relationships, and recreation in their lives as people without developmental disabilities. Halpern (1985) recognized this need for balance when he introduced the three pillars of transition: employment/postsecondary education, independent living, and personal and interpersonal relationships. Furthermore, the IDEIA Amendments (2004) mandate that educators address the three areas of work, relationships, and recreation by requiring transition plans to consider outcomes in the areas of employment or postsecondary education, independent living, and community participation, and that those outcomes are established from students’ choices.

The ultimate goal of special education is to assist individuals with developmental disabilities to attain a level of interdependence and participation in community life as an adult, including participation in community leisure activities. For individuals with developmental disabilities, meaningful leisure activities are a vital component in the balance of their lives and are essential for enhancing their competence and acceptance. Leisure engagement can be an effective way to provide students with opportunities for health and fitness, as well as for learning appropriate communication and social skills (Schleien, Ray, & Green, 1997). Leisure involvement can also assist the individual with the disability by supporting successes in residential and employment outcomes (Heyne, 1997; Stein & Sessons, 1983).

Often overlooked, recreation programs and leisure activities are effective means to provide students with opportunities to learn appropriate communication and social skills (Russell, 1996) as well as other important transition outcomes such as developing self-determination, meaningful relationships, and satisfaction in life (Cordes & Ibrahim, 1996; Schleien et al., 1997). Unfortunately, individuals with developmental disabilities often have few friends other than family and paid support staff. The lack of recent research in this area is indicative of the lack of attention given to leisure education for individuals with developmental disabilities; however, providing leisure opportunities and choices can open the door to opportunities that could lead to relationship building and other positive postschool outcomes.

Assisting individuals with developmental disabilities to choose their own future is a key to effective transition planning (IDEA Amendments, 1997; Individuals with Disabilities Education Improvement Act [IDEIA], 2004).
However, providing choices to individuals with severe developmental disabilities and determining their preferences and interests are confounded when the individual has limited communication and/or cognitive skills. A second confounding variable, when providing choices to individuals with developmental disabilities, is the ability to make choices when their experiences and opportunities have been limited. Third, when choices have been provided to these individuals, the choices have often had no significant impact on control over their daily routine (Bambara, Koger, Katzer, & Davenport, 1995; Brown, Belz, Corsi, & Wenig, 1993).

The assessment of education and transition needs is used in making decisions (Ysseldyke, 2004) about the interests and preferences, as well as programming and educational strategies. Likewise, leisure assessment is critical to the determination of leisure interests and preferences for individuals with disabilities as well as to the structuring of leisure programming (Schleien et al., 1997). Unfortunately, most leisure assessments are not formatted in a way that affords access for transition-age students with severe developmental disabilities and communication difficulties. When the presentation design of the leisure assessment is not taken into consideration, these students can display various response factors (Sigelman, Budd, Winer, Schoenrock, & Martin, 1982; Strand, 1995; Topf, 1986) that may inhibit the communication of their choices or the facilitator’s interpretation of their choices.

Although IDEIA 2004 mandates the implementation of leisure programming for individuals with developmental disabilities, it generally has been neglected (Schleien et al., 1997; Sitlington, 1996). However, current leisure assessment tools do not meet the communication needs of individuals with severe developmental disabilities. The purpose of this research was to develop and to assess an interactive software program that uses a forced-choice presentation of photographs to assist transition-age youth and adults (16 to 22 years old) with developmental disabilities and communication difficulties in making and communicating choices regarding leisure interests and preferences. In this study, the Preferences for Leisure Attributes (PLA) Assessment was developed and tested for reliability and validity.

The purpose of the PLA Assessment is to provide special education teachers, therapeutic recreation specialists, rehabilitation counselors, and other service providers with a method of determining leisure and recreation interests of transition-age students with developmental disabilities and communication difficulties, in an efficient and reliable manner. The PLA Assessment provides students with a choice between two pictures of activities presented on the computer screen, and students select the picture of the activity they prefer. The student has the option of selecting a “neither” button if they don’t prefer either of the pictures. Associated with each picture, but not shown on the computer screen, is a database of attributes related to that activity. As the student makes selections of preferred activities, the computer program compiles a profile for that student consisting of his or her preferred leisure attributes. The program provides the student, teacher, and service providers with a leisure profile, thereby helping to narrow down the list of possible activities so that students can spend their valuable transition years validating leisure interest areas and choices, experiencing and developing skills in their preferred activities, making connections with lifelong community leisure and recreation options, experiencing successes, and increasing self-esteem.

The following questions were addressed in this study: (a) Does the PLA Assessment (a computerized, forced-choice presentation of leisure activity photographs) have content validity? (b) Is the PLA Assessment reliable? (c) Does the PLA Assessment have construct validity? (d) Is the PLA Assessment an effective tool to assist transition-age youth with severe developmental disabilities and communication difficulties in indicating their leisure preferences?

Method

Development of the PLA Assessment

Content selection. To develop a broad range of leisure activities, a comprehensive list of adult leisure and recreation activities was compiled by cross referencing lists of activities ob-
tained from leisure references, therapeutic recreation references, the Education Resources Information Center (ERIC), and the internet. A key word search of terms related to leisure and recreation activities for adults was conducted using each resource. Adult activities, rather than children’s activities, were selected because the ultimate goal of special education for transition-age students is to prepare them for adult interdependence and community life, including lifelong leisure activities. Pictures of each activity were obtained by searching the Internet, specifically, www.webshots.com. Pictures were downloaded, saved, and transformed to bitmap format for ease of use. Leisure activity attributes were selected based on a review of several commonly used leisure assessments (DeGrazia, 1962; Hawkins, Eklund, & Martz, 1992; McKechnie, 1974; Witt & Ellis, 1985), each of which uses attributes, or a similar categorization, as part of their assessment procedure. After comparing each of these lists, a comprehensive list of leisure activity attributes was developed for the purposes of this study, with the intent of including all of the possible attributes (Table 1).

**Content validity.** To select the attributes that best describe each picture or activity, and vice versa, four experts were consulted for their input. The four professionals represented the fields of leisure, recreation, physical education, adapted physical education, and special education. All four consultants had a Ph.D. and all were professors in their fields at major colleges or universities. Each consultant was given a collection of the pictures along with the attributes, in checklist format. Consultants rated each picture according to attributes in each of the categories. Checklists from each of the consultants were then evaluated for inter-rater agreement using descriptive statistics.

The four experts rated each of 73 pictures of leisure activities according to critical attributes in the categories of activity, cost, equipment, location, degree of motor skills required, level of physical activity, and level of social activity. Inter-rater agreement was determined on each category of attributes as well as on the test as a whole (Table 2). Percent agreement on the categories of attributes ranged from 87.3 to 93.8, with overall agreement on the ratings at 89.6 percent. For each picture, the attributes with the highest agreement ratings were then incorporated into the computer software program.

### Table 1

<table>
<thead>
<tr>
<th>Attribute Category</th>
<th>Attribute</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of Activity</td>
<td>Participation sports</td>
</tr>
<tr>
<td></td>
<td>Spectator sports</td>
</tr>
<tr>
<td></td>
<td>Arts</td>
</tr>
<tr>
<td></td>
<td>Social Activities</td>
</tr>
<tr>
<td></td>
<td>Hobbies</td>
</tr>
<tr>
<td>Location</td>
<td>Indoor activities</td>
</tr>
<tr>
<td></td>
<td>Outdoor activities</td>
</tr>
<tr>
<td></td>
<td>Home activities</td>
</tr>
<tr>
<td></td>
<td>Community activities</td>
</tr>
<tr>
<td>Social Attributes</td>
<td>Individual activities</td>
</tr>
<tr>
<td></td>
<td>Small group activities</td>
</tr>
<tr>
<td></td>
<td>Large group activities</td>
</tr>
<tr>
<td></td>
<td>Minimal physical activity required</td>
</tr>
<tr>
<td>Physical Activity</td>
<td>Moderate physical activity required</td>
</tr>
<tr>
<td></td>
<td>Maximum physical activity required</td>
</tr>
<tr>
<td>Motor Skill Required</td>
<td>Good fine motor skills</td>
</tr>
<tr>
<td></td>
<td>Fair fine motor skills</td>
</tr>
<tr>
<td></td>
<td>Good gross motor skills</td>
</tr>
<tr>
<td></td>
<td>Fair gross motor skills</td>
</tr>
<tr>
<td>Equipment Needed</td>
<td>Minimal equipment</td>
</tr>
<tr>
<td></td>
<td>Moderate equipment</td>
</tr>
<tr>
<td></td>
<td>Maximum equipment</td>
</tr>
<tr>
<td>Cost</td>
<td>Minimal cost</td>
</tr>
<tr>
<td></td>
<td>Moderate cost</td>
</tr>
<tr>
<td></td>
<td>Maximum cost</td>
</tr>
</tbody>
</table>

### Table 2

<table>
<thead>
<tr>
<th>Category</th>
<th>% Agreement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activity</td>
<td>91.1</td>
</tr>
<tr>
<td>Cost</td>
<td>87.3</td>
</tr>
<tr>
<td>Equipment Needed</td>
<td>87.3</td>
</tr>
<tr>
<td>Location</td>
<td>87.7</td>
</tr>
<tr>
<td>Motor Skills Required</td>
<td>90.4</td>
</tr>
<tr>
<td>Physical Activity</td>
<td>93.8</td>
</tr>
<tr>
<td>Social Attributes</td>
<td>89.0</td>
</tr>
<tr>
<td>Whole Assessment</td>
<td>89.6</td>
</tr>
</tbody>
</table>
Assessment administration. After the pictures of leisure and recreation activities were collected and the database of critical attributes was applied to each picture, a computer program—the PLA Assessment—was written using Microsoft Visual Basic 6.0 Professional Edition. The PLA Assessment works in the following manner: an assessment facilitator (e.g., special education teacher, therapeutic recreation specialist, rehabilitation counselor, or other service provider) inputs identifying data (such as name and age) for the individual taking the assessment. Once the identification screen is completed or updated, two pictures of activities are randomly selected and displayed on the computer screen side-by-side; the student selects the picture of his or her choice by (a) touching a touch screen, (b) pointing and clicking with a mouse, or (c) pointing to the screen while the assessment facilitator uses the mouse to point and click. Once the choice is made another set of pictures is displayed on the screen, from which the student can choose a preferred activity. This process continues until the student finishes the set, becomes distracted, or tires. If the student does not finish an adequate dataset (for this study, a minimum of 36 pairs of pictures was required so that the subjects had a chance to view and chose between all available pictures), results can be saved, and the assessment can be continued at a later time for completion.

As the student selects his or her preferred activity from the set of pictures, the computer program compiles data regarding his or her preferences in terms of critical attributes of the activities. The program then compiles a report based on critical attributes of selected preferences, as well as the actual activity selected. The assessment facilitator is able to save the report to electronic storage, to view the report on screen, or to print out a hard copy of the report.

Participants. For a preliminary test of the psychometric properties of the PLA Assessment, 29 transition-age students with developmental disabilities were recruited as participants. These students were from special education classes for students with multiple disabilities from local school districts in northeast Ohio. Subjects ranged in age from 13 to 21, with a mean age of 17.8. Thirteen of the students were female and sixteen were male. Once informed consent was obtained from each subject’s parent(s), and assent was obtained from the subject, he or she was administered the PLA Assessment two times, for at least 36 selections each time.

Reliability and validity of the PLA assessment. To be interpretable, a test must be reliable (Kerlinger, 1986). In other words, will the PLA Assessment demonstrate repeatability by students making the same choices at two testing sessions—does it give a true score of the individual’s preferences for attributes associated with leisure activities? The two trials were compared for test/re-test reliability using the Spearman rho test for correlation. Discriminability, the ability to differentiate between preferences and the ability to point out what is unrelated (e.g., does the individual choose the picture on the left each time) was evaluated using descriptive statistics.

To determine whether transition-age youth (16 to 22 years old) with severe developmental disabilities and communication difficulties have leisure preferences, the PLA Assessment data that were collected for the 29 subjects were compared to the probability of selecting each attribute. A chi square test was implemented to determine whether the attribute preferences selected by the subjects were different from what would be expected by chance with the given set of attributes.

Additionally, the parents of each of the subjects were asked to complete a written questionnaire about their child’s leisure preferences. Results of the parent questionnaire and the subject’s PLA Assessment were compared for convergence (evidence gathered from both sources indicate the same or similar results) using the Spearman rho test for correlation.

Results

Test-retest reliability was evaluated using the Spearman rho test for correlation, resulting in bivariate nonparametric correlations in each attribute category. Positive correlations were noted in each category, significant at the .01 level (Table 3). Correlation coefficients of categories ranged from .715 to .878. Test-retest reliability on the PLA Assessment as a whole
resulted in a correlation coefficient of .871, significant at the .01 level.

To determine whether subjects tended to choose the picture on the same side each time (e.g., to determine whether the individual chose the picture on the left each time), discriminability was evaluated using descriptive statistics (Table 4). On the first implementation of the PLA Assessment (Test A), the mean percentage of left hits was 52.5% and the mean percentage of right hits was 47.5%. Standard deviation for each was 10.5. On the second implementation (Test B), the mean percentage of left hits was 48.2%, and the mean percentage of right hits was 51.8%. Standard deviation for each in Test B was 12.9.

On the combination of Test A with Test B, the mean percentage of left hits was 50.3%, and the mean percentage of right hits was 49.7%. Standard deviation for each was 11.9 for the combination of tests.

Three measures of construct validity were determined to assess whether the PLA Assessment is an index of leisure preference. The first measure used participants without developmental disabilities and correlated the PLA assessment with rated preference of leisure attributes in written form. Counter balanced for order, nine of seven, Spearman rho bivariate correlations were significant and ranged from .30 to .45 with the total attribute scores correlating .36.

A second measure was to determine if attribute selection could be considered a preference by comparing choices of participants with severe disabilities to the probability of random selections. Through chi-square tests, observed attribute choices were found to significantly differ from random probability for location ($p = .03$), motor skills required ($p = .05$), and PLA Assessment overall ($p = .001$).

Finally, student participant leisure preferences as measured by the PLA Assessment and parent’s selection of the participants attribute preferences from a written questionnaire were correlated. Spearman rho coefficients were not significant for any of the individual attributes, but the correlation was significant (.95) for the assessment as a whole.

### Discussion

The psychometric properties of the PLA Assessment were found to be acceptable for use with transition students, given that the assessed preferences obtained would be appropriate as a starting point for exploration of preferences. Content validity was achieved with high inter-rater agreement for the attributes overall. Test-retest reliability was significant. Findings on validity of the PLA Assessment were similar to the results of the Leisurescope Plus, Leisure Assessment Inventory (LAI) and the Assessment of Leisure and Recreation Involvement (LRI) (Burlingame & Blaschko, 2002) in that construct studies for these scales resulted in low positive to negative correlations.

### TABLE 3
Test-Retest Reliability of PLA Assessment Categories

<table>
<thead>
<tr>
<th>Category</th>
<th>Level of Significance</th>
<th>Actual Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost</td>
<td>.878</td>
<td>.01</td>
</tr>
<tr>
<td>Equipment Needed</td>
<td>.873</td>
<td>.01</td>
</tr>
<tr>
<td>Location</td>
<td>.832</td>
<td>.01</td>
</tr>
<tr>
<td>Motor Skills Required</td>
<td>.715</td>
<td>.01</td>
</tr>
<tr>
<td>Physical Activity</td>
<td>.767</td>
<td>.01</td>
</tr>
<tr>
<td>Social Attributes</td>
<td>.740</td>
<td>.01</td>
</tr>
<tr>
<td>Whole Assessment</td>
<td>.871</td>
<td>.01</td>
</tr>
</tbody>
</table>

### TABLE 4
Discriminability of the PLA Assessment

<table>
<thead>
<tr>
<th>Test</th>
<th>Range</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test A (n = 29)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% Left hits</td>
<td>33–87</td>
<td>52.5</td>
<td>10.5</td>
</tr>
<tr>
<td>% Right hits</td>
<td>13–67</td>
<td>47.5</td>
<td>10.5</td>
</tr>
<tr>
<td># Neither hits</td>
<td>0–88</td>
<td>13</td>
<td>23.9</td>
</tr>
<tr>
<td>Test B (n = 29)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% Left hits</td>
<td>19–71</td>
<td>48.2</td>
<td>12.9</td>
</tr>
<tr>
<td>% Right hits</td>
<td>29–81</td>
<td>51.8</td>
<td>12.9</td>
</tr>
<tr>
<td># Neither hits</td>
<td>0–64</td>
<td>11.9</td>
<td>19.7</td>
</tr>
<tr>
<td>Combined Tests (n = 58)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% Left hits</td>
<td>19–87</td>
<td>50.3</td>
<td>11.9</td>
</tr>
<tr>
<td>% Right hits</td>
<td>12–81</td>
<td>49.7</td>
<td>11.9</td>
</tr>
<tr>
<td># Neither hits</td>
<td>0–88</td>
<td>12.9</td>
<td>21.7</td>
</tr>
</tbody>
</table>
ment also indicated that students were not selecting pictures just on the left or just on the right; there was a relatively even distribution of left and right hits. This even distribution of left and right picture selections demonstrates that the PLA Assessment can successfully eliminate this one source of response bias (Topf, 1986) that was demonstrated in a study by Sigelman, et al. (1982) and that is common for people with developmental disabilities.

On individual attributes parent and student selections did not correlate. However, this seeming discrepancy between parent and student selections suggests that although individual attributes did not appear to have agreement, the combinations of leisure attribute preferences that the students selected on the PLA Assessment were in agreement with the combination of attribute selections their parents made on the written questionnaire. These results imply that the PLA Assessment must be interpreted as a whole, not by component parts. It is not enough to say that as individual prefers participation sports when in fact they prefer participation in sports that are indoors, individual in nature, with minimal physical activity, and require fast gross motor skills.

The individuals with disabilities in this study demonstrated that they indeed have preferences for attributes associated with leisure activities. This is consistent with previous studies which showed that individuals with severe developmental disabilities demonstrate preferences for certain tasks (e.g., Bambara et al., 1994; 1995; Dattilo & Mirenda, 1987; Parsons, Reid, Reynolds, & Bumgarner, 1990). Furthermore, the current study demonstrated that individuals with developmental disabilities and communication difficulties in this study were able to make choices regarding their preferences by using the PLA Assessment tool. The PLA Assessment provided a mechanism for individuals with disabilities to communicate their preferences to service providers, whereas currently available leisure assessment tools do not. Because we know that individuals with developmental disabilities have preferences (e.g., Bambara et al., 1994; 1995; Dattilo & Mirenda, 1987; Parsons et al., 1990), and can make choices (e.g., Dattilo & Mirenda) when given appropriate means to communicate, the PLA Assessment tool can be used as the means of communicating their leisure preferences.

When students with developmental disabilities can communicate their leisure preferences, then decisions about leisure programming can be made more efficiently and effectively by teachers and others. Consequently, valuable learning time can be spent developing skills in leisure activities, including the concomitant physical, emotional, psychological, and social benefits of leisure (Cordes & Ibrahim, 1996). Because the PLA Assessment is an effective tool to determine leisure preferences for individuals with developmental disabilities, time traditionally spent exploring activities in order to determine those preferences can instead be used to develop skills in preferred leisure activities. When students with disabilities are afforded the opportunity to choose and participate in their preferred leisure activities, they are also afforded the opportunity to benefit from the physical, emotional, psychological, and social aspects of leisure that are beneficial to all individuals (Cordes & Ibrahim). This benefit in the long run could result in improving their self-concept and quality of life (Williams & Dattilo, 1997).

In this study, it appeared that individuals with developmental disabilities used their experiences differently than individuals without disabilities, when making choices. It was apparent during this study that individuals without developmental disabilities tended to use a different level of reasoning to make decisions about their preferences than individuals with developmental disabilities. In this study, individuals with developmental disabilities made choices about which leisure attributes they favored, but it was unclear as to how or on what basis their choices were made. In contrast, individuals without developmental disabilities used past experiences and a deeper level of reasoning to select their leisure preferences. Therefore, it seems that the difference between a choice and a preference may be the addition of experience and reasoning.

If this difference between choice and preference is true, then individuals with developmental disabilities must be afforded meaningful experiences that will facilitate a progression from merely making choices to developing preferences, in order to more fully
develop their self-determination. Martin, Marshall, and Deprey (2008) and Wehmeyer and Schwartz (1997) have defined self-determination as the ability to make choices and decisions regarding one's own quality of life free from unnecessary external influence or interference. Leisure is an avenue to develop self-determination (Mannell & Kleiber, 1997), and the PLA Assessment is a tool that can be used with some confidence for individuals with disabilities to exercise their choices, consequently increasing self-determination. This increased self-determination can carry over to other aspects of an individual’s life, such as community living and career, thus improving quality of life.

Limitations of the Study

One limitation of this study is the inequality of the representation of attributes in each category of the PLA Assessment. For example, it was possible for the picture representation of attributes in each category to range from 4 pictures to 25 pictures for activity, or even from 6 pictures to 45 pictures for cost. Although the unequal distribution of attributes did not seem to affect the probability of selecting the attributes of the leisure activities in this study, one still should question the distribution of attributes in terms of representativeness. Even though each attribute was not represented equally, they may have been represented proportionately in terms of the broad range of activities. Nonetheless this representation of attributes should be investigated. If the inequality of representation of attributes in the PLA Assessment is demonstrative of the universal distribution of attributes in leisure activities, then the results of this study are indeed strengthened. However, if the universal distribution of attributes in leisure activities is discovered to be more equally distributed, then the PLA Assessment should be revised to reflect the universal set of leisure attributes, so individuals with disabilities can have the opportunity to choose from the universal set of options.

Another limitation is that the pictures were presented randomly. This is problematic because subjects could have been presented with the same picture more than once, and consequently the same choices of attributes, before having the opportunity to choose another activity, and consequently different attributes. Although this did not seem to make a difference statistically, a future adjustment of the PLA Assessment software program should be a more systematic presentation of the pictures so that pictures are not repeated, until all pictures have been presented once. This adjustment would ensure that more pictures (and therefore attributes) are shown and have had the opportunity to be selected.

Another possible adjustment to the PLA Assessment could be to purposefully pair pictures of chosen activities with other pictures of chosen (or non-chosen) activities in order to more precisely narrow down students’ choices of attributes. A more systematic presentation of pictures in the PLA Assessment could afford a student with severe communication limitations the ability to more accurately communicate their preferences to service providers. Again, the pairing of pictures during the PLA Assessment is an area for future consideration.

Future Research

The results of this study bring up several questions that merit further investigation. First, the psychometrics of the PLA Assessment should be replicated in order to assure confidence in the assessment results. In this study the positive results in content validity, test-retest reliability, and overall test convergence are noteworthy; however, replication of these results with more subjects, and possibly subjects of a variety of backgrounds and ability levels would strengthen confidence in the tool as well as the generalizability.

A second area that merits further study is the role experience plays in the determination of one’s preferences. In this study, it seemed that individuals with developmental disabilities used levels of reasoning to make their choices that were different than their counterparts without disabilities. It would be interesting to study the role of reasoning ability on choice-making, as well as the role of past experiences on that reasoning process. In addition, once an individual with a developmental disability chooses a leisure activity, and has had the opportunity to experience that activity, the role of that experience on future
choices (or on changing one’s mind) needs to be studied.

Although not a topic included in this study, adding of the attribute of disability to the photos used in the PLA Assessment would be interesting, as well as helpful in the individual planning process for individuals with developmental disabilities. In other words, do individuals with developmental disability prefer to participate in activities with others who also have developmental disabilities or with individuals without developmental disabilities?

Conclusion

This study demonstrated that the PLA Assessment is a valid and reliable tool to afford individuals with developmental disabilities and communication difficulties a means of communicating their leisure preferences. The PLA Assessment, as demonstrated in this study, can reduce response bias from assessment, permitting service providers to more confidently implement person centered planning. Further, the results of this study confirmed that individuals with developmental disabilities indeed have leisure preferences. Specifically, this study results in a tool (PLA Assessment) that will assist service providers in special education, leisure education and rehabilitation in providing meaningful leisure experiences for individuals with disabilities based on their own choices. In turn, these meaningful leisure experiences can be used to allow individuals with disabilities to make more informed choices based on these actual experiences. The cycle of choosing, experiencing, and using experiences to refine choices is self-determining for individuals with disabilities.

References


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