Education and Training in Autism and Developmental Disabilities

Focusing on individuals with autism, intellectual disability and other developmental disabilities
The purposes of this organization shall be to advance the education and welfare of persons with autism and developmental disabilities, research in the education of persons with autism and developmental disabilities, competency of educators in this field, public understanding of autism and developmental disabilities, and legislation needed to help accomplish these goals. The Division shall encourage and promote professional growth, research, and the dissemination and utilization of research findings.

Abstracts for Social Workers, International Journal of Rehabilitation Research, Current Contents/Social and Behavioral Sciences, Excerpta Medica, Social Sciences Citation Index, Adolescent Mental Health Abstracts, Educational Administration Abstracts, Educational Research Abstracts, and Language and Behavior Abstracts. Additionally, it is annotated and indexed by the ERIC Clearinghouse on Handicapped and Gifted Children for publication in the monthly print index Current Index to Journals in Education and the quarterly index, Exceptional Child Education Resources.


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EDUCATION AND TRAINING IN AUTISM AND DEVELOPMENTAL DISABILITIES (ISSN 2154-1647) (USPS 0168-5000) is published quarterly in March, June, September, and December, by The Council for Exceptional Children, Division on Autism and Developmental Disabilities, 2900 Crystal Drive, Suite 1000, Arlington, Virginia 22202-3557. Members’ dues to The Council for Exceptional Children Division on Autism and Developmental Disabilities include $8.00 for subscription to EDUCATION AND TRAINING IN AUTISM AND DEVELOPMENTAL DISABILITIES. Subscription to EDUCATION AND TRAINING IN AUTISM AND DEVELOPMENTAL DISABILITIES is available without membership; Individual—U.S. $60.00 per year; Canada, PUAS, and all other countries $44.00; Institutions—U.S. $150.00 per year; Canada, PUAS, and all other countries $199.50; single copy price is $30.00. U.S. Periodicals postage is paid at Arlington, Virginia 22204 and additional mailing offices.

POSTMASTERS: Send address changes to EDUCATION AND TRAINING IN AUTISM AND DEVELOPMENTAL DISABILITIES, 2900 Crystal Drive, Suite 1000, Arlington, Virginia 22202-3557.
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Seven Reasons to Promote Standards-Based Instruction for Students with Severe Disabilities: A Reply to Ayres, Lowrey, Douglas, & Sievers (2011)

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Abstract: This article was written as a response to Ayres, Lowrey, Douglas, and Sievers (2011) who commented on the degree to which promoting the teaching of functional skills had a higher probability of leading to a more independent life for students with severe disabilities. In doing so, the authors take issue with the use of a standards-based curriculum and suggest that working on grade-level content seizes time that could be allocated to teaching skills for adult life. We suggest that a standards-based curriculum affords students with severe disabilities a complete educational opportunity and need not preclude personally relevant instruction. In our rejoinder, we first describe our points of agreement (evolving curriculum, contribution of research on teaching functional skills, dismal transition outcomes), and then suggest seven reasons why a standards-based curriculum is appropriate. Our reasons include: (a) right to a full educational opportunity, (b) relevancy of a standards-based curriculum (c) unknown potential of students with severe disabilities, (d) functional skills are not a prerequisite to academic skills, (e) standards-based curriculum is not a replacement for functional curriculum, (f) individualized curriculum is limited when it is the only curriculum, and (g) students creating their own changing expectations through achievements.

In a recent article, Ayres, Lowrey, Douglas, and Sievers (2011) proposed that focusing on functional skills for students with severe disabilities leads to a more independent life. The authors question the use of a standards-based curriculum as not addressing the individualized skills students will use in adult life that are referenced to the locale in which they live. They proposed that working on grade-level content standards usurps time that could be invested in teaching skills students need for adult life (e.g., consumer skills [Mechling, 2004; Mechling & Gast, 2003], community living skills [Branham, Collins, Schuster, & Kleinert, 1999; Browder, Snell, & Wildonger, 1988; Collins, Stinson, & Land, 1993], domestic and self-help skills [Bates, Cuvo, Miner, & Korabek, 2001; Fiscus, Schuster, Morse, & Collins, 2002; Snell, Lewis, & Houghton, 1989]). Research on functional skills instruction is cited as evidence that this approach leads to a more independent life. The purpose of this response is to propose that a standards-based curriculum provides students with severe disabilities a full educational opportunity and need not preclude instruction that is personally relevant. In this article we use the term “severe disabilities” to refer to students with moderate/severe intellectual disabilities who may also have physical disabilities, sensory disabilities, or autism.

Before describing reasons why students with severe disabilities should receive a full educa-
tional opportunity, we would like to begin with our points of agreement with Ayres et al. (2011). As the authors note, curriculum for students with severe disabilities has been evolving. This evolution was described in some detail by Browder et al. (2004) who considered what was occurring in the early development of alternate assessments. As individuals, we have been through many of these changes as teachers and researchers and were especially invested in teaching skills derived from students’ current and future daily activities outside of school (e.g., books by Browder, 1987, 2001; Cipani & Spooner, 1994). We agree with the excellent summary of Ayres et al. (2011) of the contributions of the research on functional skills. We agree that these skills continue to have importance in educational programs for students with severe disabilities, should appear as IEP objectives, should be taught during the school day, and linked to the student’s specific current and future environments.

We also agree that the transition outcomes for students with severe disabilities have been disappointing. Despite efforts to focus on transition, and to bridge the gap between school and adult life for students with disabilities, unemployment for persons with severe disabilities has been found to be over 60% (Wagner, Cadwallader, & Marder, 2003; Wehman, Kregel, & Seyfarth, 1985). Unfortunately after age 21, options for this population have been limited and in some cases this has meant returning to segregated day services (Spoonier, Browder, & Uphold, 2011). It will be unfortunate if educational programs for students with severe disabilities only focus on grade-aligned state academic content standards without providing opportunities for community-based instruction and job tryouts. As Agran, Alper, and Wehmeyer (2002) and Agran, Cavin, Wehmeyer, and Palmer (2010) note, access to general curriculum does not mean only teaching state standards.

Although we share these points of agreement, we also would like to offer a differing perspective on the role of standards-based instruction. Our reasons are based on the values we hold that students with severe disabilities should have full access to their schools, communities, and future job opportunities. When Lou Brown and colleagues (Brown et al., 1979) first challenged the field to focus on chronological, age appropriate skills for students vs. basing instruction on student’s mental age, there were few studies to guide this approach. In the decades to follow the research on teaching skills referenced to the community, as well as research on social interaction, grew rapidly (Nietupski, Hamre-Nietupski, Curtian, & Shrikanth, 1997). In contrast, there was minimal research on teaching academic skills in this era (Nietupski et al., 1997). Despite this focus, there has been research to support academic learning (e.g., see the following reviews: Browder, Ahlgrim-Delzell, Spooner, Mims, & Baker, 2009; Browder, Spooner, Ahlgrim-Delzell, Harris, & Wake man, 2008; Browder, Wakeman, Spooner, Ahlgrim-Delzell, & Algozzine, 2006; Courtade, Spooner, & Browder, 2007; Spooner, Knight, Browder, Jimenez, & DiBiase, in press). As educators began to embrace the value of standards-based instruction, research also has emerged on teaching skills that link to grade-level content (Agran, Cavin, Wehmeyer, & Palmer, 2006; Browder et al., 2010; Collins, Evans, Creech-Galloway, Karl, & Miller, 2007; Jameson, McDonnell, Johnson, Riesen, & Polychronis, 2007; Jameson, McDonnell, Polychronis, & Riesen, 2008; Jimenez, Browder, & Courtade, 2009; Johnson, McDonnell, Holzwarth, & Hunter, 2004; McDonnell, Johnson, Polychronis, & Riesen, 2002; McDonnell et al., 2006). The following are seven reasons to continue to pursue standards-based instruction.

Reason #1: Students with Severe Disabilities Have the Right to a Full Educational Opportunity

Prior to the mid-1970s, the general expectation was that most students with severe disabilities would not benefit from a public education and might need to reside in an institutional setting. PL 94–142 (1975) opened the door for opportunity and participation in educational programs. Prior to this time, there were no systematic plans for developing preservice and inservice teacher training programs, no doctoral level training in severe disabilities, few programs for parents, and fewer still life encompassing service plans (Sontag, Burke, & York, 1973). At this juncture, educators were exploring...
the optimal way to serve this population of individuals. As a field, educators relied heavily on the guidance of people like Lou Brown (Brown, Nietupski, & Hamre-Nietupski, 1976), Marc Gold (Gold, 1980), Norris Haring (Haring & Brown, 1976, 1977) and organizations like TASH, known then as the American Association for the Education of the Severely and Profoundly Handicapped (AAESPH) founded in 1974 (Sontag & Haring, 1996). Similarly, more students began to live in the community as supported by the principles and philosophy of normalization (Larsen, 1977; Nirje, 1969; Roos, 1970; Wolfensberger, 1972). By the early 1990s, educators began describing ways to serve students with severe disabilities effectively in inclusive settings (Gent & Mulhauser, 1988; Haring, 1991; Haring & Romer, 1995; Lipsky & Gartner, 1989; Meyer, 1994; Meyer & Kashi, 1985). Spooner and Brown (2011) have described this history and propose future directions for educating students with severe disabilities. What seems surprising, in retrospect, is that early inclusion often focused on physical placement and social belonging, but continued to embrace the use of a separate curriculum (e.g., only teaching IEP goals like social greetings). Several educators led the way to expect not only presence in general education, but learning general curriculum content (e.g., Calculator & Jorgensen, 1994; Downing, 1996; Ryndak & Alper, 1996, 2003; Ward, Van De Mark, & Ryndak, 2006). Soon, the stories about how students acquired this content began to emerge in the literature (e.g., Heron & Jorgensen, 1994–1995; Jorgensen, 1994–1995; Ryndak, Morrison, & Sommerstein, 1999; Siegel-Causey, McMorris, McGowen, & Sands-Buss, 1998).

The opportunity to learn general curriculum content is a right of every child who attends school. The primary reason students with severe disabilities have not had this right is that educators may not have recognized the full capabilities of this population of students. We have come a long way in the last 40 years. Students with severe disabilities have taught us that: (a) they can learn in public schools, (b) they can learn skills related to their community contexts, (c) they can benefit from opportunities to be with peers who are nondisabled, and (d) they even can learn state standards that are adapted for alternate achievement. To deny someone an opportunity that all other members of a society are afforded should require a compelling rationale. We propose in our following points that the rationale to deny some students the opportunity for full access to the general curriculum is not compelling.

**Reason #2: A Standards-Based Curriculum is Relevant to Students with Severe Disabilities**

The purpose of state standards for all students is to prepare them for functioning as adults in the community, as well as preparing some to pursue college preparation. Increased academic competence adds to the options students with severe disabilities will have as adults for jobs (e.g., jobs that require mathematics), leisure activities (e.g., access to books; using science knowledge in hobbies), and overall independence (e.g., being able to read one’s own mail or participate in government/civics activities).

In 2010, a consortium led by the Council of Chief State School Officers (CCSSO) and the National Governors Association Center for Best Practices (NGA Center), and involving parents, teachers, and school administrators established a shared set of educational standards for English Language Arts and mathematics that states can voluntarily adopt. Currently, 42 states and the District of Columbia have adopted the standards. The Common Core State Standards (CCSS, http://www.corestandards.org/) were developed to ensure that no matter where students live, they will be prepared for post-secondary education and the workforce. The initiative helps to define the skills that are most important for students as they transition through K-12 and become adults. The needs of students with disabilities are addressed in the CCSS. Specifically, the CCSS provide “an opportunity to improve access to rigorous academic content for students with disabilities” with the outcome of preparedness “for success in their post-school lives, including college and/or careers.” College programs for students with intellectual disabilities (ID) are increasing. Interestingly, research on transition outcomes
indicates that the only post-high school transition goal which was a predictor of employment for students with ID was having the goal of attending a two or four year college (Grigal & Hart, 2010). For the first time educators are talking about helping students with severe disabilities become career or college ready upon graduation because of these new opportunities and the potential importance of continuing education to transition outcomes.

Even if students do not attend college upon graduation, academic learning can enrich their overall adult lives. The CCSS and similar general curriculum standards (e.g., science and social studies) are developed to help students think about the world in which they live. If the world of students with severe disabilities should be as small as the trip from their home to the local discount store, fast food restaurant, and back then what educators have taught in the past will suffice. In contrast, students with severe disabilities also live in a universe, travel nationally and internationally, encounter people of other cultures, are impacted by world events, and engage with the natural world. Their lives are impacted by historical events and changes in the natural world. They are members of communities where adults only spend so much time talking about going to the restroom, ordering a cup of coffee, or crossing the street. Having vocabulary and experiences to communicate about the broader world provides a better foundation for adult social interactions.

Educators do need to consider how to promote the personal relevance of standards-based instruction for students with severe disabilities. For example, Jimenez, Browder, and Courtade (2008) provided opportunities for students to learn how to solve algebraic equations to complete job tasks. The students then used this problem-solving skill to generalize across materials. This personal relevance also is sometimes demonstrated through social validity measures (e.g., parent survey, Courtade, Browder, Spooner, & DiBiase, 2010; general education peer and students with disability survey, Jimenez, Browder, Spooner, & DiBiase, in press; teacher and paraprofessional survey, Johnson et al., 2004). Perhaps most important, educators need to ask students themselves what experiences mean the most to them. Although it is not typical in most American schools for students to choose their entire curriculum, older students often do have choices about what classes they take and how much to emphasize academic learning versus on-the-job training in high school. Elementary students often have choices within academic subjects such as what book to read, what topic to research, and which materials to use for a class project. This type of choice-making has been an important value in educating students with severe disabilities (Brown, Belz, Corsi, & Wenig, 1993; Brown, Gothelf, Guess, & Lehr, 1998; Brown & Cohen, 1996) that can and should be preserved in teaching standards to students with severe disabilities.

Reason #3: We Do Not Yet Know the Potential of Students with Severe Disabilities

From comprehensive reviews of research on teaching academics (Browder et al., 2006, 2008; Spooner et al., in press), it is clear that what we know about the potential of students with severe disabilities to learn academic content has been severely restricted by educators’ own priorities. In reading, most research focused on sight words, in mathematics mostly computation and the use of money, and few researchers have considered science. In social studies, a comprehensive review is not possible because there have been so few studies (Zakas, 2011). We do not yet know the potential students have to learn more complex academic content or how they may use it in their lives.

Researchers are beginning to discover this potential. Some have discovered that students with moderate intellectual disability can learn to read (Allor, Mathes, Roberts, Jones, & Champlin, 2010; Al Otaiba & Hosp, 2004; Bradford, Alberto, Shippen, Houchins, & Flores, 2006). Others have discovered that students with severe intellectual disability can acquire early literacy skills (Browder, Gibbs, Ahlgrim-Delzell, Courtade, & Lee, 2007), identify and define content vocabulary (Jameson et al, 2007; Riesen, McDonnell, Johnson, Polychronis, & Jameson, 2003), and comprehend passages adapted from grade-level text (Browder, Trela, & Jimenez, 2007). Even students with the most severe disabilities can learn to comprehend read alouds (Mims, Browder, Baker, Lee & Spooner, 2009). Stu-
Students can learn and generalize algebra skills (Jimenez et al., 2008), learn social studies concepts (Dugan et al., 1995), and learn and generalize science concepts (Jimenez et al., 2009).

The current era of discovery of the academic potential of students with severe disabilities is similar to the explosion of studies on teaching community-referenced skills that occurred in the 1980s after educators embraced the value that students with severe disabilities could learn more and different skills. The fact that we know more about this population’s potential to learn functional skills is not an indictment of their potential to learn academic content. Educators need to continue to find creative ways to address state standards and much more research is needed on how to teach this content. In contrast, there is now a foundation of research that meets rigorous criteria for evidence-based practice that provides a foundation of how to teach these skills. Spooner, Knight, Browder, and Smith (2010) have suggested that using principles of behavior analysis such as task analysis and systematic prompting with feedback, previously found effective for teaching many daily living and community skills, can also be effective in teaching academic content.

Reason #4: Functional Skills Are Not a Prerequisite to Academic Learning

What should be noted is that there is no research indicating that students cannot learn academic content until functional skills are mastered. There is nothing about learning to tie one’s shoes or use a vending machine or eat with a spoon that must be mastered before learning to read or solve math problems. While all may be important life skills, they are not prerequisites to academic learning as has sometimes been assumed in the past. In fact, this creates a double standard. What students without disabilities are required to master all their life skills before they get the opportunity for standards-based instruction? In contrast, there are graduate students and even university professors who have not mastered keeping a room clean or preparing meals, but fortunately these were not gatekeepers to their academic success.

Some students with severe disabilities may excel with academic learning and will need lifelong support for functional routines. There are individuals who are nondisabled who rely on others to prepare food, clean their house, wash their clothes, and help with their finances. While all students, with or without disabilities, should have opportunity to acquire independence in these areas through instruction, not everyone will master every life domain. All people are interdependent to some degree.

Reason #5: Standards-Based Curriculum is not a Replacement for Functional Curriculum

If a person purchases a new home, there usually are decisions to be made about what to pack and bring to the new home, what to discard, and what new items to purchase. Rarely does the homeowner discard everything from the prior home. Similarly, in planning curriculum for students with severe disabilities, educators need to make decisions with students and their families about what to bring into the new era from the past. Promoting self-determination, providing access to assistive technology, teaching skills needed for daily living and future job success, and positive behavior support are examples of “valuables” from the past to include in this new era. Because there are only so many hours in the day (as there is only so much space in a new home), some things from the past also must be relinquished. These may include not teaching skills before they are relevant to most other children that age (e.g., not teaching elementary children to vacuum), not teaching skills rarely used in daily life (e.g., naming coins; reading “survival” sight words like “railroad” rarely encountered in real life without other cues), assuming some skills are best taught at home (e.g., showering), and not teaching skills that may be “life skills” but not necessarily relevant to an individual child (e.g., not every child is interested in making drinks from a powdered mix). For the new context, there also will be skills never taught before (e.g., inquiry science; graphing points on a plane). These are like the new furnishings in a home. In creating this new context, thought also needs to be given to how to balance the old with the new. For example,
while teaching students inquiry science, the teacher also may incorporate some skills of daily living (e.g., washing hands after the experiment) or generalization to everyday activities (e.g., caring for a plant while learning about life cycles). There also is time across the school years for balance. Some skills like beginning reading may be given heavy emphasis in the elementary years; others like job training may be more important in the high school years. The final years in public school (ages 18–21) may be a time when standards-based instruction becomes a lower priority and students receive intensive community-referenced instruction. Many adult programs for students with severe disabilities, including some college programs, also continue to teach life skills.

Because educators are new to this blend of individual life skill goals and state standards, what is occurring now in classrooms is probably not the goal for the future. The criticisms of Ayres et al. (2011) provide a useful reminder to keep asking how to preserve the best of the past with the finest of the future. Educators sometime embrace new trends like fashion without carefully weighing the benefits of both the old and new practice. For example, developing an IEP in which every goal links to a state standard will either overlook some important life skill needs the student has or result in some impractical links (e.g., linking self care skills to a math standard). In contrast, a standards-based IEP can have both goals that link to state standards and others that incorporate individual life skill needs (Browder, Spooner, & Jimenez, 2011; Kearns & Quenemoen, 2010; Donnell & Copeland, 2011).

Reason #6: Individualized Curriculum Is Limited When That Is the Only Curriculum

When choosing curriculum in the 1980s-1990s, educators typically used a catalog approach (Ford et al., 1989; Wilcox & Bellamy, 1987). In a catalog approach, the planning team selects what students need and want from a list of options. This is similar to selecting items from a store catalog where the consumer views the options and makes selections. The consumer does not begin on the first page and order everything on page one before moving to the next page. The advantage of this approach was the strong emphasis on individual student need. The disadvantage is that there was not necessarily a longitudinal plan. Students might work on identifying coins or reading the same set of sight words year after year. In contrast, state standards have been carefully planned to promote sequential learning. The mathematics skills in 4th grade build on those of 3rd grade. When this sequential development of academic competence is paired with supplemental instruction in high priority life skill needs, students will have an educational program that promotes increased competence.

Functioning as an adult with few to no academic skills is difficult. To do so requires dependence on others for deciphering the mail, managing finances, and translating everyday events typically learned in school (e.g., What is a hurricane?). Jobs increasingly are requiring academic competence. For example, a machinist no longer simply guides the machine. Most now must apply geometry and even trigonometry to program computerized machines. A baker’s assistant may be asked to set out trays of 25 buns in rows of 5. While teachers may try to anticipate every possible academic demand of a student’s future opportunities referenced to the local area, it seems much more efficient to promote generalized academic competence with many opportunities for practice. For example, the student who has generalized the concept of creating sets of 5 from 25 (division), may do so in a bakery, landscaping, store display, party setup, or a variety of other activities.

Reason #7: Students Are Creating the Changing Expectations with their Own Achievements

The most important reason for standards-based instruction is that students are the ones ultimately driving this expectation with their own achievements. In the last decade, states have increased the academic expectations of their alternate assessments (Thompson, Thurlow, Johnstone, & Altman, 2005; Towles-Reeves, Garrett, Burdette, & Burdge, 2006). To some extent this was due to the policy requirements of NCLB, but to some extent it also was due to the fact that stu-
Students taking alternate assessments based on alternate achievement standards were performing the academic items presented. In our (the authors’) professional development workshops five years ago, we spent a large portion of time introducing the rationale for standards-based instruction. Currently, in workshops across the nation, many teachers share their own stories of students doing more than they ever expected possible. The following is a quote from one of the many teacher emails we have received in the last decade “The best part is that my students LOVE reading group!! I have a non-verbal student who is learning to eye gaze to answer questions. She has significant cognitive/behavior/sensory/physical issues. Her most challenging time of day is the afternoon, so I SAVE her reading instruction FOR the afternoon, because she loves it so much it will usually calm her and engage her interest.” (Nancy Pursley, personal E-mail communication, October 15, 2008).

Summary

We appreciate the criticisms offered by Ayres et al. (2011) and this opportunity to present our perspective as a rejoinder. We acknowledge that not all teachers, parents, or students embrace the emphasis on standards-based instruction. This is true not only for students with severe disabilities but for all students in the overall standards-based reform in today’s schools. Not all stakeholders embraced the transition from using mental age to focusing on chronological age for planning in the 1980s. We have offered seven reasons why we endorse standards-based reform for students with severe disabilities.

We also advocate for promoting dignity of students with severe disabilities. Although we may disagree on curricular priorities, we advocate avoiding demeaning people with disabilities in the process. Our strongest objection to the Ayres et al. article was the authors’ choice to include a pejorative quote about a student’s toileting skills. This quote stigmatizes both students with severe disabilities and their parents. As the popular press reflects, it is possible to procure demeaning examples and quotes about almost anyone’s life skills (e.g., sending lewd text messages; public drunkenness; weight gain). Some of these issues require real problem solving for people with and without disabilities, but they do not define people or their potential. In contrast, in promoting the best in each other through naming strengths, celebrating achievements, and honoring preferences, quality of life is enhanced for each and every member of a community.

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Received: 6 July 2011
Initial Acceptance: 6 September 2011
Final Acceptance: 15 October 2011
The Question Still Remains: What Happens when the Curricular Focus for Students with Severe Disabilities Shifts?
A Reply to Courtade, Spooner, Browder, and Jimenez (2012)

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Abstract: This article responds to rejoinder by Courtade, Spooner, Browder, and Jimenez (2012) of our initial article (Ayres, Lowrey, Douglas, & Sievers, 2011) describing the importance in making individualized curriculum decisions for students with severe disabilities. We point out our agreements with the rejoinder (reiterating statements from our original article) while also stating overarching disagreements, responding to Courtade et al.’s seven reasons to support a standards based curriculum, and concluding with general ideas on future directions for curriculum planning, research, and implementation. We continue to advocate for developing personalized curricula that meet the needs of individual students.

In our original article (Ayres, Lowrey, Douglas, & Sievers, 2011), we presented “the position that we, as special educators, should continue to increase real outcomes for students by focusing on students as individuals with specific preferences and needs resulting in a meaningful curricular development for each and every student” (p. 18). Courtade, Spooner, Browder, and Jimenez (2012) offer a rejoinder that posits “a standards-based curriculum provides students with severe disabilities a full educational opportunity and need not preclude instruction that is personally relevant (p. 3).” Courtade et al. offer seven key reasons they believe that a grade level standards based curriculum (SBC) should be promoted. In reply, we will first, briefly outline overarching disagreements. Second, we will comment briefly on Courtade et al.’s seven reasons to focus on a SBC by grouping some of these together to provide a more cogent discussion. Finally, we will conclude with some general ideas on future directions for curriculum planning, research, and implementation.

Overarching Disagreements

When one performs a comparison of the Courtade et al. rejoinder to our original piece, the overarching differences may not be obvious. Courtade et al. argue that “students with severe disabilities should receive a full educational opportunity” (p. 3), so did we (p. 12–13, 16–18). They propose that “students with severe disabilities should have full access to their schools, communities, and future job opportunities” (p. 4), so did we (p. 16). They propose that “it will be unfortunate if educational programs for students with severe disabilities only focus on grade-aligned state academic content standards” (p. 4), so did we (p. 15–18). The points of disagreement occur, not in these broad statements but in the interpretation of what these statements actually mean in the practice of developing and implementing educational programs for individuals with severe disabilities. The questions posed by Ayres et al. were never about whether functional...
curriculum should be exclusively chosen over standards-based curriculum. No questions were posed about whether or not students with severe disabilities (SWSD) had a right to access, participate, and progress in the general education curriculum or, whether or not SWSD can and should learn content. The primary question asked was “what happens when the curricular focus for students with severe disabilities shifts?” Four questions were posed in the introduction of the original piece (1) “At what cost do students (with severe disabilities) learn these standards? (2) Will these skills help the students get a job? (3) Choose where to live? (4) Actively participate in the community?” (p. 11). Examining Courtade et al.’s rejoinder, these questions regarding curriculum that focuses on a grade level, standards-based approach remain unanswered.

Much of Courtade et al.’s counter argument is based on the supposition that a SBC is actually meaningful at all (much less to SWSD who frequently have different needs than their typically developing peers). The Common Core State Standards (CCSS) are certainly a research-based set of standards. They were developed and linked clearly with skills and knowledge that students need to enter the workforce and college. A critical piece that is missing at this point is a careful examination of the role of SBC on the outcomes for SWSD.

Are they more likely to go to college? Are they more likely to get jobs after leaving school? Are they more likely to live independently? Are they more likely to participate in their communities in meaningful ways? Research on alternate assessment seems to stop dead and simply evaluating progress on SBC without making cogent links to post-school outcomes. One study was found examining the relationship of skills assessed on alternate assessments measuring SBC. The results of this study showed that achievement of students with significant disabilities on alternate assessments was not at all related to longitudinal outcomes (Kleinert et al., 2011). There is not even a clear logic model linking educational programs for SWSD which focus primarily on SBC with improved access to employment or reduction in reliance on outside service providers after high school. Until that linkage is demonstrated, we cannot definitively say that a SBC should be the primary curriculum for SWSD.

A second overarching disagreement occurs around the assertion that including a quote from a parent was stigmatizing to “both students with severe disabilities and their parents” (p. 15). This statement was made by a parent. The juxtaposition of instructional time spent on an irrelevant grade level standard while instructional time was needed on other individualized, family-prioritized goals is clearly articulated by this parent. This quote serves more to negatively mark the educational decision makers in this child’s life rather than the child himself. Ayres et al. provided this quote as the “quintessential point that begs discussion by the entire field of severe disabilities” (p. 12). Parents are much clearer in their discussion of services than we could ever assume to be. Authentic voices of stakeholders receiving services hold meaning for the field at large. While censure from parents on our practice in the field of special education may not always be pleasant, it is always something we should listen to. Feminist research has routinely employed qualitative and mixed methods methodologies to insure the voices of marginalized populations—including individuals with disabilities—are heard (Denzin & Lincoln, 2011; Giangreco & Taylor, 2003; Tashakkori & Teddlie, 2003). Through their work on disability and stigma, Green and colleagues (2003, 2005) have revealed harsh emotions, experiences, and perspectives of individuals and their families who have much to say about the educational system and stigmatization encountered. We echo the recommendation of Towles-Reeves, Kleinert, and Muhomba (2009) that the voices of individuals with severe disabilities and their families be systematically examined by the field. Positive and negative experiences with SBC should be examined to increase our understanding of how to improve the services we recommend and deliver. We stand by our inclusion of a parent’s voiced frustration with the current educational choices made for her child.

The Seven Reasons

Courtade et al. provide seven reasons to continue to pursue SBC. (1) SWSD have the right to a full educational opportunity. (2) A SBC is
relevant to SWSD. (3) We do not yet know the potential of SWSD. (4) Functional skills are not a prerequisite to academic learning. (5) Standards-based curriculum is not a replacement for functional curriculum. (6) Individualized curriculum is limited when that is the only curriculum. (7) Students are creating the changing expectations with their own achievements. It is imperative to point out several straw man fallacies in Courtade’s response that are used to try to minimize and mischaracterize our position. These straw man fallacies will be highlighted as we examine their seven reasons for promoting a general education focus for SWSD.

Reason 1: Students with severe disabilities have the right to a full educational opportunity. By law, every student does have this right. The ambiguity comes in defining educational opportunity (Courtade et al.’s term which does not necessarily parallel the term access that is also often used in this context). We proposed that a full educational opportunity as defined by IDEIA included individualized curricula based on a student’s prioritized needs (p. 12). Can a full educational opportunity for students eligible to receive special education services and supports include individualization? It must if we are to honor the provisions in both NCLB and IDEIA.

Are we, as educators, interested in everyone learning the exact same material? Working towards a “common core” suggests this, if the common core is all a student is allowed to address. The common core does not include skills and knowledge that are taken for granted by typically developing students: those skills that will lead to independent living, jobs, and social integration into the community. SWSD need more than the common core. IDEA provides the right for eligible students to have individualized supports, services, and yes—individualized curricular goals and objectives. That is not debatable. Not only do these students have a right to educational opportunity, they have a right to have successful, productive lives within the community. The discussion in our original piece was never presented as one OR the other but rather, how to achieve the correct balance (p. 16–18). Don’t the student’s and family’s priorities have some bearing on what goals/objectives receive the most curricular focus? Students with severe disabilities have a right to full educational opportunity. We, as researchers and practitioners in this field, must find ways to turn that right into a reality. Courtade et al. suggest we would deny this right to SWSD. This straw man attack is misleading at best. To elaborate on the points made above, we are not seeking to deny rights, rather we are encouraging policy makers and others to think about the issue with greater flexibility and greater individualization. Having a right to access, participate, and make progress in the general education curriculum does not mean one does not have a right to access, participate, and make progress in individualized educational priorities. A right to do something does not mean one is obligated to do that alone. We have a right to vote, bear arms, and speak freely but we choose within those rights the best course of action for each of us. When parents’ and students’ individual needs and priorities are removed from the equation, the discussion is less about rights and more about acquiescence to the one, sole curriculum. Perhaps it is time for students, parents, and teachers to again have greater say in what the curriculum would look like for an individual student.

Reasons 2, 5, & 6: Relevant, irreplaceable, and unlimited. In Reason 2, Courtade et al. suggest that SBC is relevant to SWSD by defining relevance as “the opportunity to learn general curriculum content” as “a right of every child who attends school” (p. 6). IDEIA (2004) demands that students be provided access to general education “in order to (i) meet developmental goals and, to the maximum extent possible, the challenging expectations that have been established for all students” (118, Stat.2651). This access to general education includes access to the SBC. This was never in debate. SBC goes a long way to improving the breadth and depth of curriculum when aligned with long-term expectations. Tempering this however must be the goals and priorities of the student and his or her family and the actual individualized assessment necessary to identify those long term expectations. The Courtade et al. definition of relevance is, in fact, at the very crux of our disagreement about SBC. As stated in our original work, our position is that relevant curricula are “meaningful, individualized curricula directly tied to
increasing independence in identified current and future environments” (p. 12). “The achievement of general education standards may be the most appropriate target for some students with severe disabilities, however, one cannot know that for certain without assessing each student’s individualized needs in order to create a meaningful curriculum that addresses those needs not only in the present, but also in the long-term” (p. 14). A student’s curriculum is only personally relevant if it is related to long term goals and outcomes that the student and their family expect or want them to achieve (Shelden & Hutchins, 2008). As explained in our earlier work, we would recommend that individualized assessment include person centered planning to identify long and short term goals and careful ecological inventories of current and future environments and identification of present level of performance relative to those demands. Educational programming begins there. This is a dynamic process that evolves as the student masters content, changes interests, or moves to new geographic locations. By identifying clear, long term goals and establishing reasonable benchmarks inclusive of all needed content, the student and IEP team can track student progress and reallocate resources and time to ensure mastery.

Additionally, Courtade et al. use the emergence of postsecondary programs for individuals with intellectual disabilities as evidence for relevance. Courtade et al. assert “for the first time educators are talking about helping students with severe disabilities become career or college ready upon graduation because of these new opportunities and the potential importance of continuing education to transition outcomes” (p. 8). We wholeheartedly applaud the creation of these postsecondary programs for individuals with intellectual disabilities. Furthermore, we see the continuing development of these programs as clearly relevant to our position maintaining that an individualized, meaningful curriculum is critical for students to achieve longitudinal outcomes. Zafft, Hart, and Zimbrich (2004) reported a positive correlation between participating in postsecondary education and gaining competitive or independent employment. Hughson, Moodie, and Udlisky (2006) found 70% of the participating students with intellectual disabilities or developmental delay who graduated from inclusive postsecondary education achieved full- or part-time employment. Other benefits have been noted as well. Page and Chadsey-Rusch (1995) analyzed the experiences of four students with and without disabilities attending community college and found all four reported a positive impact on their interpersonal relationships through their activities and enrollment in the community college. All early data demonstrates that postsecondary programs increase the likelihood of securing paid employment. However, some skills are necessary outside of academic preparation to be successful in the postsecondary environment. Think College, the dissemination site of the National Coordinating Center, highlights the key differences between high school services and college services. For personal care, including getting to class, lunch, etc., they state “the college is not responsible for providing these services. It is up to you to find help” (http://www.thinkcollege.net/for-students/understanding-college/high-schoolcollege-differences). Additionally, they recommend learning self-advocacy and self-determination skills in addition to spending time in inclusive settings as does Getzel and Wehman (2005), Test (2004), and Wehmeyer and Palmer, (2003). Additionally, in their discussion of preparation and employment of youths with severe disabilities, Rusch and Braddock (2004) recommend “that high schools assume the leadership role in guaranteeing that all youths are competitively employed or enrolled in postsecondary education on or before their 18th year” (p. 241). One concern noted by Johnson (2004) in his commentary on Rusch and Braddock’s recommendation was that “an unfortunate result of this increased attention on academic courses in many school districts nationwide has been a reduction in career and technical education and work-experience programs available for youths with disabilities” (p. 245). If students need experiences in paid employment, preparation for self-help skills required in postsecondary environments, and lessons in self-determination by the age of 18, when does this become an educational priority? Using a curriculum design that is individualized, beginning skills in these areas can be embedded very early on. Using curriculum designed
solely using academic standards, they cannot be infused as easily nor do they become a priority.

Courtade et al. go on to say in Reason 5 that SBC is not a replacement for functional curriculum. Again, this was never in debate. We argued repeatedly for a meaningful, individualized curriculum that included personally relevant grade-level standards combined with personally relevant functional skills directly tied to increasing independence in current and future environments (p. 16–17). However, we did suggest “a student has only a finite amount of time in school to learn the critical skills they will need to achieve the criterion of ultimate functioning” (p. 15). If a student’s entire day is spent exclusively addressing grade-level standards, where is the time to focus on skills related to employment, community access, etc.? Certainly, as we pointed out, those skills can and should be embedded but this takes thorough planning and preparation by the system. Currently, statewide assessments are focused solely on grade level standards achievement. Our assertion was that “addressing general education standards just because they are general education standards does not end in meaningful achievement towards adult outcomes for most students with severe disabilities” (p. 15–16). SBC does place an incredible demand on systems serving individuals with severe disabilities. Because statewide assessments measure progress only in SBC and teachers are held accountable for this progress, the system creates an educational priority that seems to say the only important goals are those measured on statewide assessments. Thus, teachers’ instructional time follows suit (Kampfer, Horvath, Kleinert, & Kearns, 2001; Kleinert, Haigh, Kearns, & Kennedy, 2000). Furthermore, SBC cannot always be linked to relevant, meaningful outcomes. Policy makers must decide if trading instructional time for SBC that may/may not be relevant to a student’s adult outcomes is important. Courtade et al. seem to suggest that we would recommend teaching age irrelevant skills to young children like “teaching young children to vacuum” (p. 12). This was never suggested in our paper. It is another straw man argument. We suggested that teaching age appropriate skills in context tied to longitudinal outcomes was the only way to make education functional and meaningful (p. 16). Further, we found curious their suggestion that we might endorse teaching things like naming coins (which is common fare in kindergarten) but has limited utility in the real world where the value of the coins and combining them to purchase things is much more important. In contrast, another point on which we would agree with them is on the misuse of training on irrelevant things like community sight vocabulary that is so often taught out of context and has no functional importance. Astoundingly, their assertions about teaching these splinter skills that are not meaningful to the student are no different than our assertions about teaching planets, stem plots, or algebraic equations. We insist that not only is the context in which the material is taught important, but more important is the relevance to the student, the links to their life and future. If the student needs to learn stem plots for their future job, it has meaning for that student and should be taught in the context of how it will be used in that job. Similarly, if the student needs to learn to vacuum and it is a socially valid skill, perhaps time should be spent learning to vacuum something that really needs vacuuming (general classroom chore, bedroom, etc.). We fully support teaching skills that have been determined through individualized assessments as appropriate for the individual student and his or her future.

Finally, in Reason 6, Courtade et al. further assert that individualized curriculum is limited when it is the only curriculum. If a student’s curriculum is designed following the procedures we outlined on p. 17 of our original work, an individualized curriculum would include relevant general education standards (from all to a selected amount), as well as prioritized objectives that include his/her most pressing needs. Individualized curriculum developed in this manner is not limited at all but rather tailor made to maximize a student’s opportunity to access, participate, and progress in the larger general curriculum. This type of curriculum is unlimited in the depth and breadth of what can be taught.

Reasons 3, 4, & 7: Potential, prerequisites, and expectations. First, let us address Courtade et al.’s Reason 4: Functional skills are not a prerequisite to academic skills. Another straw
man attack: we never suggested they were. Nor would we suggest that a truly inclusive general education setting has prerequisites for inclusion into that setting. Prerequisites (or the concept of prerequisites) were not mentioned in our original work. Rather, we suggest that students need instruction in those things that are identified as a prioritized need (p. 17). Courtade et al. highlight that all people are essentially interdependent (rather than independent). They provide an example of individuals without disabilities requiring help with personal care (p. 11). We agree; people are interdependent. Interdependence requires concessions and tradeoffs, even compromises. One of those tradeoffs in society is financial. It would be nice if we all had people to prepare meals for us and clean up after us. While partners, roommates, spouses, etc. do this for one another, the mutual tradeoff in duties often contributes to the continuation or the decline of the relationship. Unless one has someone in their lives with whom to barter over these tasks, there is usually a financial tradeoff. Paying for a housekeeper, a cook and someone to take care of maintenance in a home is expensive. If one is unable (physically or skill wise) to take care of these tasks they must have someone help them and in many cases, that someone must be paid. Given the pervasive unemployment of the population of people with severe disabilities and the current decline in assistance for social services, who will perform these tasks for them?

In Reason 3, Courtade et al. assert that we do not yet know the potential of students with severe disabilities. We agree whole-heartedly. And, while we do not know each individual’s maximum potential, we must strive to maintain high expectations. Once those expectations are met, the student and team must move on to continue supporting the student to grow and learn. We must make learning meaningful at every level. If that is a physics lesson that is of high interest and related to a short or long term outcome, that lesson is meaningful. If it is a history topic that may not be of high interest but may provide an authentic opportunity of learning and practicing social skills and building friendships, then that history experience is meaningful. If learning about the scientific method generalizes to solving everyday problems, that is meaningful. We highlighted much of the work done by Courtade, Spooner, Browder and Jimenez in our original work because they have been doing pioneering work examining the potential of students with severe disabilities and pushing the boundaries of what is known relative to learning complex academic content. However, we cannot charge headlong into a curriculum without truly understanding the relevance and day-to-day application or we may miss important opportunities and squander valuable time. To put a label on potential is to limit achievement. We would hope that we truly never learn the ultimate potential of any student involved in the educational system: disabled or nondisabled. Isn’t that the very concept of becoming lifelong learners? Our expectations as educators should always accelerate with the progress of our students. The entire field of special education is formed around this concept of student achievement. The field was not formed because students couldn’t learn but rather because they could learn so much when given appropriate supports and services. This ties in directly with Reason 7 presented by Courtade et al. Students are now and have always been changing expectations with their own achievements. From the early days of Victor of Aveyron to the current day Temple Grandin, individuals with disabilities have always been the ones to demonstrate how much they can do. We owe it to these individuals not to waste their time with any instruction that does not directly help them reach their personal goals and objectives. Letter naming for the sake of addressing literacy may be just as useless as a peg board for the sake of addressing vocational training. Curriculum must be tied to personally relevant outcomes that improve immediate and longitudinal quality of life. Students with and without disabilities constantly surprise educators by exceeding expectations. We are the ones who impose the limits by creating systems that force teachers to focus on one thing or the other for the sake of the system rather than the sake of the students.

**Recommendations and Conclusions**

We conclude our reply with some general ideas on future directions for curriculum planning, research, and implementation.
Creating a curriculum that includes relevant SBC and individualized priorities involves several considerations that we deem important. First, we recognize that SBC is beneficial to teachers. SBC provides teachers a clean delineation of what needs to be taught for the student to progress through school with their typical peers. However, SBC does not have clear links with post-school outcomes. Teachers must work to make these connections by developing strong, dynamic ecological inventories and formative assessments of student progress to make sure their programming moves students towards long range outcomes. Researchers must work to demonstrate these links to the field at large. If SBC is the primary curriculum, it logically should be taught in the general education setting alongside typically developing peers so that students with disabilities can take advantage of all opportunities (academic and social) that would be presented in this context. Innovative practices using the principles of Universal Design for Learning should be implemented (Wehmeyer, 2006). Individualized functional skills established as a priority for the student must be embedded in that general education context. Finally, student achievement on all target skills must be measured for progress, maintenance, and generalization.

Second, while we still contend that the amount of time a student has in school is finite, not all of this time is clearly instructional. With approximately 22,680 hours spent in school between the ages of 3 and 21 (a mathematical error was made in our original article), we have no sense of how well this time is maximized for student benefit. It may be the case that incorporation of a SBC is not in fact diminishing the amount of time spent on individually relevant functional skill instruction but rather acting to fill out the rest of the day or bumping other activities from the day (which could also be harmful if this removed the opportunity to take part in things like art, physical education, music, etc.). An investigation into the use of teacher and staff time regarding this issue would be useful. The most recent study examining instructional time for SWSD was published by Smart and Hillyard in 1985 (the study was not conducted in U.S. schools). A great deal has changed since then.

A closer look at how instructional time is being used with SWSD would be useful.

Third, classroom teachers need clear, generalizable models linking SBC to real world outcomes for all SBC they may be expected to implement. A middle or high school teacher of SWSD is likely to have students who span all grade levels at that school. Familiarity with the standards can obviously be facilitated by closer collaboration with general education teachers. However, making those links to life outside of school, to things students are likely to encounter on a daily basis is critical for the student to retain the information and skills. Maintenance and generalization is supported through use of skills across environments (Stokes & Baer, 1977). If skills are not used, the likelihood that they will simply be lost is greatly increased because they were non-functional (and had no meaning). If this occurs, any time spent on any curricular target (SBC or Functional) is wasted.

Fourth, as school systems move toward pay for performance models and attempt to identify ways to evaluate teachers of SWSD, we fear that standardized testing and evaluation of progress on a SBC is far too simplistic a path that will emphasize test scores for the sake of test scores without examination of the validity of what is being measured. Measuring and evaluating meaningful outcomes for SWSD has been the assurance of special education for decades. If school systems and the U.S. Department of Education truly want measures of teacher’s ability to help students learn meaningful material, they will have to look well past state annual assessments of student progress in SBC and evaluate teachers based on increased student independence, reduction in needed supports, and post-school outcomes. These are not all easy measures to collect, nor is this a simple, standardized way to teach. Emphasis on SBC begins to oversimplify the process when teachers no longer have to look at what is meaningful after graduation and are instead incentivized to look only at the near term mastery of SBC that may have no link with post-school outcomes or even to the next school setting.

Fifth, any curricular decisions should still be made in close consultation with the student and their family/caregivers. Emphasis and balance in the IEP should not be deter-
mined solely by the professionals or should not be driven only by a school’s desire to satisfy Annual Yearly Progress by preparing a student to take a standardized assessment. Family members and/or caregivers are best able to inform the school of the student’s current and future environments (critical for quality person centered plans and ecological inventories) and they have the best understanding of what skills and supports their child needs to function as independently as possible in the home and community. The student is clearly the most important individual voice identifying their preferences in learning objectives and their own expectations for plans after high school. As stated earlier on p. 5, the voices of families and students should be examined. If individuals with disabilities and their families are involved in the curriculum development process, we are less likely to encounter frustrated (and confused) parents who simply need our professional skills and experience to support their child to reach their educational goals. It is unfortunate that Courtade et al. took offense at a frustrated parent’s concern about the curriculum decisions that were being made for her son. This happens to be evidence of the unfortunate side effect of a SBC overtaking some of the fundamental needs with which individuals with severe disabilities and their families need our professional skill and experience to support. We conclude our reply by repositing our original position: an individualized, meaningful curriculum is the most appropriate curriculum to help students attain meaningful adult outcomes that directly increase their quality of life.

References


Received: 8 September 2011
Initial Acceptance: 5 November 2011
Final Acceptance: 28 November 2011
Beyond Time Out and Table Time: Today’s Applied Behavior Analysis for Students with Autism

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Abstract: Recent mandates related to the implementation of evidence-based practices for individuals with autism spectrum disorder (ASD) require that autism professionals both understand and are able to implement practices based on the science of applied behavior analysis (ABA). The use of the term “applied behavior analysis” and its related concepts continues to generate debate and confusion for practitioners and family members in the autism field. A general lack of understanding, or misunderstanding, of the science and practice of ABA is pervasive in the field and has contributed to an often contentious dialogue among stakeholders, as well as limited implementation in many public school settings. A review of the history of ABA and its application to individuals with ASD is provided, in addition to a discussion about practices that are/are not based on the science of ABA. Common myths related to ABA and ASD, as well as challenges practitioners face when implementing practices based on the science of ABA in public school settings are also described.

The use of applied behavior analysis (ABA) with students with autism spectrum disorders (ASD) is not a new concept, as many professionals working in the autism field state that they “do” ABA with their students/clients. Though the science of ABA has been in use for decades questions remain about what constitutes ABA, its efficacy, and its use with individuals on the autism spectrum. Critics of ABA have historically disputed the evidence of efficacy of ABA for reasons ranging from criticisms that it is too punishment-based, lacks generalizability across settings and contexts, and issues with study methods and design. Such criticisms are not without merit, as will be discussed in this paper. However, much criticism is based on broad misconceptions about what it means to “do” ABA today in public school settings. ABA is much more than “Table Time” or discrete trial training, and “time out” or punishment. Today’s ABA is based on a well-founded and researched science, uses positive reinforcement over punishment, seeks to establish a clear connection between treatment and outcome (e.g., functional relationship, discussed later in this paper), and is focused on generalization of socially important skills to the natural environment.

This paper provides an overview of ABA. This overview lays the foundation of the science and provides a historical context. Next, strategies and interventions based on the science of ABA will be discussed, as well as some of the myths and misconceptions of ABA as it pertains to individuals with ASD. Finally, challenges in the implementation of ABA (e.g., personnel preparation, litigation, blended methodology) are presented. The purpose of this paper is to provide readers, both new and seasoned professionals in the field of ASD and ABA, a reference for the use of ABA techniques with students with ASD, and to provide clarity about what today’s ABA is, and is not, for individuals with ASD.

Overview of Applied Behavior Analysis

Applied behavior analysis was first defined by Baer, Wolf, and Risley in 1968 as “the process of applying sometimes tentative principles of behavior to the improvement of specific behaviors, and simultaneously evaluating whether or not any changes noted are indeed
attributed to the process of application” (p. 91). Using principles of behavior to shape, modify, or change behavior has a lengthy history in the field of special education, yet behavior modification alone does not qualify as ABA. Applied behavior analysis specifically includes the analysis of whether or not changes in behavior are caused by the behavioral modification techniques used, or whether there were other variables, or pure coincidence that leads to behavior change (Alberto & Troutman, 2009). In this way, the field has gone beyond training and moved to evaluation and prediction as well. In order to say with confidence that a particular intervention has led to a change in behavior, one must evaluate it according to specific criteria (e.g., against baseline) and determine whether or not it is likely that this behavior change would be seen again if the same intervention were to be used. This is known in the literature as establishing a functional relation between the behavior and the intervention, and is key to the analysis of behavior change (Kennedy, 2005).

Historical Context

Long before behavioral principles were formally defined, educators were using positive reinforcement and punishment to shape or change the behaviors of their students (Alberto & Troutman, 2009). Family members have for centuries used systems of reinforcement and punishment to teach their children, and to ensure that they grow into “well behaved” adults. Thus, use of the principles of “applied behavior analysis, is not a new concept to the field of special education. In the early part of the 20th century John Watson began to advocate for a less “mentalistic” view of human behavior in favor of one based on only what could be objectively observed (Alberto & Troutman). In other words, instead of examining a child’s history with his family, for example, one would observe his current behaviors to determine cause and make suggestions for change. This focus on observable behavior has continued in the field to this day. During the time when principles of behavior were first coming into formal description, other scientists began conducting experiments to determine the effect such principles and corresponding variables had on both human and animal behavior. B.F. Skinner is associated with operant conditioning, in which the consequences that follow a behavior determine the likelihood of that behavior increasing or decreasing. Specifically, when reinforcement is applied following a particular behavior, that behavior is expected to at the very least stay the same (in terms of intensity and frequency), and may increase. When punishment is applied following a behavior, the behavior is expected to decrease. A behavior that can be shaped by these consequences is said to be under operant control; it is not automatic, but rather, the individual has been taught to respond in a particular way. Use of such principles was the basis for behavior modification, and received a great deal of research in the early to mid 1900s, while researchers sought to establish that these principles held true for humans as well as animals.

In the 1960s, researchers began to apply behavioral principles in the real world to study and promote generalization of behavior. This move from the laboratory to the applied setting marked the beginning of ABA as it is known today. If one examines Baer et al.’s 1968 definition, it is clear that the use of behavioral principles in abstract, non-functional situations is counter to the purpose of ABA. In order for use of behavioral principles to be “applied” they must be conducted with meaningful, socially important behaviors and be generalized to the natural environment where those behaviors or skills are needed. The use of behavior modification techniques in the real world became enormously popular because of its great success, and in 1968 the Journal of Applied Behavior Analysis (JABA) was introduced so that researchers could share their work with the ever-increasing number of researchers and practitioners using principles of behavior in applied settings.

Using ABA to Educate Students with ASD

For most children and youth, their natural environment consists of a combination of home, community, and school. In education, ABA is routinely used in attempts to teach new skills and decrease challenging behaviors. The use of behavior principles to affect these changes is not new in the field of education, though relatively few teachers may realize
their use of ABA throughout their day. Each time a teacher makes a decision to modify or change his teaching to help a student better grasp an important concept, and then watches and records whether or not that student does indeed learn the concept, he/she has used applied behavior analysis. Certainly there is more to ABA than this, and there are professionals (behavior analysts) dedicated to the study and use of ABA, yet the basic definition is really that simple. In reality, teachers use ABA more often than they realize in their day-to-day interactions with students.

When many people think of ABA and autism, they think of the work of Dr. Ivar Lovaas and colleagues (1973, 1987). Lovaas was among the first researchers to use the principles of behavior to teach youngsters with autism. In his seminal work, Lovaas and colleagues compared high intensity (approximately 40 hours per week) of ABA to low intensity (approximately 10 hours per week) of ABA and found that children who received more intensity of services had greater gains. Further, in a seven-year follow-up researchers found that many of the children who had received the high intensity ABA were included in general education classrooms and were virtually indistinguishable from their typical developing peers (McEachin, Smith, & Lovaas, 1993). Other researchers have replicated the findings from Lovaas’ original study (1987) with similar results (e.g., Eikeseth, Smith, Jahr, & Eldvik, 2002, 2007; McEachin et al., 1993; Reed, Osborne, & Corness, 2006), while other researchers have found that lower intensity of ABA (e.g., 20 hours per week or less) also leads to improved functioning (Anderson, Avery, DiPietro, Edwards, & Christian, 1987; Eldevick, Eikeseth, Jahr, & Smith, 2006). Along with methodological concerns (Mesi-bov, 1993) a criticism of the original Lovaas study has been that the ABA intervention was conducted entirely in a clinical research setting, and does not mimic the environment of the public school, thus those individuals who rely solely on this original research as the basis for their work may question the utility of ABA in a public school setting for children with autism. However, since the original Lovaas study, hundreds of studies have been conducted, with many of them in applied, real world settings including homes, communities, and schools, and have demonstrated the efficacy of the approach. Such studies have found that using the principles of ABA with children with autism is not only effective, it is considered an evidence-based strategy and recommended for use (see discussion below regarding research-based practice and the National Autism Center’s National Standards Project [NSP, 2009] for a review of the literature).

Strategies/Interventions Based on the Science of ABA

Along with misperceptions about what ABA is and what it is not, educators and caregivers often struggle in discerning which techniques and interventions are based on the principles of ABA. This confusion is understandable, as even professionals in the field continue to describe ABA as an “autism therapy” or “treatment approach for autism” (Sigafoos & Schlosser, 2008). Though the field has clearly recognized that treatments based on the science of ABA have the strongest research support at this time (NSP, 2009), it is less clear what specific interventions for individuals with ASD are both empirically-based and fall under the ABA “umbrella.” Following are some guidelines for practitioners to use in discerning which practices are based on the science of ABA as well as examples of a number of those practices used with individuals with ASD.

Baer et al. (1968, 1987) recommended that intervention and/or research based on ABA principles be judged using six criteria. Should these criteria be met, practitioners can determine that the research/treatment is based on the science of ABA. Conversely, if all of these are not met, one can conclude that the intervention or practice does not fall under the umbrella of services based on the principles of ABA.

1. Is the intervention/research applied?

To meet this criteria the intervention and/or research must address behaviors that are socially significant for the individual with ASD and those interacting with the individual. These behaviors include social skills, academics, communication, self-care, or other behaviors that improve the day-to-day life experi-
ences of the individuals and their caregivers (Cooper, Heron, Heward, 2007). Practitioners and researchers must evaluate the social significance of the behavior that is addressed. Practices/studies that contribute only to theory or address behavior that is not socially significant (i.e., choosing behaviors or participants based on convenience rather than immediate need) would not be applied.

2. Is the intervention/research behavioral?

The behavior addressed in the intervention/research must be observable and measurable through direct assessment and/or observation of the behavior. The observer must be well trained in observing the specific behavior, use a clearly defined written behavior code, and complete frequent reliability assessments. The observer’s behavior should be monitored as well, through the use of implementation fidelity measures if appropriate. Interventions/research using only self-report measures, participant-observer reports, or samples of student performance (e.g., IQ or achievement tests) are not deemed behavioral.

3. Is the intervention/research analytic and conceptual?

The practitioner/researcher must be able to demonstrate a functional relationship between the intervention and the change in targeted behavior. This requires multiple demonstrations of the relationship between the implementation of the intervention and the reliable and measurable change in the identified behavior. Essentially, a “believable demonstration of the events that can be responsible for the occurrence or non-occurrence of the behavior is required” (Baer et al., 1968, p. 94). Interventions/research that only describe a problem behavior or relationships between behaviors and contextual variables, as well as studies that employ exclusively qualitative methods (e.g., record review, case study, interviews, focus groups) are not considered analytic.

In addition, the intervention/research methods should make systematic, conceptual sense. It should be clear why the intervention methods worked and the practitioner/researcher should be able to link both the procedures and outcomes to the relevant behavioral principles. Interventions/studies that cannot provide a clear rationale for methods or a systematic justification for the observed behavior changes are not determined conceptually sound.

4. Is the intervention/research technological?

The intervention must include precise procedures that include enough detail and clarity that a trained professional can replicate the intervention with minimal teaching. All salient ingredients of the intervention should be described, including how the interventionist should respond to student behavior throughout the intervention. Because a number of interventions based on ABA have been used for decades, practitioners and researchers can use previously published articles or texts as a reference for colleagues/readers. Intervention/research that does not include or refer readers to, a clear procedural description with information about techniques, along with a set of contingencies between student/practitioner responses, is not deemed to be technological.

5. Is the intervention/research effective?

The practical and social importance of the behavior change is considered to be the most important feature of an intervention. While statistical significance is valuable, meaningful and noticeable change for the participant and those in the participant’s environment is key. Effectiveness should be measured in several ways, including a measure of the problem behavior, the replacement behavior, and a measure of social validity, which addresses consumer satisfaction of the intervention’s goals, procedures, and outcomes. When evaluating these measures to determine efficacy, interventionists/researchers must determine if the behavior was altered enough to be socially important (e.g. would changing a student’s grade from a D- to a D be deemed socially important?) (Baer et al., 1968, p. 96). Determinations about an intervention’s efficacy can often best be made by those impacted by the behavior (e.g. teachers, caregivers, staff members). Research that contributes only to theory or that does not produce practical change, as evaluated by stakeholders, in both replace-
ment behaviors and problem behaviors would not be considered to be effective.

6. Does the intervention/research have generality?

The behavior change should last over time, after the intervention has been withdrawn, and ideally (but not required), behaviors that were not targeted for intervention should change. In addition, programming to assist generalizability across a variety of factors is also recommended (Baer et al., 1968). Outcomes that diminish rapidly after an intervention ends and/or have little application across setting or behavior would not have generality.

These six criteria can assist practitioners in evaluating and determining which interventions are based on the science of ABA. As educators and caregivers are exposed to the myriad of treatment options available and faced with the choice of selecting interventions to implement, these guidelines should provide a foundation for decision making. In addition to using these criteria, two national centers have recently completed independent and complementary reviews of the intervention literature for individuals with ASD and the related reports can assist in this evaluation process as well. These national centers were charged with reviewing the intervention research literature, identifying standards for determining research quality, evaluating research designs, categorizing evidence-based practices, and disseminating that information to practitioners and families. In 2007, the Office of Special Education Programs in the US Department of Education funded the National Professional Development Center on Autism Spectrum Disorders (NPDC) to promote the use of Evidence Based Practices (EBP) in programs for infants, children, and youth with ASD and their families. In addition, the National Standards Project (NSP), an initiative of the National Autism Center, has recently completed an exhaustive review of the strength of evidence for psychosocial and behavioral interventions for individuals with ASD (NSP, 2009). These two efforts are the most current, comprehensive evaluative reviews of the literature on focused intervention practices for learners with ASD.

Each report identified practices that have strong empirical evidence supporting their use with individuals with ASD. The NSP labeled interventions as “Established” if the most stringent quality criteria were met (see the full report, NSP, 2009, for information about how research was reviewed and rated). The NPDC labeled interventions as “Evidence-based” if criteria were met (see Odom, Collet-Klingen, Rogers, & Hatton, 2010, for information about how research was reviewed and rated). Both reports identified numerous established and/or evidence-based practices based on the science of ABA. In fact, the NSP (2009) reported that two-thirds of the Established Treatments were developed exclusively from the behavioral literature, and 75% of the evidence for the additional one-third of Established Treatments was gleaned from the behavioral literature. Each report identified the strategies in different ways (i.e. “Antecedent Packages,” “Behavioral Treatments”), and included is a description of a sample of the strategies represented in one or both reports. The descriptions presented here, as well as the intervention literature included in both reviews, are certainly not exhaustive, as the interventions are far too numerous to list in one paper (see previously named reports for more detailed descriptions). In addition, the field continues to grow and hundreds (likely thousands) of articles have been published in the last decades using interventions based on the principles of ABA with individuals with ASD.

For inclusion in this evidence-based list and to be identified as a strategy based on ABA in the two reports, interventions must have demonstrated each of the six criteria above. This requires that each intervention include a) frequent observation and b) monitoring of progress through data collection and individualization, as intervention is based on the assessment of specific behaviors of individual students (e.g. curriculum based assessment, functional behavior assessment). Both are crucial components in the science of ABA. For the ease of visual presentation and discussion, intervention examples will be grouped across three broad categories: Antecedent Strategies (modification of situational events that occur before targeted behavior), Instructional Strategies (used to build new skill repertoires), and Consequence Based Strategies (modification of situational events that immediately follow a
### TABLE 1
Examples of ABA Based Interventions for Individuals with ASD- Antecedent Strategies

<table>
<thead>
<tr>
<th>Antecedent Strategies</th>
<th>Description</th>
<th>Sample Reference</th>
</tr>
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<tbody>
<tr>
<td><strong>Behavioral Momentum</strong></td>
<td>Presenting a series of requests for behaviors that are associated with a high rate of reinforcement (have a high probability of occurring), and then presenting a request for a behavior that has a low probability of occurrence</td>
<td>Romano, J. P., &amp; Roll, D. (2000). Expanding the utility of behavioral momentum for youth with developmental disabilities. <em>Behavioral Interventions, 15</em>, 99–111.</td>
</tr>
<tr>
<td><strong>Choice</strong></td>
<td>Allowing individuals to exhibit preferences in the selection of materials, activities, order of task completion, and/or other elements of the instructional day (e.g. reinforcers, setting)</td>
<td>Romaniuk, C., Miltenberger, R., Conyers, C., Jenner, N., &amp; Jurgens, M. (2002). The influence of activity choice on problem behaviors maintained by escape versus attention. <em>Journal of Applied Behavior Analysis, 35</em>, 349–362.</td>
</tr>
<tr>
<td>Instructional Strategies</td>
<td>Description</td>
<td>Sample Reference</td>
</tr>
<tr>
<td>----------------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Prompting</td>
<td>Providing help to students (e.g., verbally, gesturally, physically, visually) that assist them in using a specific skills</td>
<td>Gena, A. (2006). The effects of prompting and social reinforcement on establishing social interactions with peers during the inclusion of four children with autism in preschool. <em>International Journal of Psychology</em>, 41, 541–554.</td>
</tr>
</tbody>
</table>
### TABLE 3
Examples of ABA Based Interventions for Individuals with ASD- Consequence Based Strategies

<table>
<thead>
<tr>
<th>Consequence Based Strategies</th>
<th>Description</th>
<th>Sample Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Response Interruption</td>
<td>Blocking a student’s attempt to engage in interfering behavior (e.g. repetitive or stereotypic behavior)</td>
<td>Roberts-Pennel, D., &amp; Sigafoos, J. (1999). Teaching young children with developmental disabilities to request more play using the behaviour chain interruption strategy. <em>Journal of Applied Research in Intellectual Disabilities, 12</em>, 100–112.</td>
</tr>
<tr>
<td>Reinforcement</td>
<td>A consequence that is likely to maintain or increase the probability that a behavior will occur in the future</td>
<td>Adelinis, J. D., Piazza, C. C., &amp; Goh, H. (2001). Treatment of multiply controlled destructive behavior with food reinforcement. <em>Journal of Applied Behavior Analysis, 34</em>, 97–100.</td>
</tr>
<tr>
<td>Token Economy</td>
<td>A system in which students receive tokens that can be exchanged for reinforcing object/activities when a target skill/behavior is used appropriately</td>
<td>Tarbox, R. S., Ghezzi, P. M., &amp; Wilson, G. (2006). The effects of token reinforcement on attending in a young child with autism. <em>Behavioral Interventions, 21</em>, 155-164.</td>
</tr>
</tbody>
</table>
targeted behavior) (see Tables 1, 2, and 3). Categories are not exclusive and strategies are often used across categories.

**Strategies/interventions that are not Under the ABA Umbrella**

It is important to recognize that though service providers may state they are using an intervention based on the science of ABA, if it is not implemented with fidelity, along with frequent assessment and measurement of efficacy, it is not “ABA.” In addition, there is little research that supports the use of eclectic models and programs (e.g. the combining of several approaches with varying theoretical foundations), (Foxx, 2008). However, because an intervention does not fall under the ABA umbrella does not mean it is not effective for some individuals on the autism spectrum. A number of interventions and comprehensive treatment models based on alternative theories (e.g. developmental, social/perceptual-cognitive) have emerging evidence supporting their use with individuals with ASD (NSP, 2009; Odom, Boyd et al., 2010). Treatments based on alternative theories, either in isolation or in combination with behavioral strategies, should be continued to be studied empirically (NSP, 2009). Several are described below.

Strategies based on behavioral theory center on the notion that behavior change results from manipulating the antecedents and consequences of behavior. Typically discrete, observable behaviors are targeted for intervention. Interventions based on developmental or cognitive developmental theories may share a number of similarities with behavioral interventions; however developmental and social cognitive interventions may emphasize outcomes beyond distinct behaviors, such as “forming a sense of themselves” (Greenspan & Weider, 1999, p. 152), intentionality, and “responding in more thoughtful, flexible ways” (Gutstein, Burgess, & Montfort, 2007, p.399). In addition, these theories propose or assume that a child’s emotional state as well as his/her interpersonal relationships with caregivers impact behavior change. Typically these interventions, such as the Developmental, Individual-Difference, Relationship-Based model (DIR) or the Relationship Development Inter-
article and are typically not considered to be based on the science of ABA.

Common Misconceptions about ABA and ASD

Myth #1: ABA and DTT are Synonymous

The most common misconception about ABA and its use with students with ASD is that ABA refers to a particular strategy, namely discrete trial training/teaching, or DTT. Perhaps because of its use in the original Lovaas study (1987) and subsequent replications, many professionals who are not well trained in ABA consider DTT to be “the” program for students with ASD, and synonymous with ABA. When a teacher states that he or she “does” ABA, they are frequently referring to DTT. Often referred to as “Table Time” because historically conducted in a one-to-one setting, usually at a table, DTT involves the use of what is called a three-term contingency for instruction. The three-term contingency includes some antecedent cue, or discriminative stimulus (SD) provided by the teacher, followed by a behavioral response by the student (which in some cases may require teacher prompting to elicit), followed by a reinforcing consequence delivered by the teacher. Table 4 provides a visual example of the three-term contingency. Each learning opportunity utilizing this three-term contingency is referred to as a trial. Because it is used to teach skills that typically involve short, discrete behavioral responses (e.g., pointing at an item, answering a question), it is referred to as discrete trial training or discrete trial teaching. Use of DTT is not limited to “table time”; indeed, anytime someone uses the three-term contingency to teach a skill, they are using DTT.

As discussed previously, discrete trial training is only one part of a comprehensive ABA program. Steege, Mace, Perry, and Longenecker (2007) suggested that, “although DTT has many advantages to recommend its use, it is not well suited to teach the full range of cognitive, social, academic, leisure, and functional living skills children with autism and related disorders need to develop and generalize to varied natural environments. DTT, also does not address the treatment of behaviors that can interfere with instruction and the acquisition, generalization, and maintenance of skills many children with autism bring to instructional situations” (p. 91). Thus, it is clear that ABA and DTT are not synonymous, and also, DTT alone is insufficient to produce the kinds of benefits typically sought in educational programs for students with ASD.

Myth #2: ABA is Punishment-Based

Punishment has been used and will likely continue to be used in the field of ABA. There are a number of misconceptions, however, about what punishment is and the frequency of its usage in the field. It is important to first provide a clear definition of punishment—essentially it is a consequence that reduces the future probability of a behavior (Azrin & Holz, 1966). Punishment can be a commonly-used reprimand such as “Stop” or “No” or the removal of positive reinforcer, like losing free time or privileges after engaging in disruptive behavior. The term punishment has somehow become synonymous with the use of time-out procedures and the use of aversive stimuli, such as noxious smells, electric shock, or isolation. Though the use of these procedures has a history in ABA, as well as in other methods such as TEACCH (Schopler, Lansing, & Waters, 1983) and the broader field of special education (Heron, 1978), few in the field would advocate for their usage today. In the last twenty years the field has shifted “from viewing behavior support as a process by which individuals were changed to fit environ-

<table>
<thead>
<tr>
<th>Antecedent/Instructional Cue/ SD</th>
<th>Behavioral Response</th>
<th>Reinforcing Consequence</th>
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<tbody>
<tr>
<td>Example: teacher asks child to “Show me your nose”</td>
<td>Example: child touches her nose</td>
<td>Example: teacher gives student a high five</td>
</tr>
</tbody>
</table>
ments, to one in which environments are changed to fit the behavior patterns of people in the environment” (Horner, Carr, Strain, Todd, & Reed, 2002, p. 425). The field has increased attention to intervention procedures that focus on what to do before or between interfering behaviors (National Research Council, 2001). Consequence based approaches, including the use of strategies to reduce challenging behavior, will continue to be used in the field, however, this use is only after less intrusive strategies have been tried and failed and only with consent of stakeholders. Inappropriate use of the science of ABA by individuals who have been poorly or inappropriately trained may lead to the inappropriate use of consequences, and thus perpetuate the myth of aversives or isolation as punishment. When conducted correctly, ABA is an effective tool for individuals with ASD; when conducted incorrectly, it can create negative effects. Therefore, it is important that schools (and families) recognize the competencies of those who are well-trained in ABA, as well as those who are not. This issue will be discussed further in the section on personnel preparation.

Myth #3: ABA Must be Conducted 40 Hours per Week

With the original published work of Ivar Lovaas (1987), the field was introduced to the concept of early intensive behavioral intervention (EIBI) for children with ASD, which consisted of 40 hours per week of one-to-one DTT-style instruction. Following three years of such intensive intervention, Lovaas reported that the children who received the highest intensity (i.e., 40 hours per week) made remarkable gains in language, IQ, and were virtually indistinguishable from their typically developing peers. Other researchers have replicated the original Lovaas study and found similar results (e.g., Eldevick et al., 2006; Smith, Eikeseth, Klevstrand, & Lovaas, 1997). However, other studies have found that similar gains can be made with fewer than the recommended 40 hours per week (Sheinkopf & Siegel, 1998; Smith, Groen, & Wynn 2000). Additionally, internal and external validity concerns have been reported with the original Lovaas study (1987) (see Gresham & MacMillan, 1997), including the use of different IQ tests at baseline and follow up, the homogeneity of subjects in the study (specifically, higher functioning, verbal subjects), and conducting the study in a clinic, rather than applied, setting (Reed et al., 2006). Further, upon replication in a home-based (applied) setting, Reed et al. found that while the “high-intensity intervention group produced generally better results than the lower-intensity group, these differences were not always statistically significant. This finding brings in question the strong reliance placed on the temporal input of the program as key to its success” (p. 1820). In addition, no significant changes between high and low intensity groups on adaptive behavior or on severity of autistic symptoms were found by Reed and colleagues. Reed, et al. further examined the relationship between the intensity of the program in terms of number of hours per week and overall child gains and found that “no clear pattern between temporal input and the gains” existed (p. 1820). Moreover, these researchers noted: “This finding implies that the suggested 40 hours per week input may not be optimal, and once over a certain level of temporal input, perhaps around 20 hours per week, there are diminishing returns for increasing the temporal input of a program” (p. 1820). Clearly there is a disparity in the literature regarding the intensity of ABA programming for youngsters with ASD, including location of such services (e.g., applied vs. clinical) and age (e.g., young children vs. older children and adolescents). Educators especially are frequently concerned with the perceived “requirement” that ABA (in this case, usually meaning DTT) be conducted a minimum 40 hours per week, because the typical public school classroom is not conducive to this intensity of one-on-one instruction. While debate continues, further research is necessary to address these issues. In the meantime, educators in public schools can rely on increasing evidence that fewer than the originally reported 40 hours per week has been associated with increases in functioning for students with ASD.
Myth #4: ABA is Clinic-Based and Lacks Generalizability

Given the reported success of the Lovaas (1987) study, people may attribute the positive results of that study to its clinic setting. While researchers have conceded that it is possible that Lovaas’s results were in part due to the relative controlled nature of clinical research (Reed et al., 2006), a useful intervention is one that is accessible by all those who interact with the child, not just researchers in a clinic setting. Research is emerging suggesting that ABA is successful for children with ASD when applied in home and school-based settings (Harris & Delmolino, 2002; Reed, 2006). Further, research continues to support that parents, teachers, and paraprofessionals can be taught to successfully use ABA strategies in a variety of applied, real world settings (Bolton & Mayer, 2008; Dillenburger, Keenan, Gallagher, & McElhinney, 2004; Hayward, Gale, & Eikeseth, 2009; Lerman, Tetreault, Hovanetz, Strobel, & Garro, 2008).

Consider again the original definition of ABA proposed by Baer et al. (1968). This definition focuses first on the remediation of socially important behaviors; in other words, professionals are directed to address and teach only those skills that have meaning and function for the child now or in the future. Secondly, the applied nature of the science of ABA inherently requires that skills be generalized to the natural environment. Undoubtedly there are professionals, and even some parents, in the field of ASD today who have seen teaching of skills that appeared without function or meaning, and have seen “ABA” (more accurately, DTT) conducted only at a table and never moved to the natural environment. The Behavior Analyst Certification Board (BACB), the international accreditation agency for behavior analysts, requires as part of its ethical guidelines for practice the generalization of socially important skills. Thus, those using ABA strategies with students with ASD should strive for instruction in the natural environment to the maximum extent appropriate; to increase generalization and to ensure that the skills taught are functional and meaningful in the most socially appropriate setting.

Concerns about Implementation of ABA in Public School Settings

Caregivers and service providers have voiced a number of concerns related to the implementation of high quality public school programs based on the science of ABA. These are often related to the expertise and training of service providers in public school settings, difficulties in blending approaches for students on the spectrum, and the challenges related to providing effective programming that is affordable, while simultaneously avoiding due process (National Research Council, 2001; Scheuermann, Webber, Boutot, & Goodwin, 2003). A brief discussion of each concern as well as possible solutions follows.

Personnel Preparation

The difficulty in finding public school personnel who are trained in both the theory and implementation of ABA with students with ASD is well documented (National Research Council, 2001; Scheuermann et al., 2003). Preparation of special education teachers varies across states and license requirements are typically not specific to one disability, such as ASD. Exposure to the science of ABA may be limited for many throughout their preservice preparation. An option for service providers is to pursue certification as a behavior analyst; however this requires a master’s degree with a minimum of 15 hours of graduate work in the field of ABA, 1500 hours of supervision in the field, and the completion of the behavior analyst certification exam. While this option certainly provides the most training for service providers, it is a long-term solution to the pressing problem of increased numbers of students with ASD in public schools and the constant teacher shortage, and is not feasible for all staff for a myriad of reasons (e.g. time, finances).

A number of communities have developed effective means of training public school personnel in the implementation of ABA-based strategies. Providing intensive ABA-based training and ongoing consulting to service providers has proven effective in increasing teacher skills as well as student outcomes (Arick et al., 2003; Lerman et al., 2008; Swiezy et al., 2007). These studies have indicated that
providing up to 5 days of intensive training to public school staff through the use of lecture, role play, and application with students with ASD has led to significant increases in staff knowledge and application of skills (Lerman et al., 2008; Swiezy et al., 2007), as well student gains in language, social interaction, and adaptive behavior (Arick et al., 2003). In addition to intensive, hands-on training options, a number of states and schools have partnered with universities or private schools and resource centers specializing in ABA to provide ongoing support and consultation. For example, the National Professional Development Center on ASD, funded by the US Department of Education, has partnered with 12 states across 3 years to provide technical assistance in the implementation of ABA strategies, as well as assist in developing state and district capacity for ongoing training and support (Odom, Collett-Klingenberg, et al., 2010). Another example is the River Street Autism program that provides services to individuals with ASD in home settings and a separate facility, but has also established model classrooms in school districts that can serve as training facilities (Dyer, Martino, & Parvenski, 2006). A third viable option that schools are pursuing is the development of district ASD support team that employ board-certified behavior analysts (BCBA) to serve as consultants to district classrooms. The Valley Program in New Jersey, for example, is a 16-class public school program based on the science of ABA (Handleman & Harris, 2006). It is supported by 4 BCBA’s, including a program administrator, who provide skill development and behavior support for the larger program. Though published outcomes from the Valley Program are not yet available, this model of personnel preparation and support warrants further investigation (Odom, Boyd, et al., 2010).

The Law

With the rise in autism rates has come an increase in litigation concerning the education of students with ASD (Zirkel, 2001), particularly concerning effective programming and the use of ABA (Choutka, Doloughty, & Zirkel, 2004). According to Choutka et al., the two areas most predominate in ABA/ASD litigation are “program selection (i.e., the choice between competing instructional approaches) and implementation of said program (e.g., its location, duration, or frequency)” (p. 95). Choutka and colleagues completed a review of case law relevant to ASD and ABA; specifically they compared ABA and TEACCH (previously discussed) as the two competing programs most litigated. Cases concerning program selection were those wherein parents had requested that the school district use ABA (specifically, DTT or the Lovaas method) rather than the district program (e.g., TEACCH). When the parties had agreed on use of DTT, concerns over program implementation became the disputed issue (specifically home vs. school, the number of hours provided, and whether or not the DTT provider was qualified to provide DTT). While this study found that the chances of winning (whether parent or district, concerning program selection or implementation) were 50/50, a number of factors emerged concerning the litigation over ABA/DTT in schools. Specifically, cases won by either party tended to include three factors that are suggested for use by either parents or schools when entering into litigation over programming: proof of efficacy, expert testimony, and qualified providers. First, parents and schools must provide documentation as to the effectiveness of whatever program they used. Evidence supporting that the program provided some educational benefit and that the child made progress toward educational goals is key. The second suggestion by Choutka and colleagues was that both parties should include testimony from qualified expert witnesses who can attest to the efficacy of the program chosen as well as to its appropriateness for the child in question. Third, it is incumbent upon schools to show that staff who carry out DTT programming are well trained and qualified to do so. Further, staff must also be knowledgeable not only in programming and in the nature of autism, but also in regard to the unique and individual needs of the child in question.

The suggestions by Choutka et al., (2004) are consistent with the literature on best practices for students with ASD. As previously discussed, literature suggests that staff implementing ABA be well trained (e.g., Scheuermann et al., 2003) and that programming must be based on the unique needs of
the child. Their review of case law, however, does not suggest that ABA (specifically, DTT) is always selected as the program of choice for all students with ASD. Again, hearing officers/judges are charged with determining which practice or program provides evidence of educational benefit for a specific child based on that child’s individual needs. Thus, use of ABA or DTT alone may not win a due process case simply on its own merit.

**Blended Methods**

The above referenced review of case law suggests, as previously mentioned, that the use of ABA alone may not be sufficient for all children with ASD, particularly when the “ABA” being used is only DTT. Further, most researchers agree that the most appropriate program for students with ASD is one based on the child’s individual needs (e.g., Simpson, 2005). As previously discussed, there are a number of other programming options for students on the autism spectrum, with varying degrees of research support (see NSP, 2009 for a review of these practices). And while many strategies and approaches are based on the science of ABA, “ABA” is not a program in and of itself. Teachers and parents alike have found that what works best for an individual child is often a combination of strategies, based on the impact of the autism, the child’s level of functioning, and other factors. Boutot and Dukes (2011) suggested a multi-theoretical approach to teaching students with ASD. Based heavily in the science of ABA (because of its known efficacy), but acknowledging that the unique needs of various students and families may require additional strategies beyond ABA, a multi-theoretical approach utilizes other established practices such as TEACCH (based on a perceptual-cognitive/social-cognitive model) and those strategies based on a more developmental model (e.g., DIR) in addition to ABA. Though evidence for such approaches is currently limited, study is ongoing. The key to success, in the end, may be how well the program works for an individual child and family members, rather than what it is called.

**Conclusions**

Recognizing, understanding, and implementing practices based on the science of ABA is essential for practitioners serving individuals with ASD. Professionals must provide clarity when describing what one “does” when using the science of ABA, why one “does” it, and what the data reveals after it is “done.” Though a number of challenges are presented when implementing these interventions in the public school settings, service providers will be more adept at navigating these challenges when armed with an awareness of what ABA is (and is not), what the practices look like in school settings, and where its theories are derived. Further, as has already been suggested, educators and caregivers/families must recognize that ABA goes beyond DTT (“Table Time”), and includes concepts such as pivotal response training, incidental teaching, task analysis and chaining, progress monitoring, functional behavior assessment and analysis, and generalization and maintenance of skills across time and setting. Similarly, critics of ABA must recognize that today’s ABA is heavily focused on the use of positive reinforcement and antecedent modifications to shape behavior, rather than the use of punishment (“Time Out”). A challenge for the field will be to support the use of ABA in programs for learners with ASD. If equipped with proper training and support (a number of effective options are described previously), practitioners can successfully implement ABA-based strategies, which are likely to produce the most measurable changes in behavior for their students (NSP, 2009).

**References**


Received: 5 October 2010
Initial Acceptance: 8 December 2010
Final Acceptance: 20 January 2011
Self-Advocacy Skills as a Predictor of Student IEP Participation among Adolescents with Autism

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Abstract: The importance of student IEP participation has been indicated by both legislative mandates such as IDEA and research literature. The purpose of the current study was to examine those variables that predict student IEP participation among adolescents with autism spectrum disorders as compared to adolescents with disabilities other than autism spectrum disorders. Using logistic regression analyses, self-advocacy skills were revealed to be a significant predictor of student IEP participation among adolescents with autism spectrum disorders. These results suggest the particular importance of developing self-advocacy skills among adolescents with autism spectrum disorders as compared to adolescents with disabilities other than autism spectrum disorders.

Each year, over two million students receiving special education services across the nation have meetings to develop and tailor their curriculum and instruction. The product that comes out of these annual meetings of parents, teachers, and other stakeholders as mandated by law is referred to as an Individualized Education Program (IEP). Inviting students with disabilities to participate in these IEP meetings is, in general, encouraged and mandated by law to refer to an Individualized Education Program (IEP). Inviting students with disabilities to participate in these IEP meetings is, in general, encouraged and mandated by IDEA for students aged fourteen and older as deemed appropriate (IDEA; Public Law 105-17). As IDEA mandates the IEP participation of students age fourteen and older to be considered, it should be noted that students can at any age be invited to participate in their IEP meeting when considered appropriate (Clark, 2000). Concurring with the spirit of this legislative mandate, research literature has indicated the importance of IEP participation and involvement for students with disabilities.

In reviewing the literature, it appears that student IEP participation is overwhelmingly favored and associated with academic achievement across time (Barnard-Brak & Lechtenberger, 2010) and parental satisfaction (Barnard-Brak, Davis, Ivey, & Thomson, 2010).

These perspectives on student IEP participation do range in their degree of support for student IEP participation. Wood, Karvon, Test, Broader, and Algozine (2004) indicated that, “students should be involved or taking a leadership role in developing their own IEP and transition goals” (p. 8). Clark (2000), however, has considered student IEP participation “essential” (p. 57) to certain aspects of the IEP process, particularly transition goals, to the point that school personnel should, “inform parents up front that they are welcome to invite their children of any age to attend the IEP meeting” (p. 8). Additionally, while current IDEA legislation considers student IEP participation as “essential” (p. 57) to certain aspects of the IEP process, particularly transition goals, to the point that school personnel should, “inform parents up front that they are welcome to invite their children of any age to attend the IEP meeting” (p. 8). Additionally, while current IDEA legislation considers student IEP participation as permitted as appropriate, Shore (2004) considers student IEP participation to be permitted as appropriate, Shore (2004) considers student IEP participation as, “always appropriate,” (p. 25). Shore further notes that student participation in the IEP process is often downplayed, especially when students are younger. In view of this literature, the student IEP process appears to have received varying levels of endorsement in research.

Shore (2004) further notes a relationship between student IEP participation and self-advocacy skills. Self-advocacy skills appear to be acknowledged as a key component to achieving self-determination among students with disabilities (Thoma, Nathanson, Baker, & Tamura, 2002; Wehmeyer, 1998). As such, these self-advocacy skills can facilitate the de-

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velopment of self-determined behavior, which has been associated with positive experiences and outcomes for students with disabilities (Wehmeyer). Over the past now almost forty years, emphasis on developing these skills has increased beginning with the People First movement (Aspis, 2002). In a review of the literature, Test, Fowler, Wood, Brewer, and Eddy (2005) developed a conceptual framework from which to consider self-advocacy for students with disabilities. Consisting of four components, Test et al. outline the development of self-advocacy skills as involving: knowledge of self; knowledge of rights; communication; and leadership. From this conceptual framework, Test et al. suggest that self-advocacy skills can play an important role in the planning of curriculum and instruction for students with and without disabilities. For students with disabilities, curriculum and instruction are developed as part of the IEP planning process thus self-advocacy skills would appear to logically have a place in this process.

With regard to the perspectives of persons with autism and related spectrum disorders specifically, research literature has indicated the same perceived need for developing self-advocacy skills. In particular, Townson et al. (2007) conducted a qualitative study examining the experiences and difficulties of individuals with autism and related spectrum disorders in achieving self-advocacy. Two of the seven major themes that emerged from studying the lived experiences of the participants with autism was a lack of awareness and access to advocacy and an interest in developing knowledge around advocacy (Townson et al.). Thus, while research has indicated the importance of developing self-advocacy skills, it is equally important to note that persons with disabilities, specifically persons with autism and related spectrum disorders, recognize the value of these skills and have expressed interest in developing them.

Mulick and Butter (2002) have noted that parents of children with autism and related spectrum disorders appear to acknowledge the importance of self-advocacy skills. Mulick and Butter examined how parents have sought out behavioral interventions for their children, which includes but is not limited to the development of self advocacy skills. Thus, the development of these self-advocacy skills appears to be especially relevant for the parents of and students with autism and related spectrum disorders as Shore (2004), an individual and researcher diagnosed with autism, notes: “...most people on the autism spectrum need direct instruction in order to learn the important skills of self-advocacy” (p. 23).

As for individuals with autism and related spectrum disorders, the communicative aspects of developing self-advocacy skills can amount to trying to decipher a hidden curriculum (Myles, Trautman, & Schelvan, 2004). According to Shore however, the IEP planning process presents itself as a key opportunity in which students with autism and related spectrum disorders can develop and hone self-advocacy skills.

Given the educational relevance of student IEP participation, the purpose of the current study was to examine those variables that predicted student IEP participation among adolescents with autism spectrum disorders as compared to adolescents without autism spectrum disorders but with other disabilities requiring special education services. While research has repeatedly noted how student IEP participation is indeed important for students with disabilities, research literature has yet to deconstruct what variables are associated with students participating in this process. To achieve the purpose of the current study, two research questions were examined: 1) What variables (if any) were significant predictors of student IEP participation among adolescents with autism spectrum disorders? And 2) Were these predictors of student IEP participation any different for adolescents diagnosed with disabilities other than autism spectrum disorders?

Method

Sample

The National Longitudinal Transition Study-2 (NLTS-2) is a nationally-representative, community-based follow-up study commissioned by the U.S. Office of Special Education Programs (OSEP) and the U.S. Department of Education (Valdés, Godard, Williamson, Van Campen, McCracken, & Jones, 2004). For the purposes of our study, we utilized the sample
collected as part of the first wave of the NLTS-2. With the application of the appropriate weight, the 9,167 students of the first wave of the NLTS-2 represent approximately 2,078,971 adolescents with disabilities attending school during the 2000–2001 academic year across the nation. In the first wave of data collection, the age of adolescents ranged from 161 months old (≈ 13.42 years old) to 214 months old (≈ 17.83 years old) with a mean of 187 months old (≈ 15.58 years old) (SD = 13.87). The NLTS-2 includes 1,019 adolescents with diagnoses of autism spectrum disorders that comprise approximately 11.1% of the sample along with some 8,148 adolescents diagnosed with disabilities other than autism spectrum disorders requiring special education services. Of the participants having been diagnosed with autism spectrum disorders, approximately 16.9% (n = 172) were identified as female while 83.1% (n = 847) were male. Among those adolescents diagnosed with disabilities other than autism spectrum disorders, approximately 62.4% (n = 5,086) were identified as male while 37.6% (n = 3,062) were female. With regard to the ethnic distribution of the sample of adolescents diagnosed with autism, approximately 67.9% (n = 687) were identified as White followed by 12.1% (n = 123) as Hispanic or Latino while 25.5% (n = 258) were African American, 4.1% (n = 42), and 2.0% (n = 20) were Native American. The respective ethnic distribution of adolescents diagnosed with disabilities other than autism spectrum disorders is as follows: 70.3% (n = 5,654) were White; 20.9% (n = 1,680) were African American; 18.0% (n = 1,463) were Hispanic; 2.6% (n = 211) were Asian; and 3.9% (n = 311) were Native American.

Measures
A variety of covariates were hypothesized as predicting student IEP participation among adolescents with autism spectrum disorders. For the purposes of the current analyses, ten variables were selected for inclusion for both their conceptual and empirical contribution in predicting student IEP participation among adolescents with autism spectrum disorders after controlling for age in months, NLTS-2 variable of *age_months*. The dependent variable of student IEP participation consisted of a dichotomous, yes/no response format. Among adolescents with autism spectrum disorders, approximately 55.5% (n = 531) participated in their IEP meeting while approximately 74.5% (n = 5,232) of adolescents with disabilities other than autism spectrum disorders participated in their IEP meeting. A 2 × 2 chi-square analysis suggests that adolescents with disabilities other than autism spectrum disorders are significantly more likely to participate in their IEP meetings than adolescents with autism spectrum disorders, χ²(1) = 151.49, p < .001, Φ = .138. This value of the phi (Φ) coefficient, however, indicates a small effect size (Green & Salkind, 2007). Table 1 contains a description of each these ten variables along with their NLTS-2 naming conventions for the purposes of future study replication.

Procedure
Analyses were performed in SPSS (v. 16.0). Adolescents identified as having both an autism spectrum disorder and another disability were removed prior to performing analyses. Values for missing data were handled using a linear trend at point as the method of imputation among independent, predictor variables. Multivariate outliers were examined by calculating Mahalanobis distance indicating that such outliers were minimal and were retained in the analyses as logistic regression requires no assumptions about the distributions of the predictor variables to be made (Mertler & Vannatta, 2005; Tabachnick & Fidell, 2006).

Analyses
Given the dichotomous nature of the dependent variable, student IEP participation, logistic regression was the primary method of analysis for both models using the predictors outlined in Table 1. Values for four statistics reflecting model fit are reported: chi-square (χ²); -2 log likelihood; Cox and Snell R²; and Nagelkerke R² are reported. In the examination of individual predictor variables, regression coefficients (B) and estimates of their standard errors (S.E.) are presented along with their respective levels of statistical signif-
icance ($p$) using the Wald test statistic. Odds ratios (e.g., $\text{Exp}(B)$) for each predictor variable are also reported. Two follow-up analyses were performed. An independent sample $t$-test performed on self-advocacy scale scores as the dependent measure with an adolescent having been diagnosed with an autism spectrum disorder or another disability as the independent grouping variable. Additionally, a chi-square ($\chi^2$) test was utilized to examine the relationship between communication skills and an adolescent having a diagnosis of an autism spectrum disorder or another disability.

**Results**

In evaluating those variables we hypothesized as predicting student IEP participation among adolescents with autism spectrum disorders, model fit statistics were small indicating evidence toward a well-fitting model with a low $-2 \log$ likelihood value of 37.77 (a value of zero suggesting perfect fit) and a low, non-significant value of chi-square, $\chi^2(11) = 18.693$, $p = .067$. Our model was also significantly different from the constant-only model, $\chi^2(1) = 7.82$, $p = .005$ with an estimated 72.7% of the participants being correctly classified based upon predicted values of the dependent variable, student IEP participation. Altogether, values for these statistics indicate that our model may be considered statistically reliable in distinguishing between adolescents with autism spectrum disorders who participated in their IEP meetings and those adolescents with autism spectrum disorders who did not. Values for both Cox and Snell along with Nagelkerke $R^2$ were .346 and .479 respectively indicating a moderate to high proportion of the variability in student IEP participation among adolescents with autism spectrum disorders may be accounted for by the predictor variables.

In examining individual regression coefficients, it appears that, after controlling for age in months ($\text{curmos}$) in the first block, that only two predictors ($np1b5b$ and $xsfadvsc$) were statistically significant at the .05 level. As from Table 1, the variables of $np1b5b$ and $xsfadvsc$ are how well a student is reported to communicate and self-advocacy scale score respectively. The variable of how well a student is reported to communicate was measured from parental response along a semi-continuous, 4-point scale ranging from: student does not communicate at all; a little trouble communicating; a lot of trouble communicating; and no trouble communicating at all. The self-advocacy skills scale score variable was measured as the combination of teacher and school program survey responses as to how well the student asks for what s/he needs along a continuum. The odds ratios for how well a student is reported to communicate was measured from parental response along a semi-continuous, 4-point scale ranging from: student does not communicate at all; a little trouble communicating; a lot of trouble communicating; and no trouble communicating at all. The self-advocacy skills scale score variable was measured as the combination of teacher and school program survey responses as to how well the student asks for what s/he needs along a continuum. The odds ratios for how well a student is reported to communicate was measured from parental response along a semi-continuous, 4-point scale ranging from: student does not communicate at all; a little trouble communicating; a lot of trouble communicating; and no trouble communicating at all.

<table>
<thead>
<tr>
<th>NLTS-2 Variable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Xclsbhsc</td>
<td>Classroom behavior scale</td>
</tr>
<tr>
<td>Xdiscipl</td>
<td>Suspensions/expulsions/disciplinary actions in past year</td>
</tr>
<tr>
<td>Xsfadvsc</td>
<td>Self-advocacy Score: Scale of how well asks for what s/he needs</td>
</tr>
<tr>
<td>Xmagrdis</td>
<td>Discrepancy between grade level and math level</td>
</tr>
<tr>
<td>Xregrdis</td>
<td>Discrepancy between grade level and reading level</td>
</tr>
<tr>
<td>np1b5b</td>
<td>How well youth communicates</td>
</tr>
<tr>
<td>Pfamspsc</td>
<td>Family support scale</td>
</tr>
<tr>
<td>pa3b_01</td>
<td>Youth is White</td>
</tr>
<tr>
<td>np1a1</td>
<td>Is youth male or female</td>
</tr>
<tr>
<td>Psocskl</td>
<td>Social skills scale score</td>
</tr>
</tbody>
</table>
to communicate increases by 1. This indicates an almost one to one relationship between student IEP participation and a student’s reported communication skills among adolescents with autism spectrum disorders. Additionally, adolescents with autism spectrum disorders are 4.118 times more likely to participate in their IEP meetings whenever their self-advocacy skill scores increase by 1. This result suggests a stronger relationship between student IEP participation and self-advocacy skills among adolescents with autism spectrum disorders than with how well a student is reported to communicate. Summary statistics for each individual predictor in modeling student IEP participation among adolescents with autism spectrum disorders are presented in Table 2.

We next examined whether those same variables would predict student IEP participation among adolescents with disabilities other than autism spectrum disorders. In evaluating those variables we hypothesized as predicting student IEP participation among adolescents with disabilities other than autism spectrum disorders, model fit statistics were higher than the previous model indicating evidence toward a less well-fitting model with a $\chi^2$ value of 296.46 and a significant value of chi-square, $\chi^2(11) = 37.251, p < .05$. This model, however, was significantly different from the constant-only model, $\chi^2(1) = 19.101, p < .001$ with an estimated 79.7% of the participants being correctly classified based upon predicted values of the dependent variable, student IEP participation. Altogether, values for these statistics indicate that our model may be considered somewhat statistically reliable in distinguishing between adolescents with disabilities other than autism spectrum disorders who participated in their IEP meetings and those adolescents who did not. Values for both Cox and Snell along with Nagelkerke $R^2$ were .112 and .171 respectively indicating a lower proportion of the variability in student IEP participation among adolescents with disabilities other than autism spectrum disorders may be accounted for by the predictor variables.

In examining individual regression coefficients, it appears that, after controlling for age in months ($p$curmos) in the first block, that only one predictor, how well a student is reported to communicate ($np1b5b$), was statistically significant at the .05 level. The odds ratios for how well a student is reported to communicate ($e^{B_{np1b5b}} = 2.522$) revealed an increase in the likelihood of student IEP participation when the predictors increased by 1. In other words, adolescents with disabilities other than autism spectrum disorders are 2.522 times more likely to participate in their IEP meetings whenever how well a student is reported to communicate increases by 1. This indicates a stronger relationship between student IEP participation and a student’s reported communication skills among adolescents with disabilities other than autism spectrum disorders.

### Table 2

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>S.E.</th>
<th>Wald</th>
<th>$p$</th>
<th>Odds Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>$p$curmos</td>
<td>-0.144</td>
<td>0.060</td>
<td>5.718</td>
<td>.017</td>
<td>1.155</td>
</tr>
<tr>
<td>xclsbhsc</td>
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<td>0.328</td>
<td>1.160</td>
<td>.282</td>
<td>.703</td>
</tr>
<tr>
<td>xdiscipl</td>
<td>0.885</td>
<td>1.036</td>
<td>0.730</td>
<td>.393</td>
<td>2.422</td>
</tr>
<tr>
<td>xsfadsc</td>
<td>1.415</td>
<td>1.248</td>
<td>4.824</td>
<td>.028</td>
<td>4.118</td>
</tr>
<tr>
<td>xmagrdis</td>
<td>0.777</td>
<td>0.418</td>
<td>3.461</td>
<td>.063</td>
<td>2.175</td>
</tr>
<tr>
<td>xsecgrdis</td>
<td>-0.579</td>
<td>0.363</td>
<td>2.550</td>
<td>.110</td>
<td>.560</td>
</tr>
<tr>
<td>$np1b5b$</td>
<td>-1.644</td>
<td>0.799</td>
<td>4.233</td>
<td>.040</td>
<td>1.193</td>
</tr>
<tr>
<td>$pfamspsc$</td>
<td>-0.511</td>
<td>0.481</td>
<td>1.128</td>
<td>.298</td>
<td>1.668</td>
</tr>
<tr>
<td>ps3b_01</td>
<td>0.766</td>
<td>1.217</td>
<td>0.397</td>
<td>.529</td>
<td>2.152</td>
</tr>
<tr>
<td>$np1a1$</td>
<td>-2.186</td>
<td>1.958</td>
<td>1.246</td>
<td>.264</td>
<td>.112</td>
</tr>
<tr>
<td>psocskl</td>
<td>-0.095</td>
<td>0.251</td>
<td>0.143</td>
<td>.705</td>
<td>.909</td>
</tr>
<tr>
<td>Constant</td>
<td>-20.033</td>
<td>11.965</td>
<td>2.803</td>
<td>.094</td>
<td>.000</td>
</tr>
</tbody>
</table>
spectrum disorders as compared to adolescents with autism spectrum disorders. There was a statistically non-significant relationship between student IEP participation and self-advocacy skills among adolescents with disabilities other than autism spectrum disorders. Summary statistics for each individual predictor in modeling student IEP participation among adolescents with disabilities other than autism spectrum disorders are presented in Table 3.

We next performed a follow-up analysis to determine whether the self-advocacy skill and communication skill scores of adolescents with autism spectrum disorders as compared to those adolescents with disabilities other than autism spectrum disorders were statistically different from each other. Independent sample t-test results indicate no statistically significant difference in self-advocacy skill scores among adolescents with autism spectrum disorders and those adolescents with disabilities other than autism spectrum disorders, which suggests that self-advocacy skills may simply be more influential in predicting IEP participation among adolescents with autism spectrum disorders. Additional follow-up analyses indicated that adolescents with autism spectrum disorders were reported as having less communication skills than adolescents with disabilities other than autism spectrum disorders. Given the communicative impairment that may emerge with a diagnosis of an autism spectrum disorder (American Psychiatric Association, 2000), adolescents with autism spectrum disorders having significantly less communication skills, as compared to adolescents with disabilities other than autism spectrum disorders, is not surprising. While many of the proposed predictors in our models were non-significant, this result does not suggest that each of these predictors such as classroom behavior or discrepancy scores between grade level and ability are of themselves non-

### Table 3

Summary statistics predicting IEP participation among adolescents without ASDs

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>S.E.</th>
<th>Wald</th>
<th>p</th>
<th>Odds Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>pcurmos</td>
<td>.046</td>
<td>.011</td>
<td>16.150</td>
<td>.000</td>
<td>1.047</td>
</tr>
<tr>
<td>xclsbhsc</td>
<td>.031</td>
<td>.066</td>
<td>.220</td>
<td>.639</td>
<td>1.092</td>
</tr>
<tr>
<td>xdiscipl</td>
<td>-.697</td>
<td>.370</td>
<td>3.547</td>
<td>.060</td>
<td>.498</td>
</tr>
<tr>
<td>xsfadvsc</td>
<td>-.252</td>
<td>.220</td>
<td>1.306</td>
<td>.253</td>
<td>.778</td>
</tr>
<tr>
<td>xmagrids</td>
<td>-.117</td>
<td>.094</td>
<td>1.567</td>
<td>.211</td>
<td>.890</td>
</tr>
<tr>
<td>xsegrdis</td>
<td>.165</td>
<td>.094</td>
<td>3.116</td>
<td>.078</td>
<td>1.179</td>
</tr>
<tr>
<td>np1b5b</td>
<td>-.650</td>
<td>.245</td>
<td>7.027</td>
<td>.008</td>
<td>2.522</td>
</tr>
<tr>
<td>pfamspsc</td>
<td>-.049</td>
<td>.116</td>
<td>.174</td>
<td>.677</td>
<td>.953</td>
</tr>
<tr>
<td>pa3b_01</td>
<td>-.275</td>
<td>.321</td>
<td>.733</td>
<td>.392</td>
<td>.760</td>
</tr>
<tr>
<td>np1a1</td>
<td>.270</td>
<td>.299</td>
<td>.814</td>
<td>.367</td>
<td>1.310</td>
</tr>
<tr>
<td>psocskl</td>
<td>.024</td>
<td>.076</td>
<td>.097</td>
<td>.755</td>
<td>1.024</td>
</tr>
<tr>
<td>Constant</td>
<td>-6.742</td>
<td>2.559</td>
<td>6.943</td>
<td>.008</td>
<td>.001</td>
</tr>
</tbody>
</table>

### Discussion

The results of both models suggest that while how well a student is reported to communicate may be viewed as significantly predicting student IEP participation among adolescents with and without autism spectrum disorders, the predictive value of self-advocacy skills in predicting student IEP participation is more relevant for adolescents with autism spectrum disorders. Follow-up analyses revealed no statistically significant difference in self-advocacy skill scores among adolescents with and without autism spectrum disorders, which suggests that self-advocacy skills may simply be more influential in predicting IEP participation among adolescents with autism spectrum disorders. Additional follow-up analyses indicated that adolescents with autism spectrum disorders were reported as having less communication skills than adolescents with disabilities other than autism spectrum disorders. Given the communicative impairment that may emerge with a diagnosis of an autism spectrum disorder (American Psychiatric Association, 2000), adolescents with autism spectrum disorders having significantly less communication skills, as compared to adolescents with disabilities other than autism spectrum disorders, is not surprising. While many of the proposed predictors in our models were non-significant, this result does not suggest that each of these predictors such as classroom behavior or discrepancy scores between grade level and ability are of themselves non-
significant in influencing student IEP participation among adolescents with disabilities. This result, however, suggests that these variables are non-significant in relation to how well a student is reported to communicate in both models and self-advocacy skill scores in the model among adolescents with autism spectrum disorders. This finding further suggests that these variables may not play a salient role in influencing communication as it relates to IEP participation making it clear that there are other important variables that may need to be considered in future studies.

Results of the current study suggest an overarching importance of self-advocacy skills among adolescents with autism spectrum disorders in predicting student IEP participation as compared to adolescents with disabilities other than autism spectrum disorders. A major limitation of the current study, however, is the fact that previous student IEP participation is unknown. A student could have previously participated in an IEP meeting, and thus developed the self-advocacy skills, which would beget future student IEP participation. Regardless, it is clear that these self-advocacy skills have more of an influence on student IEP participation among adolescents with autism spectrum disorders as compared to adolescents with disabilities other than autism spectrum disorders. Given the communicative deficit co-occurring with autism and its related spectrum disorders, self-advocacy skills may emerge as more important to adolescents with autism in predicting IEP participation as compared to adolescents with disabilities other than autism spectrum disorders. Communication skills, however, remain important for both groups of adolescents in predicting IEP participation.

For persons with disabilities, self-advocacy can take many forms from the organized to the individualized (Braddock & Parish, 2001). For the purposes of the current study, our discussion of self-advocacy skills emphasizes the need for individualized interventions to develop self-advocacy skills rather than group self-advocacy. As such, the development of self-advocacy skills can be viewed as closely linked to identity construction for individuals with disabilities. Identity construction for individuals with disabilities has been noted as being, “a highly social, ongoing process” (Bagatell, 2007, p. 413) given the challenging issues any disability can present across the lifespan. In an ethnographic study of the experiences of an individual with autism, Bagatell noted that this process of identity construction for individuals with autism spectrum disorders are often overlooked and understudied given the assumption that aspects of the social world have little importance for these individuals. Even if we briefly (and incorrectly) assume that aspects of the social world have little importance to all individuals with autism spectrum disorders, this does not mean that aspects of the social world have no impact on the experiences and outcomes for these individuals. As such, future research should consider examining the development of self-advocacy skills in view of the identity construction of individuals with autism and related spectrum disorders.

Furthermore, existing approaches to the development of self-advocacy skills must also be examined. In a comprehensive review of 51 research studies concerning self-determination and related outcomes, Algozzine, Browder, Karvonen, Test, and Wood (2001) found that many of the components of self-determination emphasized focused on teaching and encouraging self-advocacy skills. In reviewing 25 self-advocacy intervention studies for individuals across a variety of ages and disabilities, Test, Fowler, Brewer, and Wood (2005) suggested that individuals can learn self-advocacy skills through interventions and curricula developed. Test et al., however, noted that the development of these interventions and curricula must be accompanied by methodological rigor and the presentation of results to the greater research community to ensure future implementation and replication. This will be advantageous not only for the students whom the interventions would help but also all who are involved in the process including parents and educators.

With regard to self-advocacy interventions in particular, Wood et al. (2004) provide excellent examples in their article that outlines how to implement activities that promote self-advocacy skills as a subset of self-determination skills among students with disabilities in the IEP planning process. More specifically, Test and Neale (2004) suggest a self-advocacy strategy, entailing the five ‘I PLAN’ steps scaf-
folding self-advocacy, to be taught to improve the self-advocacy skills among students with disabilities. The efficacy of their intervention entitled, The Self-Advocacy Strategy has been suggested for adolescents with disabilities in particular (Test & Neale). While other self-advocacy strategies have been developed (Barnard-Brak, Lechtenberger, & Lan, 2010), the intervention proposed by Test and Neale appears to be one of the more articulate and practical approaches developed to improve the self-advocacy skills of adolescents with autism and related spectrum disorders. Other strategies may be more applicable for students with disabilities other than autism. For instance, Pocock et al., (2002) discuss successful strategies for developing these skills for students with learning disabilities. The instruction of self-advocacy is not one size fits all. As such these strategies should be tailored to the individual and the particular disability at hand.

References


Received: 8 December 2010
Initial Acceptance: 10 February 2011
Final Acceptance: 5 April 2011
Assessment of the Self-Determination of Spanish Students with Intellectual Disabilities and other Educational Needs

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Abstract: The purpose of this study was to assess the self-determination of Spanish high school students with Intellectual Disabilities and other Special Educational Needs (SEN). A total of 371 students between 11 and 17 years of age participated in the study. Of these, 46.4% (n = 171) presented SEN, specifically learning disabilities (n = 97; 26.2%), borderline and intellectual disability with higher IQ scores (n = 43; 11.6%) and mild intellectual disability (n = 32; 8.6%). The remaining students without SEN made up the control group. The assessment was carried out using a translated and validated Spanish version of The Arc’s Self-Determination Scale (Wehmeyer, 1995). This measure had appropriate psychometric properties. Students with SEN obtained significantly lower scores than their peers without SEN. However, no differences were found in relation to the type of SEN or, more specifically, in relation to the presence of intellectual disability. The educational implications of the results are discussed.

Self-determination occupies an important place among the goals of services and supports offered to people with disabilities, especially educational supports. The construct has become increasingly relevant owing to several factors. First, society has changed in the way it now regards people with disabilities (Schalock, 2009; Schalock et al., 2010), moving from a deficits perspective to strengths-based models of disability; Second, there is a new model for the provision of services, based on principles of normalization and on self-advocacy and independent living movements (Bradley & Bersani, 1990; Knoll, 1990; Luckason et al., 1992; Schalock, Gardner & Bradley, 2007), which emphasizes the primacy of self-determination. Another important influence has been new approaches emerging from the field of positive psychology that place more emphasis on a person’s strengths rather than his or her limitations or weaknesses (Seligman & Csikszentmihalyi, 2000). Undoubtedly, however, the most important determining factor in understanding self-determination as one of the key goals of services and supports has been the demands made by the people with disabilities to have more control over their lives and over decisions that affect their lives (Getzel & Thoma, 2006; Stoner, Angell, House, & Goins, 2006).

Research has shown that people with disabilities, especially people with intellectual disability, are less self-determined than their non-disabled peers, in large measure because they have fewer opportunities to make choices and express preferences across their daily lives (Chambers, Wehmeyer, Saito, Lida, Lee, & Singh, 2007). Studies that have analyzed the influence of individual and environmental variables on a person’s level of self-determination have found that intellectual capacity is not the determining factor (Wehmeyer & Garner, 2003) in self-determination status; how-
ever, IQ is predictive of the person’s educational, work and home environments (Chambers, et al.), which in turn limit or enhance opportunities to make choices and become more self-determined. How limiting these environments are—and the opportunities available in them to make choices, make decisions, and express preferences—affect the development of self-determination (Stancliffe, Abern Smith, 2000; Wehmeyer, Kelchner, & Richards, 1995).

People with higher levels of self-determination have been shown to obtain better outcomes during both their school and adult lives (Field, Sarver & Shaw, 2003; Fowler, Konrad, Walker, Test, & Wood, 2007; Martin, Mithaug, Cox, Peterson, Van Dycke, & Cash, 2003; Wehmeyer & Palmer, 2003; Wehmeyer & Schwartz, 1997), and to enjoy a higher quality of life and enhanced social inclusion (Lachapelle et al., 2005; Nota, Ferrari, Soresi, & Wehmeyer, 2007).

The acquisition of personal traits that lead to self-determination starts in infancy and continues into adult life. It requires direct and structured instruction, starting from an initial assessment of the person and the environments in which he or she functions (Inclusive Large Scale Standards and Assessment Group, 2003; Thoma & Sax, 2003; Thoma, Williams, & Davis, 2005). It is important for this instruction to begin early if students with disabilities are to leave school as self-determined individuals (Erwin & Brown, 2003; Wehmeyer & Palmer, 2000).

Students with intellectual disability and learning disabilities often possess traits that make it more difficult for them to acquire the attitudes and skills contributing to greater self-determination (Field, Martin, Miller, Ward, & Wehmeyer, 1998; Peralta & Zulueta, 2005). Too often, people with cognitive disabilities are dependent upon and influenced by others, and, as a result, have an external locus of control, low self-esteem, poor abilities to plan, set goals and look for information, and an unrealistic perception of their own capacities and limitations (Field & Hoffman, 2002a). In spite of this, educational practice is producing more and more examples of how the different components of self-determined behavior can be acquired by people with intellectual and cognitive disabilities (Algozine, Browder, Karvonen, Test, & Wood, 2001; Karvonen, Test, Wood, Browder, & Algozine, 2004). We also have evidence for the efficacy of different strategies and educational programs (Council for Exceptional children, 2004; Field & Hoffman, 2002a, b; Halpern, Herr, Doren, & Wolf, 2000; Martin & Marshall, 1995; Oregon Department of Education, 2001; Wehmeyer, 2007; Wehmeyer & Field, 2007).

Many educators understand the importance of self-determination as an essential educational outcome for all students. They realize that many students will struggle to become self-determined unless they receive direct instruction in these skills and have the opportunity to put them into practice (Agran, Snow, & Swaner, 1999; Malone, 2008; Peralta, González-Torres, & Sobrino, 2005). And they want to know more about what and how to teach students to become more self-determined (Mason, Field, & Sawilowsky, 2004; Wehmeyer, Agrán, & Hughes, 2000).

As a consequence, the promotion of self-determined behavior, especially in students with disabilities, though also with all other students with different types of special educational needs (from hence on SEN), has met with great interest internationally in the area of education (Millar, 2008). Moreover, promoting and enhancing self-determination has become best practice in educational services (Wehmeyer, Garner, Yeager, Lawrence, & Kay, 2006). The results described above have, however, almost exclusively come from North American studies; the situation in other countries, such as Spain, remains uncertain. For one, there are few instruments to assess the self-determination of people with disabilities (Peralta, Zulueta, & González-Torres, 2002) that have been translated and normed outside of a North American context, and there are even fewer programs to promote self-determination as an outcome of the educational process. In the light of this, the aim of this study was to assess the self-determined behavior of high school students with intellectual and learning disabilities in Spain. Consistent with Field and colleagues (1998) and Peralta and colleagues (2002, 2003), the goals that have guided our assessment proposals were: 1) that the student becomes aware of his skills, needs, limitations, preferences and interests; 2) that the information obtained helps the student to
have a more accurate picture of himself and his environment; and 3) helps to identify environmental factors that facilitate or impede his self-determination, and hence, can be used to design strategies to increase opportunities and remove obstacles to self-determined behavior.

Method

Participants

Participants in this study were 371 high school students ranging in age from 11 to 17 years. They formed a convenience sample. The most relevant data about their distribution according to gender, age, presence or not of SEN, and type of SEN are shown in Table 1.

Measure

After a thorough analysis of the main self-assessment scales, we selected The Arc's Self-Determination Scale: SDS (Wehmeyer, 1995) in its original version in English for use in our studies. This tool is a self-report measure for adolescents with intellectual and learning dis- abilities. The SDS authors’ purpose was to construct an instrument that students with intellectual and other cognitive disabilities, with appropriate supports and accommodations, could use to evaluate their own beliefs about themselves and their self-determination and could work collaboratively with educators to identify their strengths and weaknesses. The SDS is a 72-item scale divided into 4 sections: Autonomy, Self-regulation, Psychological empowerment and Self-realization. The Autonomy section assesses the student’s independence and the degree to which he or she acts on the basis of personal beliefs, values, interests and abilities. The Self-Regulation section has two parts: the first concerns solving interpersonal cognitive problems; the second is about setting goals related with three major transition areas to adult life. The third section, Psychological Empowerment, assesses the student’s locus of control, self-efficacy and outcome expectancy. Finally, the Self-Realization section assesses how well the student knows himself and his own emotions, capacities and limitations.

One of the reasons for choosing this scale was that it was not designed to be diagnostic or prescriptive, but rather for use as a resource that can help students with SEN, educators, and researchers to make decisions about areas of instructional need (Peralta & Zulueta, 2003). It can, therefore, provide valuable information that can be used to design programs and interventions to promote self-determination of students with special needs.

Before using the scale, it was first translated in Spanish and adapted, in accordance with guidelines for the adaptation of self-report measures in relation to linguistic, semantic, cultural and conceptual equivalence proposed by the International Test Commission (Beaton, Bombardier, Guillemin, & Ferroz, 2000; Hambleton, 1994). First, two translations were carried out from English to Spanish by two experts in the language. Both translations were then combined to produce the first Spanish version of the scale, which was then translated back into its original language to verify that the contents of the translated items coincided with the original items. Finally, the entire research team, experts in disability and self-determination, agreed on a final version of the scale. When the self-report measure was finally available we then used it in three pilot
studies with groups of high school students with and without SEN.

The translated scale has acceptable psychometric properties. Reliability was measured by Cronbach’s Alpha internal consistency coefficient, which was 0.82 in the group of students with SEN and 0.77 in the group of students without SEN.

Construct validity was determined by an exploratory factor analysis that offered a 4 factor solution that explained 65.1% of the variance. Then we did a second order factor analysis that produced a 2 factor solution that explained 65.5% of the variance. The first one includes the three first factors from the previous analysis in a construct we refer to as Self-determination, which concerns skills related to autonomous behavior, locus of control, self-efficacy and outcome expectancy and self-awareness. The second one coincides with factor 4 of the previous analysis and refers to aspects related to self-regulation.

Procedure
After receiving a favorable report from the bioethical committee of our Institution, we began to contact the different high schools. The research team sent a letter explaining the purpose of the study. After a few days, we phoned the principals of the schools and arranged meetings with them and with counselors and educators from the 21 (out of 26) schools that accepted to participate in the study, to plan the work sessions. Two trained assessment administrators applied the scale to small groups of a maximum of 15 students. Students were ensured that their information would be encrypted and the results treated with confidentiality and were asked to give their informed consent.

Results
Total and subscale scores were transformed to a 0–100 scale to make comparisons between them easier. On the whole, students obtained average scores in Autonomy ($M = 56.35; SE = 10.37$) and higher than 70 points in Psychological empowerment ($M = 88.12; SE = 13.87$) and Self-Realization ($M = 74.90; SE = 13.93$). These results coincide with those obtained in most studies on self-determination during adolescence and with the results of the author of the scale (Shogren, et al., 2008; Wehmeyer, 1995; Wehmeyer, Peralta, Zulueta, Gonzalez-Torres, & Sobrino, 2006).

We then analyzed the differences observed in the scores obtained from the students in relation to variables such as presence of SEN, type of SEN, gender, and age. In relation to the presence of SEN, we applied a $t$ test for independent samples and found significant differences between students with SEN and students without SEN, both in total score ($t = -3.626; p < .001$) and in the different subscales: Autonomy ($t = -1.388; p = 0.006$), Psychological empowerment ($t = -3.934; p < .001$) and Self-realization ($t = -1.666; p < .001$). As can be observed from Table 2, in all cases students with SEN obtained significantly lower scores than their peers without SEN.

In relation to type of SEN, slightly lower scores were recorded in the group of students with intellectual disability (Table 3), although these differences were not statistically significant.

We also found gender-related differences among the scores. In general, the girls consistently obtained slightly higher scores than the boys, except for the Self-Realization sub-scale (Table 4), although, once again, these differences were not significant. This result was also found in the group of students with SEN.

Finally, we studied the influence of age on scores. As can be seen from Table 5, students aged over 14 obtained slightly higher scores, but the differences were not significant in any case. This result is repeated in groups of students with SEN.

| TABLE 2 |
|-----------------------------|-----------------------------|
| **Mean Score Obtained by All of the Students** | |
| | Students | Students |
| | with SEN | without SEN |
| | ($n = 171$) | ($n = 200$) |
| TOTAL SCALE | 71.01 | 74.75 |
| Autonomy | 57.32 | 58.67 |
| Psychological empowerment | 84.25 | 91.19 |
| Self-realization | 72.8 | 76.67 |

Self-Determination of Students with Educational Needs / 51
The purpose of the present investigation was to assess the self-determined behavior of Spanish high school students with intellectual and learning disabilities. Now, we present the conclusions of our study organized into two parts: The first, related to the instrument, and the second concerns the results found and their educational implications.

The measure used here, The Arc’s Self-Determination Scale (Wehmeyer, 1995) adapted and translated into Spanish, provided useful information about the students’ knowledge of their own capacities and interests, their degree of independence both at home and outside, their capacity to make choices based on their own preferences and their outcome expectancy. There is no doubt about the importance of these aspects, which are all relatively easy to incorporate in a curriculum for which reform is long due, and which must endeavor to include activities that go beyond the mere academic to focus on the students and their needs from an integral perspective.

However, the type of some of the tasks in the scale made it difficult for the students, especially those with special needs associated with an intellectual disability, to understand properly. Students found it particularly difficult to complete the Self-regulation subscale. On the whole, they offered an insufficient number of steps to resolve the situations proposed or did not choose the most appropriate ones. Therefore, and following the recommendations of the author of the scale to conduct a more qualitative analysis (Wehmeyer, 1995, 1996), we do not offer more detailed information on this subscale.

On the other hand, the alternative responses available in the Autonomy subscale seem to make the student focus more on the frequency with which he does certain activities, or makes choices, rather than on whether or not he has the opportunities to do these or not, and the extent of these opportunities.

### TABLE 3
Mean Scores Obtained by Students with Mild Intellectual Disability, Borderline and with Intellectual Disability with Higher IQ Scores, and Learning Disabilities

<table>
<thead>
<tr>
<th></th>
<th>Students with Mild ID or Borderline and with ID with Higher IQ Scores (n = 77)</th>
<th>Students with Learning Disabilities (n = 95)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOTAL SCALE</td>
<td>69.52</td>
<td>72.20</td>
</tr>
<tr>
<td>Autonomy</td>
<td>56.63</td>
<td>57.87</td>
</tr>
<tr>
<td>Psychological empowerment</td>
<td>82.25</td>
<td>85.87</td>
</tr>
<tr>
<td>Self-realization</td>
<td>73</td>
<td>72.67</td>
</tr>
</tbody>
</table>

### TABLE 4
Mean Score Obtained by Students in Relation to Gender

<table>
<thead>
<tr>
<th></th>
<th>Total Group</th>
<th>Students with SEN</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Females</td>
<td>Males</td>
</tr>
<tr>
<td></td>
<td>(n = 177)</td>
<td>(n = 194)</td>
</tr>
<tr>
<td>TOTAL SCALE</td>
<td>70.66</td>
<td>70.03</td>
</tr>
<tr>
<td>Autonomy</td>
<td>58.69</td>
<td>56.46</td>
</tr>
<tr>
<td>Psychological empowerment</td>
<td>85.19</td>
<td>83.62</td>
</tr>
<tr>
<td>Self-realization</td>
<td>72.33</td>
<td>73.07</td>
</tr>
</tbody>
</table>
This latter aspect is, in fact, much more important and, also gives us information about how restrictive the students’ most frequent environments are and the opportunities in them to make choices and decisions or to express preferences.

To some degree, these factors affected the psychometric properties of the scale. Even so, provided that the format of the items and the possible responses are modified appropriately, we consider this to be a measure of doubtless value in the area of education, in that it provides very useful information in relation to crucial aspects of self-determined behavior in students, especially in those with SEN. The scale can be used to evaluate their own beliefs about themselves and their self-determination; and encourages them to become more involved in their own educational process and decision-making; to reflect about their plans for the future and provides information that can be used to develop goals related to self-determined behavior.

In relation to the results found and their educational implications, students with SEN obtained lower total and subscale scores than their peers without special needs. The greatest differences were observed in the Psychological empowerment subscale. Instead of merely verifying a result previously reported in the literature, this result shows us areas or components of self-determined behavior that plans to promote self-determination in students with special needs should focus on (for example, encouraging students to have an internal locus of control, self-efficacy and expectations of success). It can, therefore, help us to design programs adapted to their characteristics, aimed at enabling students to achieve better personal outcomes in the medium-term and in their adult lives and, ultimately, to be able to enjoy a better quality of life.

Regarding the type of SEN, especially those associated with intellectual disability, in our sample, students with intellectual disability obtained slightly lower scores although these differences were not statistically significant. Our results differ with those of numerous studies that have shown a constant and significant relationship between IQ and level of self-determination. Most studies found that students with intellectual disability obtained significantly lower scores than students with learning disabilities (Nota et al., 2007; Stancliffe et al., 2000; Wehmeyer, 1996; Wehmeyer & Garner, 2003; Wehmeyer, Palmer, Soukup, Garner, & Lawrence, 2007; Wehmeyer et al., 2006; Williams-Diehm, Wehmeyer, Palmer, Soukup, & Garner, 2008). However, these other studies also described the complex relationship between self-determination and intelligence, with which our findings concur. In 2003, Wehmeyer and Garner conducted a discriminant function analysis to identify predictor variables of the self-determination scores obtained by the individuals with intellectual disability in their sample. They found that only perceptions of choice opportunity (from among four variables, including IQ score) predicted membership in the high self-determination group. In other words, IQ was not a primary contributor to self-determination status when other variables were included in the model, such as the possibility of choosing between alternative options. Other data suggested that self-determination is influenced by environmental factors to a similar extent, or more so, than personal traits, including intel-

| TABLE 5 | Mean Score Obtained by Students in Relation to Age |
|-----------------|-----------------------------|-----------------|-----------------|-----------------|-----------------|
|                | Total Group                | Students with SEN | 11–14 Years (n = 188) | 15–17 Years (n = 145) | 11–14 Years (n = 70) | 15–17 Years (n = 86) |
| TOTAL SCALE    | 70.65                       | 68.26            | 70.73            | 71.39            | 69.84            | 69.4 |
| Autonomy       | 56.95                       | 55.07            | 57.99            | 57.99            | 56.26            | 56.26 |
| Psychological empowerment | 82.69           | 82.02            | 85               | 85               | 85.16            | 85.16 |
| Self-realization | 70.73                       | 70.97            | 73.47            | 73.54            | 73.54            | 73.54 |
ligence (Nota et al., 2007; Wehmeyer & Garner). Therefore, there appears to be a complex relationship between self-determination, individual characteristics and environmental factors, and intelligence does not appear to be a determining factor for self-determination status.

This result has two clear implications. On the one hand, it is difficult to change a person’s IQ, but not that difficult to change elements of his or her environment to help him to make choices and decisions; it is also possible to help him express preferences and desires and to act appropriately to attain them, and to provide the necessary support to resolve problems, establish relevant goals and to look after himself.

Moreover, if IQ does not appear to be a determining variable in students’ level of self-determination, we must once again question the appropriateness of using these criteria to qualify or classify students. Furthermore, if real opportunities to choose or make decisions are more determinant than a person’s IQ, it would appear that students impediments to practicing self-determination are not conditioned by their SEN, but rather by barriers to the students’ presence, learning and participation, which determine their ability to participate fully in the different environments that surround them (Booth, Ainscow, & Kingston, 2006).

Results also demonstrated the importance of involving the students in decision-making about educational matters that affect them. It is important to remember that students more involved in their Individualized Education Program show higher levels of self-determination (Branding, Bates, & Miner, 2009; Dunsmore, 2008; Palmer, Wehmeyer, Gipson, & Agran, 2004; Wood, Karvonen, Test, Browder, & Algozine, 2004).

Regarding gender and age, we did not find significant differences in the self-determination scores. However, the data from studies relating these variables and self-determination are scarce and largely inconclusive. Wehmeyer (1996) and Wehmeyer and Garner (2003) did not find significant differences in the self-determination scores although the women’s scores were slightly higher than the men’s. However, Sorensi, Nota, and Ferrari (2004) found that men tended to show a higher level of self-determination than women, although two years later the same authors (Nota et al., 2007) found that women obtained the higher scores. These results show the need to continue studying the effect of this variable to obtain more conclusive results.

As with gender, data on the effects of age on self-determined behavior are not conclusive. Initially, it would seem logical to presume that young people acquire the knowledge and skills necessary to enjoy a greater level of self-determination as they pass through adolescence and youth. Hence, in a sample of students between 15 and 18 years old, Wehmeyer (1996) found a consistent tendency to obtain higher scores with increasing age of the students. However, after this Wehmeyer and Garner (2003) demonstrated that age was not a variable that could be used to place individuals in his sample in the high or low self-determination groups (although it was a predictive variable of level of autonomy). Years later, Wehmeyer and colleagues (2006) found no significant age-related differences among students either in the total scores or the subscale scores. Nota and colleagues (2007) found that the experience and opportunities to make choices were more determining than age at predicting the level of self-determination of students in his study. These results also show the need to continue studying the importance of this variable in the level of self-determination in adolescents.

To summarize, the study and results presented here can be considered a first step in developments that must take place over the next few years to improve students’ quality of life by encouraging self-determination. Although the study provides important information, there are limitations. First, participants formed a convenience sample. It is possible that they were quite similar in cognitive and communicative skills. Additional research needs to investigate the appropriateness of the scale with students with varying learning and support needs. Second, it is necessary to study in greater depth and adapt the Self-regulation subscale. Despite these limitations that must be overcome in future studies this scale and results presented offer numerous possibilities for analysis and action, the two most important of which are: 1) to begin to design activities to promote self-determina-
tion from educational context and to test their efficacy, and 2) to help the concept of self-determination to become a standard part of educational debates and to begin training educators in aspects of self-determination. This opens up a wide range of possible lines of work and also benefits, especially in relation to improving the integral and comprehensive education of an increasingly diverse student population with its new demands and needs.

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Received: 2 December 2010
Initial Acceptance: 4 February 2011
Final Acceptance: 12 April 2011
How and Why do Parents Choose Early Intensive Behavioral Intervention for their Young Child with Autism?

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Abstract: Although the evidence of effectiveness of Early Intensive Behavioral Intervention (EIBI) for children with autism is growing, very little is known about the process parents go through in deciding to implement such a program. We interviewed 30 mothers whose children had been on an EIBI program to investigate more systematically how and why they chose EIBI. Typically mothers were informed about EIBI through other parents, books and the internet. Their expectations of treatment outcomes ranged from their child being cured of autism to no clear expectations. Some families had access to funding through their local educational department, some had to fund part or the whole program themselves, whereas some received funding after a dispute with their educational department.

In the decades following Lovaas’s (1987) seminal study of Early Intensive Behavioral Intervention (EIBI) for children with autism, a growing body of evidence has documented its positive effects as reported in a number of recent reviews and meta-analyses (Eikeseth, 2009; Eldevik et al., 2010; Eldevik et al., 2009; Reichow & Wolery, 2009; Rogers & Vismara, 2008; Virue´s-Ortega, 2010). These findings have been widely disseminated and many parents of children with autism worldwide have chosen to implement EIBI programs (Green et al., 2006). Interventions have been typically home-based, supervised by a behavior analysis professional and delivered by three to five therapists who work individually with the child for up to 40 hours per week.

Although much EIBI research has focused on measures of child outcome, a growing number of studies have explored the intervention process from a parental perspective. For example, Grindle, Kovshoff, Hastings, and Remington (2009), examined how parents perceive the impact of an EIBI program on family life. The positive effects parents mentioned included benefits to themselves (e.g., they received additional support from the therapists working with the child) and to the siblings of the child with autism (e.g. siblings enjoyed participation in teaching sessions and learned how better to interact with the child with autism). Parents also listed some negative impacts, such as problems with their local education departments, difficulties with recruiting and retaining therapists, reduced privacy and disruption to family life. Studies that have examined the psychological difficulties of parents and siblings of children with autism following home-based behavioral programs (Hastings, 2003; Hastings & Johnson, 2001; Remington et al., 2007) suggest no increased risk of problems in family members perhaps because the positive and negative impacts of involvement in these programs essentially cancel out (Remington, 2010).

The question of how parents arrive at the decision to adopt an EIBI approach for their child with autism has not been systematically investigated but the writing of individual parents provides some anecdotal evidence. For example Maurice, Mannion, Letso, and Perry (2001) invited three mothers of children with autism to share their experiences of accessing EIBI services for their children. Their ac-
counts focused on two major areas of difficulty. The first involved the access to accurate information on potential interventions and their child’s learning capacities. Mothers reported that at the time of diagnosis they were given no recommendations about possible interventions and that their enquiries about available educational services resulted in confusing suggestions about interventions that lacked clear scientific rationale (e.g., they could “try and see if it works,” p. 150). Moreover, mothers’ understanding of behavioral approaches was hindered by the technical language often used by behavior analysis professionals. The second major area of difficulty was in securing funding for EIBI programs and identifying service providers with adequate qualifications.

Only Green (2007) has attempted to examine the issue of parental choice of intervention more thoroughly, by interviewing a subsample of parents from a larger internet survey study conducted by Green et al. (2006). Parents were asked: (1) Where they had found information about the intervention they chose, and (2) What their expectations of outcomes were prior to its implementation. Of the 19 parents interviewed, 13 were currently using, or had used, an Applied Behavior Analysis (ABA) program. Of these, Green reported that parents’ sources of information about ABA were books and articles (46%), other parents (38%), and the internet (31%). Regarding parents’ anticipated treatment outcomes, 31% mentioned specific skills they expected their child to achieve (e.g., improved language), another 31% were not asked this question, while the remainder reported either having very high expectations (e.g., hoped for a cure), or no specific expectations.

Given the paucity of existing research data on the decision-making processes that lead parents to choose EIBI for their child, the aim of the present study was to conduct a more thorough exploration of: (1) The intervention options, if any, described to parents at the time of their child’s diagnosis; (2) Other interventions they tried prior to or during EIBI; (3) How parents first heard about EIBI and their initial impressions; (4) Their main reasons for choosing to implement the program; (5) Their understanding of EIBI and their initial expectations of this approach, and (6) How they accessed EIBI services and financial support.

Method

Participants

Thirty mothers who had participated in an earlier field effectiveness evaluation of EIBI (Remington et al., 2007), were invited to participate by letter. Twenty-three mothers from this sample agreed to be interviewed for the present research. Children of 17 of these mothers had received a service supervised by a University team that was provided free of charge to parents. The children of six of the mothers were receiving interventions from private service providers. An additional nine mothers were recruited via advertisements posted in UK ABA forums and in newsletters of parents’ organizations. The children of these nine mothers were also receiving supervision services from private service providers. Participants were not offered payment for participation.

Data from two of the 32 mothers were excluded from the present analysis, one as a result of recording failure, the other because of coding difficulties. Thus, 30 mothers of young children with autism participated, 16 receiving services from the University EIBI intervention team and 14 from a private service provider.

One of the participants had two children, each with a diagnosis of autism and both enrolled in EIBI programs. Thus, the mothers who participated parented 31 children with autism (28 male; 3 female) aged between 49 and 82 months at the time of the interviews (mean = 66.2 months, SD = 7 months). All of the children lived in their family home in the UK. For 25 of the 30 families the child with autism lived with both parents, whereas five children had a father living in a different home. Twenty six of the children had at least one sibling living at home. At the time mothers were interviewed, the EIBI programs had already been running on average for 25 months (SD = 3 months).

Interview Structure

A semi-structured interview format was used to encourage mothers to talk freely about their
experiences. The content, prepared in advance, consisted of a series of open-ended questions on a variety of topics. Topics included: (1) Interventions suggested to parents by the professional(s) who diagnosed the child (e.g., “Did anyone at this meeting discuss treatments with you?”); (2) Other treatments tried prior to or at the same time as EIBI and perceptions of their effects, (e.g., “Were there any educational or therapeutic treatments that you tried at all before ABA?”); (3) Their first contact with EIBI (e.g., “Can you describe how you first found out about ABA?” , “What was your reaction to it?”); (4) The reason(s) they decided to implement an EIBI program (e.g., “Why was it that you ended up going for ABA?”); (5) Mothers’ expectations regarding anticipated benefits (e.g., “Could you describe what your expectations were for [the child] before she/he started the program?”), and possible difficulties connected with the program (e.g., “Did you have any idea before starting ABA of any possible pitfalls associated with it?”); and finally, (6) How they accessed EIBI services once they had decided to do so (e.g., “Once you had decided on ABA, could you tell me how you went about accessing it?”).

This interview protocol was used flexibly. Often, depending on a response, prompts and/or probes were given to encourage respondents to provide additional details. Also, the sequence of questions was sometimes altered depending on the answers given. A copy of the full interview protocol is available from the corresponding author.

Prior to interview, participants received an information pack describing the aims of the study and a consent form. After consent was given, interviews were conducted by telephone and audio-recorded by the second author.

Data Reduction and Coding

After transcription of the taped interviews, a content analysis procedure based on the stages described by Dey (1993) was used: First, responses that related to the six topics listed earlier were grouped together. Second, categories that described similar responses within each of these six topic areas were created. Third, these categories were combined or divided so that the data were organized in the best possible way. A balance was achieved between the most parsimonious descriptions of mothers’ responses, and the use of categories that could be communicated clearly. Throughout the coding process, category labels were modified accordingly. A coding manual based on the final system of categories was written, and each interview transcript coded in full. Depending on content, every interview was coded as either containing or not containing statements corresponding to each category in the coding manual. Primary coding was carried out by the first author. A copy of the coding manual is available from the corresponding author upon request.

Reliability

To establish inter-rater reliability a second person coded eight (25%) randomly selected interview transcripts using the coding manual. Agreement between the two coders was calculated using the list of codes assigned to each interview and a simple percentage agreement index formula (agreements divided by the sum of agreements and disagreements multiplied by 100). An agreement was defined when both raters coded an interview as containing a statement corresponding to a particular category, or when they both coded an interview as containing no statements corresponding to a particular category. Overall inter-rater agreement across all categories was 88% (range, 73% - 97% for individual categories reported in this paper).

Results

The topics of interest for the present analysis, the categories used to code material in each topic area and the percentage of mothers (n = 30) who were coded using each category are described below. All participants had the common experience of having committed to implementing an EIBI program for at least two years. One differentiating factor was the provider of EIBI services: children of 16 of the mothers had received University-supervised EIBI as a part of a research evaluation project and the remaining 14 received EIBI via a private service provider. When describing the results of the study, in most topic areas the
participating mothers are treated as a single
group because there appeared to be no differ-
ences associated with the service provision
model. However, for topic areas where the
difference in service provision appeared to be
related to findings, mothers’ views are re-
ported separately for these sub-groups.

Information Given to Parents at the Time of
Diagnosis

Mothers were asked about information and
recommendations for appropriate interven-
tions given to them at the time of their child’s
diagnosis. Fifteen of the 30 mothers reported
that the professional (or team of profession-
als) who diagnosed their child offered no in-
formation or advice. According to one
mother, “no-one ever said yes, there is ABA or
Sonrise or anything; I had to go and do my
own research.” Four mothers (13%) were in-
formed that “nothing can be done” for their
child with autism.

When the diagnosing professionals men-
tioned interventions, the recommendations
were: special school or nursery (30%), speech
and language therapy (16%), ABA (16%),
play therapy (10%), and Portage (10%; a
home-visiting educational provision for pre-
school children with special needs in the UK).
Eight mothers (27%) were already aware of
ABA at the time of diagnosis and were actively
seeking to enroll their child in a behavioral
program.

Interventions Tried by Parents before or at the
Same Time as EIBI

Mothers were asked about other interventions
they tried prior to or during implementation
of the EIBI program. Most were educational
or dietary in nature. More than two thirds
(70%) had tried at least one educational in-
tervention prior to EIBI. Speech and language
therapy was the most common (40%), but
others included the Picture Exchange
Communication System (PECS) (23.4%), Portage
(20%), special education nurseries (16.7%)
and play therapy (13.3%).

The majority of mothers who had tried an
alternative educational intervention prior to
EIBI said that they had not noticed any evi-
dence of its effectiveness for their child
(71.4%), although the remainder (28.6%) re-
ported that implementing these interven-
tion(s) had helped their child learn some
skills. One third of participants remarked
upon the lack of intensity of other educational
intervention(s). According to one mother:

(The school) were very good actually and
he started off using PECS at the nursery but,
looking back, when you see how slow it was
with the fact that he was only at nursery
two days and having to work towards these
targets with someone who wasn’t skilled,
although she was great and really did go out
of her way, so in that sense it was perfect at
that time but if we had have carried on it
wouldn’t have been sufficient. . . .

Just over three quarters of participating
mothers (76.6%) implemented a dietary inter-
vention, either before starting the EIBI pro-
gram or at some point during it. Of those
mothers, 52.2% had tried a gluten and casein
free diet, whereas 30.4% had tried a gluten
free diet. One half of the mothers who used
these types of dietary interventions reported
that they saw some positive effects as a result
of the diet. Perceived positive effects included
sleep improvement (26.3%), improvements in
the child’s physical health (21.1%), greater
concentration (15.8%) and the child being
calmer (15.8%). For example, one mother
reported:

When I took him off dairy, the dark circles
under his eyes disappeared overnight. The
head sweats – he was always very sweaty and
we could never figure out why – the head
sweats disappeared overnight. He also never
slept properly so from an early age I would
go in to his room and he wasn’t sound
asleep so he would be bolt upright in bed
but he was a very sweet child so this was
never really an issue with him. And then all
of a sudden he started sleeping.

A small percentage of mothers (15.8%) no-
ticed the differences in the child’s behavior
not so much when he/she was on the diet but
when the foods were reintroduced. Regarding
the pitfalls of dietary interventions, 26.3% men-
tioned that the child’s food variety was
very restricted and 21.1% of mothers re-
counted that the child stood out from peers,
especially at parties, as a result of being on a restrictive diet.

Other dietary interventions involved the use of supplements. One third of mothers reported having tried supplements at some point (including fish oils, homeopathy medicines and vitamins) and one half of these participants reported the interventions to be effective. Thirty per cent of mothers who had tried supplements thought that the child seemed more able to learn as a result, two mothers had noticed some physical health improvement and one mother reported a positive change in her child’s behaviour (that after homeopathy treatment he became more affectionate). In terms of difficulties with supplements, 30% of the mothers who had used them remarked on the high cost of supplements and one reported that it was not easy to persuade the child to take them.

First Contact with EIBI

Mothers were asked about how they had first heard about EIBI and what their initial impression was. They were then asked what they did to enhance their understanding of the intervention prior to starting their child’s program. One of the participants was already familiar with EIBI at the time of the child’s diagnosis and was not asked the remainder of questions in this section of the interview.

As shown in Table 1, one third of mothers were initially informed about EIBI by another parent of a child with autism. Another third mentioned the internet or a book as their first source of information. One mother commented: “Really I found that it was the network of parents – friends of friends that really helped me out. . . . Really it was the internet and parents.” Four out of the thirty mothers received information about EIBI from a professional.

Approximately two thirds of mothers reported that their first impression of EIBI was a positive one (see Table 2). Almost half became “instant converts”; their reaction was an enthusiastic and very positive one. Five mothers (17.2%) reported thinking that EIBI was a logical, comprehensive intervention. Another five mothers (17.2%) reported an initially mixed reaction; they either felt skeptical about EIBI or they could not understand it. One mother said:

He (the paediatrician) didn’t describe it but got someone from the LEA to ring me and to be honest I didn’t have a clue what she was talking about! I couldn’t envisage what she was talking about and she came out to see me the week after and I still didn’t have a clue . . . it wasn’t until the training day that I understood a lot more.

A final five mothers reported a negative initial impression of EIBI. In most cases the reason they mentioned was the outdated information they had read involving the use of aversive techniques.

Table 3 summarizes how the mothers we interviewed acquired further knowledge about EIBI. After first hearing about EIBI, most mothers looked for more information before making a decision to start an intervention program for their child. The most common source was the internet followed by other parents of children with autism who were already implementing an EIBI program. Reading up on the subject with specialised books was reported by almost half of participants, many of whom read Catherine Maurice’s “Let me hear your voice.” Eleven mothers reported having visited an existing program.

Deciding to Implement an EIBI Program

In the next section of the interview, participants talked about the primary reason(s) behind their decision to implement an EIBI program and about the level of their understanding of EIBI/ABA at that time. They were also asked to describe their initial expectations regarding how the program

<table>
<thead>
<tr>
<th>Source of Information</th>
<th>% of Mothers (n = 30)</th>
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<tbody>
<tr>
<td>Parent of another child with autism</td>
<td>33.3</td>
</tr>
<tr>
<td>Books</td>
<td>16.7</td>
</tr>
<tr>
<td>Internet</td>
<td>16.7</td>
</tr>
<tr>
<td>A health or education professional</td>
<td>13.3</td>
</tr>
<tr>
<td>Friend / family member</td>
<td>13.3</td>
</tr>
</tbody>
</table>
might have benefited their child and whether they were aware of any pitfalls associated with ABA interventions. There were some differences between the University and the private service provider group in these responses. Therefore, mothers’ responses are presented separately for these two sub-groups in Table 4. The vast majority of mothers from both groups reported that their decision to start an EIBI program was influenced by both empirical and anecdotal evidence that it is an effective method of intervention. Awareness of effectiveness was based either on statistics they had read or on personal accounts from other families whose children with autism were already on EIBI programs. One mother reported:

"Well what went through our minds before we knew about [University program] was when we had read this article in The Times about this intensive therapy and how the parents had to re-mortgage their house I said to [husband] let’s go for this as it sounds absolutely fantastic."

"ABA is a logical, sensible intervention"

"I thought this is a really positive approach. It seems to cover all the problems; in the home, out in the community, in schools. It’s a therapy that seems very workable, tailored to the child so very child specific and it doesn’t exactly nip autism in the bud because you can’t do that but it really helps the child to understand their world at an early age and helps them to take away a lot of the frustration and give them some kind of language even if it is just picture language and things like PECs . . . . I couldn’t see anything else that was so comprehensive."

"Skeptical, not sure, or did not understand ABA"

". . . when [husband] described it to me as he did most of the research both me and my parents said does [the child] need that because he is quite mild and it seems an awful lot of work and effort . . . ."

"Negative"

". . . one of things that you read is again dated and is put across like training a dog type thing and you think that is not what I want for my child."

<table>
<thead>
<tr>
<th>Initial Impression</th>
<th>% of Mothers (n = 29)</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very positive, enthusiastic</td>
<td>48.3</td>
<td>&quot;Well what went through our minds before we knew about [University program] was when we had read this article in The Times about this intensive therapy and how the parents had to re-mortgage their house I said to [husband] let’s go for this as it sounds absolutely fantastic.&quot;</td>
</tr>
<tr>
<td>“ABA is a logical, sensible intervention”</td>
<td>17.2</td>
<td>“I thought this is a really positive approach. It seems to cover all the problems; in the home, out in the community, in schools. It’s a therapy that seems very workable, tailored to the child so very child specific and it doesn’t exactly nip autism in the bud because you can’t do that but it really helps the child to understand their world at an early age and helps them to take away a lot of the frustration and give them some kind of language even if it is just picture language and things like PECs . . . . I couldn’t see anything else that was so comprehensive.&quot;</td>
</tr>
<tr>
<td>Skeptical, not sure, or did not understand ABA</td>
<td>17.2</td>
<td>“. . . when [husband] described it to me as he did most of the research both me and my parents said does [the child] need that because he is quite mild and it seems an awful lot of work and effort . . . .”</td>
</tr>
<tr>
<td>Negative</td>
<td>17.2</td>
<td>“. . . one of things that you read is again dated and is put across like training a dog type thing and you think that is not what I want for my child.”</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Source of Information</th>
<th>% of Mothers (n = 29)</th>
</tr>
</thead>
<tbody>
<tr>
<td>The internet</td>
<td>69</td>
</tr>
<tr>
<td>Parents of a child with autism doing an EIBI program</td>
<td>55.2</td>
</tr>
<tr>
<td>Books</td>
<td>48.3</td>
</tr>
<tr>
<td>Visited an existing EIBI program</td>
<td>37.9</td>
</tr>
<tr>
<td>EIBI professionals</td>
<td>34.5</td>
</tr>
<tr>
<td>Lectures / conferences</td>
<td>20.7</td>
</tr>
</tbody>
</table>
Other reasons mothers mentioned for choosing EIBI were that they could identify with the philosophy behind the intervention approach (36.7% of all mothers), and that EIBI offered hope for their child with autism (16.7% of all mothers). Six mothers (29%) mentioned that they chose EIBI because it was available to them at the time they were looking for possible interventions. These were mostly participants from the University-managed intervention project (see Table 4).

Approximately one half of the mothers (46.7%) reported that at the time they decided to start the child’s program they had a well-defined understanding of EIBI. Twelve mothers (40%) said they understood a little about EIBI whereas four (13.3%) admitted that at the time of decision they did not understand the method at all. There were no differences between the University and the private service provider group in this respect.

Participating mothers mentioned both general and specific expectations for their child with autism as a result of following an EIBI program. Thirteen mothers (43.3%) mentioned anticipating that their child would acquire some new skills and 20% that he/she would maximise his/her potential. Specific expectations included language improvement, mentioned by 17 mothers (56.7%) and the reduction of challenging behaviours (16.7% of mothers). Twelve of the participants (40%) reported they were hoping that EIBI would cure their child of autism, and that he/she would be indistinguishable from his/her peers. One mother said: “Well, we expected that he would be one of the 47% that recover from autism.”

<p>| TABLE 4 |
| Reasons for Choosing ABA/EIBI for Both the University Provision and the Private Provision Groups |</p>
<table>
<thead>
<tr>
<th>Category</th>
<th>% of University Group (n = 16)</th>
<th>% of Private Group (n = 14)</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evidence of effectiveness</td>
<td>81.3</td>
<td>78.6</td>
<td>“...I thought... that I want stuff which is out in the open where the data is out there and you can sort of see the success.”</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>“…I spoke to a couple of other parents in the area who were doing it and I phoned to speak to them and they told me themselves how their children had progressed so that just pushed us towards ABA.”</td>
</tr>
<tr>
<td>A logical intervention</td>
<td>18.8</td>
<td>57.1</td>
<td>“To me an ABA program was logical, it kind of was working towards the academics and the development and the self-care, all the self-help skills etc. Just the whole thing of life skills and development.”</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>“I think it was the intensity of the support, the way it sounded so practical and logical. It wasn’t mumbo jumbo it was really clear understandable stuff.”</td>
</tr>
<tr>
<td>Available, let’s try it</td>
<td>31.3</td>
<td>7.1</td>
<td>“I realised that two years one-to-one tuition for (the child) was something I could never afford myself and I thought well let’s put my prejudices to the side for one moment and let’s see what is on offer and it wasn’t easy to do because I had just bought in to all the negative stereotypes that are out there.”</td>
</tr>
<tr>
<td>Hope for a child with autism</td>
<td>25</td>
<td>7.1</td>
<td>“That was probably the most helpful thing, seeing a programme and speaking to a parent and all of them had an injection of hope in to their lives from the despair and these are just people who have done ABA they haven’t elected all the other therapies so again that was a big part for us.”</td>
</tr>
</tbody>
</table>

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Enrollment in a mainstream school was anticipated by 11 mothers (36.7%). Twenty percent of mothers said they were not sure about what to expect. Finally, five mothers said that they tried not to have any expectations beforehand (See Table 5).

After talking about the benefits they had anticipated for the program, mothers were asked how much time they had expected the child would have to receive EIBI for those benefits to be realised. Five mothers were not asked this question because they had not reported any specific expectations as a result of the child being on the program. However, 48% of mothers who answered this question had expected that two years on the program would be enough for the child. One mother remarked: “I think, ignorantly, I hoped for a miracle cure after the two years and some of the stuff you read you think two years of this and then he will be absolutely fine.” Less than one third of mothers (28%) had some idea that the program might continue for more than two years: “I intended to test it for 6 months to see if he makes any progress at all. I was thinking 2 years, maybe 3.” Four mothers said they did not know for how long the child would have to be on the program and two mothers hoped that the improvements would be achieved in less than two years.

More than half of participants were aware that an intensive home program might be intrusive on family life. One mother said: “...people find it very hard having their house invaded every day by strangers but we were very willing to do that.” Worries about the financial burden associated with the approach and about siblings of the child with autism receiving less attention than their brother/sister were expressed by almost a quarter of participants. Other pitfalls mentioned by mothers were difficulties with the practical organization of the program, with finding therapists to work with the child, and worries that the child with autism would be isolated from peers. Some mothers reported fears

### Table 5

<table>
<thead>
<tr>
<th>Category</th>
<th>% of Mothers</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Language improvement</td>
<td>56.7</td>
<td>“I think my whole goal and aim for doing the programme was to achieve mainstream school for him and language as he was very limited with language when we started, just labels.”</td>
</tr>
<tr>
<td>The child would learn new skills</td>
<td>43.3</td>
<td>“My initial expectation was let’s just get him taught something.”</td>
</tr>
<tr>
<td>Cured, normal functioning</td>
<td>40</td>
<td>And then somebody gave me the book ‘Let me hear your voice’ which I took a while to get round to reading and then I thought “ooh I can cure my son!”</td>
</tr>
<tr>
<td>Mainstream school</td>
<td>36.7</td>
<td>“Well when you start ABA you look at the fantastic recovery figures that were published by [UCLA] which are now down to 10 or 15% but you hope you will be one of the lucky ones that will mainstream without support and that is what we hoped for and that is what we are still aiming for really.”</td>
</tr>
<tr>
<td>Child would maximize his/her potential</td>
<td>20</td>
<td>“...my aim wasn’t mainstream at all... but mine was just to get him to the best place that he could be.”</td>
</tr>
<tr>
<td>Did not know what to expect</td>
<td>16.7</td>
<td>“To be honest with you I really didn’t know what I was going to get.”</td>
</tr>
<tr>
<td>Tried not to have expectations</td>
<td>16.7</td>
<td>“I didn’t really want to have any expectations because you don’t want to be let down...”</td>
</tr>
<tr>
<td>Reduction of challenging behaviours</td>
<td>16.7</td>
<td>“And then but at the very least that he would learn something and his behaviour would be more manageable.”</td>
</tr>
</tbody>
</table>
TABLE 6
Anticipated Pitfalls Associated with EIBI

<table>
<thead>
<tr>
<th>Category</th>
<th>% of Mothers (n = 30)</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intrusion on family life</td>
<td>56.7</td>
<td>“Just that the house was going to be an open house but it didn’t worry me at all because if that was what I had to go through for him to improve I thought why not.”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>“I didn’t think it was going to be quite as intrusive as it ended up being.”</td>
</tr>
<tr>
<td>Siblings receiving less attention</td>
<td>23.3</td>
<td>“We were concerned with our elder son and how it would affect him with people being in the house and all the attention being on (child with autism) and obviously we didn’t have as much time for him as we would have liked to – that was our main concern.”</td>
</tr>
<tr>
<td>High cost</td>
<td>23.3</td>
<td>“The downside would be the huge cost.”</td>
</tr>
<tr>
<td>Difficult to organize program</td>
<td>16.7</td>
<td>“The pitfalls, well, they told me straight away that they were having trouble getting and keeping therapists and trying to fund the programme and trying to get everything together.”</td>
</tr>
<tr>
<td>Child isolated</td>
<td>13.3</td>
<td>“People I have spoken to about it have said “oh that programme is so isolated” and also people don’t like some of the behavioural strategy but mainly the isolation.”</td>
</tr>
<tr>
<td>Use of aversives</td>
<td>13.3</td>
<td>“There was quite a lot of talk about aversive techniques being used in the past.”</td>
</tr>
<tr>
<td>Rigidity of program</td>
<td>13.3</td>
<td>“The only thing that people said was that it can produce little robots but I just thought I don’t care because I would rather have a talking robot than someone who you can’t get to at all. As it happens it is not like that at all.”</td>
</tr>
</tbody>
</table>

About aversive techniques being used or that the structure of the program would be too rigid. Anticipated pitfalls associated with EIBI are summarised in Table 6.

Almost three quarters of mothers (73.3%) expected to be involved in some tutoring of the child. Although the explicit agreement with the University service provider was that parents should do about 10 hours of tutoring per week, there was no difference between the University (75%) and the private service provider group (71.3%) in relation to this expectation. Forty percent of mothers expected to be involved in the general management of the program (e.g., recruiting therapists, preparing teaching materials, participating in team meetings, organising therapists’ timetables). More mothers from the private provision group (57.1%) expected to be involved in this way compared to the University group (25%). Finally, 33.3% of mothers said that they expected to be involved with generalizing the goals of the program outside of the formal teaching sessions.

**Accessing EIBI Services**

The next section of the interview covered how families accessed ABA services once they had decided to pursue an EIBI program for the child with autism. Table 7 shows how the EIBI programs were funded. There were differences here between the groups mainly because the University provider group families received funding from their local education department for at least part of the period of the program. More than two thirds of the University provider group were funded exclusively by their education department but this was the case for only 14% of the private service provider group. On the other hand, two thirds of the latter group started by funding the
program themselves and some months later received funding from their local education department. This was true of less than one fifth of the University provider group. Over 20% of the private service provider group funded the program themselves without any financial support from the educational department. Two families from the University provider group decided to continue to fund some hours of an EIBI program for their child after the end of the two-year project.

Table 8 shows mothers’ experiences of how they accessed an EIBI intervention. The responses were diverse and were again quite different for the University and other provider groups. More than half of the University provider participants were either offered the opportunity of an EIBI program by their education department or asked for funding and were accepted without difficulties. Two of the families from this group had moved house to another locality to have access to the University project. The rest of the University provider families and over a third of the private service provider group received funding after a long fight with their education department, which in some cases had included starting a legal process. Two participants remortgaged their houses to fund the EIBI program.

Forty percent of mothers reported that they would have implemented the EIBI program (or continued self-funding it) even if they had not received financial support from the local education department. “We would have remortgaged the house,” said one mother, and another: “We probably could have continued indefinitely – we would have had to borrow money but we would have done that I think.” Five mothers gave a negative reply to this question (i.e., they either would not have implemented the program or would not have continued with it), mainly for financial reasons.

Family Members’ Reactions to EIBI

Participants were asked whether their spouse/partner and their extended families supported their decision to implement the behavioral program. In 93.3% of cases the husband/partner agreed with the mother’s decision about the program. Just over three quarters of mothers (76.7%) reported receiving support from their parents, parents-in-law, siblings and other family members and friends.

Discussion

Although a large number of children with autism are receiving home-based EIBI programs in the UK and globally, very little is known about how their parents make the de-

<table>
<thead>
<tr>
<th>Category – Funding Source</th>
<th>% of University Group (n = 16)</th>
<th>% of Private Group (n = 14)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local education department (LED)</td>
<td>68.8</td>
<td>14.3</td>
</tr>
<tr>
<td>Self-funded for a period, then LED</td>
<td>18.8</td>
<td>64.3</td>
</tr>
<tr>
<td>Self-funded</td>
<td>–</td>
<td>21.4</td>
</tr>
<tr>
<td>LED and then self-funding</td>
<td>12.5</td>
<td>–</td>
</tr>
</tbody>
</table>
The present study provides systematic data on some UK parents’ experiences of this decision process. The findings highlight some of the main difficulties that parents may experience and have implications that can inform improved support for families in the future.

When parents begin to suspect a possible problem in their child’s development, it is usual for them to undergo a series of consultations with health professionals. Once a diagnosis of autism has been given it would be reasonable to expect that the next issue to be addressed would involve the course of action to be taken. That is, parents of children diagnosed with an autism spectrum condition, have the right to expect the diagnosing clinician to discuss evidence based treatment options with them. However, as the present data show, potential interventions may not be discussed at all during the diagnosis meeting. Additionally, despite the growing body of evidence for the effectiveness of behavioral interventions, the majority of parents were not informed and advised about EIBI by the senior diagnosing health professionals involved with

**TABLE 8**

<table>
<thead>
<tr>
<th>Category</th>
<th>% of University Group (n = 16)</th>
<th>% of Private Group (n = 14)</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>LED funded program, no difficulties</td>
<td>56.2 28.6</td>
<td></td>
<td>“...we phoned them up and she said she would come out and see [the child] and she did and I was like please let me have this and it was so easy I think it was meant to be. I couldn’t believe that there weren’t more children queuing up for the two places I was shocked.”</td>
</tr>
<tr>
<td>Funding was offered after fight with LED</td>
<td>43.8 35.7</td>
<td></td>
<td>“...at 5.45pm on the night before Tribunal I had a phone call from the LED to say “We’ve got a suggestion that you could join [the University provision project]” and I said “Well I did suggest that about 10 months ago!”</td>
</tr>
<tr>
<td>Tribunal – parents won</td>
<td>– 14.3</td>
<td></td>
<td>“We just went through the normal process which everyone does which is statementing and then when you get your final statement you put in your papers for tribunal and you go to tribunal.”</td>
</tr>
<tr>
<td>Tribunal – parents lost</td>
<td>– 7.1</td>
<td></td>
<td>“...it is so difficult to prove at tribunal because the LED only has a duty of care to provide adequate education not the best. We have been to tribunal to get full funding for ABA and failed and it was because all the LED had to do was prove that they had an adequate alternative.”</td>
</tr>
<tr>
<td>Parents asked for funding and were refused</td>
<td>– 7.1</td>
<td></td>
<td>“I wrote to the Council who told me that I would have no chance but I wrote a letter, sent all the paperwork and sent letters and said that for any help we would be delighted but we just got a letter back saying that what the local authority provide for autistic children is more than adequate so they couldn’t help and that was basically it.”</td>
</tr>
<tr>
<td>Parents did not ask LED for funding</td>
<td>– 7.1</td>
<td></td>
<td>“No we didn’t (ask for funding). I was too tired and exhausted.”</td>
</tr>
</tbody>
</table>

1 This is the legal process open to parents in relation to the education services received by the child.

2 The procedure of obtaining a statement of special educational needs from the local education department.
their child. This lack of appropriate information about intervention for autism could result in time delays and unnecessary waste of resources as parents need to research information themselves and may initiate interventions with limited or no evidence of effectiveness. In addition, receiving a diagnosis of autism that is not accompanied by detailed advice and information on how to proceed, could work to intensify parents’ feelings of distress, especially when research has suggested that parents value advice on decisions regarding intervention approaches (Webster, Feiler, Webster, & Lovell, 2004).

We could find no data on diagnostic professionals’ perspectives on informing parents about intervention options, and we can only hypothesize about the reasons for this lack of guidance. For example, it is possible that among the different professional groups involved in diagnosing children with autism (child psychiatrists, pediatricians, psychologists, speech and language therapists, etc.) there is no clear consensus at present that EIBI is an approach with the necessary evidence base for effectiveness for children with autism. Alternatively, medical professionals might regard educational interventions to be outside their area of expertise.

In the absence of recommendations from diagnostic professionals, parents look for alternative sources of information about interventions. The majority of mothers we interviewed became aware of EIBI through other parents, the internet and books. They also reported that the main reason for choosing to implement the program was the evidence of its being an effective intervention (80% of mothers). An issue to be considered here is the accuracy of information about EIBI upon which families based their decisions and expectations. Although it is not possible to assess this accuracy, the fact that a significant percentage of mothers expected their child to have achieved normal functioning and a mainstream school placement after two years of intensive intervention could be an indication that the information they received was unrealistic or over-positive. Many mothers mentioned the results of the 1987 Lovaas study and the frequently reported finding of 47% of children achieving “normal functioning.” Maurice’s book “Let Me Hear Your Voice” (1993) described outcomes for two children with autism who were indistinguishable from peers after two years of EIBI and this was also mentioned as influential by a number of participants. Only one mother in our sample mentioned being familiar with a study that explored outcomes of children in workshop-based EIBI programs (Bibby, Eikeseth, Martin, Mudford, & Reeves, 2002) which showed smaller improvements than the Lovaas study and no attainment of “normal functioning.”

It is important that parents of children with autism are being provided with honest, authoritative and up-to-date information about issues such as treatment outcomes and duration and especially about outcomes in community-based research projects (e.g., Perry et al., 2008).

Another important theme emerging from the present data has to do with the difficulties parents who decide to implement EIBI face when accessing services and funding. Many parents reported a long dispute with their local education department as they sought financial support for the program. A significant percentage of families from the private provision group had to finance all or a portion of their child’s intervention themselves. It is quite possible that this experience more accurately reflects those of the average UK family who seeks to secure funding for their child’s program. Data from previous research with parents of children with autism in the UK has identified the attitude of educational authorities as a significant barrier to the implementation of EIBI (Johnson & Hastings, 2001).

It seems that the most important difficulty that parents of children with autism face during the period of choosing and starting an early intervention program for their child stems from the fact that links of communication and collaboration among the different professional groups who are involved in the process have not yet been established. There is little evidence of continuity of services between diagnosis, early intervention provision and then later integration into the school system. Parents often need to find the way through these major steps by themselves, and they might have to fight for an effective intervention for their child. This is an issue that has already been discussed and identified as cru-
cial in the literature on intervention provision for children with disabilities including autism (McCollum, 2002; Webster, Feiler, & Webster, 2003).

The present study has certain limitations. The fact that the interviews took place approximately two years after the beginning of the children’s programs might have had some impact upon the accuracy of mothers’ recollections about the processes involved in decision making. Also, it is difficult to assess the degree to which the sample of participants is representative of UK mothers whose children follow a home-based EIBI program. In spite of these limitations however, the study offers a valuable first insight into parents’ experiences as they seek to choose an effective intervention program for their young children with autism.

References


Received: 23 October 2010
Initial Acceptance: 6 January 2011
Final Acceptance: 24 February 2011
Effects of Combined Repeated Reading and Question Generation Intervention on Young Adults with Cognitive Disabilities

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The University of Iowa

Abstract: The combined repeated reading and question generation procedure is a reading intervention designed to target both fluency and comprehension for students with disabilities. Previous research has demonstrated the effectiveness of the intervention for school age children with learning disabilities. This study extended the research by utilizing the program with three postsecondary learners with severe learning disability and mild mental retardation. In the context of a multiple baseline across participants design, the results indicate that the program may be an effective intervention to improve fluency and comprehension for young adults with cognitive disabilities.

Reading is an area of primary academic skill deficit for young adults with cognitive disabilities (NALLDC, 1999). Traditionally, postsecondary education programs for adults with disabilities have an emphasis on functional skills that prepare them for work and independent living without focusing on reading (Scanlon & Lenz, 2002). As a result, the limited reading proficiency for individuals with disabilities will persist throughout their adulthood and affect all aspects of life (Vogel, 1998). For example, individuals struggling with reading tend to have lower incomes and higher rates of unemployment (Baydar, Brooks-Gunn, & Furstenberg, 1993). Limited reading proficiency may also affect their quality of life and general well-being (Chhabra & McCardle, 2004). Therefore, reading should be an essential instructional goal of postsecondary education for adults with disabilities (National Adult Literacy Summit, 2000).

However, research in the area of reading at postsecondary level is sparse and unable to guide practice (Scanlon & Lenz, 2002). Scanlon and Lenz’s survey of the adult literacy education directors in the United States indicates that reading instruction for learners with disabilities at postsecondary level is predominantly driven by prescribed curriculum, not teachers’ knowledge of effective practice. In addition, only a few of the reported interventions provided by adult literacy programs were validated by research. The results of the survey highlight the critical needs of research in the area of reading for this population.

Researchers have developed a number of reading interventions and materials for school-age students, however, it may not be appropriate to implement these interventions with learners at postsecondary level (Carnine, 1993). On the other hand, there is some evidence that adults with disabilities learn to read the same way that children learn and adult learners may benefit from structured and intensive reading instruction that focuses on fundamental reading skills (e.g., Lyon, 1995; Scanlon & Lenz, 2002; Vogel, 1998).

For example, one defining characteristic of poor reading ability manifested by both school-age children and young adult learners is the lack of reading fluency (NALLDC, 1999). Reading fluency, the ability to read with speed, accuracy, and proper expression, is one of the essential components of reading instruction (National Institute of Child Health...
and Human Development, 2000). Reading fluency is considered a predictor of comprehension achievement (Fuchs, Fuchs, & Hosp, 2001). When reading without fluency, individuals are likely to have difficulty with comprehension because they have to use an extensive amount of cognitive resources to focus on decoding individual words, thus leaving not enough capacity to comprehension (Berg & Samuels, 1974). On the other hand, increase in reading fluency does not guarantee improvement in reading comprehension (e.g., Bryant et al., 2000; Homan, Klesius, & Hite, 1993; Rashotte & Torgesen, 1985).

Therefore, researchers and educators must address both fluency and comprehension when designing reading intervention for young adults with cognitive disabilities (Vogel, 1998).

The Reread-Adapt and Answer-Comprehend (RAAC) is one such intervention that may be promising for learners with cognitive disabilities at postsecondary level. The RAAC procedure is a reading intervention designed to target both fluency and comprehension for students with disabilities (Therrien, Wickstrom, & Jones, 2006). Several instructional components of the RAAC intervention are considered essential (Rosenshine, Meister, & Chapman, 1996; Therrien, 2004). First, the RAAC intervention addresses reading fluency by having students repeatedly read instructional level materials to a competent tutor who corrects decoding errors. Second, the RAAC intervention targets comprehension by having students answer a series of comprehension questions before and after reading.

Researchers demonstrated that the RAAC intervention increased decoding fluency and reading comprehension for school-age children with and without disabilities (Therrien, 2004). Hua, Hendrickson, and Therrien (2010) extended the research by utilizing the RAAC intervention with three postsecondary learners with autism spectrum disorder. The results indicate that the intervention improved fluency and comprehension for all three participants. Fluency gains exceeded the ambitious levels of growth and transferred to unpracticed passages. In addition, all participants answered more factual and inferential comprehension correctly during intervention. While the utility of the RAAC intervention has yet to be proven for young adults with cognitive disabilities, it seems to be a logical intervention for this population.

The purpose of this study was to assess the effectiveness of the RAAC intervention on reading fluency and comprehension of young adults with cognitive disabilities. Specifically, we addressed the following two questions. (1) Does the RAAC program increase students’ reading fluency on intervention passages? (2) How does RAAC impact factual and inferential comprehension?

Method

Participants and Setting

Three students diagnosed with mild mental retardation and severe learning disability participated in the study. At the time of the study, all three participants were enrolled in a postsecondary education program for young adults with learning and cognitive disabilities at a Midwestern university. The program provided an integrated collegiate experience including academic enhancement, career development, student life, and community life. The program academic coordinator referred the three students for participation in the study because of their reading difficulties.

Before the study, we administered an oral reading fluency (ORF) curriculum-based measurement (CBM) to determine individual student’s instructional reading level. The initial CBM results indicated that using the reading placement criteria recommended by Fuchs and Deno (1982) the highest instructional reading level for Linda was 1st grade, 2nd grade for Sam, and 6th grade for Paul. Table 1 presents a detailed description of each student, including age, gender, ethnicity, disability category, standardized test scores on cognitive ability, and instructional reading levels.

Nine undergraduate students enrolled in a special education methods course participated in the study as tutors. Tutors collected baseline data and implemented the intervention during the one-on-one sessions in three offices (3 m × 3 m). We conducted the experiment three times a week (i.e., Monday,
Wednesday, Friday) and each intervention session lasted for approximately 15 minutes.

**Materials**

We created 27 reading passages at grades 1, 2, and 6 using the procedures developed by Therrien et al. (2006). We controlled the length of the individual passages so that students reading at the 50th percentile fluency level could finish reading the passages in 1–1.25 minutes (Hasbrouck & Tindal, 1992). The average length of passages for 1st, 2nd, and 6th grade was 86, 113, and 161 words respectively. We also developed eight reading comprehension questions (four factual and four inferential) using the definition by Davey and McBride (1986):

Correct responses to factual questions can be underlined directly in the text without requiring the integration of information from multiple sentences. Correct responses to inferential questions either cannot be located in the text (i.e., cannot be underlined) or require integration of information from multiple sentences (p. 257).

**Procedure**

In the baseline, the tutor asked the student to read a passage aloud. As soon as the student started to read the first word of the passage, the tutor started the stopwatch. The tutor followed student reading on the tutor’s copy of the passage by recording errors with a slash through the incorrectly read word (including substitution and omissions). If the student hesitated or did not read a word within 3 seconds the tutor told the student the word, and marked it as an error on the tutor’s copy. After the student finished reading the last word of the passage the tutor stopped the stopwatch and recorded the total time. The tutor then removed the passage from the student and asked the reading comprehension questions. The tutor transcribed student’s responses on the tutor’s copy while the student answered the reading comprehension questions orally. Student responses to the comprehension questions were graded by tutor as correct or incorrect using a key of list of acceptable answers. At the end of each session, the tutor thanked the student and gave brief and generic praise (e.g., “Thank you. Good job!”).

During intervention, the tutor implemented the RAAC procedure using a checklist developed by the researchers. The tutor first gave the student a cue card that contained a list of four questions related to the structure of the narrative passages (see Table 2 for cue card questions). The tutor asked the student to read these questions with the following statement: “Before you read the story I want you to read these questions. Pay attention to what you are reading as you will need to answer these questions (the tutor pointed to the questions on the cue card).” The student then read each question aloud.

**TABLE 1**

Description of Students

<table>
<thead>
<tr>
<th>Student</th>
<th>Age</th>
<th>Gender</th>
<th>Ethnicity</th>
<th>Disability</th>
<th>IQ</th>
<th>Reading Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Linda</td>
<td>19</td>
<td>Female</td>
<td>Caucasian</td>
<td>Severe LD</td>
<td>92</td>
<td>1st Grade</td>
</tr>
<tr>
<td>Sam</td>
<td>21</td>
<td>Male</td>
<td>Caucasian</td>
<td>Mild MR</td>
<td>65</td>
<td>3rd Grade</td>
</tr>
<tr>
<td>Paul</td>
<td>20</td>
<td>Male</td>
<td>Caucasian</td>
<td>Mild MR</td>
<td>67</td>
<td>6th Grade</td>
</tr>
</tbody>
</table>

**TABLE 2**

Question Generation Prompts

- How did the main character feel?
- Who is the main character?
- Where and when did the story take place?
- What did the main character do?
- How did the main character feel?
As soon as the student finished reading the questions on the cue card, the tutor gave the student a reading passage and asked the student to read the passage aloud three times using the procedures identical to those described in baseline. After each reading, the tutor corrected all the decoding errors using an explicit teaching procedure. The tutor pointed to the word that was incorrectly read and asked the student to read the word after tutor modeling (e.g., “This word is _____. What word?”). After modeling all the incorrectly read words in the passage, the tutor pointed to these words and asked the student to read it independently (e.g., “What is this word?”). This error correction procedure was repeated until the student read these words correctly without additional help. The student also received feedback on fluency, accuracy, and prosody from the tutor (see Table 3 for feedback sheet).

After the student finished reading the passage for the third time, the tutor asked the student to orally answer the generic narrative passage questions on the cue card. If the student did not know the answer or answered the question incorrectly, the tutor provided additional prompts using the following steps. Initially, the tutor prompted the student to read the passage and find the information (e.g., “Can you find the answer in the passage?”). If the prompt did not result in a correct answer, the tutor asked the student to read the sentence where the answer could be found or inferred (e.g., “Can you find the answer in this sentence?”). If the student could not answer the question correctly after reading the sentence, the tutor provided the answer orally and explained the reason. At the end of the session, the tutor asked the student to answer the passage specific comprehension questions and transcribed and scored the student responses using the same procedures as those described in baseline.

**Tutor Training**

We trained tutors to collect data and implement RAAC intervention during the two 3-hour class sessions using the explicit instruction procedure. We task-analyzed the procedure and developed a 14-step checklist. The researchers then modeled each step. After modeling, tutors practiced each step as a group with researcher’s prompts and feedback. Researchers checked individual’s mastery of the procedures during the one-on-one simulated sessions. All tutors reached 100% accuracy on the procedural checklist by the end of the training sessions.

**Experimental Design**

We used a multiple-baseline across subjects design to examine the effects of RAAC procedures on reading fluency and comprehension. This design allowed us to demonstrate the effects of the academic intervention on a skill that could not be reversed (Tawney & Gast, 1984). The baseline period for Linda was 6 sessions, for Sam the baseline was 12 sessions, and for Paul the baseline was 18 sessions. We then sequentially introduced the RAAC inter-

---

**Table 3**

Feedback Sheet Used by the Tutor

| Level 4 | □ I read most of the story in long meaningful phrases. |
|         | □ I repeated or missed only a few words. |
|         | □ I emphasized important words or phrases |
|         | □ I read with expression |
| Level 3 | □ I read most of the story in 3- to 4-word phrases. |
|         | □ I repeated or missed only a few words. |
|         | □ I emphasized important words or phrases |
|         | □ I read some of the story with expression |
| Level 2 | □ I read most of the story in short 2-word phrases. |
|         | □ I repeated or missed too many words. |
|         | □ I did not emphasize important words or phrases |
|         | □ I did not read with expression |
| Level 1 | □ I read most of the story word by word. |
|         | □ I repeated or missed too many words. |
|         | □ I did not emphasize important words or phrases |
|         | □ I did not read with expression |

---
vention to individual students and measured all three participants’ reading performances concurrently. Linda received 21 sessions of RAAC intervention, 15 sessions for Sam, and 9 sessions for Paul.

**Dependent Variables**

The primary dependent variable was correct words per minute (CWPM). Correct words per minute was calculated by multiplying the number of words read correctly by 60 and dividing by the number of seconds taken to read the passage. We used CWPM from the terminal (i.e., third) reading of passages during intervention for comparison. We also recorded the number of words read incorrectly and the number of comprehension questions answered correctly across the experimental conditions as secondary dependent variables.

**Reliability and Procedural Integrity**

We checked both procedural integrity and interobserver reliability during 25% of the sessions across baseline and intervention for each participant. An independent observer evaluated tutor’s treatment integrity using a procedural checklist identical to the script used by the tutor. Procedural integrity was 100% across all tutors. The observer also independently scored student ORF and reading comprehension during the session. Interobserver agreement was calculated by total number of agreements divided by agreements plus disagreements multiplied by 100%. The mean agreement for CWPM was 92%; the mean agreement for reading comprehension was 95%.

**Results**

Figure 1 presents participants’ CWPM during baseline and intervention. Table 4 presents the mean CWPM and slopes across the experimental conditions. All three participants improved their ORF immediately after they received RAAC intervention. Linda’s ORF increased from a mean of 38 CWPM (range, 24 to 47) in baseline to a mean of 84 CWPM (range, 61 to 108) in intervention. Sam improved his ORF from a mean of 65 CWPM (range, 49 to 83) in baseline to a mean of 90 CWPM (range, 74 to 105) in intervention. Paul’s ORF increased from a mean of 133 CWPM (range, 102 to 154) in baseline to a mean of 162 CWPM (range, 141 to 205) in intervention.

In addition to the level changes, students’ ORF slopes changed between baseline and intervention as well. We calculated slopes in baseline and intervention using ordinary least-squares regression between CWPM and sessions. During RAAC training, Linda reversed her decelerating slope of $-2.00$ in baseline to an accelerating slope of 1.01. Sam improved his fluency growth with a slope of .90 in comparison to the baseline slope of .47. However, Paul’s ORF had a descending slope of $-1.84$ in the intervention in comparison to his baseline slope of .56.

Based on the slope values, we calculated CWPM growth per week to examine student’s progress over time. We converted the slope to a weekly CWPM growth rate by multiplying by 3.5 days as the slope value from the regression represents the average change of CWPM for every two calendar days (Fuchs & Fuchs, 1992). We compared weekly CWPM growth with normative realistic and ambitious grade level growth rates. In comparison to the normative grade level ORF growth rate recommended by Fuchs, Fuchs, and Hamlett (1989), Linda and Sam exceeded the ambitious levels of growth in intervention (see Table 5). Before intervention, Linda read with a decreasing fluency at 7 words per week; Sam’s ORF gain was 1.65 words per week. During intervention, Linda increased ORF growth to 3.54 words per week, representing .54 words above the ambitious growth rate. Similarly, Sam’s ORF growth rate was 3.16 words per week during intervention, 1.16 words higher than the ambitious ORF growth rate. Paul’s weekly ORF growth rate, on the other hand, was 1.98 CWPM in baseline and $6.42$ CWPM in intervention.

Figure 2 presents total number of words read incorrectly per passage across the experimental conditions. All three students’ decoding errors decreased immediately after receiving RAAC intervention. Linda’s decoding errors decreased from an average of 16 to an average of 3.6 errors per passage in intervention. Sam’s decoding error was reduced from
an average of 8.72 in baseline to 2 errors per passage in intervention. Paul’s average decoding errors decreased from 2.39 in baseline to .2 errors per passage in intervention. Figure 3 and Table 6 present total number of factual and inferential comprehension questions an-
answered correctly by students across the experimental conditions. In general, all participants answered more factual and inferential comprehension questions correctly during intervention.

Discussion

Researchers suggest that the importance of reading fluency extends beyond elementary level and it is essential to include effective fluency intervention for struggling readers, regardless of their age (Rasinski et al., 2005). Furthermore, struggling adult readers also need explicit comprehension instruction using passages with controlled vocabulary and difficulty level (NALLDC, 1999). The results of the study suggest that young adults with cognitive disabilities may benefit from systematic and intensive instruction that focuses on fluency and comprehension. The RAAC intervention we implemented in the study addressed both fluency and comprehension needs of this population. Similar to the findings from previous studies (e.g., Hua et al., 2010), all three participants showed gains in oral reading fluency from reading the same passage three times. Reading fluency of the two participants also exceeded the ambitious ORF growth rate. In addition, the intervention improved all three participants’ reading comprehension on both factual and inferential questions.

This study extended the research by utilizing the RAAC intervention with learners who have cognitive disabilities at postsecondary level. In comparison to the RAAC intervention developed by Therrien and colleagues (2006), we modified the procedures in several ways. First, students read each passage three times without using a performance criterion. Second, students read passages at their individual instructional level throughout the intervention without varying passage difficulty. Results of the study indicate that repeated reading may be an effective intervention for young adults with cognitive disabilities. It enhanced reading fluency by increasing learners’ opportunities to respond and practice (Skinner & Shapiro, 1989). In addition, anecdotal observation and reports from the tutors in the study suggest that two of the participants (Linda and Sam) were motivated to read during intervention because they enjoyed knowing that they read faster after each reading. Therefore, the immediate and significant fluency gains during repeated reading may be reinforcing for learners (Vallely & Shriver, 2003). Given the long history of difficulties in the area of reading, motivation is an important factor that contributes to the successful acquisition of new skills for adults with disabilities (Deshler, Schumaker, & Lenz, 1984).

The other critical component of the RAAC

<table>
<thead>
<tr>
<th>TABLE 4</th>
<th>Mean CWPM and Slopes During Baseline and Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Student</strong></td>
<td><strong>Baseline</strong></td>
</tr>
<tr>
<td></td>
<td><strong>CWPM</strong></td>
</tr>
<tr>
<td>Linda</td>
<td>38</td>
</tr>
<tr>
<td>Sam</td>
<td>65</td>
</tr>
<tr>
<td>Paul</td>
<td>133</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TABLE 5</th>
<th>Correct Words Per Minute Weekly Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Actual</strong></td>
<td><strong>Normative</strong></td>
</tr>
<tr>
<td><strong>Student</strong></td>
<td><strong>Baseline</strong></td>
</tr>
<tr>
<td>Linda</td>
<td>-6.99</td>
</tr>
<tr>
<td>Sam</td>
<td>1.65</td>
</tr>
<tr>
<td>Paul</td>
<td>1.98</td>
</tr>
</tbody>
</table>
procedure we implemented in the study was the feedback from tutors. During intervention, tutors corrected all the decoding errors and practiced these words with the learners. Research syntheses of repeated reading suggest that when the intervention incorporated corrective feedback students made greater gains on reading fluency (e.g., Therrien, 2004). Tutor’s feedback on fluency, accuracy, and prosody may have also increased learners’
success and motivation because tutors can directly and effectively address the immediate needs of learners with disabilities (Deshler, Schumaker, Lenz, & Ellis, 1984).

We also focused on reading comprehension in the RAAC intervention. Researchers suggest that struggling readers benefit from interventions that help them activate prior knowl-

Figure 3. Number of comprehension questions answered correctly across experimental conditions.
edge and organize text (e.g., Mastropieri, Scruggs, & Graetz, 2003). Before each reading, we asked the students to read the questions related to the structure of the narrative passages (e.g., setting, characters, problem, solution and outcome). These questions not only provided an outline of the narrative passage but also helped students take note of the relevant information, thus enhancing comprehension monitoring during reading (Gersten, Fuchs, Williams, & Baker, 2001).

On the other hand, one student’s descending ORF slope in intervention raised concerns regarding the efficacy of the RAAC intervention with this population. There are several plausible explanations for Paul’s performance during program implementation. Among the three students, Paul was the most proficient reader. He read 6th grade level passages with an average of 133 CWPM in baseline and 162 CWPM in intervention. Some researchers (Kuhn & Stahl, 2003) speculate that fluency intervention is most beneficial for students reading below 4th grade level. Second, Paul received the least amount of intervention sessions (9 sessions). Additional intervention sessions may have resulted in an increasing trend. Last, Paul’s decreasing fluency during repeated reading may indicate that he was becoming less motivated to read because the task was not challenging. Researchers found that boredom was one of the drawbacks of repeated reading and may become aversive for older learners (Homan, et al., 1993; Rasinski, 1990).

### Limitations and Future Research

The results of this study must be interpreted within the context of its limitations. First, we did not assess the effects of the RAAC intervention on unpracticed passages. In order for the acquired reading skill to be functional, learners must be able to generalize the skill to unpracticed passages (Vallely & Shriver, 2003). It will be important to evaluate if the effects of the intervention are transferrable to texts that are novel to learners as generalization of the skills to other contents and setting is an important goal of the literacy education for young adults with disabilities (Deshler, Schumaker, & Lenz, 1984).

Second, the modest improvement and a high degree of variability of the number of comprehension questions answered correctly by students warrant further investigation of the effectiveness of the intervention on comprehension. In the study, students had limited opportunity (i.e., eight comprehension questions) to demonstrate their comprehension growth. Therefore, it is possible that students’ performances of reading comprehension were limited by the ceiling effects. In addition, future research should use more sensitive measures to examine the effectiveness of the intervention on reading comprehension (e.g., story retell- Fuchs & Fuchs, 1992).

Third, although the data of the study showed that the RAAC was an effective intervention to improve reading fluency and comprehension for postsecondary students with cognitive disabilities, only three students participated in the study. Researchers found that young adults with reading difficulties have

### TABLE 6

<table>
<thead>
<tr>
<th>Student</th>
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<th>Inferential Baseline</th>
<th>Total Baseline</th>
<th>Factual Intervention</th>
<th>Inferential Intervention</th>
<th>Total Intervention</th>
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<td>3.93</td>
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<td>5.06</td>
<td>3.33</td>
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<td>6.00</td>
</tr>
</tbody>
</table>

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large discrepancies of needs and proficiency levels in critical reading skill areas (Vogel, 1998). Thus, further research is warranted to determine whether other individuals with cognitive disabilities would also benefit from the RAAC intervention.

**Practical Implications**

The emphasis of postsecondary education for individuals with cognitive disabilities should directly contribute to meaningful outcome for the adult. Evidence suggests that literacy proficiency can enhance qualities of economic and social living for these individuals. Therefore, providing basic skills instruction using research-based intervention should be a priority for educators working with young adults who struggle with reading. The results of this study suggest that young adults with learning disabilities and mild mental retardation can benefit from an intensive reading program that addresses both fluency and comprehension (Zigmond, 1990). Teachers can improve fluency by providing students with opportunities to read connected text repeatedly while correcting decoding errors. Reviewing and answering comprehension questions related to the structure of the story during reading can also enhance reading comprehension.

The RAAC procedure we implemented in the study included features identified by research as essential components of a dynamic intervention program (Deshler et al., 1984). First, we used CBM to progress monitor student reading fluency and comprehension throughout the intervention. Second, we collected procedural integrity data to check the actual implementation of the intervention. Third, we asked the tutors to write a reflection paper every week to keep us apprised of the consumer satisfaction. This feedback loop ensured that the intervention was dynamic and responsive to the needs of the consumers of the program. Therefore, the RAAC intervention may be a promising basic literacy intervention model for young adults with cognitive disabilities.

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cognitive disabilities. Manuscript submitted for publication.


Received: 19 October 2010
Initial Acceptance: 21 December 2010
Final Acceptance: 9 March 2011
Teaching Play Skills to Children with Autism through Video Modeling: Small Group Arrangement and Observational Learning

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Abstract: The purpose of the present study was to examine if video modeling was an effective way of teaching sociodramatic play skills to individuals with autism in a small group arrangement. Besides maintenance, observational learning and social validation data were collected. Three 9 year old boys with autism participated in the study. Multiple probe design across behaviors was used to examine the effectiveness of video modeling. Results of the study revealed that participants acquired their own roles via video modeling. They also maintained the skills they learned two weeks after the training sessions were completed. Observational learning data were also very positive with all participants. As a result, it can be said that video modeling was effective in teaching sociodramatic play skills to children with autism. Based on the results of the study, it can be recommended that the study be replicated with writing different scenarios and with children with different kinds of disabilities.

Play is one of the most important learning opportunities in every child’s life. For many children, play fills most of their spare time. Individuals with autism, like their typically developing peers, can manage to fill their spare time with some play activities. But it is observed that children with autism who have limited social and communication areas have some limitations in learning play skills and playing with peers (Terpstra, Higgins, & Pierce, 2002). Often they will withdraw from social situations due to their lack of appropriate skills (Liber, Frea, & Symon, 2008). Some of the reasons effecting the development of playing in children with autism include having limited social relationships, expressive language skills, and displaying stereotype behaviors (Hobson, Lee, & Hobson, 2009; Honey, Leekam, Turner, & McConachie, 2007). Usually, systematic procedure needs to be used to teach them these skills (Coyne, Nyberg, & Vandenburgh, 1999; D’Ateno, Mangiapanello, & Taylor, 2003; Hine & Wolery, 2006; Leaf & McEachin, 1999; MacDonald, Clark, Garrigan, & Vangala, 2005).

Teaching role playing skills is seen as an important area in children with autism for decreasing the effects of these characteristics on children’s role playing. Role playing is also important for children with autism for developing the playing skills repertoire and for providing an opportunity for interacting with others in their daily environments (D’Ateno et al., 2003; Hine & Wolery, 2006; Ingersoll & Schreiman, 2006; MacDonald, Sacromone, Mansfield, Wiltz, & Ahearn, 2009). In our study, expanding the participants’ skills in sociodramatic play was targeted. Sociodramatic play is in-vivo pretend play. In this play type, the child pretends that s/he is a particular character, possibly one that is written in a script for the players (Brown & Murray, 2001; Honey, Leekam, Turner, & McConachie, 2007). Usually, systematic procedure needs to be used to teach them these skills (Coyne, Nyberg, & Vandenburgh, 1999; D’Ateno, Mangiapanello, & Taylor, 2003; Hine & Wolery, 2006; Leaf & McEachin, 1999; MacDonald, Clark, Garrigan, & Vangala, 2005).

This study was supported by a grant from Anadolu University Research Fund (Project No: 032714). Binyamin Birkan was the principal investigator of this research project. Correspondence concerning this article should be addressed to Sema Batu, Anadolu Universitesi, Engelliler Arastirma Enstitusu, Eskisehir, TURKEY, 26470. E-mail: esbatu@anadolu.edu.tr
tices suggested for teaching skills to individuals with autism is visual support systems. Children with autism are visual learners. Visual materials should be used for teaching targeted behaviors and skills to these children. For example, pictures (Pierce & Schreibman, 1994), computer technology (Campbell, Lison, Borsook, Hoover, & Arnold, 1995), activity schedules, written scripts (Dettmer, Simpson, Smith-Myles & Ganz, 2000; Rao & Gagie, 2006) and videos (Charlop & Milstein, 1989) have been successfully used.

In the literature, it is also seen that video modeling alone and/or video modeling with one of the teaching strategies in applied behavior analysis is being frequently used for meeting the educational needs of children with autism in recent years (Nikopoulos & Keenan, 2006). In video modeling, a model is provided on video, but there are no living models in front of the participants during the training sessions (Grant & Evans, 1994). Video modeling only requires the participants to look at the screen and model the skills they see on it. Thus, it is a one-way interaction, which may be beneficial for children with autism.

Reviewing the recent literature it was found that there were a number of studies conducted on teaching play skills through video modeling to children with autism. In these studies, purchasing and tea party role playing skills (D’Ateno et al., 2003), gardener and preparing meal skills as role play (Hine & Wolery, 2006), fireman, doctor, cowboy, and teacher role playing skills (Reagon, Higbee, & Endicott, 2006), role playing in country yard, ship and school settings (MacDonald et al., 2005), role playing skills in the airport, zoo and barbecue party scenarios (MacDonald et al., 2009) were taught through video modeling. The results of these studies showed that video modeling was an effective way of teaching play skills; the participants successfully acquired the verbal and motor skills sought by the method.

Although there have been many studies conducted about video modeling, there still is a need for more studies to be conducted in different arrangements. For example, small group arrangements have an advantage both for the trainers and the participants, and both during research studies and in daily routines in the classrooms. The National Research Council’s Committee on Educational Interventions for Children with Autism recommended that developmentally appropriate small group instruction should be a part of the education of children with autism (National Research Council, 2001). One benefit of small group instruction is the opportunity for observational learning, the acquisition of new responses as a result of observing the behavior of a model (Bandura, 1977; Ledford, Gast, Luscre, & Ayres, 2008). There are many research studies showing the importance, effectiveness and efficiency of group arrangements in their studies (Fickel, Schuster, & Collins, 1998; Griffen, Wolery, & Schuster, 1992; Keel & Gast, 1992; Ledford et al., 2008; Stinson, Gast, Wolery, & Collins, 1991, Tekin-Iftar & Birkan, 2010). The literature reveals no study which used video modeling and observational learning together to teach various skills to individuals with autism. Our study related to this literature on small group arrangements is extended by using video modeling with a group of individuals with autism.

The purpose of our study was to examine (a) whether video modeling was effective in teaching sociodramatic play skills to children with autism, (b) whether the participants maintained the skills they learn two weeks after the training was completed, (c) whether the participants learned the target behaviors of their peers, and (d) the opinions of the participants about taking part in the study.

Method

Participants

Three children with autism who were all nine years old participated. All participants were male. The prerequisite skills to participate were to be able: (a) to pay attention to visual and verbal stimuli for at least 20 minutes, (b) to imitate motor and verbal skills, (c) to take turns during group activities, (d) to follow verbal instructions, (e) to read written scripts, and (f) to memorize what is read.

Osman attended the Small Steps Early Intervention Program between ages 3–5. Since he was six years old he was taking individual support courses from a special education teacher, and also was a full time student of a
fourth grade regular class with 32 students for two and a half years. He had problems with attending to play activities with his peers during school and out of school times. He also had difficulties speaking with appropriate grammar, and initiating and continuing communication with others.

Cemil also attended the Small Steps Early Intervention Program between ages 4–5. He was also attending a third grade regular class with 25 students for one and a half years as a full time student. He had difficulties speaking with appropriate grammar, and initiating and continuing communication with others. He also had problems with attending to play activities with his peers and his twin brother.

Uzan was Cemil’s twin brother. Like his brother, he also attended the Small Steps Early Intervention Program between the ages 4–5. Since he was six years old he was taking individual support courses (four sessions a week) from a special education teacher, and also was a full time student of a third grade regular class with 22 students for a year. Like the other participants, he also had difficulties with attending play activities with his peers and twin brother. He had difficulties initiating and continuing communication with others.

**Settings**

The video modeling sessions were conducted in the audio-visual room of the Unit for the Children with Developmental Disabilities of the Research Institute for the Handicapped, in Anadolu University, Eskisehir, Turkey. In the room there was a television, a video recorder, an office table, a small student table, six chairs, and ten cupboards full of teaching materials.

For role playing sessions, all the play scenarios were conducted in a different setting. For the canteen scenario, a canteen was built. As the canteen, the cafeteria of the university unit was used on weekends. In the cafeteria, there were four circle tables and four chairs around each table. There was a kitchen counter with a wash basin, tea machine, toaster and at the canteen stand, there were different kinds of biscuits, milk boxes, juice boxes, coke boxes, tissues, a calculating machine, a till, price stickers, pens and pencils.

For the teacher scenario, one of the classes of the unit was used at the weekends. In the class, there were four square student desks, ten small student chairs, one teacher chair, five cupboards full of teaching materials, a chalkboard, two notice boards, a one-way mirror, and student work on the walls.

For the doctor scenario, the office of the physiotherapist was used. In the room was an office table, computer table, two chairs, two small student chairs, a square student desk, a patient bed, materials used for physiotherapy, a computer, a telephone, a stethoscope, an othoscope, and a tongue depressor.

Observational learning data were collected in the same settings as where the role playing was conducted. Therefore, the same materials were used during observational learning sessions. During all the sessions, a handy camera was used to record the data.

**Materials**

*Preparation of scenarios.* In this study, three different scenarios were written. The scenarios were written by the first author and then were controlled by two independent professionals in special education in order for them to have equal numbers of steps for each role. The professionals reported that the scenarios were appropriate for teaching the targeted skills to the participants. For the canteen scenario, there was a cashier, a customer, and a canteen worker; for the school scenario, there was a teacher, a student, and an inspector; and for the hospital scenario, there was a doctor, a patient, and a nurse. The canteen scenario consisted of 18 steps for the cashier, 20 steps for the canteen worker and 15 steps for the customer, whereas the school scenario consisted of 19 steps for the teacher, 14 steps for the inspector, and 18 steps for the student. The hospital scenario consisted of 17 steps for the patient, 20 steps for the nurse and 21 steps for the doctor (see Table 1 for an example). Other materials used were a handy camera and data recording sheets.

*Preparation of the video models.* Three senior students of the special education department played the roles of the participants for each scenario. For canteen scenario, there was a cashier, a customer, and a canteen worker; for school scenario, there was a teacher, a student, and an inspector; and for the hospital
scenario, there was a doctor, a patient, and a nurse. During video modeling, the senior students acted their roles with the criteria determined for the participants before (e.g., make eye contact, behave appropriately to the words they have been saying, etc.) depending on the scenarios. The video model recordings were prepared by recording the roles of the senior students.

Trainers and Observer

The first and the third author were the trainers of the study. The second author was the observer. They were all assistant professors and had 10–12 years of experience working with students with developmental disabilities.

Procedure

During the study, full probe, training and maintenance sessions were conducted. Training sessions were conducted once a week on the weekends. During training sessions, data were collected simultaneously. Maintenance sessions were conducted two weeks after the criterion was met by the participants.

Full probe sessions. Full probe sessions were conducted in the same settings where the training sessions were conducted for each scenario. The first full probe session was conducted in order to collect the participants’ baseline data for three of the scenarios. Other full probe sessions were conducted after participants met the criterion for each scenario.

All full probe sessions were conducted in the following order: (a) to place materials related to the scenario, (b) to present an attentional cue to the participants (i.e., “Is everybody ready to work? Shall we start?”), (c) to present the task direction (i.e., “Now play the canteen scenario.”), (d) to wait for 5s for participants to respond to the direction, and (e) to reward.

### TABLE 1

A Part from the Hospital Scenario

| Patient: (Knocks on the door) |
| Patient: Hello. |
| Nurse: Come in please. |
| Nurse: Doctor, your patient has come. |
| Doctor: Here you are, have a seat please. |
| Patient: (Sits on the chair) |
| Doctor: What are your complaints? |
| Patient: I have a cough, I can’t sleep because of the coughs, and my throat aches. |
| Doctor: For how long have you been coughing? |
| Patient: For one week. |
| Nurse: Doctor, sorry, can you sign the previous patient’s prescription? |
| Doctor: (Signs) |
| Nurse: (Takes the signed prescription) |
| Doctor: (Turns to the nurse) Can you take the patient to the stretcher and prepare the utensils? |
| Nurse: Sure doctor. |
| Patient: (Goes to the stretcher with the nurse) |
| Nurse: (Helps the patient go to the stretcher, and prepares the utensils for the doctor) |
| Nurse: Have a seat, sit on stretcher please. |
| Patient: (Sits on the stretcher) |
| Nurse: (Prepares the utensils on the table next to the stretcher) |
| Nurse: (Turns to the doctor) Doctor, your patient is ready. |
| Doctor: (Comes to the stretcher) |
| Doctor: Please turn your back. |
| Patient: (Turns his back) |
| Nurse: (Helps the patient to open his shirt) |
| Doctor: Please take deep breath. |
| Patient: (Breaths) |
| Nurse: (Gives the stethoscope to the doctor)...
the correct responses, or (f) to ignore the incorrect responses.

**Training sessions.** Participants were given the first scenario after the first full probe session was conducted. They were asked to memorize their own roles, which were determined for them by the trainers previously.

During training sessions, participants were first told about the importance of the study. After the introduction, the video modeling was conducted. Participants watched the scenario of the day, prior to each training session during video modeling. While they were watching, verbal prompts were provided (i.e., “Pay attention”) when needed. Also, if the participants were watching appropriately, verbal praise was provided (i.e., “good looking”).

After they watched the scenario of the day, participants were told about criterion for them to get pluses (+) for their performances. The criterions were: (a) make an eye contact, (b) behave appropriate to the words he has been saying (e.g., acting excited while saying “Oh, the cakes are so fresh!”), (c) add appropriate emotions to the words he has been saying (e.g., acting sad while saying “Mmm, you have a real bad cough”), (d) use his voice appropriately (e.g. not talk very loud or as a whisper), (e) speak so everybody can understand, (f) behave appropriate to the scenario (e.g., act as what is written in the scenario), and (g) say the words on the scenario or similar words to the scenario. Then participants were asked to practice the skills they watched from the video. Participants received verbal praise and feedback for their correct responses and error correction for their incorrect responses.

**Maintenance sessions.** Maintenance sessions were conducted two weeks after the training sessions were completed. Maintenance sessions were conducted the same as the full probe sessions. For their cooperation, participants were provided verbal praise by the trainers.

**Observational learning sessions.** During the study, each participant was given a role as their responsibility. After training and full probe sessions were completed with a scenario, participants were asked to play a role different from their own, for the observational learning data collection. Data collection for observational learning was conducted using pre-and post-test design. Pre-tests for each scenario were conducted after the first full probe session. After participants met the criterion for each scenario and the full probe sessions were conducted post-tests were conducted. The pre and post test sessions were conducted the same as the full probe sessions.

During the observational learning sessions, participants played a role other than their own roles for each scenario. They played roles of their partners as a result of observing their roles during training and full probe sessions. None of the participants received any training for their roles that they played for observational learning.

**Social Validity**

Participants were asked if they were willing to work with the researchers for the present study and also what were the social benefits of this study for their daily lives. These questions were asked before each training session and also at the end of the study. Participants replied orally and responses were recorded by the handy camera.

**Experimental Design**

A multiple probe design across behaviors was used to examine the effectiveness of video modeling on teaching sociodramatic play skills and replicated with three participants with autism. During the study three scenarios (i.e., canteen, school, and hospital) and three roles in each scenario (i.e., canteen: cashier, customer, and canteen-worker; school: teacher, student, and inspector; hospital: doctor, nurse, and patient) was established. Each participant was given a role in each scenario. While establishing the target behaviors, the prerequisite characteristics of the behaviors’ being functionally similar and being independent from each other was provided in this study (Tawney & Gast, 1984). The dependent variable of the study was the percent of correctly performed steps in the scenarios. The independent variable was video modeling.

**Reliability**

Two kinds of reliability data were collected during the present study: dependent and in-
dependent variable reliabilities. Both reliability data were collected from the same sessions selected randomly, which were 20% of all the sessions conducted. Dependent variable (inter observer) reliability data were calculated with the formula of the number of agreements divided by the number of agreements plus disagreements multiplied by 100 (Tawney & Gast, 1984). Independent variable (procedural) reliability data were calculated with the formula of the number of trainer behaviors observed divided by the number of trainer behaviors planned multiplied by 100 (Billingsley, White, & Munson, 1980). Trainer’s behaviors observed were as follows: (a) controlling materials, (b) securing attention, (c) delivering task direction, and (d) giving feedback. Reliability data indicated 99% accuracy during full probe sessions, 99% accuracy during daily probe sessions, 100% accuracy during training sessions, and 99% accuracy during maintenance sessions.

Results

Instructional Data

Results of the study revealed that all participants met the criterion of the study. The data showed that video modeling was an effective way of teaching play skills to children with autism.

As shown on Figures 1, 2, and 3, all participants learned to play their roles according to the criterion determined by the researchers. Percentages of correct responses of participants during full probe sessions, training, and maintenance sessions can be seen on the figures. Figure 4 shows percentages of correct responses of participants during pre- and posttests of observational learning sessions.

In Table 2, each participant’s number of training sessions and training trials, and the number of correct responses and incorrect responses are shown. As can be seen the total number of training sessions was 48, and total number of training trials was 96. The total number of correct responses for all participants was 765 and the number of incorrect responses was 105 for all participants.

Reliability Data

Reliability data indicated 99% accuracy during full probe, daily probe, and also maintenance sessions, and 100% accuracy during training sessions.

Maintenance Data

Maintenance data were collected two weeks after the training sessions were completed. As can be seen on the figures, participants maintained the skills taught during training sessions. During maintenance sessions, Osman maintained the skills taught 100%, Cemil maintained the skills taught 100%, and Uzan maintained the skills taught 85% (range = 80–100).

Social Validity

All participants mentioned that they were willing to work with the researchers during the study. When participants were asked what the social benefits of the study were for their daily lives, they mentioned that they would be more independent in the environments that they played roles. They also mentioned that they would be able to take part in such sociodramatic plays in the school with their peers.

Discussion

Results of the study revealed that video modeling was effective in teaching sociodramatic play skills in a small group arrangement. Participants maintained skills learned two weeks after the training was completed and all participants exhibited the roles of their partners during the observational learning sessions. Furthermore, social validity data showed that participants were happy about taking part in the present study.

As in previous research, video modeling was found to be effective in teaching play skills to children with autism (D’Ateno et al., 2003; Hine & Wolery, 2006; Kroeger, Schultz, & Newsom, 2007; MacDonald et al., 2005; MacDonald et al., 2009; Nikopoulos & Keenan, 2003). Video-modeling provided many benefits for the researchers during the training sessions. The trainers did not need to play the roles for every training session, or they did not
need to arrange for senior students to be around to play their roles for the training sessions. Another benefit was that since the recordings were ready, the researchers and participants saved time watching the recordings from the video. Since children with autism like to watch TV, video modeling is thought to be a child friendly technique. This technique provides visual and attention seeking stimuli to the children; therefore, it maximizes the acquisition of targeted skills by participants.
The effectiveness of small group arrangement was another point that has been supported by the previous research (Fickel et al., 1998; Griffen et al., 1992; Keel & Gast, 1992; Stinson et al., 1991). Conducting the study in a small group arrangement, the researchers...
and participants saved time, because the trainers did not need to use different times for teaching targeted skills to participants. Participants acquired the skills taught both from the trainers and from their peers in the group. This can be seen in Table 2, participants played the roles of their partners mostly as good as the partners.

Figure 3. Percent of correct responses for Osman during full probe, training, and maintenance probe sessions.
Apart from all the points mentioned above, there are some limitations. The first limitation was that the study criterion determined for participants varied because of the performance differences in the participants. While the criterion determined for Cemil and Osman was 100%, the criterion for Uzan was 80%. As can be seen in Figure 1, one of the participants (Uzan) met the criterion over a longer time than the others. The reason for that is his social communication skills were less than his partners. As a consequence Uzan acquired the skills taught in more training sessions than his partners.

Another limitation was that since two participants were coming from a nearby town and were attending a regular school in their hometown, the studies were conducted only on Sun-
days. Therefore, the generalization sessions were not conducted because of the time limitation. The maintenance sessions were conducted on the last weekend of the school year, and the parents of two participants mentioned that they would not be able to take their children for the study during the summer holidays. Thus, generalization sessions could not be conducted in the present study.

One of the most important limitations was the difference in the baseline data of the first scenario. Participants played their roles with an average of 40% correction during the first scenario’s baseline sessions. The reason for this was, the participants were given scenarios of the three plays at the beginning of the study. They tried to memorize the first scenario more willingly than the other two scenarios. Therefore, this resulted with an average of 40% correction. Since they did not have any more time to memorize the remaining scenarios, they did not perform any correct responses for the second and third scenarios.

A consideration to be kept in mind about the present study was that, although video modeling was found to be effective on teaching sociodramatic play skills to children with autism, participants still needed feedback and verbal prompts for being successful in their target behaviors. Another consideration was that during training sessions the entire video model of a scenario was watched at once by the participants. But when the participant was stuck in a step in the scenario, the entire scenario was shown to the participants several times. Instead only the step the participant was stuck on could have been shown. This can be a suggestion for future researchers.

This study extended the literature in a number of ways. First of all, since play skills and social skills are troublesome issues for children with autism, results of the study revealed that they can learn these effective prompting procedures through video modeling. Second, observational learning data were collected for the first time in a small group arrangement study. Third, social validity data were collected from participants.

Also, as it was mentioned before, in the literature, there are studies conducted with children with autism about teaching role playing skills. These were: purchasing and tea party role playing skills (D’Ateno et al., 2003), gardener and preparing meal role play skills (Hine & Wolery, 2006), fireman, doctor, cowboy, and teacher role playing skills (Reagon et al., 2006), role playing in country yard, ship and school settings (MacDonald et al., 2005). All of these studies were done with participants who played their roles by themselves alone. In only one study two participants played their roles in a reciprocal format after watching the video model where two adults modeled the target skills (MacDonald et al., 2009). In our study, three participants played their roles in a reciprocal format after watching the adult models on the video and depending on the scripts provided for them. During the study, participants acted appropriate to the scenario and spoke appropriate verbal scripts according to the scenarios. Hopefully participants of this study would be able to take part in theatre plays in their classes in the regular schools with their normally developing peers.

It can be recommended that other researchers conduct such small group arrangements using video modeling with other groups of developmental disabilities. Also it can be recommended to conduct studies with

<table>
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<th>Name</th>
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<th>Number of Training Trials</th>
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<th>Incorrect Res. During Training</th>
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different scenarios. Different studies can be designed by self-modeling and self-correcting of the participants. Other suggestions include peers as models, cartoons can also be used as models, comparing peer models with adult models, and comparing effectiveness of video modeling alone and/or video modeling with one of the teaching strategies in applied behavior analysis.

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Received: 19 January 2011  
Initial Acceptance: 21 March 2011  
Final Acceptance: 1 June 2011
Effects of Differential Reinforcement of Short Latencies on
Response Latency, Task Completion, and Accuracy of an
Adolescent with Autism

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Abstract: Children with Autism Spectrum Disorder (ASD) are faced with many challenging behaviors that could
impede their learning. One commonly reported problem behavior is noncompliance, which is often defined as a
delay in response (latency), decrease in rate of responding (fluency), or failure to complete a task. This failure
to comply in an appropriate amount of time has been noted as a primary factor for a child's exclusion from the
community, poor social interactions, as well as limited instructional opportunities. This study examined the
response latency, task completion, and accuracy in responding of an adolescent with ASD utilizing a changing
criterion design. Reinforcement was provided only when the student answered a question or complied with an
instruction accurately and within the preset criterion which was successively and gradually reduced. Results
indicated that response latency decreased from an average of 4.6 seconds down to an average of 2.4 seconds and
that there was a significant decrease in no responses. Findings show that differential reinforcement of short
latencies resulted in a decrease in response latency and an increase in compliance. Thus, the study yielded
positive results and paved the way for future research.

Autism Spectrum Disorder (ASD) is a develop-
mental disability that affects a large number
of children to varying degrees. According to
the Centers for Disease Control and Preven-
tion (CDC), ASD has risen to 1 in every 150
American children (CDC, 2007). This statistic
means that approximately 1.5 million Ameri-
cans have some form of ASD. These numbers
indicate that ASD is growing at an alarming
rate of 10% to 17% per year, meaning that 4
million Americans could be affected in the
next decade (ASA, 2008).

Children with ASD exhibit a number of
challenging behaviors that often interfere
with learning. Some of these behaviors may be
aberrant and/or maladaptive; one common
reported maladaptive behavior is noncompli-
ance. Noncompliance is defined as a delay in
response (latency), decrease in rate of re-
sponding (fluency), or failure to complete a
task. Numerous studies have evaluated proce-
dures to increase compliance or reduce la-
tency using both antecedent- and consequent-
based interventions, such as differential
reinforcement and guidance prompting; re-
results have been mixed as to their effectiveness.

The failure to respond to requests or in-
structions is found among many children
throughout childhood; however, with ASD
this is a classic symptom. This response can be
as simple as not following an instruction given
by a parent or teacher or ignoring instructions
or appearing to ignore them. In a school, the
failure to respond or comply with instruction
could cause disruption and impede learning
for the child as well as other classmates. Chil-
dren may fail to respond to instructional de-
mands in the classroom because the demand
functions as aversive stimuli (Carr & Durand,
1985). This failure to respond may present in
varied forms from simply not responding to a
request or as complex as engaging in aggres-
sive, self-injurious, or stereotypic behavior to
escape the demand (Carr & Durand, 1985). This aberrant behavior can cause children to
stand out among their peers and, as a result,
may negatively influence the interaction or
relationship that adults may have with these
children. Failure to respond has been noted as a primary factor for a child’s exclusion from the community, social interactions, and instructional opportunities (Davis, Brady, Williams, & Hamilton, 1992). If the adult working with the child with ASD is able to increase the child’s ability to respond, then often the next struggle for the adult is to decrease the latency between the question posed and the child’s response. Response latency is defined by Cooper, Heron, and Heward (2007) as the elapsed time from the onset of a stimulus (e.g., task direction, cue) to the initiation of a response.

**Reducing Response Latency**

Over the past 20 years, the empirical research on reducing response latency and increasing compliance points to several effective interventions, both antecedent- and consequent-based, for challenging behaviors in children. However, the participants in these studies were primarily children diagnosed with developmental disabilities such as Mental Retardation (MR), Down syndrome, specific learning disabilities, and behavior disorders. Only a small number of articles focused on compliance or latency involved with ASD (Bouxsein, Tiger, & Fisher, 2008; Davis et al., 1992; Matson & Nebel-Schwalm, 2007; Piazza, Moes, & Fisher, 1996; Tarbox, Wallace, Penrod, & Tarbox, 2007; Tiger, Bouxsein, & Fisher, 2007).

**Rationale for Current Study**

The current study was based on the success of the Tiger et al. (2007) study that used reinforcement of short response latencies (DR-short) with a young man with Asperger syndrome to decrease his latency to comply with instruction (question answering and math problems). In the Tiger et al. study, the researchers used a changing criterion design with an added contingency to teach him which problems could be answered quickly and those that required more time to get correct. The established reinforcement criterion was stated before each session and a token, exchangeable for a preferred activity, paired with praise was given anytime the latency to respond fell below the pre-established criterion. Corrective feedback was given for any response that exceeded this criterion. Throughout the study, the criterion for reinforcement decreased each session by 10% from the mean latency in the previous session.

Initially, the participant was asked questions pertaining to personal information (e.g., “What is your sister’s name?”) using the above-stated methods. As a result, the participant’s response latency decreased from an average of 19.9 seconds to below 5 seconds, increased to 23.9 seconds during DR-long and returned to 3 seconds upon replication of the DR-short condition. Next, the procedure was implemented with math problems with differing difficulty to assess for generalization. DR-short resulted in generalization; however, it also resulted in rapid responding “I don’t know” to math problems of medium difficulty. Thus, a DR-correct was implemented and correct responding increased. Response latencies for these problems also increased during this contingency but remained below initial baseline levels. Based on the success of this study, the current research sought to replicate with procedures with minor adjustments made to fit the participant.

The primary aim of the current study was to systematically replicate research by Tiger et al. (2007) using differential reinforcement of short latencies utilizing a changing criterion design to determine the effect on reducing response latency and compliance. The participant in Tiger et al.’s research was a higher functioning adolescent who was able to respond “I don’t know” to unknown questions; thus, the researchers allowed a substantial amount of time for the individual to respond. The current study was unable to completely replicate the methods outlined in the Tiger et al. due to participant characteristics not being a direct match to the participant in the initial study. For example, the current participant has a history of simply not responding regardless of task difficulty; so enabling him to have a substantial amount of time to respond was not a viable option. Furthermore, based on anecdotal information from the participant’s teacher, the student has the potential not to respond for up to thirty minutes if unprompted. The student also had a history of self-injurious behavior if, after questioning, prompting was not implemented immediately. Thus, to reduce the probability of extended wait times or self-injurious behavior,
the current study set time parameters and focused on task completion with accuracy within a maximum of 10 seconds to information presented. Another variation from Tiger et al. was the utilization of a forced-choice preference assessment to identify preferred stimuli as opposed to using the token system because the participant was unaccustomed to token exchange. A secondary aim of the study was to reduce response latency in an effort to increase learning opportunities. A third aim, concurrent with research, was to investigate the notion that increasing academic performance would reduce other aberrant and maladaptive behaviors.

In summary, the current study sought to show that a child with ASD could decrease response latency, increase fluency and accuracy, and reduce the less desirable and maladaptive behaviors by having the researcher differentially reinforcing short latencies. The research questions were: (a) What are the effects of differential reinforcement of short latencies on response latency?; (b) What are the effects of differential reinforcement of short latencies on task completion?; and (c) What are the effects of differential reinforcement of short latencies on accuracy of responses?

**Method**

**Participant**

The participant was a 17-year-old male diagnosed with profound autism and severely limited verbal skills. He attended an autism day treatment center full time (Monday–Friday, 8:00–4:30) that targeted to improve his academic learning, social skills, independent living skills, while decreasing his maladaptive behaviors such as self-injurious behavior, physical aggression, noncompliance, disruptive behavior, and perseveration. This participant had a history of not responding to questions/instructions asked/given, even those which were indicated as having been mastered.

**Setting**

For the first part of the study, the sessions were conducted in the participant’s regular classroom at the Autism day treatment center, which consisted of two other students ranging from 12 to 17 years of age. Sessions were conducted at an individual work table with the researcher sitting next to the student. All sessions were conducted on a one-to-one, individualized manner. The setting changed during the study to an in-home setting due to the school closing. The room still consisted of two other students and the sessions continued to be conducted at the student’s work table with the researcher sitting next to the participant. One noticeable change was that the table was placed in front of the window as opposed to facing the wall without a window as in the school setting.

**Materials**

Materials utilized were data sheets with 25 questions or instructions familiar to the participant that were also used to record data, items needed for the participant to perform instructions (shapes, colors, letters, words, etc.), pen, a timer with a visual indicating the seconds expiring, an additional timer for the researcher, and preferred stimuli as determined by a preference assessment.

**Dependent Variables and Measurement**

The study used three dependent variables: (a) response latency, (b) task completion, and (c) accuracy. Response latency was the number of seconds between the end of the instruction given until the participant’s correct or incorrect response to the question (i.e., the latency to task completion). Task completion was the number of correctly answered questions or instructions complied with or the lack of a response. Accuracy was defined as the correct response to the question or instruction as measured by frequency. In addition, the number of occurrences of concomitant behaviors during the sessions, specifically physical aggression, perseveration, disruptive behavior, and self-injurious, were measured.

**Procedure**

**Pre-baseline.** Prior to beginning the study, a preference assessment using forced-choice as outlined by Berg, Wacker, and Steege (1995) was conducted to determine preferred stimuli for reinforcement. From a list of 12 suggested...
items, sets of two reinforcer choices were presented to the student until all choices had been paired with one another. Reinforcer choices were presented so that the same item was not offered consecutively. The participant was given 5–10 seconds to choose. If a choice was not made, they were presented again later. The items were then rank ordered according to preference. Following the rank ordering, another forced-choice assessment was conducted only utilizing the six most preferred items to better identify the top choices for the participant. This assessment resulted in the identification of the top four preferred stimuli.

Baseline. Two sessions a day were conducted three times per week during baseline. Before a session began, the participant was allowed to choose between two stimuli to be used as reinforcement for that session only. Each stimulus for selection was shown to the participant to assist in the decision-making process. Before each question/instruction was given, the researcher explained to the participant that he needed to answer before the timer beeped in order to obtain the chosen item which was then re-shown to the participant. The decision to provide reinforcement during baseline was to maintain similarity to his current discrete trial training sessions and to establish a functional relationship between correctly responding within a time frame and receiving the desired item for reinforcement.

To begin each trial, the timer with the visual was then set for 10 seconds. The 10-second criterion was selected for baseline due to the participant’s history of self-injurious behavior and the propensity for him to wait for extended amounts of time. If the researcher had enabled the participant to wait until he was ready to respond, this delay could have potentially resulted in a loss of academic instruction time. It was deemed not ethical to deprive the student of learning opportunities if even for a limited amount of time during baseline. Therefore, the decision was made to use a time limit in baseline too.

After the timer was set, the researcher then asked/gave the participant a familiar question/instruction one at a time. A familiar question, for the purposes of this study, was defined as a question that was already part of his curriculum and that he had previously responded to correctly but not consistently (e.g., “What is your name?” or “Point to shirt.”). The visual timer was started immediately after the question was asked. The researcher waited a maximum of 10 seconds for his response. Reinforcement was provided for correct responses only given within the 10-second time frame. Incorrect or no responses resulted in corrective feedback (e.g., “Good try, but try to answer a bit faster next time, the correct answer was . . .”). The response within the scheduled time or after 10 seconds elapsed signified the end of the trial and resulted in the presentation of the next question/instruction. Baseline sessions ended after all 25 questions/instructions were presented.

Intervention. Treatment sessions were similar to baseline conditions; however, these sessions used differential reinforcement of short latencies by using praise and a preferred stimuli for reinforcement following any trial in which the response latency fell at or below the preset criterion with an accurate response. Thus, a response within 10 seconds was now no longer accepted. The initial criterion was set based on the mean response latency established in baseline. When the set criterion was reached for three consecutive sessions, the criterion for reinforcement was decreased by 1 second from the mean response latency in the previous session. The criterion was further decreased by 1 second again after reaching criterion for three consecutive sessions and so on until all responses were falling within the desired time frame of under 3 seconds. The sessions followed a similar pattern consisting of the following steps: (a) Prior to the beginning of the treatment sessions, the researcher had the participant choose between two of the preferred stimuli to be used as reinforcement for that session (and that choice was not offered again that day); (b) the researcher explained to the participant that he needed to answer each question before the timer beeped for him to get the preferred stimuli which was shown to the participant; (c) a timer with a visual was set for the established criterion each time a question/instruction was presented; and (d) another timer was set for 10 seconds as this was the maximum time allowed to respond before a “No Response” was recorded. Only accurate responses that fell within the
criterion resulted in praise and the preferred stimuli. A response that exceeded the set criterion on the visual timer or that was incorrect resulted in corrective feedback (e.g., “Good, but try to go faster next time or the correct answer was . . .”). Concomitant behaviors were also tracked during each session. Treatment sessions ended after all 25 questions/instructions were presented.

Research Design

The research design used in this study was changing criterion. Cooper et al. (2007) defined this as an experimental design in which the initial baseline is followed by the treatment phase consisting of successive and gradually changing the criteria for reinforcement. Experimental control is shown by the extent to which the level of responding is changing to meet each new criterion. The criterion for response latency was established from the mean response latency during baseline and was subsequently decreased in the following treatment sessions.

Observation and Recording

Data was collected through direct observation beginning with the preference assessment as described by Berg et al. (1995). Latency in seconds was obtained for each question asked or instruction given. A timer with a visual depicting seconds expiring was used to indicate the criterion (10 seconds during baseline and the average latency from the previous session during treatment) to receive reinforcement and to measure latency. An additional timer was used during the treatment phase and set for 10 seconds as the maximum time allowed to score a “no response.” The response was recorded as a “C” for correct if the participant answered the question accurately (as outlined on the data sheet) and within the preset criterion of time allowed; and “I” for incorrect if he answered incorrectly and within the preset criterion. “N” for no response was recorded if the participant did not answer after the 10 seconds had expired. In addition, concomitant behaviors were tallied as they occurred during each session. A session ended after all 25 questions/instructions were presented.

Reliability

Procedural integrity was collected by a trained observer during 30% of the sessions. Observations were compared on a trial-by-trial basis. An agreement was scored if there was an exact match as outlined on the treatment integrity checklist. The checklist was based on the required steps needed to accurately conduct each trial and was designed as a script that involved indicating, by circling yes or no, if the step had or had not been completed in the appropriate order. Procedural integrity was scored as 100%.

Interobserver agreement (IOA) was measured by a second trained observer who scored response latency and task completion as either correct, incorrect, or no response during 30% of the sessions. IOA for latency was calculated using the formula to compute mean latency-per-response IOA. First the latency per occurrence IOA was determined by dividing the shorter latency by the longer latency for each trial within each session. Then the individual IOA percentages for each occurrence were added together. Next the sum of the individual IOAs per occurrence was divided by the total number of responses for that session and multiplied by 100 to obtain the IOA percentage for that session (Cooper et al., 2007). IOA for response latency was 98% with a range of 92 to 100%. For task completion, observers were compared on a trial-by-trial basis and were scored as an agreement only if there was an exact match, meaning that both observers circled the same word (correct, incorrect, or no response). IOA was calculated by counting the number of agreements, dividing by the total number of agreements and disagreements, and then multiplying by 100. IOA for correct, incorrect, and no response for task completion was 99%, 97%, and 98% respectively.

Data Analysis

The mean response latency was calculated for all sessions and presented in the form of a line graph. Visual analysis of the level, trend, and variability during baseline and treatment was utilized to determine whether the use of differential reinforcement of short latencies was successful in reducing response latency. In
addition, a bar graph was used to depict the effect of this treatment on the frequency of task completion, specifically if the task was completed (correctly or incorrectly), or if there was no response. A fourth graph was used to determine whether there was a correlation between response latencies of correct and incorrect responses. The last graph shows the frequency of concomitant behaviors during the session.

**Results**

**Preference Assessment**

Results were gathered from the initial forced-choice preference assessment. After all items had been paired with each other, the items were rank ordered according to preference. The top six items most preferred were chips, Skittles, cookies, Coke, taking a 3-minute break, and a visit to the sensory room. After the second preference assessment was re-administered, the top four most preferred stimuli used for potential reinforcement were small amounts of chips, Skittles, cookies, and Coke.

**Response Latency**

Results of the mean response latency are depicted in Figure 1. During baseline, the mean response latency was 4.6 seconds. The data was at a mid-level, fairly stable with a range from 5.8 seconds to 3.4 seconds. For intervention, the initial criterion was set at 4 seconds with mean response latency during this phase at 3.4 seconds. The data was at a low to mid-level, with the start of a descending trend and a range of 5.0 seconds to 1.6 seconds. For the second phase of the intervention, which was set at 3 seconds, the mean response latency was 2.9 seconds, at a low to mid-level, variable, and had a range of 4.3 seconds to 2.1 seconds. During the 2-second criterion, the mean response latency was 2.4 seconds. The data was at a low level, stable, and had a range of 3.4 seconds to 1.6 seconds. Although two data points fell below the criterion of 2 seconds, time expired before the participant reached three consecutive sessions of meeting this criterion. Overall, response latency decreased from an average of 4.6 seconds during baseline to an overall average response latency of 2.9 seconds during intervention.

**Task Completion**

**Correct responses.** Results of task completion are depicted in Figure 2. During baseline, the correct responses were at a mid-level, on a descending trend, and had a range of 8 to 14 correct tasks completed. During the 4-second criterion, the responses were at a mid-level, stable, and ranged from 10 to 13 tasks. During the 3-second criterion, the data was at a mid-level, variable, and ranged from 9 to 15 tasks. Lastly, during the 2-second criterion the data...
for correct tasks completed were at mid-level, stable, and ranged from 11 to 15 tasks. The average frequency of responding is shown in Figure 3. Overall, for correct tasks completed, the average during baseline was 11.3 tasks and in intervention, 11.2, 12.8, and 13.0 tasks, respectively.

No responses. During baseline, the no responses were at a low to mid-level, stable, and ranged from 4 to 9. During the 4-second criterion, the data was at a low to mid-level, varying from a descending to ascending trend, and ranged from 0 to 8 no responses. During the 3-second criterion, the data was at a lower
level, variable, and ranged from 1 to 8. During the last criterion of 2 seconds, no responses were at a low level, stable, and ranged from 0 to 3 (see Figure 2). Overall, the average of no responses during baseline was 6.5 and in intervention was 4.8, 3.6, and 1.9 no responses, respectively. To summarize, based on dichotomies of all responses and no responses, the average frequency of all responding is represented in Figure 3.

Incorrect responses. Results of accuracy are also indicated in Figure 2. During baseline, incorrect responses were at low to mid-level, on an increasing trend, and ranged from 4 to 9 responses. During the first phase of intervention at the 4-second criterion, the data was at a mid-level, with a fairly ascending trend, and ranged from 7 to 12 incorrect responses. During the 3-second criterion, the data was mid-level, stable, and ranged from 7 to 11. During the last phase, incorrect responses were at a mid-level, stable, and ranged from 9 to 10. Overall, the average of incorrect responses went from 7.2 in baseline to 9.0, 8.8, and 9.8 incorrect responses, respectively. While the average number of correct responses increased from 11.3 in baseline to 11.2, 12.8, and 13.0 during the intervention phases, the incorrect responses also increased from an average of 7.2 in baseline to 9.0, 8.8, and 9.8 during intervention.

Average Latencies of Correct and Incorrect Responses

Results of the average latencies of correct and incorrect responses are depicted in Figure 4. The average response latency to respond correctly during baseline was 2.9 seconds and decreased to an overall average latency of 1.7 seconds during the intervention phases. The average response latency to respond incorrectly during baseline was 2.6 seconds and decreased to an overall average of 2.0 seconds during intervention. Thus, as the average response latency to respond correctly decreased, so did the average response latency for incorrect responses.

Concomitant Behaviors

The frequency of concomitant behaviors is depicted in Figure 5. During baseline, with the exception of one outlier when the first secondary observer was present, the data was at a very low level, stable, and ranging from 0 to 14 occurrences of concomitant behaviors. During intervention, the behaviors remained
at a low level, steady, ranging from 0 to 26 occurrences of behavior with the exception of perseverative behavior. Perseverative behavior showed an increase during the intervention phases on the second day after the setting change and remained at a higher level and variable. With the exception of perseveration, the overall average of all the concomitant behaviors decreased from baseline to intervention, and remained at a low level and fairly stable.

Discussion

Research Question 1

Differential reinforcement of short latencies was effective for decreasing response latency. These results were obtained with a participant who regularly would not respond to any known questions or instructions or would only answer after a long period of time with additional prompting. Even though the decrease in response latency may not appear significant, the participant was only given a maximum of 10 seconds to respond as suggested by Wilder, Atwell, and Wine (2006) and Davis et al. (1992), thus making his mean response latency during baseline no higher than 10 seconds. This decision to set the 10-second maximum was also based on the participant’s history of not responding for extended amounts of time and then engaging in self-injurious behavior; thus, the researchers wanted to maximize gains and opportunities to learn. Reducing the latency to respond down to around 2 seconds would have a socially significant impact. When asked a question such as “What is your name?,” it would be important not to delay but to respond immediately. In addition, the cumulative effect of even such a small decrease in latency over the years adds up to a substantial amount of instructional opportunity. During both baseline and intervention, a visual timer with a sound indicating the expiration of time, the discriminative stimuli “You must answer before the timer goes off to get reinforcement” which was shown to the participant, and the choice of a preferred stimuli for reinforcement as identified by a preference assessment were all available. The only different contingency placed on the student during the intervention phases was meeting the specific criterion set forth during each phase in order to obtain reinforcement. The student had to meet the contingency three consecutive times in order to move to the next phase; thus, his behavior.

Figure 5. Results of tracking concomitant behaviors of physical aggression, self-injurious, perseveration, and disruptive behavior.
was gradually shaped to responding at a faster rate. The sound of the timer was familiar to the participant as a signal that a break was over; however, the use of a visual timer had not been previously used. In the initial phases in some sessions he would watch the timer and wait for it to expire before responding, which would have increased his latency. In accordance with Tiger et al. (2007) and Fjellstedt and Sulzer-Azaroff (1973), differential reinforcement of short latencies was successful in reducing response latency and decreasing maladaptive behaviors.

**Research Question 2**

Differential reinforcement of short latencies was effective in increasing the number of correct responses while decreasing the number of no responses. This change was socially significant. The participant increased his opportunity to respond. Failure to respond has been identified as a primary factor for a child’s exclusion from community, social interactions and instructional opportunities. By increasing his rate of responding, he has increased his opportunity to participate in normal activities (Davis et al., 1992). The edibles seemed to be very reinforcing in increasing his actual responding since the sessions were usually conducted before snack and before lunch. Thus completing tasks was gradually shaped over time. The response latency was related to his responding in that as his no responses decreased, so did his response latency. A pattern evolved in that he typically responded correctly to the same questions, suggesting fluency, and that he had actually mastered those concepts even though all the 25 questions had been identified as “known” before the study began. However, sometimes he did not respond (no response) to those same questions, suggesting that his full attention may not have been obtained or because of his history of relying on prompts of which none were given. However, the effectiveness of reducing latency and increasing task completion is relevant with accuracy.

**Research Question 3**

Although the number of correct responses increased, the number of incorrect responses also increased, suggesting that differential reinforcement was not entirely effective in increasing accuracy within the time frame with which this study was conducted. This result suggested that undesirable behavior was also shaped along with the increased rate of responding or decreased response latency. These results are consistent with Tiger et al. (2007) in which the contingency resulted in generalized rapid responding and with Fjellstedt and Sulzer-Azaroff (1973) when responding incorrectly with a different behavior was more reinforcing than the token received for reinforcement. While the average response latency for answering correctly decreased, so did the average response latency of responding incorrectly. This may have improved with more time as the participant began to differentiate the contingencies of giving the correct response as well as within the criterion allowed. Toward the end of the study, the participant showed signs of incorrectly responding to similar questions such as responding to touching the arm with touching the leg or answering “green” to “What shape?” which happened to be a green triangle. This suggested that he had not actually mastered this skill or reached fluency or that he was simply rapidly responding. In addition, within the last few sessions, some of what would have been no responses became correct or incorrect responses in that he did not answer quickly but did actually answer before reaching the maximum 10 seconds. Also, he began to correct his incorrect responses immediately, which showed promise.

**Tracking of Concomitant Behaviors**

Although the average number of behaviors did decrease from baseline to intervention, the intervention did not appear to have a direct effect on concomitant behaviors. Actually it appeared reversed. Typically the sessions with increased concomitant behaviors, such as self-injurious or physical aggression, would have a negative impact on latency, task completion, or accuracy. These two behaviors had been previously assessed as having multiple functions, thus possibly explaining why decreasing response latency did not appear to have a direct effect on these behaviors. The change in setting only affected one concomi-
tant behavior and that was the perseverative behavior. The participant was placed in front of the window and focused on the strings or cords of the blinds. This placement increased the time needed to obtain the participant’s attention to begin the session, but did not affect the other variables. Carr and Durand (1985) suggest that failure to respond could result in increased aberrant behaviors. The results from this study do not indicate that suggestion, but more research is needed to determine whether those findings apply.

Limitations

Results of the current study had some limitations. First, this intervention was evaluated with only one participant within one population and with a limited number of familiar tasks. Different results may be obtained if utilizing unfamiliar tasks. No generalization to novel tasks, other people, or long term follow-up was investigated in this study since the data was collected in a relatively short period of time. With regard to interpretation, response latency times may be deceiving due to the variability in responding. In addition, with this intervention strategy, it was unclear whether the participant’s increase in incorrect responses was due to a generalization of rapid responding to seek reinforcement or an inaccurate initial assessment of known concepts. A change in setting was required due to a change in locations of the treatment center. Finally, because of the nature of the study and inadequate space, bringing observers into the research setting could have skewed the results. Videotaping could have reduced this possible effect.

Future Research

This study should be replicated with more participants and among other populations. In addition, this research base could be extended to show the long-term effects of this intervention strategy especially with the fading out of edibles as reinforcement. Differential reinforcement of short latencies could be conducted without the use of a visual timer to alleviate any distractions utilizing only sound to indicate that time has expired. Generalization to a naturalistic setting and to novel questions or instructions could be examined as well as in a typical classroom, for example, to increase response rate for working math problems. Future studies could separate the components to further investigate the effects of this intervention on specific concomitant behaviors. Future research could focus solely on differential reinforcement of correct responses to control for the rapid responding of incorrect responses as well as the variability of correct responses. For example, future researchers should examine response prompting strategies, such as time delay, for the purpose of maximizing correct responses and minimizing errors (Walker, 2008). Finally, future research should compare the effectiveness of differential reinforcement of short latencies with other response-shaping procedures, e.g., behavior momentum (Davis et al., 1992; Wehby & Hollahan, 2000).

Applied Implications

Several applied implications may be gained from the current research study. First, the research highlights that differentially reinforcing short latencies decreases the failure to respond. This finding is critical since the failure to respond/comply and responding slowly can hinder other opportunities to interact in the community and to obtain necessary social skills and ultimately interfere with learning in a classroom setting, especially for individuals with disabilities. Thus, this study has implications of educational, community, and personal significance and supports literature that differential reinforcement of short latencies has promise for reducing response latency, thus shaping behavior to appropriate levels of compliance. Practitioners and teachers could utilize this methodology with struggling individuals or with the entire classroom by using group orientated contingencies. The decrease in noncompliant behavior is paramount as noncompliance substantially interferes with instruction and decreases opportunities to learn for the individual and the classroom as a whole. Therefore, once noncompliance is replaced with appropriate responding, more opportunities for learning result. In addition, increasing compliance and decreasing aberrant behaviors may change how the child is perceived and accepted by others. In other
words, opportunities to acquire both academic skills and social skills will increase. This increase will alter the individual’s current repertoire, maximize opportunities for short- and long-term reinforcers, and directly contribute to the individual’s overall level of habilitation.

References


Experiences of Preschoolers with Severe Disabilities in an Inclusive Early Education Setting: A Qualitative Study

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Abstract: The purpose of this qualitative study was to explore the social experiences of preschoolers with severe disabilities in an inclusive early education setting. Teachers, paraprofessionals, and peers were interviewed, and the children and adults were observed in daily routines of the preschool. Findings showed that social experiences with adults were primarily assistance/help and direction/teaching and were influenced by the characteristics of the children, learning objectives, and the activity in which the child participated. The peers expressed pleasure in interacting with and sensitivity toward the children with disabilities. Results also showed that three approaches were used to facilitate peer-peer interactions: the full participation of children in activities, modeling appropriate behaviors, and enlisting the help of the children without disabilities. Implications for future research and inclusive education are discussed.

The education of individuals with severe disabilities has gradually changed from institution-based services to models of inclusion in general education settings. The federal mandates of the Individuals with Disabilities Education Act (IDEA) and No Child Left Behind have given school-age children with severe disabilities increasing opportunities to be educated with their nondisabled peers and to have access to the general education curriculum (Turnbull, Turnbull, & Wehmeyer, 2006). The same progress for preschoolers (i.e., 3- to 5-year olds) with disabilities has occurred, although inclusion opportunities often are provided through community child care programs, rather than in public schools, for this age group.

In a joint position statement, the Division of Early Childhood (DEC) of the Council for Exceptional Children (CEC) and the National Association for the Education of Young Children (NAEYC) supports “the right of every infant and young child and his or her family, regardless of ability, to participate in a broad range of activities and contexts as full members of families, communities, and society. The desired results of inclusive experience for children with and without disabilities and their families include a sense of belonging and membership, positive social relationships and friendships, and development and learning to reach their full potential. The defining features of inclusion that can be used to identify high quality early childhood programs and services are access, participation, and supports” (DEC/NAEYC, 2009, p.2).

In addition to these two professional organizations advocating for inclusion in the early years, research has documented increases in language, social, cognitive, and literacy development for all children in inclusive settings (e.g., Buysse, Goldman, & Skinner, 2002; Holahan & Costenbader, 2000; Kliewer, Fitzgerald, Meyer-Mork, & Hartman, 2004; Rafferty, Piscitelli, & Boettcher, 2003). Young children with disabilities benefit as much from inclusive programs as they do from segregated special education programs, and all children benefit from inclusion, particularly with respect to their social development (reviewed in Odom, Schwartz, and ECRII Investigators, 2002).

Only a few studies, however, have included preschool children with severe disabilities (Odom et al., 2002). Hanline (1993) observed spontaneous peer interactions in a preschool that included three children with profound disabilities. Results of the study showed that...
the children with disabilities had many opportunities to participate in peer interactions and engaged in interactions comparable in length to those of their peers without disabilities. Hundert, Mahoney, Mundy, and Vernon (1998), comparing the progress of children with disabilities enrolled in segregated and inclusive settings over a one-year period, found that children with severe disabilities in inclusive classrooms showed greater developmental gains than children with more mild disabilities in inclusive settings. Holahan and Costenbacher (2000) found the progress of children with severe disabilities to be similar for children in inclusive versus segregated settings. In a qualitative study of preschoolers with severe disabilities in inclusive settings, Kliewer et al. (2004) found teachers were able to effectively foster the citizenship of all children in the classrooms under study.

Because of the limited number of studies of preschool children in inclusive early childhood settings, little is known about the learning opportunities available to preschoolers with severe disabilities in inclusive early childhood settings. As the benefits of inclusion occur primarily if opportunities for social interactions are available, opportunities for socialization and communication available to children with severe disabilities in inclusion preschools is of critical importance. Thus, the purpose of this study was to explore the nature of social interactions of preschoolers with severe disabilities educated in an inclusive early education program. This qualitative study focused on 1) the nature of adult-child and peer-peer social experiences (i.e., what type of interactions occurred and with whom did the interactions occur), 2) strategies used by adults to promote social and communication skills, and 3) perceptions of peers to promote understanding of peer-peer interactions. Data in this qualitative study were gathered primarily through interviews and observations.

Method

Participants

The participants in this qualitative study were three preschool students with severe disabilities, seven preschoolers without disabilities, and eight adults (teachers and/or paraprofessionals) who worked with the children in the inclusive preschool setting.

Children with disabilities. Nick, Laura, and John represent a purposeful sample; they were chosen deliberately because they were deemed the most likely candidates to offer valuable information that could not be gathered in as much detail from other possible participants. The children were selected because they were between the ages of 3 and 5 years, attended an inclusive setting with same age peers, and experienced severe disabilities. The TASH explanation of “severe disabilities,” as presented in the TASH Resolution on the People for Whom TASH Advocates (TASH, 2000), is used in this study. That is, Nick, Laura, and John required support for life activities such as mobility, communication, self-care, and learning as necessary for community living, employment, and self-sufficiency.

All three children received special education and related services during each 6 hour school day. That is, a special education teacher worked with the children directly and consulted with other adults in the program who provided instruction during the school day. In addition, therapists provided services within the 6 hour school day. All three children remained at the child care center for after-school care. Information about each child was gathered from a demographic information form and the children’s special education teacher.

Nick (5 years old) began attending the preschool at 2 years because of language and cognitive delays. He enjoys looking at books, engaging in solitary sand and water play, and playing alone with trucks. He lives with his parents and a young brother. Nick received special education, speech/language therapy, and occupational therapy (OT). Nick actively moves through his environment, but seldom initiates social interactions or responds to peers, requires adult attention to engage in play activities for longer than several seconds, and needs guidance when completing routines such as hand washing or moving to a different area of the preschool. When he made the transition to kindergarten, Nick continued to receive special education services, but under the label of autism. Nick’s preschool education goals focused on 1) in-
creasing functional use of language during play and meals, 2) obtaining other children’s attention to enter and maintain play, and 3) interacting with play materials in a functional and meaningful way.

Four-year-old Laura lives at home with her mother, father, and baby sister. She enjoys having books read to her, cause-effect toys, cooking activities with peers, and music. Laura experienced meningitis at the age of 3 months resulting in cortical blindness, cerebral palsy, seizure disorder, and severe developmental delay. She began attending the preschool at 18 months of age, receiving special education, vision, physical therapy (PT), occupational therapy (OT), assistive technology, and speech/language services. Laura is either pushed in a wheelchair or carried by an adult to move from place to place in the preschool. Laura uses vocalizations to gain attention, listens attentively to sounds around her, and responds to others with smiles, vocalizations, and movements. She requires assistance and support in all routines and activities of the preschool. Instructional goals for Laura included learning to make choices and learning to use a head touch pad to indicate yes-no. Laura was also learning to increase social responses and initiations.

John, who is 4 years old, began attending the preschool when he was 2 years old. He experiences severe developmental delay resulting from Potocki-Shaffer 11p deletion syndrome. John receives special education, OT, PT, and speech/language services. He enjoys gross motor activities, music and movement, and water play. He lives with his older brother and parents. John walks independently in all areas of the preschool and attempts to communicate with adults and peers using vocalizations, but requires adult support to engage in turn-taking with peers and to follow directions. John also requires assistance to complete daily routines such as making a transition to a new activity or passing food to peers during family-style meals. Instructional goals centered on increasing the use of verbal requests, improving fine motor skills in activities of daily living and self-care, and engaging in turn-taking with peers. An additional goal for John was to engage in associative play.

Children without disabilities. Seven 4- to 5-year-old preschoolers without disabilities were interviewed. Four were girls; three were boys. The children were selected by their teachers because of their expressive language skills and experiences with the children with disabilities. All of the participants without disabilities had attended preschool with Nick, Laura, and John for at least two years.

Adults. Eight adults, four certified teachers and four paraprofessionals, participated in this study. All of the eight participating adults represented a broad range of expertise with an average of 10 years of experience for the paraprofessionals and 14 years for the certified teachers. Of the four certified teachers, two had Master’s level degrees and two had earned PhDs. All of them held a state-recognized teacher certification in either elementary, special education, or early childhood education. Three of the teachers had more than one certification; all four of them were female. Background information on the paraprofessionals was somewhat different. Three of the four paraprofessionals were female and one was male. The highest degree earned by all of the paraprofessionals was high school diploma. All four paraprofessionals reported they had received training to work with children with disabilities through the preschool where they currently work.

Setting

This study took place in an inclusive early education program that has included children with disabilities since its inception over 40 years ago. The program has been continuously nationally accredited since 1989. The preschool provides services to 120 children ages 8 weeks old through kindergarten. Programs for infants and toddlers are located in a building separate from the preschool and kindergarten programs. Sixty children attend the “Big School” for ages 3 through kindergarten with an adult-child ratio of 1 to 10. Ten of the children in the Big School receive special education services from the local school system. The school district provides a special education teacher, a paraprofessional, related services, transportation, instructional materials, adaptive equipment, and inservice personnel development.

The philosophy of the preschool, based on the developmental theories of Erik Erikson,
Anna Freud, Jean Piaget, and Lev Vygotsky, assumes all children learn best through meaningful play interactions with the objects and people in their environments. The play is child-initiated, child-directed and teacher-scaffolded. Through carefully organized pre-arranged environments and planned play experiences by teachers with knowledge of child development, children have opportunities to manipulate, explore, experiment, problem-solve, make choices, and develop new skills. The program provides a variety of play opportunities through which each child is guided towards his/her optimal potential (Phelps, 2005).

The daily schedule of the preschool begins with supervised indoor and outdoor play from the time the child arrives in the morning until a family-style breakfast is served at 9:00 AM. Breakfast is followed by a 30 minute outside play period. Children then participate in center activities for 90 minutes. Children are divided into a consistent play group composed of 10–12 children and are supervised by the adult assigned to the center in which the children play. Centers include block play, microdramatic play, macrodramatic play, readiness, and construction play. Children experience each center one day per week in the morning. The remainder of the day includes additional supervised outdoor play that includes opportunities for sociodramatic and construction play, lunch, snack, nap, and an afternoon of child-selected centers similar to those available in the morning. In addition, small and large group reading, cooking, and music are provided at various times during the day.

Services for children with disabilities are provided within the context of the activities of the daily activities of the preschool. IEPs are developed by family members, school system special education and related service personnel, and administrators and teachers at the preschool. IEP goals and objectives for each child are discussed with the adults in the preschool who will be responsible for their implementation. The special education teacher works with other teachers to embed instruction within the context of play activities and routines. Therapists and other related services professionals (e.g., vision teacher) provide service to the children within the on-going activities or create small groups of children with and without disabilities in which to provide services. The related service personnel also consult with the preschool teachers to ensure continuous implementation of interventions (e.g., correct positioning and handling).

Data Collection Methods

For this qualitative study, interviews and observations were used as the primary methods to gather information on the nature of the social interactions of children with severe disabilities within the context of an inclusive early childhood program. Credibility of the data, as discussed by Brantlinger, Jimenez, Klingner, Pugach, and Richardson (2005), was established as follows:

- **Data triangulation**—use of varied data sources. Data were collected from two sources: adults serving in instructional roles at the preschool and the children attending the preschool.
- **Investigator triangulation/collaborative work**—use of several researchers: could involve interrater reliability checks on the coding of data. The two authors of this paper served as coders of data, reaching agreement on coding outcomes.
- **Methodological triangulation**. Two methods to gather data were used: interviews and direct observation.
- **Disconfirming evidence**—the researcher looks for evidence inconsistent with themes. No outliers were found.
- **Researcher reflexivity**—researchers attempt to understand and self-disclose their assumptions, beliefs, values, and biases. The bias of the authors toward inclusive practices influenced the focus of the study, as well as the selection of the research site.
- **Audit trail**. Records of when observations occurred and interviews conducted were kept by both observers; field notes from observations, videotapes of interviews with children, and audio tapes of interviews with adults are maintained.

Interviews

**Interviews with adults.** Adult participants (certified teachers and paraprofessionals) were asked to share information on their per-
ceptions about the opportunities for communication preschoolers with disabilities have in this inclusive setting, approaches and strategies they used to facilitate social interactions, and their insights about this educational setting. The second author conducted the interviews with the adults at times that were most convenient for them and at a time that did not disturb the daily routine of the inclusive preschool. Interviews were audiotaped.

Interviews with peers. Peers were interviewed to learn about their perceptions of their social interactions with Nick, Laura, and John. Peers were divided into two groups. The first group consisted of two boys and two girls; the second group, two girls and one boy. The first author acted as interviewer, while the second author video-recorded. The children sat on the floor in a semicircle in front of the interviewer. The videotaper sat outside the semicircle of children. A teacher from the preschool observed the interview, but did not participate.

The interviews began with the researchers and children introducing themselves and the interviewer explaining that the children were going to talk about their friends. (At the preschool where the research took place, the word “friend” was used to refer to any child attending the preschool.) The children were asked, “Who do you like to play with?” followed by, “Why do you like to play with _____?” The children were then asked, “When you play with your friends, what do you like to do?” Because none of the children identified Nick, Laura, or John as children with whom they played, the interviewer asked specifically about these children. That is, the interviewer said, “Let’s talk about another friend at school. When you play with Laura, what do you like to do?” This question was repeated for Nick and John. Each interview lasted approximately 20 minutes.

Observations. Observations were conducted by the two authors as Nick, Laura, and John participated in their daily routine to answer the research questions related to the nature of social interactions and the strategies used to facilitate peer-peer interaction. Interactions between Nick, Laura, and John and their peers and adults were observed. Interaction was defined as any social contact or behavior between two people: child to child, child to adult, or adult to child.

Observations took place during the morning activities of center activities, outdoor play, meals and snacks, and transitions. In this way, the same activities were observed by each researcher. Each researcher observed at different days, but observed approximately 12 hours each. Researchers sat or stood on the outskirts of the activities, taking notes by hand and not initiating interaction with adults or children. If approached by a child, the researchers responded, but then directed the child back to his/her activities. Teachers were told in advance that the researchers were observing and assisted in redirecting the children. Being observed by researchers was a frequent activity in the preschool, so teachers were familiar with the process. Field notes were hand-written during observations.

Data Analysis
Field notes and interviews were transcribed by a research assistant within a few days of data collection. Data were coded within a week after transcription.

Analysis of interviews with adults. Coding of adult interview data began with the second author examining each phrase, sentence, or paragraph to determine the meaning of the unit (Merriam, 1998). Meaning units were then placed into categories based on the research questions: 1) the nature of the interactions between Nick, Laura, and John and their peers and 2) strategies used to promote social interactions with peers. The first researcher verified the accuracy of each meaning unit into one of the categories. The second author then analyzed each meaning unit within each category for themes.

Analysis of interviews with peers. The first author examined the meaning of each phrase, sentence, or paragraph to determine the meaning of the units. Units were placed into one of two categories based on the interview questions: 1) the activities in which the peers engaged with their friends without disabilities and 2) the activities in which the peers engaged with Nick, Laura, and John. The second author verified the accuracy of each meaning
unity into one of the categories and the first author then analyzed each category for themes.

Analysis of field notes from observations. Both researchers first coded the same three observation transcriptions, coding each social interaction of Nick, Laura, and John with peers and adults according to a first draft of the definitions provided in Table 1. Categories of social interaction behaviors are based on previous work by Correa-Torres (2008a; 2008b) and Evans, Salisbury, Palombaro, Berrymam, and Hollowood (1992). Results of the independent coding of each researcher were then compared. Refinement and expansion of three of the 11 categories of social interaction behavior (i.e., conversation, affiliative comments, and assistance/help) resulted from this initial coding. Both researchers then coded the transcribed observations and again compared results, this time with no disagreements. Categories of social interactions were analyzed for each individual child and compared across children.

<table>
<thead>
<tr>
<th>Behavior</th>
<th>Definition of Behavior</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assistance/help</td>
<td>Any help provided to another student (e.g., help getting up from the floor) or interaction with the student where another person facilitates communication or information from the environment; any assistance provided to the student to complete a task; physical assistance and other types of assistance such as getting a book off the shelf; not assistance related to one-on-one instruction</td>
</tr>
<tr>
<td>Discipline</td>
<td>Any statement that conveys a reprimand or correction, either by tone of voice or vocabulary; any physical gesture that is intended to identify a child that his or her behavior is not acceptable; reminders to follow rules</td>
</tr>
<tr>
<td>Play</td>
<td>Any activity involving materials wherein the primary purpose is not instructional, but focused on the enjoyment of the participant</td>
</tr>
<tr>
<td>Conflict resolution</td>
<td>Given the occurrence of a dispute between children (argument over toys, whose turn), student makes an attempt to resolve the situation by presenting solutions; physical actions that address ending the conflict</td>
</tr>
<tr>
<td>Physical aggression</td>
<td>Any activity such as hitting, punching, kicking, biting, butting with the head, non-playful push/pull/grab, destruction of another’s property, or using materials to harm others</td>
</tr>
<tr>
<td>Verbal aggression</td>
<td>Screaming, shouting, name calling, or otherwise derogatory comment directed toward another</td>
</tr>
<tr>
<td>Affiliative comments</td>
<td>Verbal praise (What a nice job!), questions, or comments intended to praise or encourage (I love that dress; I know you can do it)</td>
</tr>
<tr>
<td>Attention-seeking</td>
<td>Behaviors intended to gain another’s attention; may include reaching toward someone, vocalizing toward a specific individual, presenting objects to someone, physically changing body position to be in closer proximity to someone</td>
</tr>
<tr>
<td>Directions/teaching</td>
<td>Behavior that involves giving directions or instruction to a student; prompts, including hand-over-hand; one-on-one instruction with an adult</td>
</tr>
<tr>
<td>Asks for assistance</td>
<td>Verbal or gestural behaviors that involve asking for assistance; code as “conversation” if interaction continues and involves one or more contribution from each participant</td>
</tr>
<tr>
<td>Asks for information</td>
<td>Verbal or gestural behaviors that involve asking for information; code as “conversation” if interaction continues and involves one or more contribution from each participant</td>
</tr>
<tr>
<td>Conversation</td>
<td>Verbal or gestural behaviors that involve a chain/turn-taking in exchange of information; the interaction has a “fun” or casual conversation quality; involves one or more contribution from each participant</td>
</tr>
</tbody>
</table>
Results

Nature of Interactions between the Children with Severe Disabilities and Adults

The majority of Nick, Laura, and John’s social interactions were with adults (teachers and paraprofessionals), as can be seen by the data provided in Table 2. For all three children, the nature of the interactions was mostly that of assistance/help and direction/teaching by the adult. Assistance/help was both verbal and nonverbal in a variety of activities throughout the preschool. Some of the activities in which adults were observed assisting and teaching were: play-based activities, transitions, daily routines, and structured small and large group activities.

Influence of activity type on adult-child interactions. The type of activity influenced the focus of the instruction and assistance. That is, when in play-based activities, the instruction usually emphasized promoting interactions with peers and using play materials appropriately. During routines and transitions, the instruction focused on assistance to complete the routine or transition. More physical assistance (such as hand over hand assistance) or guiding the child in a specific direction with physical contact (for Nick and John) were used during routines and transitions. Laura, because of the nature of her disability, often received assistance by being carried, repositioned, and/or seated in the lap of an adult for support during an activity.

Influence of learning objectives on adult-child interactions. The interactions Laura, Nick, and John had with adults reflected the child’s learning objectives. That is, one of Laura’s goals was to increase social initiations and responses. After assistance/help and directions/teaching, the next social interactions categories in which Laura and adults participated to the greatest degree was affiliative comments and attention seeking. Affiliative comments were directed at Laura by the teacher and attention seeking was directed at the adult by Laura. Both of these types of social interactions would serve to provide opportunities for Laura to increase her social responsiveness.

Two of John’s goals included engaging in more socially interactive play with peers (i.e., engaging in turn-taking with peers and moving from parallel to associative play). The higher rates of engaging in the social interaction category of play with adults in which peers were included served to increase John’s social interactions with peers. In addition, much of the adult directions/teaching with John was focused on teaching John to meet his educational goals.

<table>
<thead>
<tr>
<th>Behavior</th>
<th>Nick Peers</th>
<th>Nick Adults</th>
<th>Laura Peers</th>
<th>Laura Adults</th>
<th>John Peers</th>
<th>John Adults</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assistance/help</td>
<td>4</td>
<td>27</td>
<td>14</td>
<td>52</td>
<td>44</td>
<td>56</td>
</tr>
<tr>
<td>Discipline</td>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Play</td>
<td>20</td>
<td>22</td>
<td>14</td>
<td>3</td>
<td>31</td>
<td>24</td>
</tr>
<tr>
<td>Conflict resolution</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Physical aggression</td>
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<tr>
<td>Verbal aggression</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Affiliative comments</td>
<td>20</td>
<td></td>
<td>24</td>
<td></td>
<td>32</td>
<td></td>
</tr>
<tr>
<td>Attention-seeking</td>
<td>3</td>
<td>25</td>
<td>32</td>
<td>15</td>
<td>26</td>
<td></td>
</tr>
<tr>
<td>Directions/teaching</td>
<td>35</td>
<td>12</td>
<td>49</td>
<td></td>
<td>52</td>
<td></td>
</tr>
<tr>
<td>Asks for assistance</td>
<td>2</td>
<td>5</td>
<td>12</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asks for information</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conversation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>24</td>
<td>119</td>
<td>85</td>
<td>179</td>
<td>56</td>
<td>219</td>
</tr>
<tr>
<td>Percent</td>
<td>16.78</td>
<td>83.22</td>
<td>32.20</td>
<td>67.80</td>
<td>20.36</td>
<td>79.64</td>
</tr>
</tbody>
</table>
Nick was learning to use play materials and language in functional ways. High rates of play interactions with adults and affiliative comments would assist in reaching these goals. Further, much of the adult directions/teaching directed toward Nick was focused on his learning to interact with play materials in a more functional manner.

Influence of child characteristics on adult-child interactions. Although the tone of the adult-child interactions was positive, as evidenced by the high rates of affiliative comments between adults and Laura, Nick, and John, the nature of the interactions seemed to be influenced by the child’s characteristics. That is, Nick required higher rates of discipline and adults engaged in less conversation with him. The occurrence of conversation and interactions as a result of attention-seeking was much higher with Laura and John, who were more socially interactive than Nick. The ability of Nick and John to manipulate play materials may have resulted in higher rates of play interactions with adults than with Laura. Further, John had the most interactions with adults, a function of his high rates of attention seeking combined with his requests for assistance.

In addition, the tone of the social interactions between Laura, Nick, and John and the adults was somewhat different. That is, interactions with Laura were of a more playful nature and frequently involved kissing, tickling, and other affectionate physical contact. As example recorded through observations, during a reading circle follows:

Laura is in the lap of an adult who is reading a book about baby chickens to a group of children seated on the floor in a semi-circle in front of the adult and Laura. The adult tickles Laura’s cheek and says, “Cheep, cheep.” Laura smiles.

Adult interactions with John and Nick (while affectionate, responsive, and positive) were less playful in nature. For example, the following was observed to occur:

John is one of 8 children seated around a child-size table for a cooking activity. The teacher is breaking eggs into a mixing bowl. John is rocking in his chair. He stops rocking, watches the teacher, and stands to be able to see better. The teacher says to John, “Can you sit down and stir 10 times? Ready? Stir. Scoot up a bit—1, 2, 3, . . . 10. Ten! Good job. You did a good job, John!”

Adults made efforts to communicate with Nick, Laura, and John at each child’s level. John would often walk up to adults and verbalize, but his verbalizations were often unintelligible. When the adults did not understand John, they maintained the conversation until they did understand. Laura’s movements and verbalizations were responded to with touch and talking.

The adults used interactions with the children to increase language/communication skills in a manner similar to their interactions with the children without disabilities. As evidence:

“OK, John. Where do you want to go play? I see a puzzle. Want to go make a cake of mud? Yeah? OK.” The adult then takes John’s hand, walks him to the mud, and puts a smock on him. “OK, now, here’s your smock.”

Nature of Interactions between Children with Severe Disabilities and Peers

Nick and John’s interactions with peers were predominantly in the social interaction category of play. Typically, an adult was present and encouraging Nick and John to engage socially with peers in support of learning objectives for each of the boys. John was the only child who required conflict resolution in the context of playing with peers. This was needed in all instances in response to John taking the toy of a peer. John also engaged in a relatively high number of attention-seeking behaviors with peers. This was usually in the form of attempting to have peers look at his toys as he stood next to a peer or group of peers engaged in play activities. An example of a typical peer interaction with John is:

John walks up next to a girl playing at a sand table. He picks up and waves a wooden spoon to the girl and says, “Mmmmmm.” He then waves the spoon to another peer who just came to the sand table, “Mmmmm.” The peer makes eye contact. John drops the spoon and begins to stack cups. The peer begins to stack cups next to John.

Outside of peer interactions in the category of play which were facilitated by adults, Nick had
only 4 additional peer interactions, all in the category of peers providing assistance/help. All instances of assistance occurred during transitions when Nick received help from a peer to move to another activity in the form of a verbal request such as, “Nick, come with me,” followed by the peer taking Nick’s hand and leading him to the next activity.

Laura’s interactions with peers were centered around her seeking attention. This was accomplished by verbalizations and body movements. The ability to gain attention from peers resulted in high rates of conversations. The turn-taking with peers often involved the peers tickling or touching Laura in an affectionate manner. Laura maintained the conversation by moving or verbalizing in response to her friends’ touches. Peers were eager to assist Laura and to play with her, as evidenced by high rates of interactions in the categories of play and assistance/help.

Influence of child characteristics on peer-peer interactions. Similar to interactions with adults, the interactions with peers seemed to be influenced by the behaviors of Laura, John, and Nick. That is, John had the largest number of interactions with peers, a result of his attention-seeking behaviors. Nick had the fewest interactions with peers and was the child with the least ability to socially interact. In addition, the tone of interactions between Laura and her peers was more playful and affectionate in nature than with John and Nick. Laura was responsive and, in responding, laughed and smiled and showed pleasure in interacting with her peers.

Strategies used by Adults to Promote Social Interactions

In the interviews, the adults were asked to identify strategies used to facilitate opportunities for social interactions with Nick, Laura, and John. Three approaches emerged in the analysis: 1) the full participation of all children in activities, 2) modeling appropriate social interaction behaviors, and 3) enlisting the help of the children without disabilities.

Full participation. The strategy most commonly mentioned was having Nick, Laura, and John participate in all the different activities for all the children throughout the day. One adult in her interview explained the practice in this way:

“We go around the table and talk about what we did at home the night before... Everybody is expected to contribute even though he’s—he’ll say things that are really off the wall. That’s still his contribution, so he feels like he’s part of the group.”

While the adults recognized that the children with disabilities were not able to do everything the way children without disabilities could do them, the expectation was that they would be part of the activities and meet expectations appropriate for their abilities. In reference to building block structures, one teacher said:

“I know that a child who is developmentally five can build a block structure that’s high. Whereas this child—although he’s 5 chronologically, developmentally he’s only 2—his structure isn’t going to be as big, but he’s still expected to build it.”

Modeling. Another approach used to facilitate interactions identified by adults was to model for peers the appropriate way to interact with Nick, Laura, and John. Adults were well aware that their behavior was modeled by the children. They were also aware that interacting appropriately with the children with disabilities was something that peers needed to learn.

Enlisting helpers. A third approach to facilitate social interactions between Nick, Laura, and John and the other children was to enlist peers to act as “helpers” to the children with disabilities. Adults spoke of the peers participating in therapy with Nick, Laura, and John, peers participating in the recording of the words in Laura’s AAC system, peers holding the hands of Nick and John when walking to new activities, and peers getting materials for Laura.

Perceptions of Peers in Relation to Social Interactions with the Children with Severe Disabilities

In the interviews, peers were asked to identify their friends and the activities in which they participated with friends. When discussing the activities in which they engaged with friends,
they typically identified an area in the preschool in which they played, rather than specific activities. For example, one child identified Miss Suzi’s outdoor deck that included micro- and macro-dramatic play activities.

None of the peers independently identified Nick, Laura, or John as their friend in the interview. Therefore, the children were asked to identify activities in which they participated with Nick, Laura, and John. Activities the peers enjoyed with Nick and John included outdoor games, gross motor play, and more quiet activities available indoors and outdoors. Children spoke of playing tag and riding tricycles with John and Nick and of playing on the deck, slides, and tires in the outdoor area of the preschool.

Peers identified their interactions with Laura differently. Most interactions discussed by peers involved affectionate exchanges. When asked what they do with Laura, some of the responses were:

“Um, I play with her with um legs.” “Um, I kiss them... And that’s mostly all I do... Oh, yea. I like to talk to Laura.”; “I hold her hand... What I do with Laura is I start with talk, and I start talking about silly things like ‘Bugging your head’ or ‘Kissing your eggies.’ She always laughs when I say silly things.”

Peers recognized that Nick, Laura, and John required assistance and additional help from teachers and from friends. As two peers stated,

“Because they have special needs, and I think it’s fun playing with them because they don’t know how to do as much interesting things that we can do. So I think we make it better by playing with them.” “I like the therapy I do with him. Miss Becky does the therapy and the therapy helps.”

They identified therapy as an activity in which they participated with Nick, John, and Laura. When asked to discuss what happens in therapy, children responded:

“Well, at the one Laura goes to, they help her walk and all, and at this one I help her say Hello and Goodbye and Good Morning and that kind of stuff... And with Nick I like doing therapy with him, and doing the bear walk with him.”

“And we go on the ball... I like the bouncy one. And, we sometimes, and we do the puzzle on the ball.”

The peers spoke of assisting their friends with disabilities in daily activities, talking about holding Nick’s hand to help him get to an activity, taking toys to Laura, and helping John talk.

Discussion

The purpose of this qualitative study was to explore the nature of adult-child and peer-peer social experiences of preschoolers with severe disabilities in an inclusive early education setting, the strategies used to facilitate peer-peer social interactions, and the experiences of the peers without disabilities when interacting with the children with disabilities. Teachers and paraprofessionals were interviewed and asked about the strategies used to facilitate peer social interactions and inclusion of children with disabilities. Peers without disabilities were also interviewed and asked their ideas of friendships and activities shared with the children with disabilities who participated in this study. The children and adults were observed in daily routines of the preschool. The behaviors observed in the naturalistic observations corroborated information discussed in interviews.

The type of social interaction and the context in which they occurred showed that the adults were providing interactions to promote accomplishment of each child’s individual learning goals. As example, both Nick and John had learning goals centered on increasing play skills and using language within play. A large number of adult-child interactions occurred within the context of play activities and were centered on promoting more sophisticated play skills and/or interactions with peers.

Findings of this study also suggest that the nature of adult-child and peer-peer social experiences (i.e., what is happening in the interactions) of Nick, Laura, and John were essentially assistance/help and direction/teaching provided by adults. Most interactions were with adults and were initiated by adults. While adults spoke about and were observed using strategies to facilitate social interactions of
Nick, Laura, and John, rates of peer-peer interactions were low. The percent of social interactions of Nick, Laura, and John with peers occurred at very low rates, i.e., 16.7%, 32.3%, and 20.3%, respectively. This finding has been seen in previous research studying social interactions of older children with severe disabilities in inclusive settings; i.e., that students with disabilities are more likely to be more dependent on adults, teachers and/or para-professionals for social interaction (e.g., Correa-Torres, 2008a,b).

The peers interviewed expressed pleasure in interacting with Nick, Laura, and John; as well as sensitivity towards and acceptance of their peers with disabilities. They engaged in social interactions and other activities that demonstrated an understanding of each child’s unique needs. For example, the peers spoke of enjoying accompanying John and Nick to therapy. The peers’ interactions with Laura were affectionate and playful and provided an opportunity to engage in reciprocal interactions. These findings are similar to those of Hanline (1993) who observed spontaneous peer interactions in a preschool that included three children with severe disabilities.

Limitations
While this study offers information to better understand the social experiences of preschoolers with severe disabilities in inclusive settings, there are limitations. The data were collected in one site, limiting the generalizability of the results. In addition, the familiarity of the first author with the teachers and the known bias of the first author toward inclusion may have influenced behaviors while being observed, as well as interview responses of the adults. Further, the information gathered from the preschool children in interviews must be interpreted with caution, given the difficulty of interviewing young children with confidence of obtaining valid and reliable information (Ceci & Huffman, 1987). However, the interviews were designed with consideration of factors known to influence preschoolers’ behavior in interviews. That is, a familiar person was present, the questions were not biased or leading, and the interviewer did not attempt to influence the children’s responses.

Implications for the Field
One of the interesting findings of this study was the way both adults and peers interacted with Nick, Laura, and John based on the social behaviors of the children with disabilities. That is, Laura (who expressed clear enjoyment of interacting with others and was consistent in responding to others) had more social interactions with peers than John and Nick. This finding highlights the importance of young children with disabilities learning to engage in turn-taking within the context of social interactions. As shown in this study, the ability of children with disabilities to engage in reciprocal social interactions provides motivation for the children without disabilities to engage socially with them. The increased social interaction increases opportunity for learning. Previous research has demonstrated the importance of providing social skills instruction to young children with a variety of disabilities in inclusive preschools (e.g., D’Allura, 2002; Frea, Craig-Unkefer, Odom, & Johnson, 1999; Kohler, Anthony, Steighner, & Hoyson, 2001).

A second interesting finding of this study was how the children without disabilities tended to mimic the adult style of interaction with the Nick, Laura, and John. The adults interacted with Laura in a more playful manner, often of a nature more appropriate for interactions with infants. Peers were also observed to be more playful with Laura than with Nick and John. However, the peer interactions with Laura were not age-appropriate and did not provide opportunities for Laura to learn more advanced communication or social skills. This finding suggests that adults must model the type of interactions with children with disabilities that are also appropriate for peer-peer interactions. The finding also shows the need for children with severe disabilities to learn to use augmentative and alternative communication (AAC) systems when appropriate and possible. For example, Laura could learn motor responses that meant “yes” and “no.” Her peers could then have interacted with her by asking yes-no questions - a type of interaction more age-appropriate than tickling.

The need for alternative communication systems in inclusive settings is also supported...
by the overall low rates of peer interactions of John and Nick. A simple picture card communication system might have provided them with a method of asking for entry into a play activity in which peers were already engaged. Based on the findings from the peer interviews, children in the preschool in this study would most likely have responded positively to the AAC systems. Adults in the preschool, however, would have had to educate peers about the purpose of the communication system and support the use of such a system by John and Nick.

Conclusions
The philosophy and practice of the preschool in which this study took place has been one of inclusion for over 45 years, creating a culture of positive attitudes and caring behaviors toward meeting the needs of all children. Teachers and paraprofessionals are educated “in-house” to follow the philosophy of providing equal opportunity by meeting individual needs. Further, what adults and peers learned through these practices was reflected in behavior and expressed in words. The children with severe disabilities in this study were full participants in all program activities, but had individualized and alternative expectations for development and learning. This program, therefore, accomplished the defining feature of inclusion as defined by DEC/NAEYC (2009) i.e., it provided access, participation, and supports for Nick, Laura, and John.

A challenge for future research is to determine why some early childhood programs can successfully include children with disabilities, while others are unable to do this. Although this study (and others) provide evidence that preschoolers with and without disabilities can benefit from inclusion, national statistics indicate that few young children with disabilities are educated in inclusive classrooms.

References


Received: 9 October 2010
Initial Acceptance: 22 December 2010
Final Acceptance: 10 April 2011
Born in the early 1900s in rural Idaho, James Castle was believed to be deaf, mute, illiterate and intellectually disabled. Never speaking, he nevertheless produced tens of thousands of artworks using such found materials as ink made from soot and saliva, pens fashioned from twigs or sticks, and canvases scavenged from scrap paper. Today his behavioral and communication characteristics would likely be interpreted as consistent with autism.

This Idaho Public Television-aired video documentary uses Castle's art (drawings, constructions, books) and exclusive interviews with Castle's childhood friends, family and art experts to tell his unique story, helping the viewer to see the world as it might be experienced by a gifted artist with autism.

Member Price: $16.95  
Non Member Price: $19.95  
http://www.cec.sped.org/ScriptContent/Orders/ProductDetail.cfm?section=CEC_Store&pc=D5902

Package Price (book James Castle: His Life and Art and DVD Dream House)  
Member Price: $35.95  
Non Member Price: $39.95  
http://www.cec.sped.org/ScriptContent/Orders/ProductDetail.cfm?section=CEC_Store&pc=D5903
When CEC's Division on Developmental Disabilities published its landmark first edition of Best and Promising Practices in Developmental Disabilities in 1998, it quickly became a staple in the libraries of professionals working in the fields of cognitive disabilities/mental retardation, autism spectrum disorders, and associated developmental disabilities. Covering existing best practices in such arenas as assessment, curriculum development, and instructional strategies, that work quickly established itself as the premier publication of its kind.

Now this landmark publication is available in a greatly expanded second edition. Featuring contributions from some of the most notable names in developmental disabilities, the new Research-Based Practices in Developmental Disabilities – Second Edition provides current professional thought on such fundamental issues as the meaning of developmental disabilities, learning characteristics, assessment and instructional planning, and inclusive programs.

Present-day practitioners providing services to individuals with developmental disabilities are now required to implement best practices that are supported by research. This work answers the need of these practitioners for accessible and immediately practical information that reflects best practices as based in research.

The book is also designed to meet the needs of university personnel in special education teacher preparation programs. Each of the 29 chapters includes:

- Summary of chapter contents
- Learning outcomes
- Glossary of professional terminology
- Specific CEC Standards addressed in that chapter
- Web site resources

An accompanying Instructor's Manual offers for each chapter a variety of useful supplements, including:

- Outline
- Extension Activities
- Exam questions and answers
The Board of Directors for the Division on Autism and Developmental Disabilities endorses the use of the term “intellectual disability” to replace any previous term used to describe the population of students with significant limitations in intellectual functioning and adaptive behavior as manifested in the developmental period. This action is: (1) consistent with the Division’s movement away from the use of the term “mental retardation” over the past decade; (2) in alignment with the adoption of the intellectual disability by the field’s primary diagnostic and classification systems; (3) adheres to changes in federal law with regard to nomenclature; and (4) reflects current conceptualizations of disability as manifesting as a state of functioning that exists within the fit between the person’s capacities and limitations and the context in which the person functions. The adoption of the term intellectual disability implies an understanding of disability consistent with an ecological and multidimensional perspective and requires that society responds with interventions that focus on individual strengths and that emphasize the role of supports to improve human functioning. Although some confusion has arisen in the field with regard to the use of the term intellectual disability (reflecting a single state of functioning) or intellectual disabilities (suggesting multiple types of states of functioning), DADD agrees with the use of the term intellectual disability, in the singular, to reflect a single state of functioning characterized by significant limitations in intellectual functioning and adaptive behavior, though with the understanding that intellectual disability can vary among students by severity of intellectual impairment and in the type, intensity, and duration of supports needed by a person to function in typical, integrated environments and contexts.
Education and Training in Autism and Developmental Disabilities

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*Education and Training in Autism and Developmental Disabilities* focuses on the education and welfare of persons with autism and developmental disabilities. *ETADD* invites research and expository manuscripts and critical review of the literature. Major emphasis is on identification and assessment, educational programming, characteristics, training of instructional personnel, habilitation, prevention, community understanding and provisions, and legislation.

Each manuscript is evaluated anonymously by three reviewers. Criteria for acceptance include the following: relevance, reader interest, quality, applicability, contribution to the field, and economy and smoothness of expression. The review process requires two to four months.

Viewpoints expressed are those of the authors and do not necessarily conform to positions of the editors or of the officers of the Division.

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