Education and Training in Developmental Disabilities

Special Conference Issue
Best Practices for Practitioners

Focusing on individuals with cognitive disabilities/mental retardation, autism, and related disabilities

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Education and Training in Developmental Disabilities

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JACK J. HOURCADE

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

December 2005

Attitudes of Japanese adults towards persons with intellectual disability: An exploratory analysis of open-ended descriptions of respondents’ experiences and opinions. **Toshiaki Tachibana**, Department of Social Welfare, Aichi Shinshiro Otani University, Kawai, Shinshiro, Aichi 441-1306, JAPAN.

Review of assessment procedures for students with moderate and severe disabilities. **Ellin Siegel** and Rose M. Allinder, University of Nebraska Lincoln, Department of Special Education, 318 Barkley Memorial Center, PO Box 830738, Lincoln, NE 68583-0738.

Teacher performance rate and accuracy scale: Training as evaluation. **Denise E. Ross**, Jessica Singer-Dudek and R. Douglas Greer, Health and Behavior Studies, Teachers College, Columbia University, 525 West 120th Street, Box 223, New York, NY 10027.

Teaching naming relatives to individuals with autism using simultaneous prompting. **Nurgul Akmanoglu-Uludag** and Sema Batu, Anadolu Universitesi, Engelliler Arastirma Enstitusu, Eskisehir, 26470, TURKEY.

Teachers’ view of transition services in South Carolina: Results from a statewide survey. **Dalun Zhang**, Joy Ivester, and Antonis Katsiyannis, Department of Educational Psychology, College Station, 4225 Texas A&M University, College Station, TX 77843-4225.

Using self evaluation to improve student teacher interns’ use of specific praise. **Cassandra L. Keller**, Michael P. Brady, and Ronald L. Taylor, Florida Atlantic University, Department of Exceptional Student Education, 500 NW California Blvd, Port St Lucie, FL 34986.

Effectiveness of constant time delay on teaching snack and drink preparation skills to children with mental retardation. Funda Bozkurt and **Oguz Gursel**, Anadolu Universitesi, Egitim Bilimleri Enstitusu, Eskisehir, 26470, TURKEY.

Self-injurious behavior and functional analysis: Ethics and evidence. **Richard P. Hastings** and Stephen J. Noone, School of Psychology, University of Wales, Bangor, Bangor, Gwynedd, LL57 2DG, UK.

Selecting and validating tasks from a kindergarten screening battery that best predict third grade educational placement. **Marcia Strong Scott** Christine F. Delgado, Shihfen Tu and Kathryn L. Fletcher, University of Miami, Department of Psychology, Flipse Building, PO Box 248185, Coral Gables, FL 33124-0751.

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Best Practices for Practitioners

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On October 10-12, 2004, the Council for Exceptional Children Division on Developmental Disabilities (DDD) sponsored its Ninth International Conference: Best Practices for Practitioners. The conference was held at the Alexis Park Hotel in Las Vegas. The DDD Board of Directors decided to devote this issue of Education and Training in Developmental Disabilities to conference papers. The conference brought together educators from school and college classrooms from all over the world. The conference included strands on assistive technology, autism/autism spectrum disorder, cognitive disability-best practices, differentiated instruction, multiple disabilities, and wellness. The conference provided many parents, teacher educators, researchers, teachers, and other practitioners an opportunity to gather to learn the most current information related to providing services for individuals with mental retardation, autism, and other developmental disabilities.

This special issue can enable those who attended the conference to see expanded papers, prepared by presenters, and also give those who were unable to attend an opportunity to benefit from the thoughtful work done by conference participants.

Presenters were asked to submit papers based on their conference presentations. Papers submitted were reviewed by the Guest Editors who selected the papers for publication. We think the selection of papers represents an interesting assortment of topics and formats ranging from discussion papers to databased research to descriptions of classroom techniques. The papers selected do not necessarily represent all the topics covered at the conference but they do give a good idea of the variety and quality of the presentations. We would like to thank those authors who submitted papers for their efforts in making this Special Conference Issue possible.

Over time, the use of characters with disabilities in children’s books has evolved to the point where today we would expect characters with disabilities to be positively portrayed and fully accepted and integrated in society. Tina Taylor Dyches and Mary Ann Prater have previously developed guidelines for evaluating children’s literature, utilizing both general literary standards as well as standards related to the portrayal of individuals with developmental disabilities (including autism). In the first article, “Characteristics of developmental disability in children’s fiction,” Dyches and Prater describe their current study, which examined the characterization of individuals with developmental disabilities in children’s fiction books and compare these characterizations with those from an earlier study. Results showed that characters with developmental disabilities made more deliberate choices, were educated in more inclusive settings, were more accepted in their communities, served in more helping roles, and the disability was only one of many character traits. It should be noted that all of the books analyzed in this study qualified to be considered for the 2002 and 2004 Dolly Gray Award in Children’s Literature.

IDEA has long promoted family involvement in planning a student’s educational plan. Best and evidenced-based practices also support family involvement in the student’s educational programming. Unfortunately, research indicates family involvement is far from the desired level. In the next article, “Family perceptions of student centered planning and IEP meetings,” Amy L. Childre and Cynthia R. Chambers report results from a qualitative study concerning the family perceptions of
the purpose of the IEP meeting and their level of participation prior to the incorporation of the Student Centered Individualized Education Planning (SCIEP) protocol. Findings indicate greater family involvement and satisfaction with the planning process following the use of SCIEP. Implications for teacher training programs include developing a variety of approaches to utilize with students with disabilities and their families including the use of SCIEP.

Colleen A. Thoma and Elizabeth Evans Getzel in their article “Self-determination is what it’s all about: What post-secondary students with disabilities tell us are important considerations for success,” describe results of a series of focus group interviews conducted with post-secondary students with disabilities about the importance of self-determination in their success in those settings. Participants attended community college and/or state universities in Virginia and were between the ages of 18 and 48. They indicated that self-determination skills were important to their success in taking courses, finding the supports they needed, and advocating for their rights. Implications for supports for students with disabilities in post-secondary settings, as well as those K-12 students who are planning to transition to post-secondary educational settings are discussed.

In “Teaching social communication skills to young urban children with Autism,” Jennifer A. Loncola and Lesley Craig-Unkefer examined the responses of students with autism to a cognitive-social skill model of intervention. The intervention used play sessions to teach interaction skills. Sessions included a planning portion in which students talked with the teacher about what activity they would participate in, the play session itself which included prompted verbal interactions, and a review session immediately following the play session during which time the student processed what had taken place. Through this intervention, the authors saw an increase in the students’ commenting skills and the overall complexity of language.

Stacey Jones Bock, Julia B. Stoner, Ann R. Beck, Laurie Hanley, and Jessica Prochnow compared the effectiveness of two commonly used communication strategies: (1) the Picture Exchange Communication System (PECS) and (2) voice output communication aids (VOCA). Previous research indicated both approaches are effective interventions for persons with complex communication needs. “Increasing functional communication in non-speaking preschool children: Comparison of PECS and VOCA” expands the research base by comparing the effectiveness of the communication strategies with six preschool children who were non-speaking and were not using an ACC system. Five of the six children appeared to develop a preference for one modality over the other. Results underscore the fact that communication is multimodal and that communicators express themselves using more than one method. Additionally, the results indicate that children can learn at least two systems of communication simultaneously, thus, allowing for the child to select the method better able to convey the message the communicator seeks to relay by selecting his or her own voice.

The next article by Melinda R. Pierson and Barbara C. Glaeser discusses the use of comic strip conversations in providing positive behavioral support to students. In “Extension of research on social skills training using comic strip conversations to students without Autism,” the authors describe how these methods were used with four students with severe social skill deficits. They incorporated the use of a personal symbol dictionary to assist students with comprehension. Comic strip conversations were used as a way to instruct appropriate social skills behavior as well as processing behavior during teachable moments during the day. By using the technique, students were better able to respond in social situations.

Play is an integral part of early childhood development in which typically developing children learn social and language skills, as well as appropriate behaviors, problem solving, and a variety of other cognitive skills. For many children with autism, however, play does not appear to come naturally and thus these children must be specifically taught to engage in social and play activities. In “Let’s play: Teaching play skills to young children with Autism”, Amanda Boutot, Tracee Guenther, and Shannon Crozier explore the various aspects of play, discuss several means of teaching play skills to children with autism, including milieu strategies, peer-medi-
ated instruction, and discrete trial training, and make suggestions for future research. Additionally, the article describes a case study comparing the efficacy of two methods of play skills instruction for children with autism.

In their study “Teacher interaction styles and task engagement of elementary students with cognitive disabilities,” Ockjean Kim and Susan C. Hupp examined the interaction styles of teachers. An analysis of videotaped interactions showed that teachers are more directive in their interactions than responsive to students. Interactions were categorized as verbal or non-verbal direction and verbal or non-verbal responses. Teacher interactions were correlated with student responses and discussed in relation to student attention to task. While attention to task was rated by frequency and duration, this study showed that only frequency was significantly increased by teacher interactions.

General education curriculum appears to be mandated in federal education, but often specialists in the field advocate for functional curriculum. In her article “Impact of factors on curriculum and instructional environments for secondary students with mild mental retardation”, Emily C. Bouck examined factors that might influence the choice of secondary settings and the type of curriculum chosen for students with mild mental retardation. The author examined teacher variables such as gender, degree held, endorsements, and years teaching with the choice of inclusive or functional setting and general education or functional curriculum. Also examined were school size and location (urban, suburban, or rural) for impact on the choice of setting and curriculum. Findings indicate a need for more research to determine what is driving the choice of curriculum and setting for secondary students with mild mental retardation.

Children and youth today, referred to in the final article as Millennial children, including those with mild disabilities, have grown up in a world surrounded by varying technologies. According to the authors, Howard P. Parette, Brian Wojcik, George Peterson-Karlan, and Jack Hourcade, technology use is deeply embedded in the lives of Millennial children on a regular basis, and for students with disabilities, the use of preferred technologies may facilitate learning. In “Assistive technology for students with mild disabilities: What’s cool and what’s not,” the authors advocate development and use of a technology “toolkit”, which is, in essence, an array of technology devices having broad applicability to many students with mild disabilities in a particular classroom. Within the toolkit, technology devices that have an appeal to current school-age students with mild disabilities are identified as “cool.” The article reviews a variety of cool tools that may assist in writing, reading, math, and memory and organization. Additionally, the article describes cool technologies that are up and coming. The authors conclude that cool technologies hold great potential to contribute to the academic success of many students with mild disabilities.

The conference provided researchers and educators with the opportunity to explore current research, topical issues and best practices relating to mental retardation, autism, and other development disabilities. We hope readers of this Best Practices for Practitioners Special Conference Issue find the information valuable and timely.
Abstract: Based on the Dyches and Prater (2000) guidelines, characterizations and plots in 34 eligible children’s books published during 1999-2003 were evaluated; 36 characterizations are discussed in detail in terms of each guideline. Results showed that, compared to a previous study (Dyches, Prater, & Cramer, 2001), characters with developmental disabilities made more deliberate choices, were educated in more inclusive settings, were more accepted in their communities, and served in more helping roles; and more commonly the disability was only one of many character traits. Also a wide age spectrum was portrayed, and several characterizations represented people from minority races or cultures. Over half of the characters with DD had autism spectrum disorders, and almost half of those characters had Asperger syndrome.

The use of characters with disabilities in children’s books has evolved over time. Classic stories such as the Grimm brothers’ tales portrayed deformed witches, dwarfs, giants, and others with physical differences as metaphors for these characters’ inner qualities. Usually these characteristics were associated with negative, even evil tendencies. Other classical stories portrayed characters with disabilities as symbolically representing what is good, kind, and loving in the world (e.g., Pollyanna). These stories are well known by children and adults today, yet most classical characterizations of disabilities are unacceptable by current standards. In contemporary literature we expect characters with disabilities portrayed in children’s literature to be integrated in society, to experience reciprocal relationships with characters without disabilities, to make positive contributions, and to have opportunities to make and act on choices. Metaphorical use of physical or cognitive disabilities is no longer acceptable.

Although many authors have identified guidelines for evaluating and selecting contemporary children’s literature (e.g., Blaska, 2003; Heim, 1994; Myles, Ormsbee, Downing, Walker, & Hudson, 1992), Dyches and Prater (2000) took a unique approach by including both general literary standards and standards related to the portrayal of individuals with developmental disabilities (DD). They suggest that books be evaluated in terms of theme, setting, plot, point of view, and literary style, as well as by characterization of individuals with disabilities. Additionally, illustrations should be examined in terms of interpretation, style, text enhancement, quality of art, and layout.

Characterizations of individuals with disabilities in contemporary children’s literature should be both positive and realistic. Positive portrayals are those which (a) envision high expectations for the character with disabilities, (b) enhance positive contributions, (c) build on strengths, (d) show the person acting on choices, (e) depict expanding reciprocal relationships with others, and (f) ensure that the character with disabilities is afforded the same citizenship rights as others (Turnbull, Turnbull, Shank, & Leal, 1999). Realistic portrayals include physical, behavioral, and language attributes typical of an individual with a developmental disability. In addition, all literature should include characters that are credible, consistent, multidimensional – characters who continue to grow and develop, including those with developmental disabilities (Dyches & Prater, 2000).

Previous analyses of the portrayal of charac-
 ters with mental retardation and autism in children’s fiction yielded the following results.

When Prater (1999) examined 68 children’s books published between 1965 and 1996 that portrayed mental retardation (MR), she concluded that few stories were told from the point of view of the character with MR, most of the characters with MR did not develop throughout the course of the story, and most were used as a catalyst for changes in a character without disabilities.

Dyches, Prater, and Cramer (2001) subsequently examined books portraying mental retardation and autism published in 1997 and 1998. The authors concluded that characterizations were inconsistent in terms of the guidelines of acceptability. Although more characters in these books were portrayed as making choices in their lives and being educated in more inclusive settings than characters encountered in Prater’s (1999) study, there were several concerns regarding many portrayals. The researchers called for more books to include characters with mental retardation or autism (a) who are integrated and accepted in society, (b) who serve in helping roles rather than being solely the recipients of care, and (c) whose disabilities are portrayed as only one among many character traits. The purpose of this study, therefore, was to analyze the characterization of individuals with developmental disabilities, as well as related issues discussed within the plot, in children’s books with an initial publication date of 1999-2003.

Method

A qualitative, descriptive study was used to examine the characterization of individuals with developmental disabilities in children’s fiction, and to compare these characterizations with those described in an earlier study (Dyches et al., 2001). The design, method, and purpose are simply descriptive (see Sandelowski, 2000).

Book Selection

Three criteria were applied for books to be included. The book must (a) include a main or supporting character with a developmental disability, (b) be fiction (or biography written in story format), and (c) have been published initially in 1999 through 2003.

Both picture books and chapter books were included in the review. To be classified as a picture book, the book must be illustrated and presented in story format. The chapter book category is defined as a novel divided into chapters written in story format. This category includes easy readers, juvenile fiction, young adult fiction, and biographies.

The first step in determining which books to include was to identify fiction written for children and adolescents, which includes characters with developmental disabilities. For this study, developmental disability was defined as a condition which occurs before a person is 22 years of age that limits him/her in at least three of seven major life activities (e.g., receptive and expressive language, self-care, and economic self-sufficiency). Developmental disabilities include people with disabilities such as autism and mental retardation. The authors consulted with two children’s literature librarians who used search terms such as developmental disability, mental retardation, intellectual disability, autism, and Asperger syndrome to locate books in Children’s Books in Print (2004) and on various electronic book lists.

Data Analysis

Characterizations were submitted to content analysis according to qualitative methods described by Lincoln and Guba (1985). First, the authors and student assistants read the books. Using the guidelines described by Dyches et al (2001), the readers took notes on the portrayal of the individuals with developmental disabilities, including their relationships with others, as well as the treatment of topics in the field of developmental disabilities. The researchers then compared notes, as they needed to achieve consensus regarding the analysis of each characterization before the collective analysis became part of the results.

The Dyches et al (2001) study provided the framework for initial analysis. An audit trail was performed by an outside researcher, according to the method described by Sandelowski (1986), to establish trustworthiness of the analysis method and the results. The audit trail confirmed the themes that had been identified, as agreement was shown between...
the authors and the auditor regarding these themes.

Results

Of the 34 books that were found that included main or supporting characters with developmental disabilities, 11 were picture books and 23 were chapter books. There were 36 characters depicted in main or supporting roles in these books. Lists of the books including the title, author, illustrator (if appropriate), year published, publisher, and appropriate reading/interest levels are provided in Table 1 (picture books) and Table 2 (chapter books).

Themes in the Field of Developmental Disabilities

The portrayal of characters with disabilities and their life circumstances were analyzed and categorized across four themes: (a) characterization of the individual with DD, (b) relationships among characters with and without DD, (c) changes in characters without DD, and (d) special topics related to the field of DD. Each theme will be discussed in detail, with representative examples from the various books.

Characterization

Characterizations of the individuals with DD were analyzed in terms of (a) level (main or supporting), (b) personal characteristics, (c) realistic depiction, (d) positive portrayal, (e) character development (dynamic or static), and (f) point of view from which the story was told. A brief summary of these characteristics is provided in Table 3.

Level (main or supporting). Main characters are those whose presence and development are critical to the plot. Supporting characters generally are important to the growth of the main characters, yet their personal experiences are not essential to the plot. The level of characterization was determined as main in 16 characters with DD (44%), and supporting in 20 characters (56%). Two books, Looking for X and Sparks, portrayed more than one main or supporting character with DD.

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**TABLE 1**

**Picture Books Reviewed**

<table>
<thead>
<tr>
<th>Title</th>
<th>Author (Illustrator, if appropriate)</th>
<th>Year</th>
<th>Publisher</th>
<th>Reading/Interest Levels</th>
</tr>
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<tbody>
<tr>
<td>Dustin’s Big School Day</td>
<td>Alden R. Carter (Dan Young &amp; Carol Carter)</td>
<td>1999</td>
<td>Whitman</td>
<td>Lower Elem.</td>
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<tr>
<td>Russ and the Almost Perfect Day</td>
<td>Janet Elizabeth Rickert (Pete McGahan)</td>
<td>2003</td>
<td>Woodbine House</td>
<td>Baby-Preschool</td>
</tr>
<tr>
<td>Way to Go, Alex</td>
<td>Robin Pulver (Elizabeth Wolf)</td>
<td>1999</td>
<td>Albert Whitman</td>
<td>Lower Elem.</td>
</tr>
<tr>
<td>What’s Wrong With Timmy?</td>
<td>Maria Shriver (Sandra Spiedel)</td>
<td>2001</td>
<td>Little Brown</td>
<td>Lower Elem.</td>
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Personal characteristics. Ages of characters with developmental disabilities ranged from toddler to adult. One character was a pre-schooler, five were adults, and the remaining were school-aged children.

Of the 36 characters with developmental disabilities, 19 (53%) were individuals with autism spectrum disorders, and 17 (47%) were characters with mental retardation. Almost half of the characters with autism spectrum disorders (n = 8, 42%) had Asperger syndrome. Of the 17 characters identified with mental retardation, 41% (n = 7) had Down syndrome. However, the term “Down syndrome” was only used in one of the stories (Head Above Water); the other books either did not mention the disability at all, or mentioned the disability not as part of the story, but in a preface or prologue.

A majority of the books depicted males with DD (n = 28, 78%). Of the characters exhibiting symptoms of mental retardation, 12 were male and only five were female. Many of these characters were described as being “slow,” “mentally handicapped,” or having “special needs.” Of the characters with autism spectrum disorders, 16 were male and three were female. All but one author used the term “autism” or “Asperger syndrome” to describe these characters. One author described the character, Jacob, as being “touched,” a term used early in the 20th century to describe one who is “touched in the head,” who is different from those described as “imbeciles” because

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<th>Table 2: Chapter Books Reviewed</th>
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<tr>
<td><strong>Title</strong></td>
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<tr>
<td>The Babbs Switch Story</td>
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<tr>
<td>Clay</td>
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<tr>
<td>A Corner of the Universe</td>
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<tr>
<td>The Curious Incident of the Dog in the Night-Time</td>
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<tr>
<td>A Face in Every Window</td>
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<tr>
<td>Haze</td>
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<tr>
<td>Head Above Water</td>
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<tr>
<td>Hoob and Brabble</td>
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<tr>
<td>John Riley's Daughter</td>
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<tr>
<td>Looking for X</td>
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<tr>
<td>Me and Rupert Goody</td>
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<tr>
<td>Philippa</td>
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<tr>
<td>Rooster</td>
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<tr>
<td>The Silent Boy</td>
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<tr>
<td>Sparks</td>
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<tr>
<td>To Oz and Back</td>
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<tr>
<td>Tribute to Another Dead Rock Star</td>
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<tr>
<td>A Wizard Alone</td>
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<tr>
<td>Book</td>
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<tr>
<td>All About My Brother</td>
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<td>The Babbs Switch Story</td>
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<tr>
<td>Buster and the Amazing Daisy</td>
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<tr>
<td>Blue Bottle Mystery</td>
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<tr>
<td>A Challenge for Brittany</td>
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<tr>
<td>Clay</td>
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<td>A Corner of the Universe</td>
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<tr>
<td>Hoob and Brabble</td>
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<tr>
<td>Lisa and the Lacemaker</td>
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<tr>
<td>Looking for X</td>
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<tr>
<td>Me and Rupert Goody</td>
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<tr>
<td>My Brother Sammy</td>
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<td>My Friend Isabelle</td>
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<tr>
<td>Of Mice and Aliens</td>
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<tr>
<td>Philippa</td>
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<td>Rooster</td>
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<tr>
<td>Russ and the Almost Perfect Day</td>
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<td>Russ and the Apple Tree Surprise</td>
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<td>Russ and the Firehouse</td>
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<td>The Silent Boy</td>
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<td>Sparks</td>
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they can go about doing what they want while staying safe (*The Silent Boy*). This character exhibited many symptoms of autism, including vocal perseveration, fascination with inanimate objects, emotionless expressions, poor non-verbal communication, and poor eye contact.

Only five characters (14%) were depicted as being from ethnically diverse cultures: Hispanic – *Rooster, The Treasure on Gold Street, To Oz and Back;* African American – *Me and Rupert Goody, A Wizard Alone.* The remaining 31 depositions did not give any indication of representing ethnically diverse populations. Unfortunately, in only three stories were the characters’ cultures relevant to the story. Otherwise, their race or origin was mentioned but later ignored (*To Oz and Back, A Wizard Alone*).

**Realistic depiction.** Most of the portrayals of the characters with DD were realistic in that they demonstrated skills and knowledge consistent with the characters’ projected ability levels ($n = 28$, 78%). Portrayals that were partially realistic depicted the character using speech or actions that were inconsistent or improbable, or they were shallow depictions of the character. For example, Daphne Tillman is a 16-year old girl characterized as being “slow,” yet when the school catches on fire, she avoids the rush of people running out the school doors by finding the door to the coal chute, where she escapes with a baby she rescues (Beard, 2002). Such problem solving skills had not been previously depicted in the story, and were greater than the skills of non-disabled victims of the fire.

**Positive portrayal.** Portrayals were characterized as positive if they (a) emphasized strengths rather than weaknesses, (b) represented high expectations of the character with DD, (c) enhanced positive contributions, (d) showed the character acting on his/her choices, (e) were given full citizenship in the home and community, and (f) enjoyed reciprocal relationships. Of the 36 characters, 26 (72%) were portrayed positively. Characterizations were described as being mixed if some of the attributes of positive characterizations were present, and negative if these characterizations were rarely shown.

Most of the books mentioned or alluded to the strengths of the characters with DD; however, only a few authors used these strengths
to contribute to the plot of the story. One example of the portrayal of strengths is Seb Taylor, a teenage boy with Asperger syndrome in *Haze*, who is accused of hacking into the school’s computer network. His knowledge of computers, rather than his deficits due to his disability, is critical to the storyline and to solving the mystery of the computer hacker.

When expectations were set high for the characters, those portrayed positively were able to meet them. For example, in the book *Sparks*, Todd, a 5th grader who is a “slow learner,” was given a trial period in a class with the “normal” kids, instead of being in the special needs class. His teacher initially did not think he would succeed, but Todd was determined to be included in the general education environment, and although he struggled, he was successful.

Many of the characters made positive contributions to their families, and some even contributed to the wider community. Although some of these contributions were not intentional, such as providing circumstances where others can learn patience, tolerance, and compassion, many contributions were initiated by the character with DD. For example, Daisy, a 5th grade girl with Asperger syndrome in *Buster and the Amazing Daisy*, was able to face her fear of crowds to perform in a talent show. Her performance was intended to raise money for her friend who was going to be sent to a special school due to lack of funding in the mainstream school.

While all characters were depicted as making their own choices, not all of these choices had a significant impact on the story or on the characters’ development. However, many characters were depicted as being given responsibilities to make important choices. The most notable example of this positive characteristic was found in *The Curious Incident of the Dog in the Night-time*, in which Christopher John Francis Boone, a 15-year old boy with autism, willfully engages in detective work to determine who killed his neighbor’s dog. This initial decision leads Christopher to many other critical junctures where he must decide for himself what he will do. His choices result in outcomes that were unintentional, yet desirable, for Christopher.

Many characters with DD were depicted in several books as having full citizenship in their families and communities. The *Russ* books (*Russ and the Almost Perfect Day, Russ and the Apple Tree Surprise, and Russ and the Firehouse*) were prime examples of how a young boy with Down syndrome is a fully participating citizen in his family, school, and community. Similarly, Dustin, in *Dustin’s Big School Day*, was given similar rights as his nondisabled peers, as a fully participating member of the general education program. Further, the characters with Asperger syndrome were typically depicted as having similar rights and responsibilities as peers their age, and they were included in general education environments (*Blue Bottle Mystery, Haze, Lisa and the Lacemaker, Of Mice and Aliens, Philippa,* and *To Oz and Back*).

Reciprocal relationships, those in which one person is not the perpetual giver or taker, were depicted in several books ($n = 18, 50\%$). While the reciprocity in the relationships varied, many of these depictions showed that characters gave similar levels of effort to initiate and maintain the relationship. One example of a reciprocal relationship was found in *A Corner of the Universe*, where 11-year-old Hattie and her uncle Adam Mercer, a 21-year-old man with “mental problems” or “autism,” clearly enjoyed each other’s company and sought opportunities to spend time together. The strength of their relationship was clearly depicted, and although Adam was considerably older than Hattie, she did not feel compelled to protect, care for, or teach him. She was just happy to spend time with him, as she would be with any other friend.

**Character development.** Character development in a story helps readers relate to the character and to learn vicariously from the characters’ experiences. Dynamic characters are important because they develop or grow, while static characters do not. It is critical to note that characters with DD should not remain static, even if their development is slow or unnoticeable to the untrained eye. Of the 36 characters with DD portrayed, 21 (58\%) were identified as dynamic, and the remaining were classified as static. Some of the changes in character included: learning to accept one’s diagnosis (*Blue Bottle Mystery*), developing skills to solve mysteries (e.g., *Blue Bottle Mystery, A Curious Incident of the Dog in the Night-time, Haze, Lisa and the Lacemaker, and To Oz and Back*), successfully completing an ad-
venture (e.g., Looking for X, Of Mice and Aliens, Philippa, A Wizard Alone), and developing new talents or skills (e.g., Buster and the Amazing Daisy, A Face in Every Window, Head Above Water, Me and Rupert Goody, Russ and the Almost Perfect Day, Russ and the Apple Tree Surprises, Sparks).

Point of view. Three of the stories (8%) were told explicitly from the point of view of a character with DD: Christopher, a boy with autism (The Curious Incident of the Dog in the Night-time); Dustin, a boy with Down syndrome (Dustin’s Big School Day); and Todd, a boy who is a “slow learner” (Sparks).

Relationships Among Characters With and Without DD

Seven primary themes regarding the relationships between the characters with and without DD were identified by Dyches et al (2001). These seven themes were used to analyze the characters in the current study: (a) primary relationship, (b) victim, perpetrator and/or protector, (c) dependent and caregiver, (d) friendship, (e) pupil and instructor, (f) fear of association, and (g) feelings of guilt.

Primary relationship. The deepest relationships between the character with DD and another character are those in which characters share many common experiences and, if possible, they share thoughts and beliefs. The most frequently depicted primary relationship was between the character with DD and a friend (n = 15, 42%), followed by a relationship with a sibling (n = 10, 28%). Other primary relationships were between the character with DD and parents, spouse, or extended family.

Victim, perpetrator, and/or protector. Several characters with DD were portrayed as victims, usually of teasing and name-calling by nondisabled peers (n = 14, 39%). Often a sibling or close friend protects the character with DD who is victimized. Only in a fantasy does the character with DD serve as protector of someone without a disability (Philippa).

Dependent and caregiver. Dependence on a caregiver was not a strong theme found in the books reviewed. Generally the caregivers were parents, who provided natural supports to their children. When parents were not the primary caregivers, generally siblings were depicted in these roles. Extreme examples can be found in stories in which a single mother worked full time to provide for the family, and the children with developmental disabilities did not attend school. In the book Clay, Elsie, older sister of a 7-year old boy with autism, noted that her mother “mostly leaves me to take care of Tommy (Rodowski, 2001, p. 5). In Looking for X, Kyber was responsible for watching after her twin brothers with autism. When she was finally allowed to go outside by herself, she said, “It felt funny being out on my own on a weekday. I always had one of the boys with me, their harness strapped to my wrist, their hand in mine” (Ellis, 1999, p. 22).

Friendship. As noted earlier, half of the characters with DD enjoyed some reciprocity in their relationships with others. A majority of these relationships were with peers rather than with family members.

Pupil and instructor. While many of the books reviewed portrayed pupil/instructor relationships between characters with and without DD, some of these relationships were stronger than others. Some books included paid professionals who played an important role in the story (Blue Bottle Mystery, Buster and the Amazing Daisy, The Curious Incident of the Dog in the Night-time, Haze, Lisa and the Lacemaker, Of Mice and Aliens, and Sparks), while other teaching/learning relationships were less formal (All About My Brother, A Challenge for Brittany, I Love My Brother, Rooster, Russ and the Apple Tree Surprise, Russ and the Firehouse, Tribute to Another Dead Rock Star, and Way to Go, Alex!). A few books depicted characters with DD as informal instructors. In Buster and the Amazing Daisy, the 5th grade girl with Asperger syndrome taught her new friend about her condition; in Of Mice and Aliens, Ben taught an alien how to get along in the earthly environment.

Fear of association. Only five stories explicitly show nondisabled characters as being afraid or embarrassed for associating with the character with DD. This fear of association is found among community members, peers, siblings, family members, and even characters with DD. For example, Todd, a 5th grade boy who described himself as a “slow learner” in Sparks, was afraid to associate with his friends in the special needs class because he wanted to prove that he was more like the “normal” students.
Feelings of guilt. Several nondisabled characters were depicted as feeling guilty in various ways regarding their relationship with the character with DD. These feelings stemmed from not providing sufficient care (The Babbs Switch Story, A Corner of the Universe, and Rooster), not knowing the child had a disability (Blue Bottle Mystery), maltreating the character with DD (Hoob and Brabble, Looking for X, and Me and Rupert Goody), for having mean or unhealthy thoughts about the character with DD (A Face in Every Window, John Riley’s Daughter, My Brother Sammy, Way to Go, Alex!, and What’s Wrong with Timmy?), and for receiving more privileges than the character with DD (Tribute to Another Dead Rock Star).

Changes in Characters Without DD

A prominent theme in these 34 books involved the person with DD as a change-agent for nondisabled characters. Generally nondisabled characters learned to accept or began to understand the individual with DD. None of the books depicted an increase in negative feelings by a significant nondisabled character toward the character with DD. However, several books showed levels of acceptance from the beginning of the story that did not considerably change throughout the course of the story (All About My Brother, Clay, Haze, Looking for X, Of Mice and Aliens, My Friend Isabelle, Russ and the Almost Perfect Day, Russ and the Apple Tree Surprise, Russ and the Firehouse, The Silent Boy, Sparks, The Treasure on Gold Street, and To Oz and Back). For example, young Hannah portrayed her positive relationship with Isabelle, a woman with developmental disabilities, early in the story when she noted, “I love Isabel because she is big like a grown-up but she plays with me like a friend” (Byrd, 2003, p. 11). This positive attitude is carried throughout the story of The Treasure on Gold Street.

Special Topics in Developmental Disability

The books were also examined for treatment of special topics in the field of developmental disability, including: (a) schooling and education, (b) recreation, (c) residence, and (d) family characteristics.

Schooling and education. Elements of school life for the character with DD were described in 24 books. The types of school settings varied along a continuum of placements; however, the most common educational placement depicted was inclusionary settings (n = 11, 46%).

At the other end of the continuum were the depictions where the character with DD did not receive educational services. Most of these, however, were historical depictions, and only one characterizes a school-aged child with DD (The Babbs Switch Story and The Silent Boy).

Some characters with DD were depicted as being educated in residential (A Corner of the Universe and Looking for X) or self-contained schools (My Brother Sammy), while home-based services were depicted for toddlers with DD (All About My Brother and I Love My Brother). One child was “homeschooled,” but his education was not depicted in the story, as his mother had abducted him and his sister and did not want to enroll either child in school (Clay).

Recreation. Recreation, a minor theme in the books analyzed for this study, frequently represented informal events (e.g., playing on computers, playing with animals, listening to music, going for walks). Very few formal activities were included in the stories, and when they were included, they were organized for groups of people with disabilities (e.g., Special Olympics). Most of the recreational activities mentioned did not require peer involvement (e.g., swinging, playing with animals, collecting stones, gardening), but several characters did engage in activities with their peers or siblings (e.g., going to a carnival, playing baseball, playing basketball, dancing).

Residence. All of the books that mentioned the characters’ place of residence depicted the family home as the primary residence. In one instance, the character with DD was homeless until he found his father (Me and Rupert Goody). Residential schools were depicted in two stories: one in which the school had closed and the character with DD was sent back home (A Corner of the Universe), and one in which the twin brothers with autism were sent to a residential school so that they could receive services (Looking for X). At the end of one book, the character with DD was sent to an asylum after having been charged with murder (The Silent Boy).
Family characteristics. Various types of families were depicted in the books: traditional (e.g., mother and father at home), single parent (e.g., divorced or widowed), and blended families. Siblings were portrayed in many of the families. Two books made no mention of family members (My Friend Isabelle, Philippa), as they were not pertinent to the storyline. In one book, the character with a developmental disability was the father (A Face in Every Window). Traditional families were the most common depiction.

Discussion

Books in this study were evaluated to determine what messages are being sent to readers of children’s literature that includes characters with developmental disabilities. Specifically, four topics were evaluated: (a) characterization of the individual with DD, (b) relationships between the character with DD and others, (c) changes in characters without DD, and (d) special topics related to DD.

Characterization

Books reviewed depicted two main types of developmental disabilities: slightly more than half depicted individuals with autism spectrum disorders, and the remainder depicted characters with mental retardation. This representation is disproportionate to reported enrollment of school-aged children with these disabilities in the U.S., where mental retardation is considered a high incidence disability, and autism is considered to occur less frequently (U.S. Department of Education 2002). However, the recent increase in new children’s fiction that feature characters with autism may be reflecting the recent media popularization of autism spectrum disorders and the reported increase in children with this diagnosis (Fombonne, 2003). In the previous study, which covered an earlier time period, only 25% of books with characters with DD depicted autism and none of the books had characters with Asperger syndrome (Dyches et al., 2001). In this study almost half \((n = 10, 48\%)\) of the characters with autism spectrum disorders were portrayed specifically as having Asperger syndrome. Of the 17 characters identified with mental retardation, 41% \((n = 7)\) had Down syndrome, compared to 66% in the previous study (Dyches et al., 2001). However, three of these books (the Russ series) featured the same character.

Results from a previous study indicated that authors need to portray characters with a disability where the disability is not essential to the story but is one of many character traits (Dyches et al., 2001). In the books portraying characters with Down syndrome, this need has been clearly met, as the disability is rarely even mentioned. Several of the depictions of other characters with DD show multi-dimensional individuals who have a disability as one character trait; however, the disability is generally essential to the story. We expect future publications to continue to demonstrate the strengths and contributions of those with disabilities without dwelling on the deficits the disability may cause.

There was an overrepresentation of male characters with DD in the books reviewed. Of the characters exhibiting symptoms of mental retardation, 12 were male and only five were female. This ratio does not reflect actual proportions of those with mental retardation in the U.S. population (1.5 male to 1 female) (American Psychiatric Association 1994). Some of this overrepresentation of males is due to the inclusion of three books that depict the same male character with Down syndrome (Russ and the Almost Perfect Day, Russ and the Apple Tree Surprise, and Russ and the Firehouse). However, a similar overrepresentation was found in a previous study, where 82% of the characters with mental retardation were male (Dyches et al., 2001); this proportion is disconcerting because it appears to minimize the effects that mental retardation may have on females. It also may be that authors reflect a societal perception that it is more acceptable for boys rather than girls to have mental retardation.

The ratio of male and female characters with autism spectrum disorders in the books reviewed (4.25 boys : 1 girl) closely align with actual ratios (4-5 boys : 1 girl) (American Psychiatric Association 1994). In contrast, in the previous study, all portrayals of children with autism were male (Dyches et al., 2001). This more accurate representation is welcomed,
even though all of the portrayals of females with autism spectrum disorders had Asperger syndrome.

There was an increase of characters with DD from diverse cultures in this set of books compared to the previous study, where no portrayals of ethnic diversity were evident (Dyches et al., 2001). This gives readers more realistic perceptions of how developmental disabilities may affect people from all races, cultures, and ethnicities. Current estimates indicate that 12% of the U.S. population designates their race as Black, 75% consider themselves to be White, and 13% indicate Hispanic origins (U.S. Census 2004). In the five books that feature minority characters with DD, both of these groups are underrepresented (Black – 6%, Hispanic - 8%) in comparison to population estimates.

Most portrayals of characters with DD were classified as realistic. While a few books were fantasies, some of these characters were true to their projected abilities (Blue Bottle Mystery, Of Mice and Aliens), while others were not (Hoob and Brabble, Philippa, A Wizard Alone). However, a fantasy is an ideal genre where characters with disabilities can be free from their disabilities for a time. Caution must be exercised, however, that unrealistic portrayals are not promoted as reality. For example, in A Wizard Alone, 11-year old Daryl McAllister is cured from his autism when he successfully completes his wizardry experience. An additional inaccuracy in this depiction of autism is that it is portrayed as a condition that can begin later in life rather than prior to age three, as has been firmly established in professional field (American Psychiatric Association 1994).

A strong majority of the portrayals of children and adolescents with DD were positive both in the current study and the previous study (Dyches et al., 2001). Most of the characters had strengths that helped them succeed in life, had high expectations, made positive contributions to others, and enjoyed full citizenship in their families and communities. This success, in large part, is depicted as due to the characters with Down syndrome and Asperger syndrome being educated in general education environments with access to a broad array of friends, activities, and experiences. Few stories depicted individuals with DD who made decisions that would substantially impact their lives or the circumstances of others.

Some of the portrayals of characters with DD that had been positive or mixed throughout the story were cast off at the end, either by death, institutionalization, or a miraculous cure (A Corner of the Universe, Clay, The Silent Boy, A Wizard Alone). This literary weakness reveals, “authors do not know how to handle the relationships and circumstances surrounding people with special needs. Thus the characters who die a martyr’s death, in an accident or as a result of an illness, can be remembered fondly and sadly but not confronted” (Rudman, 1995, p. 308).

Individuals with DD are often viewed as people who need support in order to participate in daily activities (Thompson et al., 2004) and as people who find it difficult to develop and maintain reciprocal relationships. This was reflected in almost all of the book portrayals of individuals with autism and all portrayals of the characters with Asperger syndrome, which is curious because a major diagnostic criterion for obtaining such a diagnosis is a qualitative impairment in social interaction, such as a failure to develop relationships with peers at the appropriate developmental level, and a difficulty sharing enjoyment, interests, or achievements with others (American Psychiatric Association 1994). Authors of these books did not neglect to demonstrate the challenges individuals with autism face, but sensory differences often prevailed as the identifying characteristic.

A majority (58%) of the characterizations were considered dynamic, whereas only 50% of the characters in the previous study were dynamic (Dyches et al., 2001). Many of these dynamic characterizations were also realistic. This is a difficult balance for authors to portray, because these dynamic changes in characters with DD must be consistent with the characters’ present levels of performance and their potential for growth. But many authors of the books reviewed in the current study were able to balance significant levels of character development with realistic expectations of characters with DD.
Relationships between characters with DD and others were consistent in some ways with reports of earlier studies (Dyches et al., 2001; Prater, 1999). While some characters with DD (a) are protected by others from being victimized, (b) rely upon others, (c) are students of informal teachers, (d) have few friendships, and (e) provoke fear of association in others, many of the characters in this study were not involved in these types of unbalanced relationships. As a matter of fact, several characters in the present study were shown helping others and maintaining healthy relationships. While many were teased or ridiculed, they were generally not feared by others.

The primary relationships depicted in the current study differ markedly from those depicted in the previous study (Dyches et al., 2001). The most common primary relationship in the current study was between the character with DD and a peer, whereas in the previous study a sibling was frequently in the primary relationship. Further, in the previous study no primary relationships were depicted between the individual with DD and a nondisabled peer; yet, in this study, 10 of the 15 peers did not have disabilities. Many of these peers were friends with children with Asperger syndrome. This increase in depictions of individuals with DD having meaningful relationships with nondisabled peers is a positive trend which represents emerging friendship patterns in American society.

Changes in Characters without DD

This evaluation generated results similar to previous studies (Dyches et al., 2001; Prater, 1999) regarding the changes in characters without DD. Many of the characters without disabilities improved their feelings regarding the character with DD. When noticeable improvement was not shown, it was generally due to the fact that there was little room for improvement because the relationship was positive in the first place.

Topics in DD

When compared with earlier analyses of children’s literature, authors appear to be writing and publishing depictions of individuals with DD in more acceptable circumstances. In books considered in the previous study (Dyches et al., 2001), most settings were depicted as either self-contained units or special schools. However, in the current study almost half of the depictions of school environments were in general education settings. This is due, in large part, to nearly all of the portrayals of characters with Asperger syndrome or autism being depicted in inclusionary environments.

Also all characters in the books reviewed lived in the family home for a period of time. One was institutionalized, twins were sent to a residential school, and a 21-year old man was sent home after his residential school closed. Two of these three stories were historical and could be considered appropriate for the periods depicted (A Corner of the Universe, The Silent Boy).

While most educational circumstances of the characters depicted in these books were aligned with best practices, their recreational activities were not. Many characters engaged in solitary pursuits, and rarely participated in formal group activities.

Conclusions

All books analyzed in this study qualified to be considered for the 2002 and 2004 Dolly Gray Award in Children’s Literature. This award recognizes high quality children’s literature that characterizes individuals with developmental disabilities. The award is sponsored by the Developmental Disabilities Division of the Council for Exceptional Children and Special Needs Project. The books selected for the 2002 award were My Brother Sammy and Me and Rupert Goody as a result of their positive portrayal of characters with DD as well as their literary and illustrative quality. One book was selected for the 2004 award: The Curious Incident of the Dog in the Night-time, for its insightful and unique portrayal of a 15-year-old boy with autism. While The Curious Incident would not meet all of the qualifications for high levels of positive characterization because the main character has no reciprocal relationships, primarily engages in solitary activities, is a victim of his father’s lies, and enjoys depending upon others for caregiving, many of these
traits are realistic due to his autism. He does, however, have many character traits that despite his autism are delightful, uncanny, and positive. This balance is desirable for demonstrating the realities of living with a disability, without letting the disability limit one’s life experiences.

The most current fictional children’s books that characterize people with developmental disabilities are generally more positive than they have been in the past. They represent a wide spectrum of ages and even include characters from minority races and cultures. Most characters are realistic, positive, and dynamic, and they enjoy meaningful relationships with others. Many are educated in inclusionary environments, and most live at home in traditional families.

While these trends in characterization are positive, authors of future books are encouraged to add depth and multidimensionality to the characters with DD that they portray. These characters should be shown making deliberate choices that significantly impact their lives and the lives of others; serving more as protectors, teachers, and caregivers of others; and engaging in inclusionary recreational activities.

References


Family Perceptions of Student Centered Planning and IEP Meetings

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Abstract: Given the documented benefits of family involvement in educational planning, engaging families throughout the school years is strongly advocated. However, barriers continue to impede families from collaborative partnering in educational planning. In this qualitative study the perceptions of six families were examined prior to and after the implementation of a student centered individualized education program (IEP) planning tool. Findings revealed barriers within traditional planning that relegate families to passive roles and a family preference for the student centered approach to IEP planning. The student centered approach resulted in increased family satisfaction, more collaborative participation by all IEP team members, and broader consideration of family and student input with respect to future desired outcomes as a basis for goal development.

Current law and professional literature advocate family involvement in education as a best practice. The Individuals with Disabilities Education Act (IDEA) Amendments of 1997 and the 2004 reauthorization promote family involvement by requiring the consideration of parental concerns and information in individualized education program (IEP) development and consideration of student preferences in transition planning. Documented positive outcomes for both student and family as a result of family participation include improved transition outcomes (Greenen, Powers, & Lopez-Vasquez, 2001; Masino & Hodapp, 1996) and development of parent and student advocacy skills (Alper, Schloss, & Schloss, 1996; Mason, McGahee-Kovac, Johnson, & Stillermand, 2002). Involving families in educational planning is a critical variable to both school and post school success. Despite the importance of family involvement, barriers exist that limit family engagement in educational planning (i.e., lack of understanding of the planning process, limited involvement options, terminology/language barriers) (Greenen et al., 2001). Furthermore, although consideration of family and student preferences is key to meaningful outcomes, discussing these issues with families is not typical practice (DeFur, Todd-Allen, & Getzel, 2001; Thoma, Rogan, & Baker, 2001). Given these barriers, it is not surprising that family involvement decreases and family apathy toward educational planning increases as students age (Greenen et al., 2001; Morningstar, Turnbull, Turnbull, & Turnbull, 1996).

Barriers limiting family involvement place the locus of control in educational planning firmly with professionals. This disparity of control and failure to consider student and family preferences leads to inadequate educational planning. Too often IEP documents do not articulate skills that will assist a student in achieving success in environments outside of a limited educational environment (Stowitschek & Kelso, 1989) or skills that will improve the quality of life for a student (Giangreco, Edelman, Dennis, & Cloninger, 1995). Giangreco and colleagues (1994) note that because of the current status of educational planning, student achievement on goals and objectives is not an adequate indicator of success of an educational program. Current educational planning falls short in areas of relevance, quality, and preparedness (Grigal, Test, Beattie, & Wood, 1997; Stowitschek & Kelso,
Regularly educational planning fails to build a vision for the student’s current and future life on which to base goals and objectives. It is no wonder with the current approach the field takes toward planning that the end results of special education are diminutive. Statistics depict substantial gaps between young adults with disabilities and their peers without disabilities across a range of areas of adult independence (Blackorby & Wagner, 1996).

Given that family involvement in education planning is far from the desired level, a high priority for the field is to research and identify innovative approaches that practitioners will utilize to involve families and students in the educational planning process. The literature resounds with calls for implementation of person centered planning to enhance family participation and educational planning outcomes (Flannery et al., 2000; Miner & Bates, 1997; Morningstar et al., 1996; Whitney-Thomas & Hanley-Maxwell, 1996). Person centered planning is seen as a tool that could increase family involvement, shift the locus of decision making control, increase student awareness and advocacy, and focus educational planning on preparation for post school settings. Given the present outcomes of transitions, researchers recommend use of person centered planning in early adolescent years to begin building networks and supports to facilitate transition into post school environments (Whitney-Thomas & Hanley-Maxwell, 1996). Person centered planning is not seen as a one step solution to all of the problems in educational planning, but as the beginning step on the ladder to reaching successful planning with positive outcomes (Miner & Bates, 1997).

The difficulty lies in how person centered planning is currently being implemented with school age students with disabilities. Practice and research have applied the person centered planning process with school age students with disabilities much as it was designed for use in the adult service system. For instance, Miner and Bates (1997) examined how involving families in person centered planning activities prior to IEP meetings would impact family involvement in IEP meetings. Although the study found that the planning increased family verbalizations at meetings, the additional meeting placed resource demands on the families, which would make this option unreasonable for many families who have children with disabilities. Another approach to person centered planning employed by Flannery and colleagues (2000) sought to influence transition planning by training special educators in person centered techniques. Educators participated in 8-10 hours of person centered planning training that included ideas for how person centered planning could impact educational planning. Without guidelines for applying techniques, professionals infused IEP and ITP meetings with person centered techniques resulting in higher level of professional and family satisfaction and an increase in identified supports. While certainly more effective for families, this approach failed to provide resources to professionals to guide their integration of person centered techniques within the IEP and ITP process. Unfortunately, the current applications of person centered planning have not resulted in any widespread use in P-12 settings.

In view of these issues, a different person centered planning tool was developed for this current research study by combining aspects of person centered tools such as Personal Futures Planning (PFP) (Mount & Zwernik, 1989) and Planning Alternative Tomorrows with Hope (PATH) (Pearpoint, O’Brien, & Forest, 1995) as well as a student IEP involvement approach, IPLAN materials (Van Reusen & Bos, 1990 1994). This approach, referred to as Student Centered Individualized Education Planning (SCIEP), was developed by the first author to be used within an IEP meeting to address legal requirements while incorporating person centered techniques. The purpose of this inquiry was to examine the impact SCIEP would have on family and professional perceptions of planning. Thus, the specific research questions for the current study were (a) What are family perceptions of the purpose of IEP meetings and of participation for themselves and their children in educational planning prior to the implementation of the SCIEP approach? (b) How does the use of the SCIEP planning process affect family perception of and participation for themselves and their children in educational planning? (c) Considering factors important to professionals (e.g., ease of use, costs vs. bene-
fits), what are professional and family perceptions of SCIEP as a tool for IEP planning?

Method

Qualitative methodology is the most appropriate means of researching and discovering realities for families of students with disabilities for two reasons: the process yields rich, descriptive data and the approach presents the families’ perspectives more fully (Bogdan & Biklen, 1992). In this study qualitative methods were employed to gather information about family perceptions of educational planning before and after using a student centered planning approach in IEP meetings. Qualitative elements utilized included purposive sampling of families, inductive analysis of data, development of grounded theory based on the data, and a continually emergent design (Lincoln & Guba, 1985). Attitude was viewed as a critical factor in whether families would use a student centered process and when used, if it would change their participation in planning. Identifying these underlying issues that affect family involvement could be more easily addressed through in-depth, open-ended interviews. Analysis of the categories arising from the interviews generated answers to the research questions.

Participants

Purposeful sampling (Lincoln & Guba, 1985) was used to select families of students with disabilities who served as primary participants for the study. The target group included families of students who receive services for orthopedic disabilities and/or moderate intellectual disabilities in a rural southeastern school system. All of the students either attended or were transitioning in or out of a middle school. The middle school was one of two in the district and served approximately 530 students between grades 6 and 8. Approximately 54% of the school’s population were African American, 42% Caucasian, and 4% other ethnicities. Approximately 65% of students in this system were eligible for free or reduced price meals. Families were selected to reflect the racial balance, family structure, and range of student disability present in the school. All families who were contacted about participation agreed to participate in the study. Ethnicity of families consisted of African American (n = 5) and Caucasian (n = 3). Sampling included families of diverse structure: 2 blended families with siblings and siblings from previous marriages, 1 nuclear family with siblings, 1 nuclear family with no siblings, 1 family with a single mother, and 1 family with a non-traditional head of household. Of these families only 1 father and mother jointly chose to participate in the study. For the remaining 5 families, the mother (n = 4) or grandmother (n = 1) chose to participate. The children of these families represented a wide range of intellectual and communication abilities, which allowed insight into child participation with students of varying abilities. See Table 1 for detailed information on the participating families and students.

The special education teacher for each student at the middle school level served as the facilitator of the SCIEP process in each IEP meeting. One of these two teachers was also the first author. Teachers as opposed to outside facilitators were used to more closely emulate the typical arrangement in IEP meetings and to assess the feasibility of the process to teachers. In addition to the families and facilitators, the study included team members from the IEP meetings as participants (i.e., physical therapist, an occupational therapist, and an elementary special education teacher).

Procedure

The SCIEP process integrated person centered techniques within written forms that addressed information required on IEPs. The process included family forms, student forms, and meeting forms to generate input from all team members. For a description of the forms, see Table 2. Family forms were provided to families prior to the IEP meeting. Families were encouraged to complete these forms as a family, including the student in generating information. Student forms were completed by the student with the support of the facilitating teacher. Students were informed that they would use the forms in the upcoming IEP meeting to help give the planning team ideas about their next school year. The meeting forms were completed with the cooperation of team members during the IEP meeting. All
steps were designed to help professionals and families educate one another about the student and the information could be used to gain understanding about where goals should be focused.

The facilitating teachers used a written protocol as a guide to ensure that SCIEP forms were used consistently across the meetings. This written protocol included information on how each step would relate to generating the IEP and also served to guide facilitating teachers as they used the completed forms to write the IEP. Training of the second facilitating teacher occurred in three stages. The first stage involved discussing the purpose of using a student centered plan, the information that could be generated from its use, and the benefits of involving families in educational planning. The second stage covered the written protocol and the SCIEP forms providing explanations on how to follow the protocol and how to use it to assist in implementing the SCIEP forms. A third training was offered including role play of a sample IEP meeting using the SCIEP process following a pilot run of a SCIEP meeting.

To implement SCIEP, families were contacted by phone to determine a date and time.

### TABLE 1

*Family and Student Characteristics*

<table>
<thead>
<tr>
<th>Family Name</th>
<th>Race</th>
<th>Family Structure</th>
<th>Student Name</th>
<th>Sex</th>
<th>Age</th>
<th>Eligibility</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Millie King</td>
<td>African</td>
<td>Grandparents, grandchild</td>
<td>Derrell</td>
<td>M</td>
<td>15</td>
<td>Moderate Intellectual Disability</td>
<td>Non-verbal, vocal, communicates through gestures and AAC; enjoys company of others</td>
</tr>
<tr>
<td>Ray and Ginny Ross</td>
<td>Caucasian</td>
<td>Nuclear family, children</td>
<td>Lyndi</td>
<td>F</td>
<td>14</td>
<td>Moderate Intellectual Disability</td>
<td>Verbal; reading 1st level; happy</td>
</tr>
<tr>
<td>Fiona Baxter</td>
<td>African</td>
<td>Single mother, children</td>
<td>Alicia</td>
<td>F</td>
<td>15</td>
<td>Orthopedic Impairment</td>
<td>Severe physical and speech impairments; shy; uses wheelchair; moderate intellectual disability</td>
</tr>
<tr>
<td>Blanche White</td>
<td>Caucasian</td>
<td>Nuclear family, child</td>
<td>Erin</td>
<td>F</td>
<td>14</td>
<td>Orthopedic Impairment</td>
<td>Verbal; friendly; non-literate; moderate physical impairments; uses wheelchair; moderate intellectual disability</td>
</tr>
<tr>
<td>Jackie Moore</td>
<td>African</td>
<td>Blended family, children and stepchildren</td>
<td>Vonica</td>
<td>F</td>
<td>10</td>
<td>Orthopedic Impairment</td>
<td>Strong social, verbal, &amp; independence skills; reading 1st level; walker for ambulation; mild/moderate intellectual disability</td>
</tr>
<tr>
<td>Pam Lewis</td>
<td>Caucasian</td>
<td>Blended family, children and stepchildren</td>
<td>Zach</td>
<td>M</td>
<td>11</td>
<td>Orthopedic Impairment</td>
<td>Age appropriate verbal &amp; social skills; reading 4th level; crutch for ambulation; learning disability</td>
</tr>
</tbody>
</table>
for the IEP meeting. Five of the meetings were conducted at the school; and one meeting was conducted at a family’s home. All meetings occurred during regular school hours. In addition to the legally required participants, each family chose additional participants to include in their child’s IEP meeting. Prior to the meetings families completed the family forms at home and facilitating teachers assisted students with completing the student forms. During the IEP meetings, facilitating teachers completed the meeting forms by requesting information from all participants including the information listed on the student and family forms. Meetings lasted approximately 1 hour 30 minutes to 2 hours.

Preinterviews (i.e., prior to the SCIEP meeting) and postinterviews (i.e., following the SCIEP meeting) were arranged with each family at their convenience and at a place of mutual agreement. All of the families requested interviews at their homes with the exception of one family that requested the interview be conducted at school. All but one preinterview took place less than 1 week prior to each student’s IEP meeting. One preinterview occurred 18 days prior to the meeting because the family rescheduled the IEP meeting for a later than expected date. All but one postinterview took place within 1 month of the IEP meeting with the additional postinterview occurring 7 weeks after the meeting because of scheduling difficulties due to student surgery. Each semi-structured interview was conducted in approximately 1 hour. All interviews were audiotaped and later transcribed for analysis.

The first author served as the interviewer in each interview. The interview protocol was developed by reviewing literature on family involvement in educational planning. Researchers (n = 2) who had expertise with families and qualitative research reviewed and assisted in finalizing the interview protocol. This protocol served as a guide to assure that relevant questions were addressed. The interviewer followed the lead of the family members prompting spontaneous follow-up questions keeping the interviews informal and comfortable. Issues addressed in the preinterviews included family perceptions of IEP meeting purpose; family roles in the meetings; family satisfaction with current family and student involvement level; whether school planning meets current family and student educational needs;

**TABLE 2**

<table>
<thead>
<tr>
<th>Description of SCIEP Forms</th>
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<tbody>
<tr>
<td><strong>Family Forms</strong></td>
</tr>
<tr>
<td>Relationship Circle</td>
</tr>
<tr>
<td>Dreams</td>
</tr>
<tr>
<td>Goals</td>
</tr>
<tr>
<td>Strengths and Preferences</td>
</tr>
<tr>
<td>Goals and Dreams</td>
</tr>
<tr>
<td><strong>Meeting Forms</strong></td>
</tr>
<tr>
<td>Relationship Circle</td>
</tr>
<tr>
<td>Community Survey</td>
</tr>
<tr>
<td>Now</td>
</tr>
<tr>
<td>What Works</td>
</tr>
<tr>
<td>Dreams</td>
</tr>
<tr>
<td>Goals</td>
</tr>
<tr>
<td>Who &amp; When</td>
</tr>
</tbody>
</table>
impact of planning and education; and how educators might better serve families in IEP planning. Postinterview questions focused on the following issues: family and student roles within SCIEP; impact of the process on professional and family interactions; family feelings about discussing future dreams; and positive and negative aspects of SCIEP.

After each of the IEP meetings, the first author met with professionals who participated in the SCIEP meetings including the other facilitating teacher, elementary special education teacher, physical therapist, and occupational therapist. Discussion information included ideas for SCIEP future use, effort in implementing the process, and perception of success of using the forms with the families. Detailed notes made following each discussion were used as collateral data to family postinterviews.

Data Analysis

The audiotapes of the pre- and post-family interviews were transcribed verbatim by an outside professional and were verified by the researcher. All preinterviews and postinterviews were analyzed separately using the constant comparative method of data analysis (Glaser & Strauss, 1967; Lincoln & Guba, 1985). This method was used to construct categories and themes case by case to find common and idiosyncratic patterns from the interview data and to ensure rigor. The first step in analysis involved reviewing transcripts for recurring themes, insightful comments, and salient ideas. No predetermined categories were used and each interview was coded separately. Then categories across preinterviews were combined and compared repeatedly until category sets were well defined. This analysis process was repeated for all postinterviews.

After analysis of family interviews was complete and themes were fully developed, notes from the discussions with other participants were analyzed for positive and negative occurrences with family interview themes. Comments and ideas from other participants were added to appropriate family themes to further substantiate categories. Several themes arose from these discussions that were not evident in family interviews related to changes in or for future use of SCIEP. Since this information was deemed crucial to professionals’ use of SCIEP, categories were added to family data and thoroughly documented as to the source.

Family interviews were viewed as the primary data in the study. All other data collected were used either to establish credibility or as an external check on the inquiry process. Credibility was established through triangulating family interview data with data from discussions with other participants, completed SCIEP forms, and IEP documents. External checks on the findings were performed through use of analysis of personal notes, peer debriefing, and member checks.

Results

Findings are discussed according to the three research questions: (a) family perceptions of traditional IEP planning, (b) family perceptions of student centered IEP planning, and (c) implementation and future use of student centered IEP planning.

Family Perceptions of Traditional IEP Planning

Data collected in preinterviews reflected family perceptions developed over time through repeated interactions in educational planning. Categories arising from the data addressed (a) meeting purpose and dynamics, (b) student involvement, and (c) limitations of planning.

Meeting Purpose and Dynamics

Listening to receive information about their child’s education was a primary means of participation in IEP meetings for all families and a primary role for 5 of the 6 families was to agree with the IEP. The general consensus of how families viewed their participation was illustrated in these families’ statements: “I listen more than I say anything. I guess I am just always satisfied with the input of everybody else” (White). Certainly listening was not the only role families played, but it was the most emphasized and repeated. When families discussed instances of more active planning (e.g., requesting change of placement, sharing medical information), it involved a low level of collaboration, brainstorming, and problem solving among team members. “Well, I usually
listen and if I feel like I do not understand something, I ask a question” (Moore). When families and professionals worked together, the result was more consistent with an exchange of information rather than an in depth cooperative effort.

Two families shared their satisfaction with the teacher primarily planning the program and they, the family, having little input. “Ever since she has been at the elementary school, I have always been satisfied with the things that the teacher set up for her” (Moore). “The teacher suggests because. . Zach went to her for six years and she knew probably more about him than I did” (Lewis). While these quotes highlight a trust for teachers, they indicate a failure of teams to share critical information and consider all relevant factors in planning an educational program.

Families did not consider the lack of professional and family sharing a shortcoming of planning; their experience with planning had shaped them to regard meeting as a means of determining services and annual goals wherein the focus was on the school environment and short term planning. Without family input or families guiding planning, professional planning focused on school and lacked insight into the student’s home or community life. Therefore, planning had no basis for generating a broader base of goals targeting skills that could assist the students in environments beyond school.

Throughout the preinterviews, families discussed information that illustrated their wealth of information regarding student needs and functioning. Although families felt they had given information to professionals, it was clearly evident that families had shared only a minute portion of their knowledge concerning their children. Traditional IEP planning did not begin to touch on the information that these families could potentially share.

Student Involvement

Student participation in meetings was widely variable ranging from voicing goal preferences to not attending. The level of participation for each individual student was dependent on family and professional expectations for participation as well as student communication and cognitive abilities. Five of the six families were satisfied with their children’s current involvement in educational planning. Families expressed hope to see participation increase with age and for the students to become more actively involved in decision making about their future. The only family that did not express these expectations for increasing input felt that the student could not be expected to provide input due to level of communication and cognitive functioning. Families hoped their children would become independent decision makers, but acknowledged the time required for some to master this skill. Families recognized potential benefits of students increasing their awareness and reasoning in planning. Even with expectations for increasing student participation, half of the families expressed concern about maintaining control over final decisions. Families openly discussed their feelings. “Maybe a little later on down the line we could let her have more input. Right now we do not want to lose what she has accomplished” (Baxter). “Well not anything wild that she may want to do. If I do not feel like it is right, then I do not want her to do it” (Moore). “I will probably let him choose, if it is the right thing” (Lewis). Families felt that due to student age, immaturity, or cognitive ability adults should oversee student decisions to make certain the choices are in the best interest of the student. Clearly families have hopes for their children to become more active in making decisions related to education and life goals, but approach this with some apprehension.

Limitations of Planning

Several themes arose as families discussed difficulties they had encountered in educational planning: noncollaborative actions, failure to understand family perspective, service provision problems, and networking breakdowns.

Noncollaborative actions. Half of the families had experienced pressure to agree with a preset agenda for placement or goals. One particular parent was pushed to accept a special school placement even though she felt the evaluation was not valid. “I was given the impression that I should go along with the Academy for the Blind [evaluation and special school placement] when they said that she was...
legally blind and saw very little" (White). Another family discussed how professionals convey a preset agenda and how this serves to hinder family participation.

...I felt like a lot of times they pretty well had the agenda set before we got there...The few things we would mention, it was like, "Well that is great", then they would go back into the set agenda. It just kind of seemed like it was kind of a cut and dry thing basically before we got there (Ross).

The parent continued, "When they already have the goals set, it is just like the parents just have to agree to whatever they [professionals] have on the papers that are already written up...We are just there to put our signature on the paper" (Ross). Failure to move beyond a preset agenda conveys that meetings are merely a legal obligation of schools.

Not considering or requesting family suggestions is an additional way that schools fail to support families. Two families discussed instances in planning where professionals dismissed information families offered placing families on the defensive. "My ideas were not accepted, were valueless" (Ross). Families emphasized the importance of professionals offering and explaining options rather than forcing their opinions and approaches. One parent discussed what he hoped for: "Rather than leave there saying, 'Well I lost and they won' or 'They won and I lost,' try to work more for a win/win thing" (Ross). Even when professionals and families differ in opinion, families often desire compromise and do not seek an adversarial position.

Another way educators alienate families in planning is through the use of educational and medical terminology or jargon. Families shared situations wherein team members had used terminology that they did not understand. Interestingly, families did not feel it was the educator’s responsibility to put the information in more comprehensible terms even when the team was discussing an evaluation or placement. These families felt it was their responsibility to understand the information as the educators presented it.

It is the terminology that they carried on between themselves that really I did not understand. I can not really put any fault on anybody there because I did not understand the terminology that they were using at the IEP (White).

Two of the families who did not note educational jargon as a problem discussed gaining an understanding of information through initiating questions and discussion. Over time, they had used meetings to educate themselves about terminology, how to give input, and the IEP process.

Failure to understand family perspective. Three families discussed how professionals need to be sensitive to family feelings especially when expressing low expectations for a student. One family explained the need for professional sensitivity when families are adjusting to the possibility of special education placement.

When as a parent you have a child and you are told that your child has to be in special education. . .this is kind of a hard thing to accept. I think that they [professionals] might need to be a little bit more understanding of parents’ feelings (Ross).

Families discussed their efforts to support their children’s progress as professionals focused on limitations or even predicted institutionalization. Families discussed how negative expectations alienate families from planning destroying family-professional trust, but more importantly how these statements, can inflict wounds that families must struggle to overcome emotionally.

Problems with service provision. Families discussed displeasure with various services; each of the difficulties centered on a failure of the professionals to communicate with families. Specific instances recounted by families included occurrences wherein professionals failed to provide details on services and placement so that the family would have knowledge of environments in which the student was being educated and what each professional’s role would be in the process. As one family shared, “The first year Zach went to that school...I did not realize what the special education teacher was and what the kindergarten teacher was” (Lewis). This parent discussed her discomfort with the school setting at IEP meetings as well as other school activities. "Well the people there were not very
friendly. Nobody ever talked to you except the special education teacher. That is really the only person at the school I knew. I just did not feel comfortable going” (Lewis). Failure of regular education teachers to initiate contact with her made her uncomfortable in the school setting. “As far as every teacher he has ever had besides the special education teacher, I never communicated with them. They never communicated with me” (Lewis). For a student who received half-day regular classes with few modifications, this lack of communication was not in the best interest of the student.

Other instances shared related professional failure to communicate lack of student progress to families and failure to offer or provide adequate services to meet the student’s needs. Mrs. King described an incident of failure of a speech therapist to communicate important information to a family in a timely manner. “She [speech therapist] did not feel like she accomplished anything. So if she had told me that in the beginning, she could have gotten somebody else to try to teach him because she was not doing it” (King). In this case, the lack of progress was conveyed several years after services were implemented.

Lack of networking between classrooms, schools and agencies. Lastly, families had incurred difficulty with the continuity between school programs (i.e., elementary to middle) and continuity between schools and outside agencies providing information and services for school age children. One family shared a desire for consistency in teaching approaches and programs.

It seems like every time we transfer from one school. . .each of them seemed to have a different way of wanting to educate her rather than continuing with what. . .seemed to work and building on that. It was kind of like getting halfway through the house and deciding we do not like this plan. Let’s abandon it, tear down what we have done, and start again with a whole different plan. . . . It was difficult to convince them to continue with what we were doing and build on it rather than switch over to a whole new agenda and method of teaching her (Ross).

Another family expressed frustration with the school system and service agencies as she pursued information on vocational training options and alternative living situations. No one provided her with the information or assistance she requested, which left her feeling she had no where to turn. “There is nothing else I can do. I have done it. I am just about exhausted” (King). These cases highlighted a failure of schools to provide continuity in programs and to supply families with supportive information.

In the preinterviews families discussed an array of incidents or practices of educators that interfered with their involvement in planning or hindered them from pursuing dreams for their children. Before using SCIEP, families primarily assumed or were impelled into passive roles in determining their children’s educational goals and program. Families saw themselves as participating in meetings, but their discussion revealed they primarily listened and answered questions. Problems families encountered were lack of support for what families wanted, lack of understanding for what families were experiencing, and lack of communication between schools and agencies to build successful transitions. These results evidenced a need for an approach to support an educational partnership between families and professionals.

Family Perceptions of Student Centered IEP Planning

Data collected in postinterviews addressed family perceptions of the SCIEP planning and was categorized into the areas of (a) meeting purpose, (b) meeting dynamics, (c) process structure, and (d) student involvement.

Meeting Purpose

One purpose of the SCIEP meeting families identified was planning for the future. All six of the families discussed how the process facilitated opening families up to considering the future, developing plans for the future, and using the plans as a basis for programming today. The discussion generated from using the forms placed focus on not only determining goals and services, but on choosing goals and pursuing services that would assist them in reaching future dreams. The discus-
sion triggered some families to think about aspects of their children’s futures that they had not considered before. For Ms. Baxter this meant seeing options for her child that she thought were not possible.

It kind of keyed in on what it is that you want her to be able to do in the future... to tune in that she will be able to do something instead of just being homebound where somebody comes in here and feeds her and clothes her (Baxter).

This was the first time that families had discussed this information in an IEP meeting. By sharing dreams, the families began to consider the future and to identify goals to target today that could assist with achieving future dreams. Plans for the future varied from family to family—alternative living placement, companionship, work, and higher education. One family noted the shift to the future. “We [the family] have discussed it before; we just never have narrowed it down to reality” (White). All families felt discussing the future was a positive change because informing professionals established a support team to facilitate achieving dreams. As one family put it, “…For everybody to visualize this dream, a goal, for Alexandra, I think it is a good thing because I am sure that could be a part in helping to make this dream come true” (Ross).

Professionals involved in the meetings echoed the families’ view that consideration of the future sparked a more purposeful dialogue. Through this, a realistic vision of the student’s future generated a new perspective that helped professionals know how to guide the family.

A second purpose of the SCIEP meeting families identified was developing a holistic view of the student. Five of the families discussed how the process revealed more extensive information in the areas of home, community, and school than in prior meetings, which provided a broader picture of student functioning. One family emphasized the importance of professionals understanding student functioning in environments outside school. “You can open up and tell the things that you do with him because I do not just shelter him. . . .” (King). Another family member discussed how the forms gave a more accurate picture of the student from which the team could develop an educational program. She discussed the contrast of the traditional deficit focused meeting information with the ability profile generated with SCIEP. This parent voiced the importance and desire of families to hear ability focused information as a means of promoting professional-family collaboration and effective planning for the student. Professionals confirmed that SCIEP gave a broader view and ability focus in student functioning and noted the insight it provided in developing and implementing programs.

Meeting Dynamics

Families shared how the SCIEP process shifted meeting dynamics from general conversation to in depth communication about specific issues, which supported more active and open interaction than in previous meetings. The process encouraged communication, brainstorming, and problem solving between families and professionals. These meetings were characterized by their shift from simple exchange of information between team members toward true collaboration. “Everybody, each one, put in their input and discussed it to the fullest” (White). Some families offered ideas about goals in areas that had not been targeted before, their input cued by the prompts written in the SCIEP forms. “I knew what to ask, what I needed to know” (White). Other families identified the primary difference in this meeting as an increased level of communication. “It did not change my input any. It just gave me more input... . . .” (King). This increased communication supported an overall elevated level of family participation.

Beyond prompting input, the SCIEP process facilitated collaborating by promoting an open and nonjudgmental atmosphere that was conducive to families sharing input. As evident from interactions at the meetings and from comments in the postinterviews, families actually enjoyed the meetings: “…it was just a good meeting” (King), “…I really enjoyed it... . . .” (White), and “…I thought it went different, one of the most enjoyable ones I have been to before” (Lewis). In confirmation of this positive experience, all families stated they preferred SCIEP to typical IEP planning. Mrs. White discussed her preference, “To me
it was a lot better IEP meeting than I have ever been to. It was all discussing important things that I enjoyed finding out about, some things I did not know" (White). The process made the families more comfortable and at ease than at previous IEP meetings. Mrs. White discussed this change. “I felt like everybody just jumped in and did their part rather than the other meetings—zip, zip, zip—I did not know where I was at when I left” (White). Another parent echoed similar feelings, “I was more comfortable. Usually when I did go to those meetings [past IEP meetings at school], I think what was mainly on my mind was getting out of there” (Lewis). Comfort level appeared to have an immense effect on family participation in team discussions.

Collaboration benefits were not limited to families, but extended to professionals. Professionals felt using the forms encouraged collaboration not only between professionals and families, but among professionals as well. As one professional shared, “Other IEP meetings are so discipline defined. Each discipline has their lines to talk through. With these forms the family is able to ask, ‘Can you help us with this?’” The format encouraged team efforts to address student needs by placing issues before the team so that all members could contribute their expertise in a collaborative effort. With this approach, addressing goals was “not territorial.”

Another positive aspect of the meeting articulated by families was that professionals and families gained useful information from one another. Families learned what to expect in the upcoming year, goals for the families to work on at home, details about the student’s program, what skills the student was working on at school, information about alternative and augmentative communication devices, and how to teach the student while out in the community. “I understood it a little bit more. . .of what Vonica was going to be doing for the next year. I was real pleased with what I heard” (Moore). Ms. Baxter shared further details about the information she gained. “I liked that [SCIEP] because it helped me out taking her into the community too. You [the teacher] are teaching her stuff like counting money. . .which I never did think of doing.”

Professionals learned more about the student’s relationships and friendships at home, skills or behaviors of the student at home, and how and where the student functions in the community with the family. Families provided the team with a clear picture of the students’ lives outside of school, how the students function with their families, to an extent that had never been discussed in previous meetings. As Ms. Baxter noted, “I feel like that now we both have some understanding there on each end. I understood more about what is going on in school and you as her teacher understood more about what is going on at home.”

One professional offered an explanation of how the process made such a difference in the knowledge shared and learned. The format of the meeting supported receptivity of families and professionals and created an open atmosphere for families to express ideas and concerns. Families were then more open to accepting and often better able to understand opinions and suggestions of other members. In turn, families also offered information that team members welcomed with open minds.

**Process Structure**

Families identified the structure of SCIEP as a strong factor in supporting family participation. All families felt that both family and meeting forms increased their participation and guided them to discuss issues they typically would not have shared. In the words of one family, “All of this, it is different, but it is to the point. This is the first meeting that these items and statements have been made where you can have input in it” (King). Another family shared how the process served to prompt input. “As you go to each step of the meeting. . .you begin to generate ideas rather than just as we have in the past with general conversation” (Ross). Professionals and families agreed that the family forms served to prepare families for their role in the meeting. One family (Ross) discussed the contributions of the forms.

It is good before the meetings to stimulate thought. . . . Most of the time. . . you really just have not taken the time to think about what it is that you feel that you need to discuss with the teacher or some of the things that you feel like we need to begin to work with her on.
Family participation is often stifled because families feel as outsiders rather than as team members. Ms. Baxter emphasized this point, “I think a parent being in the meetings is just like a visitor.” In addition, she shared how SCIEP drew her in as a contributing team member. “With your questions [on the forms] you are digging up more and more and more-...[Without the forms] The parent may not think it is important and they kind of withhold some information.” As with Ms. Baxter, families often withhold questions or input out of concern that they are unimportant. The process supported families to overcome this obstacle to participation by creating a situation that prompted families to share. Other families acknowledged this point, “Rather than the other meetings I had been to, I knew what to ask, what I needed to know” (White). Professionals attributed this shift in family participation to changing from a “Here it is. Will you sign?” approach to a “Families are the meeting” approach. Professionals discussed how the process allowed the families to dictate the meeting in an indirect way by giving families a clear purpose and role to fulfill resulting in immense change in participation.

The process supported family-professional relationships that encouraged family communication across time. “It just made a good relationship between the teacher and physical therapist and occupational therapist. I feel more comfortable that I can come to you” (White). Professionals noted that the process educated families about each professional’s role while opening lines of communication. Related service professionals shared that establishing a relationship where families recognized them as resources was a highly positive outcome.

In addition to supporting family participation, families and professionals discussed how the SCIEP process provided structure, focus, and clarity to the meetings. Mrs. King stated, “…it is more clear” (King). Families were pleased with the meeting because the discussion stayed focused and all issues were thoroughly covered. One family explained, “It keeps you on target so you do not get off track and discuss something else. It structures the meetings, keeps you focused. I like that” (Ross). Furthermore, the structure and focus of the meeting led to more clarity. Families left the meetings with a better understanding of the information covered. As Mrs. Moore explained, “I understood it a little bit more”.

One of the features contributing to meeting clarity was design of the forms. Five of the families mentioned that the new forms were easier to read and understand than the legally required IEP forms because the SCIEP forms were “…just like a little diary” (Baxter). As one family revealed, more immediate value was placed on the SCIEP information, “I was able to read and understand them better. I actually read that whole thing [student centered forms]. Usually I just stick them [legal IEP forms] on my dresser. I do not even look at them” (Lewis).

**Student Involvement**

In preinterviews families had little to say about the students’ prior participation. Primarily the families hoped that their children would become more active in participation in the future. After implementing the SCIEP process, the postinterviews showed how the new approach had begun to transform families’ consideration of the students’ involvement. Due to the range of student cognitive and communication abilities, student involvement varied widely across the meetings. In 2 of the 6 meetings, student participation was active in that students shared information about strengths and future desires. In the remaining 4 meetings, students had more passive participation. Three of the students gave professionals information related to goals and dreams that the facilitating teacher shared in the meeting for the student. For the remaining student whose communication was limited, the team used knowledge of student preferences to discuss student desires.

Student participation, regardless of whether participation was active or passive, resulted in a range of family comments focusing on effects it had on the family. Four of the 6 families discussed benefits for both themselves and their children as a result of the student input into planning for the future. Families noted how consideration of their child’s perspective and interests gave them new insight into their child’s goals and dreams. Families viewed this process not only as a means of enlightening them, but also as a way for their children to
develop skills that would shape their future. “At least she has goals for herself. She just
does not want to do nothing” (Moore). She
continued, “She is going to have to learn to
express her own feelings someday. She might
as well start now” (Moore). For the Moore
family, the process prompted Vonica to share
her dreams in detail that she had not shared
with her family prior. “It gave me an under-
standing of where she wanted to go. . . .” (Moore).

In some meetings, discussion of student
dreams prompted the team to consider stu-
dent abilities and interests while also consid-
ering skills, competencies, and resources re-
quired for achieving that dream. For one
family this meant determining what aspects of
a dream profession intrigued the student so
that the team could generate realistic alterna-
tives.

I think she has a few real, real high dreams
[veterinarian], but bringing it on down is
she likes to work with animals. We did dis-
cuss this. She probably would be real good
with taking care of pets and looking after
them (Ross).

Opening up the future encouraged some fam-
ilies to delve into issues they were putting off
and to discuss ideas they had been hesitant to
voice.

For some families the process was a catalyst
for the family to reconsider expectations for
student responsibilities not only in educa-
tional planning, but home environments. The
Ross family considered ways to increase their
daughter’s involvement. “I would like for her
to be more involved than she is.” They con-
tinued, “. . .rather than just accepting okay, we
need to keep asking more questions and keep
probing until we get her to open up a little bit
more on these things [educational planning,
dreams, future]” (Ross). This family discussed
how planning prompted their recognition of
the importance of increasing expectations
and responsibilities at home to support their
child’s development of skills needed for fu-
ture functioning and success.

Families felt the student’s presence in the
meeting informed the students of adult expec-
tations for them. Students were participants as
professionals and families discussed expecta-
tions related to daily functioning, behavior,
and academics. “I thought it was good for him
to put his input in too and to listen to what he
needs to do and what we expect out of him
next year” (Lewis). These families expected
the act of students listening to and participat-
ing in goal development would motivate them
to be more productive in achieving goals. Mrs.
White articulated this expectation: “I think
she realized that we expected a little more of
her than what she is doing and we know she
can do it. . . I think she will do a lot better in
the next year.”

At the time of postinterviews, the new plan-
ing process had an obvious short term effect
on two students. Both Mrs. White and Mrs.
Lewis mentioned behaviors or requests their
children had made since the meeting that
were relevant to goals discussed in the meet-
ings. Erin had begun to independently engage
in drawing as a leisure activity and Zach had
repeatedly requested his family to drill his
multiplication facts. Participating as team
members seemed to make goals more relevant
for students and motivate them toward
achievement.

Implementation and Future Use of Student
Centered IEP Planning

Postinterview data addressing the feasibility of
using student centered planning was catego-
rized into two specific areas: (a) process short-
fall and (b) recommendations for future use.

Process Shortfall

Four families acknowledged that a limitation
of the process was that it did not completely
alleviate family fear and worries at times of
transition. Mrs. Moore spoke of her concerns
about Vonica moving to the middle school in
the fall. “Nothing will make me feel easier
about it. I still do not know how the year is
going to be for her.” Although the general
consensus of the families was that SCIEP could
not eliminate stress from transitions, 3 fami-
lies felt that use of the process would give
them more information about transition envi-
ronments, which might help ease the process
or better prepare them for the move.
Recommendations for Future Use

Families and professionals offered suggestions for adapting and utilizing the process in the future. As expected, professionals sought means of reducing the time commitment of the process. Professionals who had engaged in more than one SCIEP meeting felt that as professionals become more familiar with the process the time commitment may be reduced by half. For related services professionals with large caseloads, one professional suggested a modified approach to participation. For maximum efficiency while still supporting all students served, professionals could read over form summaries, but also be present for portions of the meeting for which they would have the most input and impact (i.e., Now, Goals, and Dreams). Although four of the families described the meeting as a bit longer, they stated they were glad to put in the extra time to help their children and they did not request a time reduction. One family expressed the desire for additional planning time, but recognized that this would be difficult for professionals to schedule. This family added that the information covered was more important than the length of the meeting.

All families and professionals, except one professional, recommended annual use of the forms. Families felt for the students to reap the maximum benefit the tool should be used annually. The professional who differed in opinion suggested development of an interim summary form to be used annually with the full process being used every third year.

After using the process once, both facilitating teachers developed ease with implementing the process that spawned ideas for individualizing the process for later use. Professionals felt the forms would be most beneficial to facilitating teachers if they were able to adapt the process to fit their personal style and/or the needs of a specific family, student, or situation. Facilitating teachers found that some families would have benefited from an alternative option for completing the family forms. Although family forms enhanced the information used in developing goals and planning a student’s program, the process was still effective with the families that did not complete the forms.

In reflecting upon student participation, one professional considered the current student forms too vague recommending expansion to offer more choices or categories to support student completion. Augmenting the student forms in this manner would inform the students of the range of possibilities available while encouraging more active involvement. Maximal student involvement occurred with students with higher cognitive and communication abilities. This prompted professionals to express the opinion that the process would work well with students with mild disabilities who would be more actively involved in the planning process.

Discussion

In summary, these findings represent positive changes across both student and family participation with the use of SCIEP in educational planning and illuminate the potential that exists for engaging families as collaborative members on educational teams. Findings revealed in preinterviews depicted families who primarily listened in meetings and students who were minimally involved, but families who were generally satisfied with planning. The postinterviews revealed families who saw themselves, their children, and team members actively planning for the future and families who were more satisfied with the planning process and their level of input. These changes highlighted benefits that student centered techniques offer in IEP planning.

Limitations

Use of a small number of families from a single school system placed constraints on the findings. Although this small sample and close personal association promoted trust and allowed closer analysis and richer data because of the understanding of the stories families told, the small number of participating families limited the external generalizations or transfers which may be drawn from the data for other families and educational teams. Close association of families and team members with the first author who served as interviewer and facilitating teacher created possibility for biased findings. Yet, professionals and family participants shared clear ideas about shortfalls of the process and necessary
changes. Families contributed negatives even about the first author’s own practices. The existence of both positive and negative results verified the researcher as a neutral agent.

Needs

The following interpretations, generated from family perspectives on IEP and SCIEP meetings, provide a groundwork for developing family-professional collaboration and addressing educational planning issues identified in this study and in the literature (e.g., Hilton & Henderson, 1993; Morningstar et al., 1996).

First, planning must be designed to encourage family involvement. Providing a relaxed and open environment is the starting point for positive family-professional exchanges in which value is shown for families’ knowledge and ideas about their child. Educational teams must further support family input through verbal and written prompts that encourage families to consider student needs and problem solve issues. The SCIEP process built a role for families, which was not static, but was open for families to choose the level of activity and input they desired. Educational teams need to accept families at the level of involvement they choose never pushing families to perform what is perceived as optimal involvement. This could alienate families resulting in even less involvement and withdrawal of support. As this study illustrated, some families may be reluctant to attend IEP meetings. For these families, input through informal conversations, classroom observations, phone calls or home visits could extend a bridge towards increased family involvement.

Second, meeting dynamics must shift from being professional driven towards planning becoming a shared learning opportunity. The SCIEP process created an atmosphere of learning through the meeting structure, the information requested of families, and the ensuing discussion, which supported contributions from all team members. Families were an integral part of the team meeting as families held necessary information to complete the process. In traditional planning, families play an active role in planning only if they are advocates and educate themselves to carve out their own niche. In SCIEP the responsibility of developing one’s role is not necessary because families’ roles are built into the process. By placing equal importance on the contributions of all members, families are partners in planning. There must be an atmosphere of questioning, learning, and exchanging to support sharing and understanding among disciplines and between families and professionals.

Third, educational teams need to focus on planning for the future. As this study showed, none of the families had discussed their dreams for the future with educational team members before. With SCIEP, professionals have the opportunity to learn what families hope students to accomplish now and in the future. By focusing on the positive aspects of student functioning and student interests and using the future as a point of reference for planning, IEPs and goals become much more meaningful for families, students, and professionals.

Finally, educational teams must involve students in planning so that they may voice their interests and preferences while gaining an understanding of team expectations and the need to acquire specific skills. This can encourage increased motivation, self-awareness, and decision making leading students to become their own agents of change. For several students, SCIEP planning resulted in the sharing of dreams for the future and the consideration of objectives needed to reach the dreams. As students continue participation over time, changes are expected in their overall ability to participate, in setting and achieving goals, and in their confidence. These general outcomes are predicted and discussed throughout the self-determination literature (Wehmeyer, 1998; Wehmeyer & Palmer, 2003). SCIEP holds promise as one vehicle for students to develop self-determination by voicing choices, planning goals, and being partners in decision making. Using SCIEP at a young age and over a period of years may prepare students for holding greater roles of responsibility and more control in their lives as they move into adulthood. Student centered approaches to educational planning are an effective means of promoting self-determination by placing students in a position of having power to make choices about their educational program and their own lives.
Teacher training programs must integrate information on student and family centered approaches to expose teachers to a variety of tools to use in educational planning with families. Along with information, teachers should participate in role play or field practice implementation through which modeling, redirection, and feedback are provided to enhance their skills for involving families in planning. For veteran teachers who renew certification through inservice training, local and regional educational service agencies should make available workshops related to specific special education needs such as family involvement. Training in the use of student and family centered planning approaches through local and regional systems has the potential to reach a vast audience with impact possibilities across numerous families. Educational efforts through teacher training in college courses and inservice training should seek to increase teacher awareness of the positive effects this type of planning can have on students, families, professionals, and the interactions of these groups. Training in student and family centered planning should emphasize teachers adapting a process, combining parts of processes, or using portions of a process to find the steps to best suit their personality and interaction style while gaining the desired assets of the planning approach for their individual meetings.

This study opens several areas of research to further explore to move educational planning and family involvement toward best practices. Certainly, further research on the use of SCIEP with a larger number of families is necessary before it can be determined if the tool will bring about positive changes in other families’ involvement. Research questions related to family characteristics such as education, ethnicity, and culture, as well as other student characteristics remain open as to their impact on this approach. Continued consideration of family baseline satisfaction with planning is important to judging the effects of SCIEP or any other family involvement approach (McNaughton, 1994). In addition, follow along research on the use of this process through the middle and high school could give insight into whether a planning tool can have far reaching effects on quality of life and post school outcomes.

As discussed in the findings, team members suggested several changes particularly with the family and student forms. What impact would modifying the forms to give families and students more ideas and options about the future have on family and student involvement? Research should follow to examine any changes in involvement that result from refinement of the SCIEP process. Though this current study did not seek to focus on student perceptions of the process, the meetings, or their attitudes toward involvement, understanding the student viewpoint can be critical. Future research of the implementation of the process with students of varying abilities should emphasize their perceptions of participation and the planning process. Study should seek information on how this type of educational planning affects student attitude, motivation, responsibility, and perception of control.

While research questions still remain regarding student centered planning, studies such as this, which change the approach to planning with families, are critical if the field expects to move forward with family involvement to meet expectations of IDEA. Without changes the majority of families will continue to fulfill the letter of the law with signatures and attendance without branching out to fulfill the intent of the law—families as partners in educational planning. The hope remains that opening opportunities for families and students as collaborative planners will assist them in realizing their dreams as reality in school and post school environments.

References


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“Self-determination is what it’s all about”: What Post-secondary Students with Disabilities Tell us are Important Considerations for Success

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Virginia Commonwealth University

Abstract: This article describes results of a series of focus group interviews conducted with post-secondary students with disabilities about the importance of self-determination in their success in those settings. Participants attended community college and/or state universities in Virginia and were between the ages of 18 and 48. They indicated that self-determination skills were important to their success in taking courses, finding the supports they needed, and advocating for their rights. Implications for supports for students with disabilities in post-secondary settings, as well as those K-12 students who are planning to transition to post-secondary educational settings are discussed.

Self-determination has been identified by numerous researchers as a critical component of effective transition planning for students with disabilities (Eisenman, 2001; Field, Martin, Miller, Ward, & Wehmeyer, 1998; Wehmeyer, 2002; Wehmeyer & Schwartz, 1997). In fact, research has shown that the core component skills of self-determination are correlated with an improved quality of life for adults with disabilities, particularly those outcomes as employment, community living, and post-secondary education (Martin, Mithaug, Husch, Frazier, & Huber Marshall, 2003; Raskind, Goldberg, Higgins, & Herman, 1999 2002; Wehmeyer & Schwartz, 1998; Wehmeyer & Schalock, 2001).

The importance of self-determination is reinforced by the Study of Personnel Needs in Special Education (SPeNSE), a study funded by the U.S. Department of Education. This large-scale, national study identified teaching self-determination as one of the key practices in facilitating transition (U.S. Department of Education, 2002). Approximately 62% of teachers reported teaching self-determination “often” and approximately 29% of teachers reported teaching self-determination “sometimes” (U.S. Department of Education, 2002). Empirical studies report, however, that many secondary teachers do not include activities for students with disabilities that will foster self-determination as part of their transition planning (Agran, Snow, & Swaner, 1999; Eisenman & Chamberlin, 2001; Grigal, Neubert, Moon, & Graham, 2003; Thoma, Baker, & Saddler, 2002; Thoma, Nathanson, Baker, & Tamura, 2002; Thoma, Rogan, & Baker, 2001; Wehmeyer, Agran, & Hughes, 2000). SPeNSE data, for example, indicates that special educators who conduct transition planning devote 6 hours per month, on average, to this activity (U.S. Department of Education, 2003).

The correlation between post-secondary success and self-determination skills is an important one, especially given the fact that other researchers have linked postsecondary education with improved employment outcomes for individuals with disabilities (Stod-
Given the importance of learning self-determination skills in general, the number of core component skills that are part of self-determined behavior, and the lack of time that special educators are devoting to teaching these skills, we thought it would be important to understand which of those core component skills students themselves found to be most important to their success in post-secondary settings. This research investigation focused on students in those settings who were identified by their support providers as having a high degree of self-determination skills in general, in an attempt to guide special educators and transition planning stakeholders in their work to develop transition plans that result in successful outcomes for students with disabilities.

Wehmeyer (1992) defined self-determination as “acting as the primary causal agent in one’s life free to make choices and decisions about one’s quality of life, free from undue influence or interference” (p. 302). Field and Hoffman (1994) conceptualized self-determination as “one’s ability to define and achieve goals based on a foundation of knowing and valuing oneself” (p. 136).

Wehmeyer, Agran, and Hughes (1998) described 12 component skills that are important to the emergence of self-determined behavior. Those elements are: “choice-making; decision-making; problem-solving; goal setting and attainment; independence, risk-taking and safety skills; self-observation, evaluation, and reinforcement skills; self-instruction; self-advocacy and leadership skills; internal focus of control; positive attributes of efficacy and outcome expectancy; self-awareness; and self-knowledge” (Wehmeyer, Agran, & Hughes 1998, p. 11).

It is clear that the goal of transition planning is to prepare students with disabilities for their lives after high school by teaching skills they will need in the new settings. But what skills are most important, and how does one identify them? We believe that the best way to identify those essential skills is to ask those who are currently in those settings. So, for success in post-secondary settings, we believe it is important to ask students with disabilities who are in colleges and universities. The specific purposes of the study are as follows:

- Identify which skills post-secondary students with disabilities described as being important to their success in post-secondary educational settings.
- Identify how post-secondary students with disabilities learned those skills.
- Identify how post-secondary students with disabilities believe we can best prepare high school students for the transition to post-secondary education.

**Method**

**Participants**

We used a purposive sampling procedure to select focus group participants (Morgan, 1998; Patton, 1990). In this procedure, we sought to include post-secondary level students with disabilities who were receiving supports and services related to their disability and who were identified as having self-determination skills. They were individuals who self-disclosed that they had a disability at some point within their post-secondary educational experience. Participants were paid for their time to increase the likelihood that they would attend the focus group interview session.

This method of choosing participants was used because it offered an opportunity to learn from those students who had disabilities, who sought out supports and services for their disabilities and who therefore exercised at least some degree of self-determination skills. At the university level, there is no attempt to identify students with disabilities. Instead, students with disabilities need to self-disclose; that is, they need to identify themselves as having a disability and request the services and supports they need from the office for students with disabilities. Instead, students with disabilities need to self-disclose; that is, they need to identify themselves as having a disability and request the services and supports they need from the office for students with disabilities at the college or university setting. Choosing participants who had self-disclosed assured that all participants had some basic self-determination skills and therefore had experiences to use to answer these questions.

Participants ranged in age from eighteen through forty-eight. Fifty-three percent of the participants were female and forty-seven percent were male. Participants came from a variety of cultural backgrounds and had a variety of disabilities. Tables 1-3 highlight demo-
graphic characteristics of participants. The ethnic backgrounds of the participants can be found in Table 1. Table 2 lists the types of disabilities that participants had, while Table 3 lists the grade classification of participants.

Focus Group Interview Process

This research study used a semi-structured interview process within a focus group format. Kreuger (1998) describes a number of reasons for the use of focus groups. He reports that focus groups are an effective way to obtain results from a small group of individuals, and they also provide an atmosphere for collecting information that is more relaxed and natural. Focus groups are more socially oriented with a structure that allows the facilitator the flexibility to explore unanticipated issues that emerge during the discussion.

Six locations for the focus groups were chosen: three community college sites across the state of Virginia, and three college/university sites in different geographic areas of the state (rural/Southwest, urban/Central, and suburban/Tidewater). We asked staff in the office for students with disabilities in these institutions to identify 6-8 students who receive services from their office. Students who were willing to participate gave permission for research staff to contact them directly. Telephone calls were made inviting participation in the focus group, and the researcher gave the individuals information about the purpose of the group and the date, time, and location of the meeting. Staff also identified whether accommodations would be needed by the participants in order to participate fully in the groups. Follow-up letters and phone calls were made to ensure their participation. Individuals who agreed to participate signed a consent form for the study and received a stipend of $25.

The typical size of a focus group is 6 to 10 participants and researchers generally find that three to five groups allow the emergence of recurring themes (Morgan, 1998). Group size in this study ranged from four to ten participants and we found common responses across the six groups held. The final sample included thirty-four participants.

There were three primary discussion questions with related probes for gathering information. Questions and follow up probes centered on the primary research purposes as outlined above, including: a) what do you think a good advocate does to get the services and supports they need; b) what advocacy/self-determination skills are absolutely essential for staying in college and getting the supports you need; and c) what suggestions do you have for our training format (training for high school students who are planning for their transition to post-secondary education)?

To ensure consistency across the six groups, we developed question, probe, and data guidelines for focus group facilitators and scribes. Two staff members facilitated each group with one member serving as the group moderator and the second individual serving as scribe, taking notes on the focus group session by summarizing the key points verifying with participants that the points were representative of the discussion and offering another opportunity to add to the dialogue.

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>Caucasian</th>
<th>African-American</th>
<th>Asian</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>21</td>
<td>12</td>
<td>1</td>
</tr>
<tr>
<td>Percent</td>
<td>61.8%</td>
<td>35.3%</td>
<td>2.9%</td>
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</table>

<table>
<thead>
<tr>
<th>Disability</th>
<th>Number</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Blind</td>
<td>2</td>
<td>6%</td>
</tr>
<tr>
<td>Cerebral Palsy</td>
<td>6</td>
<td>17.6%</td>
</tr>
<tr>
<td>Narcolepsy</td>
<td>2</td>
<td>6%</td>
</tr>
<tr>
<td>Multiple Health Issues</td>
<td>1</td>
<td>2.9%</td>
</tr>
<tr>
<td>Deaf</td>
<td>1</td>
<td>2.9%</td>
</tr>
<tr>
<td>ADD/ADHD</td>
<td>5</td>
<td>14.8%</td>
</tr>
<tr>
<td>Learning Disability</td>
<td>7</td>
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</tr>
<tr>
<td>Bipolar</td>
<td>1</td>
<td>2.9%</td>
</tr>
<tr>
<td>Anxiety</td>
<td>1</td>
<td>2.9%</td>
</tr>
<tr>
<td>Muscular Dystrophy</td>
<td>1</td>
<td>2.9%</td>
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<tr>
<td>Spinal Cord Injuries</td>
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</tr>
<tr>
<td>Tourettes Syndrome</td>
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</tr>
<tr>
<td>Multiple Sclerosis</td>
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<tr>
<td>Diabetes</td>
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</tr>
<tr>
<td>Seizure Disorder</td>
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<td>2.9%</td>
</tr>
<tr>
<td>Visual-perceptual disorder</td>
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<td>2.9%</td>
</tr>
</tbody>
</table>
Following each focus group, the moderator and scribe debriefed the session capturing the first impressions and the main themes that seemed to have emerged. After the second focus group met, the moderator and scribe again looked for repetition of themes that had emerged. The results were further analyzed by the scribe’s notes.

Data Analysis

Data analyses were conducted using information from the scribe notes (Benz, Johnson, Mikkelsen, & Lindstrom, 1995; Krueger, 1998). We developed transcripts for each focus group including demographic information, location and settings for each of the groups, responses to questions posed by the facilitator, and information obtained through follow-up questions to obtain additional information from the participants during the focus group sessions (Benz et al.). After each of the summaries was developed, we analyzed the information and systematically coded them for the emergent themes. We then compared and integrated these themes across the major themes that emerged from the data analysis across all groups.

Results

Research Question 1. Identify which skills post-secondary students with disabilities described as being important to their success in post-secondary educational settings

Participants in these focus group sessions clearly identified self-determination as important to their success in college and/or university settings. Many shared experiences of not self-disclosing (not advocating for the services they needed), failing, and then choosing to disclose their disability and request the supports they needed. But each of them identified many of the key component skills of self-determination as outlined by Wehmeyer as being essential for their success, including problem-solving skills, learning about oneself (and one’s disability), goal setting, and self-management.

Problem-solving. Problem-solving skills were identified as necessary. For instance, one individual talked about the fact that “barriers find students, so students have to find out a lot of things on your own.” Another student said that it was important to find out “what works for you, how do you get around problems. It’s important that you know your limitations, set priorities, and focus on those. Every person is different.” Yet another student discussed the need to “learn to be the squeaky wheel [because] 75-80% of the problems [students face] are with others.”

Understanding one’s disability. Learning about oneself, and particularly about one’s disability are directly related to the self-determination core component skills of self-knowledge and self-understanding. No one said that learning about oneself was unimportant to their success at college. In fact, they reported that others did not understand the disability and/or their abilities. For instance, one student reported that “no one understood my disability and I was told that I could not attend college.” When asked how she then made the decision to go to college, she said that “I gathered information everywhere I could: the Internet, doctors, and support groups. Then I had to explain it to others and ask for accommodations.”

Many other students reported that they used the Internet to learn about their disabilities or to understand how others with the same disability succeeded in life. “My comfort was information: the Internet and doctors.”

“The Internet and a psychology class were helpful for me.”

<table>
<thead>
<tr>
<th>Year</th>
<th>Freshman</th>
<th>Sophomore</th>
<th>Junior</th>
<th>Senior</th>
<th>Graduate</th>
</tr>
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<tbody>
<tr>
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<td>8</td>
<td>14</td>
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<td>23.6%</td>
<td>41.1%</td>
<td>17.6%</td>
<td>2.9%</td>
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</table>
important sources of information for me, especially [about] how the brain functions and better understanding of my disability.” Other students felt that they just had to do it, saying things like “I had no other choice but to accept my disability” or “[I just had to] deal with it, fight through it” or “[I was] faced with the decision to continue living or become a hermit.”

Yet another theme that emerged was that of using trial and error as a strategy for determining what worked as an accommodation for one’s disability. One student said that a trial and error strategy worked for him. “I have a short attention span. I had to learn to pay attention through my grades. I’m not good in math and had to take it a second time. Doing it twice made me realize what my strengths and weaknesses are. I tried a different instructor and he was very different with a different teaching style. The second instructor explained it better. Before taking the class, find out how that person teaches.” Another student explained that she used “trial and error [to figure out what worked as an accommodation] for studying. Note cards are helpful but anatomy note cards are not good. I learned my strengths and weaknesses through experiences with different study techniques. I need to study with another person. I need to see it, hear it and write it. I’m more of a kinesthetic learner. I wasn’t prepared enough in high school.”

Goal setting. Every participant in the focus groups mentioned the importance of goal setting. One participant said, “goals have meaning to the individual [and may not have meaning to others], but it’s important to set career goals that reflect what you want to do and enjoy in life.” Another student reported, “I think goals need to be precise with steps and breaking it down. Take it one step at a time, once you accomplish the goals, you move on to the next one.” Yet another reported that he “learned that you have to be realistic about educational goals and jobs.”

High expectations when setting goals was a theme that emerged from the participants. As one student reported “my parents helped me to set high goals and to perform well even with a disability. I don’t know how people can deal with a disability without supportive parents.” Yet another student reported “seeing more people on TV and in movies who have the same disability made him more aware of his disability and what goals he could accomplish.” Another explained that high expectations might not be supported by others, but that “being told she couldn’t do it, being determined to excel [helped her set and meet goals].” Lastly, a student summarized his feelings and those of the group when he said, “self-determination is what it’s all about. I want to do these things.”

Self-management. Self-management was also listed as an important skill by the participants in these focus groups. Participants reported, “I learned to organize my time. I don’t have back-to-back classes so I can take a nap and wake up.” Another participant reported, “I use a day planner and try to write everything down. I use the day planner to plan ahead for situations that require extra time.” Yet another participant said that it is important to “allot time to study, actually plan time, look at time and figure out how to use it; clean and clear the environment and have one notebook for each course and have sections in the notebook to keep up with different aspects of class: homework, classnotes, assignments, etc.”

Research Question 2. How did post-secondary students with disabilities learn these skills?

Trial and error. The most frequently reported method for learning self-determination skills was trial and error. That is, participants reported that they tried something, failed, and then tried again. Some even went as far as to say that “[I] don’t think that could be taught” or “In some ways it can be taught at school and some can’t.” Another student explained how he learned self-determination skills by saying, “figure out what the problem is and then figure out different ways to solve it.” Lastly, one participant offered this advice, “Make sure you know what your rights are and work with the people to get what you want, not forcefully, but assertively, until you get what you are entitled to. I learned these rights by finding out on my own.”

Finding support from peers/mentors. “Get people with disabilities together to learn from others with disabilities,” a strategy that one student suggested would work to learn “what your rights are.” This idea of learning from
others who have the same disabilities, and from a more traditional mentor relationship emerged as a theme. One participant said that he learned from “role models. They can tell you what it’s really like” while another participant reported “I had friends to look out for me and help me with notes. You know, friends who have the same disability. . . .we all work together.”

Being taught by parents. Yet others reported that their parents played a role in helping them learn these skills. “You need to be taught at home or learn on your own.” Another student reported that he learned from “my dad. He deals with a lot of my stuff.” And lastly, another student reported, “my mom is a great help. But it’s important that parents don’t baby them. . . .let them do things on their own. That’s the way to learn.”

Research Question 3. What suggestions do you have for training high school students with disabilities?

Participants in these focus groups had many suggestions for a training format for high school students with disabilities who are preparing to transition to post-secondary educational settings. These suggestions could be grouped into the following areas/themes: age to begin; format; and roles of parents in the process.

Age to begin. Participants were unanimous in their belief that learning self-determination skills should begin as early as possible. Most reported that “ninth or tenth grade [would be best]. Don’t wait until your senior year.” Another student said that it should begin “as soon as you realize you have a disability.” And yet another student said that “maybe self-determination should begin when you’re a little kid, whether you have a disability or not.”

Format for training. Participants varied greatly in their recommendations for the format for teaching self-determination skills to high school students planning to transition to post-secondary settings. It could be summarized through the comment of one student who said, “[you have to use] all formats for all learning styles.” And those multiple formats include such things as “have college students come in to talk with them;” “learning about successful people who have the same issues (Einstein, Tom Cruise, Halle Berry, etc.);” “interactive workshops;” “written information [like] fact sheets on disabilities, accommodations, resources, required testings, etc;” and “career and college exploration activities.” In summary, they reported that it was important to “make the process more practical and with more [real] life activities.”

Role of parents. Many of the participants reported that “parents need to be more involved.” They also recommended that parents realize that “[they] shouldn’t force students to do what [parents] want them to do,” but should “educate themselves and ask their kids what they thought was best.” In summary, parents are asked to “support, encourage and understand.”

Discussion

Results of the focus groups provide insights into the postsecondary education experiences of 34 college students with disabilities concerning their self-determination skills, how they acquired these skills, and what information and training are needed for secondary education students who are considering post-secondary education as a transition goal. The findings are a beginning step towards better understanding how college students define the skills or behaviors that exhibit self-determination. However, some limitations should be noted. Research is needed to further validate the information provided by these students. The selection of the participants was not based on measuring their self-determination skills prior to joining a group. The selection was based on two assumptions. First, we used self-disclosure to the DSS office as one criterion as exhibiting self-determination. Second, we asked the DSS coordinators to select students who they believed were self-determined individuals; therefore we depended on the judgment of other individuals. Another limitation is the number of students with disabilities who participated in the focus groups. The results presented in this article were based on the opinions of thirty-four college students with disabilities. A greater number of students need the opportunity to voice their experiences and ideas to achieve a greater cross-section of students with disabilities attending higher education programs.
In spite of these limitations, results present important strategies and approaches. Some of the self-determination skills or behaviors identified by the focus group participants have been reported in the literature. These skills include: 1) an awareness of their strengths and weaknesses, (2) an ability to discuss their accommodation needs with faculty and staff, (3) an awareness of services and supports available to them, and (4) an ability to access information, services, or supports when needed (Aune, 1991; Bursuck & Rose, 1992; Durlak, 1992). Comparable results were found concerning the need to understand one’s disability, seek out the services and supports needed to be successful, and communicate services needs with faculty and support services staff.

Results indicate the importance of technology, in particular, the Internet in helping students find information about their disability, which better equipped them to request accommodations and services, they needed. Another theme that emerged was the importance of family and peer support in encouraging and assisting these students in reaching their goals. They specifically discussed the importance of having peer support of other individuals with disabilities to serve as role models or as resource persons to increase their understanding about effective learning strategies or approaches.

Participants across all of the focus groups expressed the importance of setting goals, learning how to manage their time, and using problem solving strategies as essential skills when transitioning to higher education. Ongoing research and evaluation is needed to assess the impact of these skills on the progress and retention of students with disabilities in college.

**Future Directions**

The information obtained from these focus groups will be used to assist VCU-RRTC staff members to develop information and materials to use with secondary education students with disabilities considering college as a transition goal. Participants emphasized the need for a variety of formats for all learning styles and that activities should be practical and include more real life activities. Students expressed the need for secondary students to have college students with disabilities come to speak to them about their experiences. They also suggested that interactive workshops be created allowing students the opportunity to practice skills or strategies to decide what works best for them. The decision to gather information from college students with disabilities to use as one of the primary strategies for developing materials is based on the premise that the opinions of these individuals can help to fully understand what is needed to enhance the self-determination skills of students who are entering college (Lehmann, Davies, & Laurin, 2000; Fullan, 1993). Using their input will enable us to develop information that is practical and based on “real life” experiences.

There is little comprehensive research on what self-determination activities or strategies are working in the transition of students from high school to postsecondary education, and what strategies are helping students to remain in college (Harris & Robertson, 2001). Results of this study are an initial step to gaining a better understanding of the experiences of college students and the self-determination skills they believe are essential for transitioning to and staying in college. Obtaining information from students with disabilities who are experiencing the day-to-day issues, challenges, and successes in seeking advanced degrees needs to be a driving force behind the development of relevant activities and resources. Their “voices” are critical to enhancing and expanding the knowledge and information on effective self-determination methods and strategies to prepare students with disabilities to meet the demands in the college environment.

**References**


Teaching Social Communication Skills to Young Urban Children with Autism

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Abstract: This study examined effects of an intervention designed to improve the social-communication skills of children with autism. Five boys and one girl, with an age range of six to eight years and a diagnosis of autism, participated in the study. Children were paired in dyads and a multiple baseline design was used to evaluate the effectiveness of the plan-play-report intervention. Unique because two children with autism received intervention at the same time, results indicated that the intervention was successful in increasing peer-directed commenting, language diversity, and complexity. Results of this study indicate that a plan-play-report intervention provided simultaneously to two children with autism is a viable method for improving the social communication skills of both children.

It is generally accepted that encouraging and facilitating social interactions and friendships for children with autism can have a significant effect on their later social ability (Frea, 1995). Studies have shown that the social interaction and communication skills of children with autism can be improved through direct instruction (Coe, Matson, Fee, Manikam, & Linarello, 1990), script fading (Sarokoff, Taylor, & Poulsen, 2001), pivotal response training (Koegel, Koegel, & Schreibman, 1992), and milieu teaching (Hancock & Kaiser, 2002). Research has also demonstrated that self-management techniques (Koegel & Koegel, 1990; Kopp, 1988; Stahmer & Schreibman, 1993), teacher mediated interventions using priming or social scripts (Loveland & Tunali, 1991; Zanoli, Daggett, & Adams, 1996), and peer-mediated interventions (Goldstein, Kaczmarek, Pennington, & Schafer, 1992) can be effective ways to teach social and communication skills to children with autism.

Most research methods mentioned above investigated the impact of social communication interventions on children with autism utilizing teacher or peer mediated strategies where children with autism were paired with one or two typically developing or higher functioning peers (when other children were involved in the intervention) (Garfinkle & Schwartz, 2002; Garrison-Harrell & Kamps, 1997; Goldstein et al., 1992; Wollberg & Schuler, 1993). These peers helped to support the child with autism as they tested out their new skills.

Though language interventions have paired children with autism with siblings, parents, typically developing peers, and peers with other disabilities, there is a paucity of research investigating interventions that involve the use of dyads in which both individuals display autism. One study in this area that used more than one child with autism in the intervention was completed by Wollberg and Schuler (1993). Using peer directed mediation with adult support, they found that children with autism (ages 7.1 – 7.10 years) who were involved in play groups that included other children with autism and typically developing children decreased isolated and stereotypic play and made gains in interactive play and functional object use. As the children played, the interventionist stood outside the play area and directed the children to interact. A limitation of this study was that although more than one child with autism was involved in the play group, there was only one interventionist monitoring the group. Instruction and scaffolding of play could only be given to one
child with autism at a time, unless the children with autism happened to play together.

Though social interactions are difficult for children with autism, and children may not appear interested in peers or peer interaction, one study has shown that children with autism can learn skills simply by sitting next to and attending to a peer model. The effects of teaching through trial and error were compared to learning through peer modeling by Charlop, Schreibman, and Tryon (1983) who discovered that even low-functioning children with autism (mental age measured at less than half of chronological age) can learn previously unknown receptive labels simply by observing a peer with autism successfully learn and label this item. The study consisted of four dyads of children with the instructor teaching the peer model an expressive or receptive label (according to ability) while the target child observed. The results indicated that children with autism can benefit and learn from modeling procedures, especially with a similarly functioning peer-model. This type of research and the studies mentioned above set the stage for the following discussion of cognitive-social learning models as the basis for teaching social-communication skills to children with autism. As the discussion will demonstrate, this strategy has not yet been applied to pairs of children with autism.

Building on these concepts, the cognitive-social learning model for communicative skill training developed by Ladd and Mize (1983) and adapted by Gresham and Elliott (1993) emphasizes language, social, and cognitive skills. Four essential procedures are proposed as techniques for social communicative skill training: 1) Instruction: The child is provided with information, either verbal or modeled, about a particular social concept of behavior, 2) Rehearsal: The child is given repeated practice of social skills in order to promote retention of the skill concept and more effective behavioral performance, 3) Feedback and Reinforcement: The child is given feedback that provides them with information that corresponds his/her social skill performance to a standard of performance with the presentation (positive reinforcement) or removal (negative reinforcement) of environmental events that increase the frequency of targeted behavior, 4) Skill Maintenance and Generalization: Once the child has demonstrated the ability to perform a skill with the aid of an adult or instructor who provides guidance and supervision, the focus of training shifts towards increasing the child’s independence and control over both skill performance and evaluation.

It is important to consider context when implementing a social communicative intervention. Play provides contexts for children to practice interaction skills and, in particular, socio-dramatic play allows children to make sense of the actions of adults around them by re-enacting potentially confusing scenes from their everyday life (Alvarez & Philips, 1998). Play may be difficult for children with autism due to interfering stereotypic behaviors and lack of intrinsic motivation, however routine or familiarity can increase the enjoyment of an activity so a play theme may become more enjoyable over time (Brown & Murray, 2001). Furthermore, research indicates that more normalized intervention studies, such as those that go on in the context of play, are more effective than more formal or discrete-trial training in improving the language of children with autism (Delprato, 2001).

Two previous studies, conducted by Craig-Unkefer and Kaiser (2002, 2003) utilized the social-cognitive model as a basis for intervention procedures. In both studies, strategies to improve the social communication skills of at-risk preschool children were examined. Using a multiple baseline design across three dyads of preschool children (boys and girls, matched in gender mixed dyads) who were at risk for language delays and behavior problems, children were taught to plan their play, use conversational social interaction strategies and self-evaluate their play interactions. This intervention model followed the techniques laid out by Ladd and Mize (1983) and used a three part intervention containing a play organizer, a play session, and a review session. Results from both studies indicated that following the implementation of the treatment condition, all children displayed increases in social communicative behaviors. The children also showed increased use of descriptive and request utterances. In the second study (Craig-Unkefer & Kaiser, 2003), children used the newly learned skills in a generalized setting with an untrained peer. In this phase, the
children maintained increased use of social language.

While previous research indicates children with autism can be taught social communicative skills and that social cognitive learning models are effective in teaching children with mild language impairments, there is a gap in the literature around the use of the social cognitive learning model with children with autism, especially when two children with autism are paired together. In a study by Pierce and Schreibman (1995), peer-implemented pivotal response training (PRT) was utilized to teach two children with autism complex social behaviors. Using a multiple baseline design, two 10-year-old children were paired in dyads consisting of one typical child and one child with autism. Results indicated that peer implemented PRT was effective in increasing complex social behaviors such as initiations, joint attending behaviors, and language skills.

While Pierce and Schreibman (1995) were able to demonstrate gains and used a model which encompassed the four techniques for social skill training as suggested by Ladd and Mize (1983), the intervention was conducted using a typical peer as the primary instructor. The strict training guidelines for the peer did not allow for much individualization of treatment as children stuck to a prescribed treatment package. In the current study, intervention was provided by a skilled adult and treatment was more responsive to the individual needs of the targeted children. Furthermore, both children in the dyad had a diagnosis of autism and treatment was being provided simultaneously.

The current study determined the effectiveness of the three part intervention to improve social communication (Craig-Unkefer & Kaiser, 2002; 2003), with an entirely different population of subjects. Using the social-cognitive model as the theoretical basis for the intervention, children with mild to moderate autism were paired in dyads and received a plan-play-report intervention (Gresham and Elliott, 1993; Ladd & Mize, 1983). The children in this study were educated in self-contained settings. Like many children with autism that are educated in self-contained settings (U. S. Department of Education 2001), it is important to research the impact of the intervention on children who have only other children with autism to play and interact with. Since both children had the same disability, this may increase the likelihood that appropriate behaviors will be reinforced, generalized, learned and practiced in age appropriate contexts. Furthermore, this study allowed for the intervention to be conducted with two children simultaneously. Research indicates that children with autism need prompts to interact socially with others and that even typically developing peers must be taught to interact with the child with autism (Laushey & Heflin, 2000; Swain & Morgan, 2001). If both children need prompting to interact (regardless of disability status), it may be a more effective use of teacher time and resources to make both children the focus of the intervention, rather than having one child instructed simply to act as a trainer.

Through examination of the collected data, the following research questions were answered:

What effect did the intervention have on peer-directed language, specifically descriptives and requests?

What effect did the intervention have on language diversity and complexity?

How much support did the interventionist provide to the children?

Were there differences in pre and post language assessments?

Method

Participants

Recruitment procedures. Subjects were recruited from the Chicago Public School system. One school with a high percentage of students with autism was selected. Teachers of students with autism were provided with a checklist of screening criteria which included: a child between the ages of five- and eight-years-old, who had a diagnosis of mild/moderate autism, and had passed the Chicago Public Schools annual hearing assessment.

Children were excluded from the study when they met the above criteria but also fulfilled one or more of the following exclusion criteria: (a) had a diagnosed hearing impairment; (b) had a diagnosis of severe/pro-
found autism, (c) had a primary diagnosis other than autism, (d) had a secondary diagnosis of mental retardation, serious emotional disturbance, hearing loss, or low vision, (e) were under the age of five years, one month or over the age of eight years, 1 month, or (f) spoke a language other than English without also speaking English. No participants were excluded based solely on sex, race, or ethnic group.

**Screening procedures.** Children were assessed on the following domains: receptive and expressive vocabulary, non-verbal cognitive ability, and adaptive behavior. To determine receptive and expressive vocabulary ability, the Peabody Picture Vocabulary Test –III (PPVT-III; Dunn & Dunn, 1997) and the Expressive Vocabulary Test (EVT, Williams, 1997) were used. To determine nonverbal cognitive ability, the Leiter International Performance Scale-Revised (Roid & Miller, 1997) was used and to determine adaptive skill ability, the communication, daily living skills, and socialization domains of the Vineland Adaptive Behavior Scales: Classroom Edition (Sparrow, Balla, & Cicchetti, 1985).

Assessments of receptive and expressive vocabulary, as well as nonverbal cognitive ability were completed by the investigator. Behavioral assessments were completed by the child’s teacher. These assessments were chosen for the following reasons: (1) they are recommended for use with children with autism, (2) they have been utilized in previous research targeting children with autism (Laushey & Heflin, 2000; Oke & Schreibman, 1990; Pierce & Schreibman, 1995), and (3) all four measures include children with disabilities in the norming sample (Dunn & Dunn, 1997; Roid & Miller, 1997; Sparrow, Balla, & Cicchetti; 1985; Williams, 1997).

**Participants.** Eight children were screened and six children were found eligible to participate in the study. Participant characteristics are described in Table 1. All children received related services in school including speech language pathology and social work services.

Child A1 was a 6 year old Hispanic girl with fewer language and social skills than her peers. She primarily used one or two word phrases. She understood and spoke both Spanish, her home language, and English. In the classroom Child A1 required frequent redirection to tasks. During free play activities she would approach other children and take desired toys but did not actively engage with other children. She required monitoring as she regularly attempted to run from the classroom.

Child A2 was a 6 year old Caucasian male with low language skills, and poor socialization and daily living skills. He spoke English in one or two word utterances, but did not use language in social situations. He preferred to play with adults and his communication skills with adults were better than with children.

Child B1 was a six year old bilingual Arabic male who displayed deficits in socialization

### TABLE 1

**Characteristics of Participants**

<table>
<thead>
<tr>
<th>Child</th>
<th>Age</th>
<th>Race</th>
<th>Gender</th>
<th>PPVT&lt;sup&gt;1&lt;/sup&gt;</th>
<th>EVT&lt;sup&gt;2&lt;/sup&gt;</th>
<th>Leiter&lt;sup&gt;3&lt;/sup&gt;</th>
<th>Areas of Adaptive Behavior Deficit&lt;sup&gt;4&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dyad 1</td>
<td>A1</td>
<td>6–01 Hispanic</td>
<td>F</td>
<td>&lt;1–09</td>
<td>2–01</td>
<td>85</td>
<td>1, 2, 3</td>
</tr>
<tr>
<td></td>
<td>A2</td>
<td>6–05 Caucasian</td>
<td>M</td>
<td>&lt;1–09</td>
<td>2–08</td>
<td>80</td>
<td>1, 2, 3</td>
</tr>
<tr>
<td>Dyad 2</td>
<td>B1</td>
<td>6–09 Arabic</td>
<td>M</td>
<td>3–03</td>
<td>5–01</td>
<td>77</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>B2</td>
<td>8–00 African-American</td>
<td>M</td>
<td>3–01</td>
<td>4–05</td>
<td>73</td>
<td>1, 2, 3</td>
</tr>
<tr>
<td>Dyad 3</td>
<td>C2</td>
<td>7–03 Caucasian</td>
<td>M</td>
<td>3–00</td>
<td>2–07</td>
<td>87</td>
<td>1, 2, 3</td>
</tr>
<tr>
<td></td>
<td>C2</td>
<td>7–10 Hispanic</td>
<td>M</td>
<td>2–05</td>
<td>3–07</td>
<td>70</td>
<td>1, 2, 3</td>
</tr>
</tbody>
</table>

<sup>1</sup> Test Age Equivalent  
<sup>2</sup> Age Equivalent  
<sup>3</sup> Brief IQ  
<sup>4</sup> Vineland Adaptive Behavior Scales (Sparrow, Balla, & Cicchetti, 1985) To show deficit child must have standard score - 2 SD from the mean. 1 = Communication 2 = Daily Living Skills 3 = Socialization
daily living skills. Despite low language scores he communicated well in both English and Arabic. Child B1 used language all of the time and frequently kept a running commentary on what was going on around him, often talking over others and ignoring their responses to questions. He had problems with syntax and made most statements into questions by adding, “okay?” at the end.

Child B2 was an English speaking eight year-old African-American male who also had an undisclosed medical condition that effected his large and small muscle movements and necessitated the use of a wheelchair. Child B2 had many words and could communicate in full sentences when prompted. He would use as few words as he could, unless prompted for more and he phrased most spontaneous statements in the form of a question.

Child C1 was a seven year old Caucasian male who first language was Polish. He spoke English at school and Polish at home. Child C1 had low language scores and deficits in all areas of adaptive behavior. Child C1 was heavily dependant on visual schedules for working and transitions and though Child C1 used language infrequently in social exchanges, he talked his way through all of the steps on his visual schedules. Child C1’s spontaneous language was very repetitive and used a few stock phrases over and over.

Child C2 was a seven year old boy of Hispanic descent, who spoke only English. He had low language scores and obvious needs related to socialization and behavior. Child C2 had his own full time assistant and prior to the beginning of this study, Child C2 had been pulled from school for two weeks while his parents and doctor attempted to get his aggressive behavior under control. Child C2 used language only when prompted and then used one word utterances. He had little interest in socializing with peers or adults and if left unattended would sit quietly and look at books for hours.

Children were paired into three dyads, with one mixed gender dyad and two same gender dyads. As autism affects more boys then girls, it was not possible to recruit enough girls for three mixed gender dyads and no child was excluded on the basis of gender. Children were paired according to scores on the PPVT and EVT and according to schedule availability. An attempt was made to pair a child with lower language scores and a child with slightly higher language scores, though all children showed significant delays in expressive and receptive vocabulary.

Setting
Study sessions were conducted at the school. Baseline and Intervention sessions occurred in a sectioned off area of a large hallway in the school. Two accordion style dividers were constructed each measuring 8 feet long by 4 feet high. Dividers were placed in an L shape against a wall sectioning off a “U” shaped space that measured 8 feet by 8 feet and enclosed on three sides with the camera and tripod at the open end of the U. The area contained a table and two chairs.

Materials
Materials used in the baseline and intervention sessions were representative of play materials commonly found in classrooms of young children and consisted of dramatic play items including themes (grocery store, kitchen) and role playing materials (doctor, veterinarian). Manipulative items such as blocks and cars also were used. Materials were grouped into seven different play themes: Doctor, Vet/Zoo, Construction, Grocery Store, Farm, Housekeeping/ Kitchen, and Airport. Play themes and play materials are listed in Table 2.

Study Personnel
Interventionist. One interventionist collected all baseline and intervention data. A doctoral candidate in special education, she had a master’s degree in special education and six years experience teaching young children with autism.

The interventionist trained for this study according to the Peer Language and Behavior Code: Manual and Coding Protocol (PLBC; Craig-Unkefer, Williams, & Kaiser, 1998). First the interventionist transcribed at least eight minutes of previously videotaped interaction using Systematic Analysis of Language Transcripts (SALT; Miller & Chapman, 2000) as the transcription program. Next all transcripts
were verified for accuracy. Transcripts were then coded and at least one code was assigned to the end of each line of a word or phrase. Finally a summary of the coded data was provided for each speaker. The interventionist also reviewed tapes of a previous study (Craig-Unkefer & Kaiser, 2002) and discussed technique with the first author.

**Data Collection**

Baseline and intervention sessions were videotaped by the interventionist using a digital camcorder (Sony DCR-TRV17). Sessions were digitally transferred to a computer and transcribed from digital video using Systematic Analysis of Language Transcripts (SALT v 6.1; Miller & Chapman). All sessions were first transcribed by the interventionist and reviewed for accuracy prior to coding. Coding was completed by the interventionist according to the PLBC (Craig-Unkefer, et al., 1998). Prior to the beginning of this study, the interventionist trained to a criterion of 80% accuracy on the PLBC using previously coded criterion tapes. The interventionist also practiced transcribing utilizing the SALT program. Transcription within SALT requires that the transcriber mark bound morphemes and verb tenses, enter pauses, mark overlapping speech, mark unintelligible or incomplete utterances and enter codes specified by the PLBC (Craig-Unkefer, et al.; 1998; Miller & Chapman).

**Experimental Design**

A multiple baseline design was used to determine the result of an intervention designed to promote social communication skills in young children with autism (Kazdin, 1982). Each dyad in the study remained in baseline until a stable or decreasing baseline was demonstrated and for at least five sessions. The first dyad with a stable baseline was identified as Dyad One and the other two dyads remained in baseline until a clear treatment effect was visible for the second dyad, identified as Dyad 2 and so on. Following the multiple baseline design discussed above, the intervention was then introduced to Dyad Two and once effects were evident in the second dyad the intervention was introduced to the third dyad. The experimental conditions for this study were baseline and intervention

**Baseline.** Baseline sessions were conducted three times per week. During the baseline sessions, 10 minutes of play were videotaped and subsequently coded. The interventionist brought the two children in each dyad to the area designated for project use. The interventionist invited the children to play with the toys arranged on the carpeted floor or table. Toys consisted of a play theme randomly selected from those discussed above and rotated throughout the baseline sessions (see Table 2). One play theme was randomly chosen to start the baseline sessions and then taken out of the next random selection. Selection con-
tinued this way until all play themes had been used once. All play themes had at least two rotations in the selected order. During Intervention some children began to request certain play themes and the order was dropped. In baseline sessions, the interventionist did not prompt language or prohibit any behaviors except those that were harmful to the peers or materials (e.g., mouthing materials, hitting lockers).

**Intervention.** An intervention that incorporated the cognitive-social learning model (Ladd & Mize, 1983) was used as a means to promote social communication skills for children with autism. The intervention had three components: 1) a play organizer session, 2) a ten minute play session, and 3) a review session. The first component, the advanced play organizer, lasted approximately five minutes. During this component, the interventionist and the children developed a play plan specific to a play theme designated for the session. The same play themes used in the baseline sessions were used in the intervention sessions. The interventionist began the advanced play organizer portion of the session by telling the children the designated play theme (e.g., “Today we are going to play grocery store.”). Together, the interventionist and the children labeled the toys to be used. Then the interventionist asked the children how they will play with the toys within the theme. If the children could not make a play plan independently, the interventionist suggested roles for the children and ways to talk with each other (e.g., “Herb, you could pick out groceries and Wayne, you could check them out.”). The interventionist role-played with the children and modeled ways to use the toys and to talk to each other (e.g., “Tell the grocer, ‘I want some bananas.’”). After the toys were labeled and a play plan was developed, the interventionist told the children it was time to play. The interventionist moved away from the immediate play area and stood approximately five feet from the children, near the location of the digital camcorder.

The second component was a 10-minute play session. During this component, the children played with the toys and materials provided. The interventionist sat away from the play area, watching the children, and used verbal redirects and reflective statements to sustain and maintain the children’s play interaction. The interventionist did not prompt or comment while the dyad was engaged in an interaction. Four forms of redirects were used: redirecting attention to a peer, redirecting attention to a toy, adult verbal directives, and redirecting to a play area. Redirecting attention to a peer occurred when a child was playing alone or talking to the interventionist. Instead of answering the child’s question the interventionist would say, “Ask Chip” or “Tell Julie.” Redirecting attention to a toy occurred when a child was not engaged in play or was using a toy inappropriately. The interventionist would redirect the child to play appropriately with the toy or suggest a new toy to play with. For example, “Cook the carrots on the stove” or “Play with the airplane.” Adult verbal directives occurred when the interventionist gave the child specific words to use in a situation. Examples include “Tell Ellen, ‘I want the horse’” and “Ask Dan say, ‘Is that a chair?’” Finally, redirecting to a play area occurred when the child attempted to leave the designated play area. When this occurred the interventionist would say, “Play over here” or “Stay in this area.” The interventionist determined the types of redirects to use based on the degree of support needed by the child and the particular play situation. During this phase, the interventionist also made reflective statements and comments about the toys, the themes, or the children’s play. Reflective statements did not specifically prompt child actions or model language. The purpose of reflective statements was to keep the children focused on the play theme by suggesting an appropriate activity within the play theme (e.g., “The baby wants to be fed.”).

The third component of the intervention, the review session, took place immediately following the play session and lasted approximately 5 minutes. The interventionist re-entered the play area and sat near the children. The interventionist and the children discussed the play that occurred in the preceding component. The interventionist asked the children what they played with during the play session. If the general question did not elicit a response from the children, the interventionist asked the children specific questions about how they played with the toys and what verbal exchanges had occurred between the children.
(e.g. “What did you give the baby to eat?” and “What did you say to Herb?”). At the conclusion of the review session, the interventionist asked the children if they had fun playing together and if they wanted to play again. Finally, she thanked the children for their participation and gave verbal praise for language use and play skills.

**Descriptive Measures**

Descriptive measures of the children include the results of measures to assess vocabulary, cognition and behavior and include the Peabody Picture Vocabulary Test – Third Edition (PPVT-III; Dunn & Dunn, 1997), The Expressive Vocabulary Test (EVT; Williams, 1997), Vineland Adaptive Behavior Scales (VABS; Sparrow, et al., 1985), and the Leiter International Performance Scale - Revised (Roid & Miller, 1997). All measures were given prior to baseline. The PPVT and the EVT were repeated after the intervention had been completed.

**Child Communication**

Child social communicative behaviors observed were descriptives, requests, and verbal others. Descriptives consisted of comments, one word comments, play organizer statements, and acknowledgement responses. The request category consisted of information requests, yes/no questions, clarification repeats, verbal signaling, clarification requests, and action and stop action requests. The verbal other category included repeating a child comment, repeating an adult comment, verbal others, social graces, laughing, singing, and unintelligible screaming, as well as off camera comments (see Table 3 for complete definitions). Child utterances counted as a descriptive, a request, or a verbal other. Furthermore, if a child utterance was counted as a verbal other (such as a child repeating himself) that episode, although it was technically a comment, was not counted in the descriptive category. This made for a clearer distinction between actual communication attempts and language that was stereotypic or nonsensical.

Diversity and complexity of child language was determined from transcripts of each session using Systematic Analysis of Language Transcripts (SALT, Miller & Chapman, 2000). Diversity was automatically counted by the SALT program and was reflected in the total number of different root words in the transcribed sample. Complexity was calculated through the Mean Length of Utterance (MLU) and was figured automatically by the SALT program. SALT calculates MLU by taking the total number of words in each child utterance and dividing this by total utterances in the sample. Total number of words used and number of four or more word utterances were also calculated for each baseline and intervention session.

**Interventionist Behaviors**

Interventionist behaviors were measured in two categories: responses and redirects (Craig-Unkefer et al., 1998). Responses consisted of stop action requests, responses to questions, reflective statements, adult praise, adult questions, acknowledgement responses by adult, adult repeats, adult others, and adult verbal signaling. Redirects consisted of redirecting attention to a peer, redirecting attention to a toy, adult verbal directives, and redirecting a child to a play area. All measures of interventionist behavior were counted by dyad, not by response to a particular child.

**Fidelity of Treatment Measurement**

All intervention sessions were carried out by the interventionist. Fidelity of treatment was calculated using the scores from a checklist in which the investigator rated herself on the implementation of strategies outlined in the play organizer component of the intervention and the ten minute play session. These strategies included announcing the play theme, discussing and demonstrating the materials to be used, and allowing the children to make play idea suggestions. An independent observer completed a fidelity treatment checklist for a randomly selected 20% of all sessions that were completed by the interventionist. The criterion level for implementation of the intervention was completion of 80% of the ten items on the checklist. The average for the interventionist was 98% with a range of 80-100%.
Interobserver Agreement

Interobserver agreement was calculated on the coding for the Peer Language and Behavior Code (PLBC; Craig-Unkefer et al., 1998) during the baseline and intervention phases. Prior to beginning the study, both the investigator and an independent coder were trained to 80% reliability on all data collection systems. Training for the investigator consisted of a five step process. First, the investigator read through the PLBC (Craig-Unkefer et al., 1998) manual and practiced coding. Then, the coder was trained on the coding protocol and practiced coding with the investigator. Finally, the investigator and coder were trained on the coding protocol together. Training for the investigator consisted of a five step process. First, the investigator read through the PLBC (Craig-Unkefer et al., 1998) manual and practiced coding. Then, the coder was trained on the coding protocol and practiced coding with the investigator. Finally, the investigator and coder were trained on the coding protocol together.

TABLE 3
Coding Definitions for Child Communication Measures

<table>
<thead>
<tr>
<th>Category</th>
<th>Subcategory</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Descriptives</td>
<td>Comments</td>
<td>Declarative sentences or phrases that describe the child’s own activity or the activity of a peer (e.g., This carrot tastes like wood).</td>
</tr>
<tr>
<td></td>
<td>One Word Comments</td>
<td>Single word or noun that describes play or is related to what the child is doing (e.g., car, ball, Elmo).</td>
</tr>
<tr>
<td></td>
<td>Play Organizer</td>
<td>Verbalizations where a peer specifies an activity or non-activity, suggest an idea for play, or directs a peer to engage in a play behavior (e.g., You be the grocer).</td>
</tr>
<tr>
<td></td>
<td>Acknowledgement</td>
<td>A response to share or not share an understanding, following an initiation (comment or request) by a peer (e.g., okay, yeah, sure, um huh, no).</td>
</tr>
<tr>
<td></td>
<td>Information</td>
<td>Questions that ask for information beyond acknowledgement (e.g., What is it?)</td>
</tr>
<tr>
<td></td>
<td>Yes/No Questions</td>
<td>The peer requests from another peer a yes/no form of response.</td>
</tr>
<tr>
<td></td>
<td>Clarification</td>
<td>The peer repeats what the other peer has just said for the purpose of checking to see if that is actually what the peer just said.</td>
</tr>
<tr>
<td></td>
<td>Verbal Signaling</td>
<td>A peer states the other peer’s name for the purpose of obtaining their attention.</td>
</tr>
<tr>
<td></td>
<td>Clarification</td>
<td>When a peer says “What?” or “Tell me again” in response to another peer’s utterance because the peer did not hear or understand what the other peer said.</td>
</tr>
<tr>
<td></td>
<td>Repeat child</td>
<td>A peer responds to another child’s utterance by repeating what was said. There is no rising intonation. Code a repeat child when a peer repast his or her own comment or request beyond the third utterance.</td>
</tr>
<tr>
<td></td>
<td>Play verbalizations</td>
<td>Comments or requests directed to an inanimate play object or toy.</td>
</tr>
<tr>
<td></td>
<td>Play noises</td>
<td>Play verbalizations with a fantasy role—includes non speech sounds (e.g., raspberries, clucks, rooomm).</td>
</tr>
<tr>
<td></td>
<td>Off camera</td>
<td>Comment or request (including tattling) made by the peer that is directed at the adult.</td>
</tr>
</tbody>
</table>


Interobserver Agreement

Interobserver agreement was calculated on the coding for the Peer Language and Behavior Code (PLBC; Craig-Unkefer et al., 1998) during the baseline and intervention phases. Prior to beginning the study, both the investigator and an independent coder were trained to 80% reliability on all data collection systems. Training for the investigator consisted of a five step process. First, the investigator read through the PLBC (Craig-Unkefer et al., 1998) manual and practiced coding. Then, the coder was trained on the coding protocol and practiced coding with the investigator. Finally, the investigator and coder were trained on the coding protocol together. Training for the investigator consisted of a five step process. First, the investigator read through the PLBC (Craig-Unkefer et al., 1998) manual and practiced coding. Then, the coder was trained on the coding protocol and practiced coding with the investigator. Finally, the investigator and coder were trained on the coding protocol together.

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et al., 1998). Second, the interventionist transcribed at least eight minutes of previously videotaped interaction using Systematic Analysis of Language Transcripts (SALT; Miller & Chapman, 2000). Third, all transcripts were verified for accuracy. Fourth, the transcripts were then coded and at least one code was assigned to the end of each line of a word or phrase. Finally a summary of the interventionist-coded data was provided for each speaker and compared to previously coded data to check for errors. The independent coder was the first author of the PLBC.

The investigator coded all of the above transcripts. A random selection of 20% of baseline and intervention sessions from all three dyads was coded by an independent coder. A sequential comparison was made of the coded data sheets on a point-by-point basis. The number of agreements was divided by the number of agreements plus disagreements, multiplied by 100, resulting in a percentage (Kazdin, 1982). As mentioned above, interobserver agreement was calculated on 20% of the sessions. For child behaviors in baseline, the agreement was 82% with a range of 72-90 and in intervention agreement was also 82% with a range of 70-94. Interobserver agreement percentage for interventionist measures, which occurred only during intervention, was 80% with a range of 71-89.

Results

Social Communicative Behaviors: Commenting and Requesting

To determine the effect that the intervention had on social communicative behavior, frequency of peer directed descriptive statements and requests were measured. Descriptive statements included comments (e.g., I have a ball), one-word comments (e.g., ball), play organizer statements (e.g., You be the cashier and I’ll be the customer), and acknowledgement statements (e.g., yes, no, okay). Requests included requests for information (e.g., yes/no questions), verbal signaling (e.g., using another child’s name to gain attention), action requests that require a response from the other child (e.g., give me that car, hand me the train) and action requests that do not require a response form the other child (e.g., see it, look).

Total Descriptive Statements

Total descriptive statements for each child are presented in Figure 1. During baseline, children in Dyad One (Child A1, Child A2) had low rates of descriptives, using a combined average of 20 or less descriptive statements per session. Average total descriptive statements used by Child A1 were 2 and Child A2 was 8. Once the intervention was introduced, both children increased in their use of total descriptive statements. Child A1 averaged 16 descriptive statements and Child A2 averaged 29 descriptive statements.

Children in Dyad Two (Child B1, Child B2) had higher overall average rates of descriptives (33 and 20) but their rates of these behaviors decreased to an average of 16 and 14 respectively during the final three baseline sessions. Once the intervention was introduced, both children increased their use of descriptive statements. In the intervention phase, Child B1 averaged 47 descriptive statements and Child B2 averaged 23.

Child C1 and Child C2 from Dyad Three used very few descriptive statements, averaging less than 10 per session. Average total descriptive statements in baseline for Child C1 were 7 and Child C2 was 2. Once the intervention was introduced, both children in Dyad Three increased their total descriptive statements. Child C1 averaged 29 descriptive statements and Child C2 averaged 12 descriptive statements.

Use of specific types of descriptives varied among dyads. Of the three types of descriptive statements comments and one word comments were used most often. All of the participants increased in their use of comments from baseline to intervention. In Dyad One, Child A1 increased commenting and one word commenting from a baseline average of 1 and 1 respectively to an intervention average of 10 for commenting and 6 for one word commenting, Child A2 increased from a baseline average of 6 comments and 3 one word comments to 22 and 6 in intervention. In baseline, Dyad Two Child B1 averaged 30 and 1 for commenting and one word commenting and increased to an average of 42 comments.
Figure 1. Total number of descriptives.
Child B1’s one word comments remained steady at 1. Child B2 also displayed an increase in comments from 15 in baseline to 18 in intervention, but one word comment showed a slight decrease from 3 to 1. Both children in Dyad Three showed increases in comments and one word comments once the intervention was in place. Child C1 moved from baseline rates of 5 and 1 respectively to an intervention average of 26 and 2. Child C2 moved from 1 and less than 1 to 9 and 3. Only Dyad Two used Play Organizer Statements and Acknowledgement Statements in both phases and their rate of increase for each of these types of descriptives was minimal.

Requests

**Total requests.** The average number of total requests and a breakdown of requests by type is displayed in Table 4. Children in Dyad One (Child A1, Child A2) displayed low rates of requests in baseline, with both children averaging one request per baseline session. Once the intervention was introduced, Child A2 had an average rate of 7 requests per session. Child A1 remained at baseline levels and continued to average less than one request in intervention.

Both participants in Dyad Two had high rates of requests in baseline. Child B1 averaged 15 requests in baseline and Child B2 averaged 8. These levels remained stable during the intervention phase.

Average total requests for the children in Dyad Three (Child C1, and C2) were 3 and 0 respectively. When the intervention was introduced, Child C1 increased his requests to an average of 7 per session while Child C2 remained stable and averaged less than one request during intervention.

**Requests for information and Yes/No questions.** Children in Dyad One displayed low levels (averaging less than one) of both requests for information and Yes/No questions in baseline. In the intervention phase, Child A2 increased his average amount of requests for information to 2 and his average amount of Yes/No questions to 1. Child A1 remained stable with intervention averages of one or none per session.

Children in Dyad Two showed a little more variation in their results than did Dyad One. Child B1 averaged 2 requests for information and 4 Yes/No questions during baseline. In the intervention phase Child B1 increased his average requests for information to 4, while Yes/No questions remained stable at 4. Child B2’s baseline average of requests for information was 1 while his average amount of Yes/No questions was 3. During the intervention Child B2’s level of requests for information remained stable at 1 while his average Yes/No questions decreased slightly to 2. Both children in Dyad Three displayed low levels of request for information and Yes/No questions in baseline (zero) and these levels were maintained in the intervention phase.

**Verbal signaling.** Both children in Dyad One did not use verbal signaling during baseline. In the intervention phase Child A2’s verbal signaling averaged 3. Child A1 did not use this behavior. In Dyad Two, Child B1 and Child B2’s average verbal signaling during baseline was 1 and 0 respectively. During the intervention phase, Child B2 increased his average verbal signaling to 3 and Child B2 increased to 1. In the baseline phase, Child C1’s verbal signaling averaged 2 while Child C2 averaged 0. Once the intervention was introduced Child C1 increased his average verbal signaling to 4. Child C2 also increased his verbal signaling but still remained under 1.

During the baseline phase, only two of the children in this study used verbal signaling to gain the attention of a peer. After the intervention was introduced, all but one of the children (Child A1) used verbal signaling in at least two intervention sessions with four of the children using verbal signaling in at least half of the intervention sessions.

**Action requests.** Two types of action requests were made by the children in this study: action requests that require a response (e.g., give me that car, hand me the train) and action requests that do not require a response (e.g., see it, look). Dyad One participants used few or none of both types of action requests during the baseline period, with both children averaging less than 1 in each category. In the intervention period, both children either remained at a baseline rate (Child A1) or showed little increase (Child A2) averaging one of each request type. Children in Dyad Two displayed the highest rates of action requests. In the baseline phase, Child B1 averaged 4 action requests that do not require a
# Table 4

## Average Number of Requests and Average Number of Components of Request category Used During Baseline and Intervention

<table>
<thead>
<tr>
<th></th>
<th>Average Total Requests</th>
<th>Requests for Information Yes/No Question</th>
<th>Verbal Signaling</th>
<th>Action requests that do not require a response</th>
<th>Action requests that do require response</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Baseline (Range)</td>
<td>Intervention (Range)</td>
<td>Baseline (Range)</td>
<td>Intervention (Range)</td>
<td>Baseline (Range)</td>
</tr>
<tr>
<td><strong>Dyad One</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Child A1</td>
<td>0.40 (0–2)</td>
<td>0.25 (0–1)</td>
<td>0 / 0</td>
<td>0 / 0</td>
<td>0 / 0</td>
</tr>
<tr>
<td>Child A2</td>
<td>0.20 (0–1)</td>
<td>6.58 (1–22)</td>
<td>0.20 / 0</td>
<td>2.08 / 92</td>
<td>0</td>
</tr>
<tr>
<td><strong>Dyad Two</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Child B1</td>
<td>15.29 (3–30)</td>
<td>14.67 (8–20)</td>
<td>2.29 / 4.71</td>
<td>4.42 / 4</td>
<td>1.45</td>
</tr>
<tr>
<td>Child B2</td>
<td>8.43 (0–22)</td>
<td>6.83 (1–10)</td>
<td>1.29 / 2.86</td>
<td>0.92 / 1.33</td>
<td>0</td>
</tr>
<tr>
<td><strong>Dyad Three</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Child C1</td>
<td>3 (0–9)</td>
<td>7 (0–27)</td>
<td>0 / 0</td>
<td>0.40 / 10</td>
<td>1.65</td>
</tr>
<tr>
<td>Child C2</td>
<td>0 (0)</td>
<td>0.20 (0–1)</td>
<td>0 / 0</td>
<td>0 / 0</td>
<td>0</td>
</tr>
</tbody>
</table>

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response and 2 action requests that do require a response. In intervention these rates decreased to an average of 2 and 1 respectively. Child B2 averaged 3 action requests that do not require a response and 2 action requests that do require a response in the baseline phase. These remained relatively consistent in the intervention phase at 2 and 2. In Dyad Three, Child C1 increased his use of both types action requests from baseline to intervention though his average in intervention remained at one per session. Child C2 did not use this type of requesting behavior at all in baseline or in intervention.

Overall, there were small increases in the use of action requests that did not require a response for Child A2, and Child C1. These two children also showed modest increases in action requests that did require a response. Their partners, Child A1 and Child C2 remained at baseline levels or in the case of A1 showed a slight decrease in action requests that did not require a response. The children in Dyad Two had a small decrease of use for both categories of action requests when the intervention was introduced.

Other Verbal Behavior

Another category of child behaviors measured in the intervention was Verbal Other that contained all child statements that could not be considered descriptives or requests. Of the thirteen possible Verbal Other categories only four occurred with enough frequency to warrant discussion here. These were the codes for repeat child, play verbalizations, play noises, and off camera. Table 5 displays the average baseline and intervention levels of verbal others by category. Average repeat child codes for Dyad One decreased in intervention for Child A1 and increased for Child A2. Both children in Dyad Two (B1, B2) decreased their average repetitive talking in intervention. In Dyad Three, both children increased their average repetitive talking in the intervention phase.

Average use of play verbalizations during intervention decreased for both children in Dyad One. The children in Dyad Two and Dyad Three all showed decreases in average play verbalizations once the intervention was introduced. Average play noises increased during intervention for both children in Dyad One and also for one child in Dyad Two (Child B1). The remaining children (Child B1, Child C1, Child C2) showed decreased average play noises during intervention.

Off camera comments and requests increased from baseline levels for both children in Dyad One (Child A1, Child A2) and decreased for both children in Dyad Two (Child B1, Child B2). The children in Dyad three

<table>
<thead>
<tr>
<th>TABLE 5</th>
<th>Average Number of Verbal Others by Category Used During Baseline and Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dyad</td>
<td>Subject</td>
</tr>
<tr>
<td></td>
<td>Baseline (Range)</td>
</tr>
<tr>
<td>Dyad One</td>
<td>Child A1</td>
</tr>
<tr>
<td></td>
<td>Child A2</td>
</tr>
<tr>
<td>Dyad Two</td>
<td>Child B1</td>
</tr>
<tr>
<td></td>
<td>Child B2</td>
</tr>
<tr>
<td>Dyad Three</td>
<td>Child C1</td>
</tr>
<tr>
<td></td>
<td>Child C2</td>
</tr>
</tbody>
</table>
were split, with Child C1 displaying an increase in the use of off camera comments and requests and Child C2 decreasing in the use of these two behaviors.

**Language Diversity and Complexity**

To determine the effect that the intervention had on language diversity, the following components were measured: Mean Length of Utterance (MLU), total words used, vocabulary diversity, and number of four word utterances.

*Mean length of utterance.* Five children showed a gain in MLU from baseline to intervention. In Dyad One, Child A1 displayed a small decrease from a baseline average of 2.1 to an intervention average of 1.9. Child A2 displayed an increase from 2.2 to 2.4. Dyad Two children also showed a gain in MLU from baseline to intervention with Child B1 moving from 3.8 to 4.0 and Child B2 showing an increase from 2.8 to 3.4. Child C1 had one of the greatest gains in MLU, moving from 2.1 in baseline to 2.8 in intervention. Finally, Child C2 also showed a higher MLU in intervention moving from a baseline average of 1.5 to an intervention average of 1.8.

*Total words used.* Total number of words, different words used, and number of four or more utterances used by each child was also measured and is displayed in Table 6. Total number of words used increased for both children in Dyad One with Child A1 increasing from 23 to 41 and Child A2 increasing from 40 to 109. Dyad Two was split as Child B1 increased total words used from a baseline average of 201 to an intervention average at 263 and Child B2 remained relatively constant with a baseline average of 102 and an intervention average of 98. In Dyad Three both children showed an increase in total words used. Child C1 moved from a baseline average of 38 to an intervention of 113 and Child C2 increased from a baseline average of 14 to an intervention average of 36. Five children showed an increase in total words used from

<table>
<thead>
<tr>
<th></th>
<th>Total Words Used</th>
<th>Vocabulary Diversity</th>
<th>Four or More Utterances</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Baseline (Range)</td>
<td>Intervention (Range)</td>
<td>Baseline (Range)</td>
</tr>
<tr>
<td>Dyad One</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Child A1</td>
<td>23 (4–66)</td>
<td>41.08 (13–103)</td>
<td>8 (4–15)</td>
</tr>
<tr>
<td>Child A2</td>
<td>39.60 (22–65)</td>
<td>108.91 (48–169)</td>
<td>20.40 (12–31)</td>
</tr>
<tr>
<td>Dyad Two</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Child B1</td>
<td>201.14 (49–327)</td>
<td>262.75 (109–366)</td>
<td>79.71 (34–113)</td>
</tr>
<tr>
<td>Child B2</td>
<td>102.29 (17–226)</td>
<td>98.92 (45–138)</td>
<td>34.57 (7–54)</td>
</tr>
<tr>
<td>Dyad Three</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Child C1</td>
<td>37.63 (4–84)</td>
<td>113.10 (63–137)</td>
<td>14.13 (0–33)</td>
</tr>
<tr>
<td>Child C2</td>
<td>14 (2–38)</td>
<td>35.5 (5–79)</td>
<td>6.13 (1–17)</td>
</tr>
</tbody>
</table>
baseline to intervention (Children A1, A2, B1, C1, and C2) while one child remained stable in both conditions (Child B2).

**Vocabulary diversity.** All children increased the number of different words used from baseline to intervention. Both children in Dyad One roughly doubled their baseline averages in the intervention phase, with Child A1 increasing from 8 to 16 and Child A2 increasing from 20 to 47. In Dyad Two, Child B1 increased the use of number of words from baseline, averaging 80 words to an intervention average of 97. Child B2 also had increased from 35 to 40. Children in Dyad Three displayed more than double the amount of different words used in baseline when they were in the intervention phase. Child C1 increased from 14 to 36 and Child C2 increased from 6 to 15.

**Four or more utterances.** This category counts all utterances with a length of four or more words. Child A1 and Child A2 from Dyad One both displayed stable levels of four plus utterances from baseline to intervention. Child A1 had a baseline and intervention phase average of 2. Child A2 had a baseline average of 3 and an intervention average of 4. Both children in Dyad Two displayed stable levels of four plus utterances with Child B1 averaging 8 in baseline and intervention and Child B2 averaging 4. Dyad Three also displayed stability in this category with both children averaging the same in baseline as in intervention. Child C1 averaged 5 and Child C2 averaged 2.

**Interventionists Behaviors**

**Redirect attention to a peer.** During the course of the intervention, the interventionist provided varying levels of support to different dyads depending on need. In the first category examined, redirect to a peer (reminding the child to talk to a peer vs. the interventionist e.g., “Tell Sophie” or to play with a peer “Give Herb some fruit”), the interventionist gave children in Dyad One an average of 7 redirects to a peer. Children in Dyad Two received an average of 12 redirects to a peer and children in Dyad Three received an average of 5 redirects to a peer.

**Redirect attention to a play area.** Average number of times the interventionist redirected a child back to the play area was one of the least frequently occurring interventionist behaviors. Number of redirects to a play area was about 1 for Dyad One, less than one for Dyad Two, and 1 for Dyad Three.

**Redirect attention to a toy.** The interventionist’s application of redirecting attention to a toy was consistent throughout all three dyads. Children in Dyads One and Two received an average of 3 redirects to a toy, while children in Dyad Three averaged 4 redirects to a toy.

**Verbal directives.** Amount of verbal directives given to each dyad varied. Dyad One received the greatest amount of verbal directives with an average of 5. Dyad Two averaged 1 verbal directive per session. Dyad Three received an average of 2 verbal directives per session.

**Reflective statements.** Number of reflective statements the interventionist made to different dyads varied greatly and ranged from 0 to 23. The interventionist provided Dyad One with an average of 7 reflective statements per session. Dyad Two was the recipient of the lowest amount of reflective statements, with an average of 3. The highest level of interventionist support in the form of the reflective statements was given to Dyad Three, with an average of 12.

**Changes in Receptive and Expressive Vocabulary**

Prior to acceptance in the study each child was given the PPVT-III (Dunn & Dunn, 1997) and the EVT (Williams, 1997). Upon completion of the intervention sessions, each test was re-administered. Approximately three months separated test administrations. Table 7 displays pre and post scores for the PPVT-III and EVT. On the PPVT-III, five children displayed an increase in raw score from pre to post test (Children A1, A2, B1, C1, and C2). Most gains in age equivalent were between the 0-3 month range, but Child B1 displayed an increase of eight months. Only Child B2 obtained a lower raw score and age equivalent in post testing. Expressive Vocabulary Test raw scores and age equivalents increased for four children (Child A1, Child A2, Child B1, and Child C1). Increases in age equivalent ranged from 2.9 months with children B1 and C1 increasing 5 and 9 months respectively. Child B2 and Child C2 showed decreases in post test scores.
Discussion

The purpose of this study was to examine effects of a social-communication intervention on the language and social interaction skills of children with mild to moderate autism. A multiple baseline design across three dyads was used and uniquely provided intervention to two children with autism at the same time. Results indicated the intervention was successful in increasing the social-communicative behavior of children with autism.

As noted previously, most children with autism have difficulty with the development of spoken language (Shriberg, Paul, & McSweeny, 2001), and may prefer to spend their time engaged in solitary play (Volkmar, Carter, Grossman, & Klin, 1997). During the baseline phase of this study, four of the six children (Children A1, A2, C1, and C2) showed very little interest in their peer, had little interaction with their peer, and directed little language towards that peer. Only the children in Dyad Two made any attempts at interactive communication. Once the intervention was introduced, increases were seen in peer-directed language as well as language diversity and complexity across all three dyads. Differences in pre and post language assessments were also observed.

Some conclusions can be drawn from this study. First, the intervention was effective in increasing the use of social communicative behaviors such as peer-directed commenting. During the intervention all children displayed increased levels of commenting. In fact, children in Dyad One (Child A1 and Child A2) and Dyad Three (Child C1 and Child C2) more than tripled their average rate of total descriptives from the baseline to intervention phase. Dyad Two (Child B1 and Child B2) also showed a positive change from baseline to intervention and increased their use of descriptive statements.

Second, the intervention was successful in increasing the complexity of the children’s language. MLU is one way to gauge language complexity. Five of the six children showed a gain in MLU from baseline to intervention. During the intervention the children talked more and used more words per comment. Four children displayed their highest MLU in the intervention phase.

Third, the intervention was successful in increasing the diversity of language displayed by the children. All of the children showed an increase in vocabulary diversity from baseline to intervention. Furthermore, five of the six children also displayed an increase in total words used from baseline to intervention. Children were able to spontaneously label toys in intervention and used more vocabulary specific to the toys with which they were interacting. All children used words in intervention that had not been used in baseline.

Fourth, the interventionist was consistent in the amount of support provided to each Dyad. Overall, the amount of interventionist support given to the three dyads was consistent although types of interactions differed based on the needs of each group. For example, children in Dyad Two received an average of 12 redirects to a peer while children in Dyad’s One and Three received an average of 7 and 5 redirects respectively. The higher level of sup-

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<table>
<thead>
<tr>
<th>Participant</th>
<th>PPVT Pretest</th>
<th>EVT Age Equivalent</th>
<th>PPVT Posttest</th>
<th>EVT Age Equivalent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child A1</td>
<td>1–09 R = 13, S = 40</td>
<td>2–01 R = 25, S = 40</td>
<td>1–09 R = 14, S = 40</td>
<td>2–03 R = 26, S = 40</td>
</tr>
<tr>
<td>Child A2</td>
<td>1–09 R = 17, S = 42</td>
<td>2–08 R = 30, S = 42</td>
<td>1–09 R = 18, S = 42</td>
<td>2–11 R = 32, S = 43</td>
</tr>
<tr>
<td>Child B1</td>
<td>3–03 R = 40, S = 60</td>
<td>5–01 R = 50, S = 82</td>
<td>3–11 R = 49, S = 64</td>
<td>5–10 R = 57, S = 86</td>
</tr>
<tr>
<td>Child B2</td>
<td>3–01 R = 38, S = 45</td>
<td>4–05 R = 44, S = 54</td>
<td>2–11 R = 36, S = 41</td>
<td>3–11 R = 40, S = 44</td>
</tr>
<tr>
<td>Child C1</td>
<td>3–00 R = 37, S = 52</td>
<td>2–07 R = 29, S = 40</td>
<td>3–01 R = 38, S = 53</td>
<td>3–0 R = 33, S = 40</td>
</tr>
<tr>
<td>Child C2</td>
<td>2–05 R = 30, S = 40</td>
<td>3–07 R = 37, S = 40</td>
<td>2–08 R = 33, S = 40</td>
<td>3–02 R = 34, S = 40</td>
</tr>
</tbody>
</table>

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TABLE 7

Pre and Post Scores for the Peabody Picture Vocabulary Test-III and the Expressive Vocabulary Test
port provided to Dyad Two in this category can be explained by looking at Dyad Two’s high rates of off camera comments during baseline and their subsequent reduction during intervention. Reminding students to talk to each other rather than to the interventionist contributed to much lower rates of off camera comments during intervention. Another example can be seen in Dyad 3, which received the most redirects to a toy and also redirects to a play area. The higher levels for these children can be explained because these children were more likely to wander out of the play area and less likely to spontaneously pick up a toy and start playing.

Fifth, pre and post scores on the PPVT-III and EVT showed some changes. Five children showed increases in raw scores from pre to post test on the PPVT-III. Four children showed increases in post test scores on the EVT. Changes in pre and post scores should be interpreted cautiously. The level of error involved in these tests can be relatively large and there is some overlap between performance changes and range of error. For example, look at Child B1’s performance on the EVT. With a 90% confidence interval, his pretest standard score is 82 (75-91) and his post test is 86 (78-96). This indicates that there is significant overlap in his scores. These standardized measures, which give a good idea of the children’s general ability levels, are not the best tools for evaluating the effectiveness of this intervention. This may be because they are too broad and do not directly assess the same areas targeted for intervention.

Sixth, the intervention method of providing intervention to two children with autism at the same time resulted in gains for both children in the dyad. Children were initially paired in dyads by language skills with a higher functioning child placed with a slightly less able partner. Both children in each dyad showed increased levels of commenting, gains in MLU, and greater diversity of language. The levels of gain were often comparable across dyads, however, none of the lower functioning children were able to match the frequency, complexity, or diversity of their partner. This should not be interpreted as a negative effect, it simply shows that both children in the dyad made gains, and the gap that existed between them when they were paired together remained consistent.

The intervention did not increase requesting behaviors of any of the children included in the study. In fact Dyad Two displayed a slight decrease in requests. Children with autism have been shown to be particularly resistant to initializing verbal interactions such as question asking (Koegel, Camarata, Menchaca, & Koegel, 1998). Thus, failure to demonstrate changes in requesting behaviors is consistent with other studies exploring language intervention with this population.

Though requesting behaviors as a category did not show a substantial increase from baseline to intervention, a subset of this category, verbal signaling, increased for five of the six children. Verbal signaling, or using a child’s name to gain the attention of a peer, is an important skill involved in joint attending. Lack of joint attention behaviors is a critical part of the social communication skill deficits present in children with autism (Mundy & Crowson, 1997). Though joint attending (in the form of eye contact or other nonverbal behaviors) was not measured specifically in this intervention, the improved ability of some children to look to other children to share enjoyment or information is notable.

Though asking questions is typically a skill that is absent in children with autism, children in Dyad Two both engaged in high levels of asking questions that really served more as conversation fillers and seemed an attempt to elicit attention, also a characteristic found in some children with autism (Hurtig, Ensrud, & Tomblin, 1982; Koegel et al., 1998). Child B1 added, “okay?” at the end of sentences and Child B2 made statements in the form of questions, (e.g., “Is this a dog?” instead of “This is a dog”). Interventionist behavior for this dyad focused on redirecting these questions to a peer, and in the intervention phase both children in Dyad Two reduced the amounts of these types of questions.

Limitations

There were several limitations of this study. First, time constraints precluded the inclusion of a generalization phase or a maintenance probe. Absenteeism was frequently a problem and when one child was absent, the interven-
tion could not take place for a particular Dyad. Another time related problem involved the end of the school year. School policy prohibited interventions during year end testing. Additionally, the scheduling of end of the year field trips, assemblies, carnivals and book fairs meant that the hallway space used for interventions was unavailable. Finally, the last day of school arrived before there was time to implement a maintenance or generalization phase. It is unclear how well results would have been maintained or if they would have generalized to another environment.

Another limitation relates to external validity and generality across behavior change agents. There was one interventionist who completed all intervention sessions and it is possible that the same results may not be achievable by another person. To combat this issue, a fidelity of treatment checklist was completed by the interventionist and also by an independent coder. Results indicate the interventionist was consistent in implementing the procedures outlined in the training protocol, thus increasing the likelihood that others who followed the same protocol would achieve similar results. Even with this check on external validity, the fact that something else in the interventionist’s repertoire could be responsible for the results can not be ruled out.

Extension of Previous Literature

Results of this study extend the previous literature in several ways. First, the results extend social cognitive intervention research for children with autism. Results indicate that a plan – play – report intervention is successful in increasing the social communication skills of children with autism.

Second, this study demonstrated that intervention can be provided to two children with autism at the same time and that both children in the dyad show measurable gains in peer-directed commenting, language diversity, and complexity. While studies have demonstrated that children with autism can improve their social-communication skills when given an intervention involving a child without disability, finding a child to train and use as an interventionist poses some problems. First, it takes time away from the typically developing child’s education. Given the current mandates of the No Child Left Behind Act, schools must be accountable for improving academic performance and teachers may be reluctant to release typically developing students for valuable classroom instruction. Furthermore, the use of nondisabled peers as confederates may demonstrate a difference from real world stimuli.

An additional finding of this study is that both children in same gender dyads and children in mixed gender dyads made progress. Previous studies had utilized only mixed gender dyads (Craig-Unkefer & Kaiser, 2002; 2003). Research has shown that social engagement may enhance language and cognitive development (Ingersoll, Schreibman, & Stahmer, 2001). The results of this study support the idea that social engagement may enhance language development as children displayed much higher levels of language in the intervention phase when they were actively engaged with their peers.

Results of this study do not imply that students with autism should be excluded from participation in general education environments or that they do not need interaction with typically developing peers in order to become successful social communicators. All children have the right to be educated in the least restrictive environment and to be included in general education classes where appropriate. Rather this study provides support for the idea that children may begin to practice needed social communication skills prior to entering into the general education classroom. No Child Left Behind mandates include a provision that grants teachers control over their classrooms and allows then to remove disruptive students. This may mean a re-examination of inclusion practices especially as they pertain to students with challenging behavior. Some children with autism display very challenging behaviors (e.g. aggression, self-injurious behavior) that impact efforts to involve them in the general education classroom.

Results of this intervention may also have practical applications. Results in this study were seen with just 10 minutes of intervention three times a week. Given the minimal time investment and that similar play themes are readily available most classrooms, it is likely that a teacher would easily be able to imple-
ment this intervention in a classroom during free time or recess. Furthermore, intervention sessions took place in a crowded and highly trafficked hallway, indicating that the intervention might also be successful when conducted in a classroom or recess setting.

Further research is needed to determine whether the results would generalize to classroom playtime and if the results would maintain over time. Past research has demonstrated that children with autism who displayed high intelligence (IQ above 60) and the development of speech before the age of five had the most favorable outcomes (Koegel, 2000). Additional research should also explore whether this intervention would be appropriate for children with more severe forms of autism.

The relationship between language development and the development of social skills is complex. There are many things we do not know about this relationship and research should focus on these areas. Results of this study suggest that significant changes can be accomplished with a social cognitive approach to intervention.

References


Increasing Functional Communication in Non-speaking Preschool Children: Comparison of PECS and VOCA

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Abstract: For individuals who have complex communication needs and for the interventionists who work with them, the collection of empirically derived data that support the use of an intervention approach is critical. The purposes of this study were to continue building an empirically derived base of support for, and to compare the relative effectiveness of two communication intervention strategies (i.e., PECS and the use of VOCA) with preschool children who have complex communication needs. Specific research questions were (a) Which communication strategy, PECS or VOCA, results in a more rapid rate of acquisition of requesting skills for preschool children?, and (b) To what extent do communication behaviors utilizing PECS and VOCA generalize from a pull-out setting to the classroom setting? Results are discussed and clinical implications given.

According to Bedrosian (2003) only limited research exists to establish the efficacy of interventions in the field of augmentative and alternative communication (AAC). For individuals who have complex communication needs and for the interventionists who work with them, the collection of empirically derived data that support the use of an intervention approach is critical. As Hegde (1993) indicates “clinicians need procedures that . . . are experimentally demonstrated to be effective” (p.10). If this is not the case, then interventionists might be utilizing procedures that are not effective, or that might indeed be harmful to their client’s communicative success.

The Picture Exchange Communication System (PECS) is an intervention approach that has been supported by a large body of anecdotal literature (Mirenda, 2001) as well as by several controlled, empirical investigations (Charlop-Christy, Carpenter, Le, LeBlanc, & Kellet, 2002; Hanley, 2003). PECS was developed by Bondy and Frost (1994) to teach self-initiated communication to children with autism. Lidelle (2001) and Schwartz, Garfinkle, and Bauer (1998) also reported that PECS was effective with children who were not diagnosed with autism but had similar complex communication needs. PECS consists of six training phases that begin with training a child to exchange a picture for a tangible positive reinforcer and then progressively move through requiring the child to travel some limited distance to get the picture to exchange, to discriminate between two or more pictures, to use a sentence strip beginning with “I want,” to respond to direct questioning, and to comment.

Other approaches to interventions for individuals with complex communication needs involve the use of voice output communication aids (VOCAs). As with PECS, interventions using VOCAs with individuals with complex communication needs are described in clinically oriented literature (e.g., Burkhart, 1993; Goossens’ Crain, & Elder, 1992) and have been supported by empirically controlled investigations. For example, Romski and Sevcik (1992, 1993, 1996) conducted a longitudinal study that documented primary and secondary school-age individuals with moderate to severe intellectual disabilities were able to learn functional communication using VOCAs. Schlosser, Belfiore, Nigam, Blisschak, and Hetzroni (1995) also taught three individuals with severe to profound levels of intellectual disabilities to communicate with arbitrary graphic symbols presented on a
VOCA. In one condition, the VOCA was turned off so that no voice output was available, and in the other condition, the VOCA was turned on so that voice output was available. Their results indicated that the addition of voice output facilitated their participants’ learning of symbols. Schepis, Reid, Behrmann, and Sutton (1998) conducted a single-subject study in which they evaluated the effects of a VOCA on the communicative behaviors of young children with autism. Their results indicated that the use of a VOCA was effective in increasing communicative interactions for the children in their study. These authors indicated, however, that continued study into the use of VOCAs with children with complex communication needs is warranted.

Thus, both PECS and the use of VOCAs have been documented as being useful with individuals who are candidates for AAC interventions. Additional controlled investigations that supply empirically derived data supporting the use of these interventions remain important because replicated results both extend external validity and serve as substantiation and verification of previous findings (Muma, 1993). Given the fact that many individuals who use AAC have difficulty generalizing new skills (Schlosser & Lee, 2003), it is important to document the efficacy of a treatment approach and it is vitally important to determine whether children will generalize behaviors learned with that approach to other settings, partners, and behaviors.

Furthermore, while interventionists should have several options from which to choose for various children, Schlosser (2003) indicates that “once it has been demonstrated that individual interventions are efficacious in their own right, practitioners are often interested in knowing whether another approach might be even more efficacious” (p. 554). Several investigations have compared the use of PECS to the use of American Sign Language for teaching requesting to a child with complex communication needs (Adkins & Axelrod, 2001; Tincani, 2004), but, to date, the relative efficiency of teaching PECS versus using VOCAs for increasing spontaneous requesting skills in children has not been studied. Therefore, the purposes of this study were to continue building an empirically derived base of support for, and to compare the relative effectiveness of two communication intervention strategies (i.e., PECS and the use of VOCA) with preschool children who have complex communication needs. The specific research questions were (a) Which communication strategy, PECS or VOCA, results in a more rapid rate of acquisition of requesting skills for preschool children? and (b) To what extent do communication behaviors utilizing PECS and VOCA generalize from a pull-out setting to the classroom setting?

**Method**

**Participants**

Participants were six 4 year old boys diagnosed with developmental delay who were non-speaking and who did not use an AAC system to communicate functionally. Children were drawn from two self-contained preschools in central Illinois. School A was located in a city with a population of approximately 150,000 and school B was located in a small city with a population of approximately 15,000. After obtaining permission from school administrators, researchers contacted preschool teachers in each of the schools who then identified specific children who met selection criteria. All six children were selected for the study based on three criteria: (a) they were currently educated in a preschool setting, (b) they could physically manipulate and visually locate a laminated 2 in. x 2 in. picture, and (c) they were non-speaking and did not use a formal, functional means of communication. Parents were subsequently contacted and signed an informed consent letter.

**Materials**

The VOCA intervention utilized the GoTalk, a lightweight, digitized AAC device with a built-in handle and nine static locations separated by a keyguard. Velcro was attached to each of the location sites on the GoTalk. Both the VOCA and PECS interventions utilized 2 in. x 2 in. laminated colored pictures with the label of the picture printed above the word. Pictures were produced with Boardmaker Version 5.1.8 software. Velcro was attached to the back of the pictures. Both interventions used the concrete referents to which the pictures corresponded (e.g., a picture of a cookie and an actual cookie). The PECS intervention also
included the use of a 1 in. three-ring binder with a Velcro strip attached to the front.

**Dependent Measure**

The dependent measure was the correct response. The correct response was operationally defined as exchanging a picture for a desired item without a gestural or verbal prompt when implementing the PECS intervention. During the VOCA intervention a correct response was operationally defined as independently (i.e., without a gestural or verbal prompt) positioning the VOCA correctly and accessing a picture to produce digitized speech in exchange for a desired item. Coded data sheets with a prepared format were designed for each phase of the treatment for both PECS and VOCA and were used to assess correct responses per session (Alberto & Troutman, 2003). For example, the data sheet for PECS Phase I included the correct response as to whether the child independently exchanged the icon for the desired object whereas the data sheet prepared for PECS Phase II indicated the correct response for the independent exchange of the icon and the persistence component. Prepared format sheets were also provided to assess inter-rater reliability, and procedural fidelity.

**Data Collectors**

At each school setting there were three investigators present during all intervention sessions. Each team of investigators included a lead person who was a certified SLP and/or a doctoral level faculty member in either speech language pathology or special education. The other team members included master or bachelor degree candidates in speech language pathology. All investigators were trained in the interventions, data collection procedures, and procedures to evaluate procedural reliability.

**Inter-rater Agreement**

Inter-rater agreement was assessed during baseline, intervention, and generalization probes by having two individuals independently score the child’s responses for all sessions. The number of agreements was tallied and divided by the number of agreements + disagreements. Inter-rater agreement was 100%.

**Experimental Design**

An alternating treatment single subject design was implemented (Tawny & Gast, 1984; Zhan & Ottenbacher, 2001). Intervention procedures were operationally defined and a schedule for counterbalancing the presentation of interventions across time and children was established. That is, the researchers predetermined that in each session a child would have 10 opportunities or 15 min, whichever came first, to request items or activities using VOCA and 10 opportunities or 15 min, whichever came first, to request items or activities using PECS. If a child started with PECS followed by VOCA on day 1, then the order was reversed on day 2 and so on, counterbalancing the order of intervention procedure used across children. A minimum of a 15 min break was provided between the interventions for each child. Additionally, half the children were randomly selected to follow the intervention order VOCA/PECS and the other half followed the order PECS/VOCA.

**General Procedures**

After procedures were operationally defined and an order of presentation decided upon for each child, a reinforcement inventory was completed, baseline data were collected, intervention was implemented, and generalization probes in the classroom setting were conducted individually for each child. Due to school schedules, intervention was conducted three days a week for children in school A, and two days a week for children in school B. The criterion to move to a new phase during each intervention condition was established at 90% for 2 out of 3 consecutive days. Baseline data were collected in the first week and a half, intervention was conducted over the next 5½ weeks, the last week of which took place in the classroom setting. Generalization probes were taken one week after intervention was terminated. Each child’s school spring break occurred during the intervention period so that all children actually received intervention for 4½ weeks. As a part of the initial research design, no intervention training with either PECS or VOCA was provided past Phase III.
Reinforcement inventory. Prior to beginning any intervention with the children, a reinforcement inventory was conducted for each child. This consisted of placing two to three objects in front of the child and documenting which object was preferred per object grouping. Preference for the object was noted when the child either consumed an edible or manipulated an object or a toy. Using this procedure, approximately 10 reinforcing objects were identified for each child. These objects included food, toys, and activities (e.g., basketball and blowing bubbles). For each child, the reinforcers were randomly divided into two groups of equally desired objects and activities. One group of reinforcers was chosen randomly for use with the VOCA intervention and the other with the PECS intervention.

Baseline. The baseline phase, while not an absolute requirement in alternating treatment designs (Zhan & Ottenbacher, 2001), was conducted to strengthen the conclusions drawn from the results of the study. The protocol for the baseline phase consisted of placing 3-4 items, the corresponding PECS pictures, and the VOCA with the appropriate pictures attached within the child’s reach. The child was then observed for 10 min and number of times that the child either exchanged a picture with the observer or activated a location on the VOCA as a request for an item was recorded. The observer did not interact with the child unless the child engaged in one of the above behaviors or in a self-injurious behavior. Baseline data were collected over three consecutive baseline sessions conducted on separate days.

PECS Phase I – Picture exchange. Three researchers were involved in the PECS intervention during Phase I. One researcher was designated as the communication partner. This person sat across from the child and also scored the child’s responses. Another researcher was the prompter and sat behind the child. The third person observed and scored responses. The picture was placed in front of the child and the corresponding desired item was either placed on the table behind the picture or the communication partner held the desired item. No verbal prompting was provided to the child to exchange the picture for the object. If the child tried to pick up the item without exchanging a picture for it, his response was blocked and the prompter used a hand-over-hand to assist the child in accomplishing the exchange. During the time between the presentation of the stimuli and the child’s final response, the communication partner held out her open hand giving the child a gestural prompt to exchange the picture. Once the student placed the picture in the communication partner’s hand, the partner gave the child the desired item and reinforced the child verbally, stating, for example, “bubbles, you want bubbles!” All prompting was gradually faded until the child was independently able to exchange a picture for a desired object 90% of the time for two out of three consecutive days. Once this criterion was reached, PECS Phase II was begun.

PECS Phase II – Persistence of communication. The Phase II protocol for PECS consisted of placing one picture on the Velcro strip attached to the front of a 1 in. three-ring binder and placing the binder in front of the child with the corresponding object also in the child’s view. The communication partner did not prompt the child to exchange the picture for the object either verbally or gesturally. Physical assistance was only provided if the child tried to access the desired item without using the picture. Once the child handed the picture to the communication partner, the partner gave the child the desired object and also verbally reinforced the child as in Phase I. When the child was able to exchange the picture independently in Phase II, the communication partner gradually began to move away from the child until a distance of 6 ft was achieved. The communication partner also began to turn away from the child. In the final step of shaping persistence, the communication partner moved 6 ft away and turned her back to the child. This required the child to become more persistent in his attempts to communicate. The child had to pick up the picture, get up from his chair, move toward the communication partner, get the communication partner’s attention and then hand the picture to the communication partner. When the child did this successfully for 90% of the opportunities on 2 out of 3 consecutive days, PECS Phase III was initiated.

PECS Phase III – Picture discrimination. The Phase III protocol for the PECS intervention consisted of placing two pictures on the Velcro strip, one of a desired item and one of a neutral item (e.g., a piece of paper). The or-
der in which these pictures were placed on the strip was alternated on a random schedule. Again, the communication partner sat across from the child and did not prompt the child in any way to exchange a picture for the object. The desired object was placed in the child’s line of vision. The child had to look at the two pictures, discriminate between them to select the picture of the desired item, and then hand that picture to the communication partner in exchange for the desired item. If the child chose the picture of the neutral item to exchange, then the child received the neutral item. If the child rejected it, then the child was given another chance to choose between the pictures of the desired item and the neutral item. When the child was able to choose the desired item consistently, two equally desired items were placed on the board. Again, the order in which these pictures were placed on the strip was alternated on a random schedule. Correspondence checks were conducted every fifth trial. Correspondence checks consisted of offering the child two items after the picture exchange and noting if the child chose the item that corresponded with the selected icon. If the child did not, then an error correction sequence was performed. The error correction sequence consisted of prompting the child to choose the item that corresponded with the picture the child had handed the communication partner. After every successful exchange, the communication partner verbally reinforced the child in the same way she had in the previous Phases.

**VOCA Phase I –Activate picture location.** The protocol used for the intervention with the GoTalk was identical to that used for the PECS. The only difference was that the picture of the item was attached to one of the locations on the VOCA and the name of the picture (e.g. production of “cookie”) was programmed into the device. Instead of exchanging a picture as in PECS, the child had to grasp the handle on the upper edge of the GoTalk, lift the top edge off the table so that the bottom edge of the GoTalk was still supported on the table, and activate the location containing the picture. The child was required to lift the VOCA partially off the table in preparation for Phase II training.

**VOCA Phase II –Persistence of communication.** Again, the protocol used for the VOCA intervention in Phase II was identical to that of the protocol followed for the PECS Phase II intervention with the exception that the child had to pick the GoTalk up by the handle, carry it to where the communication partner was, get the communication partner’s attention, brace the GoTalk on his stomach or hip, and then activate the correct location as a request for the desired object or event.

**VOCA Phase III –Picture discrimination.** A protocol identical to the one used with PECS Phase III was utilized for the VOCA Phase III with the exception that the two pictures were attached to randomly alternated spots on the GoTalk and the child had to pick the GoTalk up as in Phase I and activate the location with the picture of the desired item.

**Classroom intervention.** Intervention in the classroom was completed for one week with all children with both PECS and VOCA. Classroom intervention simply moved the child and the communication partner into the classroom for the intervention session. The communication partners, the current phases, and the procedures remained the same as during individual intervention. For example, Corey’s intervention was at Phase III during individual sessions, it was then continued in the classroom at the same phase level with the communication partner from the research team. Intervention was conducted in the classroom to help the children generalize communication skills learned in the pull-out sessions and to model both interventions for the classroom staff.

**Generalization probes.** Generalization probes were conducted in the children’s classrooms. During these probes, the PECS and VOCA materials were placed together at one location in the classroom. The classroom teacher and the classroom aide interacted with the children in a typical manner and kept the children’s desired items within reach. The researchers remained in the environment only as data collectors and did not participate in the communication exchanges. Every instance of the child spontaneously selecting either the GoTalk or a PECS picture and using it to initiate a request with a member of the classroom staff was documented.
Data Analysis

Data on acquisition of spontaneous initiations with PECS and with VOCA were graphed and then visually inspected. Generalization of these behaviors in the classroom were averaged over sessions and put into table form for visual inspection. According to Alberto and Troutman (2003) graphic display of data should be simple, uncluttered and provide a picture of progress across the time of the intervention. With that in mind, the graphic display used for visual inspection departs from a tradition alternating treatments graph for two specific reasons: (a) both interventions consisted of three separate phases and the children progressed through the intervention phases (PECS and VOCA) at differing rates; thus, creating an inability to insert intervention lines between the phases; and (b) data were collected on each treatment (PECS and VOCA) each day resulting in multiple overlapping data points.

Procedural Fidelity

To ensure that procedures were correctly implemented, procedural fidelity measures were also assessed during the intervention procedures. On a schedule that was unknown to the person presenting intervention, a scorer documented procedural fidelity for at least one session in each phase of each intervention and during generalization probes for all children. Procedural reliability was documented on a form that was created for each phase for both PECS and VOCA. Procedural reliability was 100% across all phases of each intervention for each child.

Results

Acquisition of Use of PECS and VOCA During Individual Pull-Out Sessions

As shown in Figures 1-6, all children demonstrated stable baselines before intervention was initiated with both PECS and VOCA. No child utilized either PECS or the GoTalk to initiate a request during baseline. Within the 5 1/2 week time frame of the intervention, all children met the criterion in Phase I for advancement to Phase II with both the VOCA and PECS. Three children took notably longer to progress through Phase I of the VOCA intervention than they did to progress through Phase I of PECS. Five children met the criterion in Phase II to move to Phase III with PECS, but, although all children showed increased persistence when utilizing a VOCA for an initiation in Phase II, only two met criterion to move to Phase III of the VOCA intervention. Two children met the criterion for successful completion of Phase III of PECS intervention and only one for successful completion of Phase III of VOCA intervention.

Difference in Performance for Children Receiving Two Versus Three Sessions a Week

David, Jason, and Ryan all attended school A where intervention was conducted three days a week while Corey, Adam, and Nate all attended school B where intervention was conducted only two days a week. All the boys who attended school B progressed to Phase III of the PECS intervention and two of them also progressed to Phase III of VOCA intervention. Of the boys who attended school A, only one progressed to Phase III of PECS intervention and none met criterion to progress from Phase II to Phase III of VOCA intervention.

Acquisition of Use of PECS and VOCA During Classroom Sessions

For two children in School A (David and Jason), the move into the classroom resulted in a slight decrease in PECS behaviors and a more notable decrease in use of VOCA during the first classroom session. For both of these children, PECS behaviors came back to the level evidenced in the pull-out sessions by the end of the week. Jason’s use of VOCA also increased to a level higher than it had been during the final pull-out session. For David, however, use of VOCA decreased even more markedly as the week progressed. The performance of the third child in School A, Ryan, became variable when intervention was conducted in the classroom. With PECS his accuracy decreased markedly, then rose to 100%, then decreased to 0%. His performance with VOCA was the reverse, he maintained his previous level of accuracy on the first session, fell to 0% on the second, and rose again to 100% on the third session. Children in School B demon-
strated more consistent behavior across pull-out and classroom settings. Corey’s and Nate’s accuracy levels dropped slightly for both interventions during the first classroom session, but came back to previous levels by the second session. Adam showed no drop in average accuracy for either intervention from pull-out to classroom setting.

Generalization of PECS and VOCA

During generalization probes, five children used PECS and five used the Go-Talk to initiate spontaneous requests in the classroom setting. Three children (David, Corey, and Jason) appeared to have a slight preference for PECS, two (Ryan and Nate) appeared to pre-
fer the VOCA, and Adam did not demonstrate a clear preference for one method over another. Table 1 shows the average number of requests initiated with either the PECS or VOCA per child.

Discussion

Acquisition of Requesting Skills

A noticeable difference in the rate of acquisition between the two intervention methods was shown for three children (David, Jason, and Nate); PECS was acquired at a slightly higher rate than the VOCA. During Phase I of the intervention, the investigators noted that for these boys, the physical acts of picking the VOCA up, positioning it correctly on the table, and pushing the appropriate location hard enough to activate the voice output appeared to be more difficult and required more hand-over-hand guidance from the prompter than simply picking up a picture.
and handing it to the communication partner. Once the motoric aspects of the task were mastered, the children quickly learned to utilize the VOCA for a request in Phase I of intervention. All of these boys showed increased performance with the VOCA in Phase II, but did not meet criterion to move to Phase III because of the time frame of the study. That is, there was not time to extend training with the VOCA in Phase III. Two (David and Nate) were able, however, to acquire PECS behaviors through Phase II and to begin Phase III of PECS intervention.

For the other three children (Ryan, Adam, and Corey), acquisition of requesting skills utilizing PECS mirrored their acquisition of requesting skills utilizing VOCA. These results suggest that once these boys understood the concept of utilizing an aided form of AAC to request a desired object, they were able to take advantage of the different AAC systems that were offered to them.

Difference in Performance for Children Receiving Two Versus Three Sessions a Week

Children in School A, who received three intervention sessions a week, generally made
slower progress in both interventions than did children in School B, who received only two sessions per week. At first these results might appear to indicate that two intervention sessions are superior to three intervention sessions a week for teaching requesting behaviors to young children. This conclusion, however, is tempered by the fact that children at school A all had some problematic behavior issues, whereas children at school B did not. Each child at school A had several sessions where they were either lethargic, laid their head on the desk and did not participate independently in the interventions, or were so actively resistant to participating that the session had to discontinued. These behavior issues did not occur with the children at school B. Results of the current study therefore support the clini-

Figure 4. Corey’s acquisition of PECS and VOCA during pull-out and classroom sessions.
cally logical idea that the number of intervention sessions that need to be conducted each week should be determined by the individual child and his or her specific needs.

**Acquisition of Requesting Skills in the Classroom**

To facilitate generalization of the use of both PECS and VOCA to the classroom setting, the researchers conducted both interventions in the classroom for one week. This allowed the children to use both communication methods within the context of their classrooms and the classroom staff to see the intervention being modeled.

Results for children in School A (David, Jason, and Ryan) when intervention was transitioned into the classroom indicated that this change was initially disruptive to their learning of either PECS or VOCA. Given that individuals with complex communication needs often don’t generalize behaviors learned in one setting to another without specific training (Calculator, 1988) these are not surprising

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**Figure 5. Adam’s acquisition of PECS and VOCA during pull-out and classroom sessions.**
results. The fact that children in School B transitioned as easily as they did to the classroom is perhaps a more unexpected finding. Children in School B, however, did not have the behavioral issues that the other children had and so might have been better able than children in School A to focus their attention on the researchers and the tasks, regardless of setting. Nonetheless, two children in School B did have a slight decrease in performance for both PECS and VOCA in the first classroom session. The results of 5 of the 6 children then

Figure 6. Nate’s acquisition of PECS and VOCA during pull-out and classroom sessions.

<table>
<thead>
<tr>
<th>TABLE 1</th>
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<tbody>
<tr>
<td><strong>Average Number of Requests with PECS and VOCA During Generalization Probes</strong></td>
</tr>
<tr>
<td><strong>Child</strong></td>
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<tr>
<td>-----------</td>
</tr>
<tr>
<td>David</td>
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<tr>
<td>Jason</td>
</tr>
<tr>
<td>Ryan</td>
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<tr>
<td>Corey</td>
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<tr>
<td>Adam</td>
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<tr>
<td>Nate</td>
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</tbody>
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indicate that if training for either PECS or VOCA is initiated in pull-out sessions, it is necessary that further training be conducted in the environments in which those behaviors are expected to occur.

**Generalization**

For the more severely involved children in School A, results in the classroom phase predicted generalization results. David’s and Jason’s accuracy for PECS remained stable in the transition to classroom while their accuracy with VOCA fluctuated. Both of these children appeared to prefer PECS in generalization. Ryan’s classroom performance fluctuated for both PECS and VOCA interventions but ended higher for VOCA than PECS. Ryan preferred VOCA over PECS in generalization.

Unlike the classroom performance of the children in School A, performance of children in School B did not predict their generalization results. Despite the fact that Adam made rapid progress through Phases I and II and was performing at a high level of accuracy in Phase III for both interventions, he showed minimal evidence of generalizing behaviors from either intervention outside of the structured intervention sessions. While Nate took longer to progress through Phase I with VOCA than he did with PECS, he demonstrated a preference for VOCA over PECS in generalization. Corey progressed rapidly through Phases I and II with both PECS and VOCA and was using both with the same level of accuracy in the classroom sessions. He, however, showed a definite preference for PECS during generalization.

Taken together the results of the generalization probes support the efficacy of teaching children to initiate requests using the protocol suggested by Bondy and Frost (1994). That is, in a relatively short timeframe, all these children learned to initiate a request spontaneously when taught using an intervention approach that systematically applied the principles of positive reinforcement, backward chaining, shaping, anticipatory prompting, delayed prompting, and fading of physical prompts. Furthermore, all children showed some evidence of maintaining these behaviors during generalization probes. The unique finding from this study is that this protocol can be used to teach the use of a VOCA as well as the use of pictures for initiating communication. These results then are consistent with and expand on previous research that has validated the use of PECS and VOCAs as functional communication systems for non-speaking children (Charlop-Christy et al., 2002; Hanley, 2003; Romski & Sevcik, 1992 1993 1996; Schepis et al., 1998).

Furthermore, results of the generalization probe underscore the importance of considering the individual child. Five of the children appeared to have a preference for one type of communication modality over the other. Sometimes this preference could be predicted from intervention data, sometimes not. Children should not be taught only one method by which to communicate. The act of communication is multimodal; all communicators use more than one way to express themselves. Children should be taught and encouraged to use multiple means of communication. The results of this study indicate that children can learn at least two functional systems of communication at the same time. This then allows the child to select from an array of options when given the opportunity to choose how to express him or herself. It also allows interventionists to offer a child a means of communication that might be more advantageous than another in a specific situation.

**Limitations and Directions for Future Research**

One limitation is the short duration of this study. Only two children were able to reach criterion in Phase III of PECS, none reached criterion in Phase III for VOCA. If time had allowed children to progress through all phases of intervention, results might have been different. Future studies should be conducted that would allow for progression throughout all phases.

Another limitation is that the researchers did not audio or videotape sessions so that valuable information on verbalizations was not gathered. Given the reports of increased verbalizations after the use of PECS (Bondy & Frost, 1994; Hanley, 2003), future research should investigate if the use of a VOCA or PECS has a differential influence on development of verbalizations in children with complex communication needs.
Conclusion

Results of this study support use of a systematic, behaviorally-based program for teaching children to initiate communication utilizing either pictures, as in PECS, or a VOCA. Previous research has indicated that children who use AAC systems are primarily recipients of adult directed communication (e.g., Calculator 1997; Light, Binger, Agate, & Ramsay, 1999) and remain passive communicators. The protocol for teaching PECS and for teaching the use of a VOCA, as applied in the current study, reinforces children’s independent and spontaneous initiation of communication, which allows them to become active communicators. While the performance of children in the current study documents the importance of individualizing intervention programs, all children should be encouraged to develop their own active voice. Using Bondy and Frost’s (1994) protocol to teach initiations appears to be a step toward achieving this goal.

References


Extension of Research on Social Skills Training Using Comic Strip Conversations to Students Without Autism

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Abstract: Comic Strip Conversations is a positive behavioral support strategy that has been used effectively to improve the social skills of students with autism. Research on the effectiveness of this strategy was extended to four students with other mild/moderate learning, cognitive and behavioral disabilities. Two elementary teachers used Comic Strip Conversations for a period of six weeks with four 6-10 year olds who exhibited difficult social behaviors. All participants improved their perceptions of social situations, exhibited appropriate social growth, began to generate their own solutions to difficult social situations, and demonstrated a decrease in target behaviors.

Use of Social Stories and Comic Strip Conversations have been shown to be excellent positive behavioral support strategies for students with autism spectrum disorder. A Social Story is a formatted narrative that guides the behavior of a child or adolescent who has difficulty with language expression, especially those with autism spectrum disorder (ASD) (Gray, 1995). Before an event that may be stressful or provoke inappropriate behaviors, a Social Story is written so that the student can experience the situation and “rehearse” positive social behaviors. It can be co-written by an adult and student or, with training, by the student alone. A Comic Strip Conversation is a modification of the Social Story that is centered around pictures rather than text, and is used to review a situation and discuss alternatives to student behavior that was not beneficial. Students work with an adult (usually a teacher or parent) to resolve social dilemmas by drawing what occurred using simple figures and other comic strip symbols such as speech bubbles, discussing the negative outcome, including missed social cues, and planning a different outcome for future interactions (Rogers & Myles, 2001). Research on the effectiveness of Comic Strip Conversations thus far has been limited, but it has been demonstrated as an effective method for improving the social perceptions of students with autism and Asperger’s Syndrome (Glaeser, Pierson, & Fritschman, 2003). The following study extends the current research to include students with other mild/moderate disabilities.

Students with mild/moderate disabilities often lack social skills important to positive peer relationships (Atwood, 2000; Gresham, 1992; Swanson & Malone, 1992; Vaughn, 1992) including “a lack of reciprocity, little appreciation of social cues, and failure to share enjoyment, interests, or achievements with other people” (Atwood, p. 85-86). Gray (1995a,b) designed Social Stories and Comic Strip Conversations as interventions for teaching these social skills to children with limited language expression, particularly those with autism. Studies on the use of these interventions with this population have been limited, but encouraging (Glaeser et al., 2003; Rogers & Myles, 2001; Rowe, 1999; Swaggart et al., 1995).

There are few studies on the use of these interventions for children with learning and other mild/moderate disabilities (LD), although it has been proposed. Gut and Safran (2002) proposed that teachers could use Social Stories as part of literature response groups to reduce anxiety and improve the acceptance of students with disabilities into
general education cooperative groups. Use of Social Stories would help a child with LD understand the social cues of others in the group. “Advance information about this type of situation can reduce anxiety and provide alternative coping strategies to deal with such a situation” (p. 90).

Children with learning disabilities exhibit a variety of social skill deficits. A meta-analysis of research indicated that these students were less liked and more likely to be rejected by normal achieving children, and were more likely to be rated as aggressive, immature, suffer personality problems, and have difficulty attending when compared to peers without handicaps (Swanson & Malone, 1992). Some researchers have suggested that social skill deficits are so prevalent in persons with LD, leading to peer relationship problems that can affect graduation and post-school outcomes, that they should be considered a subtype of learning disability (Vaughn, 1992). Gresham (1992), however, rejected this idea because of evidence in the literature that many students with LD function well socially. Gresham concluded that the best explanation drawn from the research is that most children classified as LD have poorer social skills, are more poorly accepted, and more often rejected than students without LD, but these children do not differ from students who have just low achievement (p. 357). He proposes that all social skills interventions, especially for children with LD, should be based on a functional analysis of the child’s environment, e.g., focused on specific, controllable environmental variables that can be manipulated to produce changes in social behavior (p. 359).

Comic Strip Conversations fit this definition of a behavioral intervention based on functional analysis of a student’s environment. The situations displayed in these “stories” are taken directly from the student’s daily life, and therefore relate directly to the student’s social skills in given situations. The “comic strips” are designed to provide students with alternatives for behavior that will quickly and directly affect their peer relationships. Thus, Comic Strip Conversations should be an effective social skill intervention for students with LD, behavior disorders, and mild mental retardation.

Method

Participants

Two teachers in a large suburban school district used Comic Strip Conversations to improve the social skills and/or specific problem behaviors exhibited by four students in multiple settings. Both teachers were special day class teachers, which meant that a high concentration of the social situations occurred in or around self-contained classrooms outside of the general education population.

The teachers were both relatively new to their profession with less than five years of teaching experience who were interested in trying a new strategy to improve the social perceptions, social skills and problem behaviors of their most difficult students. Both teachers were females and were fully credentialed as educational specialists with an emphasis in mild/moderate disabilities.

Each teacher collected anecdotal data on the social skills deficits and problem behaviors of all students (Teacher A, n = 11, Teacher B, n = 10) for one month prior to teaching the specific students how to use Comic Strip Conversations. This helped them to isolate which students had the most severe social skills deficits, which then affected their behaviors. The authors helped the teachers determine which students had the most severe social skill deficits and, therefore, would benefit most significantly from the use of Comic Strip Conversations. Target behaviors included: eliminating explosive temper tantrums, learning to get along with others on the playground, working cooperatively in classroom centers with a small group, and reducing physical violence toward other students both in the classroom and on the playground.

Four students were identified as having the most severe social skill deficits, which in turn negatively affected their behavior and peer relationships. Consent letters were sent home to inform parents and ask permission for student participation. All four parents/guardians for the identified students agreed to a six-week intervention using Comic Strip Conversations and data collection for this article. One mother expressed concern that the intervention would be intrusive and ineffective.
Teacher A reiterated that she could withdraw her child at any time during the intervention and that if there was no significant improvement after the six weeks, other strategies would then be implemented in place of Comic Strip Conversations. She did then consent to have her child participate fully in the research study. Next, students were told about the intervention and readily agreed to be a part of the study.

Two students had been diagnosed by district criterion as having specific learning disabilities (LD), one student had mild mental retardation (MMR) with an IQ of 68, and one student qualified as emotionally and behaviorally disordered (EBD). Students were between the ages of 6-10 years old at the time of the study. All students received more than 50% of their academic instruction within a special education setting.

Teachers were trained on the use of Comic Strip Conversations by the authors who had experience with the strategy. The professors modeled the strategy, assisted the teachers in determining when a Comic Strip Conversation should be used, and assisted the teachers with the initial implementation.

Target behaviors were defined for each student in order to focus the social skills intervention. These were:

Student 1: Reduce temper tantrums in the classroom and on the playground
Student 2: Increase willingness to follow student-made rules for games on the playground
Student 3: Increase appropriate cooperative behaviors in small group settings in the special education classroom
Student 4: Reduce physical violence toward other students and adults in the classroom and on the playground

Procedure

Guidelines for Comic Strip Conversations written by Glaeser et al. (2003) were followed. Once target behaviors were defined, Comic Strip Conversation books were made for each of the four target students. This consisted of multiple pieces of paper divided into four sections stapled together. The teacher would remove the student from the situation, sit him down in a quiet place, and sit side by side to initiate the drawings.

Students began with a symbol dictionary illustrating the meaning of a specified number of icons to be used to create a miniature story. There were two types of symbol dictionaries used. The Conversation Symbols Dictionary included eight symbols for basic conversations such as listening, interrupting, talk and thoughts as outlined by Gray (1994). The Personal Symbols Dictionary was an individualized collection of symbols used by the student. Students frequently added to the Personal Symbols Dictionary as new situations arose.

Students were encouraged to write about what happened during a specific incident. The final comic strip/panel was reserved for the solution or positive outcome of the social/behavioral situation. On a daily basis, teachers reminded students of the comic strips that were drawn on previous occasions. This helped reinforce appropriate social behaviors throughout the day.

When addressing the target behavior, the teacher or paraeducator helped the students focus on the one or more of the following questions in their Comic Strip Conversations in response to the target behaviors: (1) Where are you?, (2) Who else is here?, (3) What are you doing?, (4) What happened? What did others do?, (5) What did you say? (6) What did others say?, (7) What did you think when you said that?, and (8) What did others think when they said that/did that? (Gray, 1994). The teacher or paraeducator shared her perspective of the situation with the student, but then allowed the student control of the conversation. Students were given assistance as needed if the question was too difficult and guided to a logical answer.

Teachers and paraeducators consistently observed social behaviors for six consecutive weeks. Each student was given an opportunity to use Comic Strip Conversations on a daily basis during the following time periods: after recess, after cooperative groups (centers), after lunch, and for any other time period where there was a difficult behavior. If a social situation became volatile or if social skill training was needed during these time periods for any of the four target students, the student would be removed from the situation and teachers would then work with the individual student to create a Comic Strip Conversation.
illustrating the aspects of that particular situation and proposing a more positive solution.

**Results**

Across gender, age, primary disability, and teacher, qualitative data indicated significant gains in appropriate perceptions of social situations, improvement in social skills overall, the ability to find solutions to difficult social situations using Comic Strip Conversations, and improvement in targeted behaviors.

**Overview of Change in Student Behavior**

*Student 1 – 7 year old white male identified as LD*

Whenever a situation arose where this student did not get his first choice, he would immediately begin to tantrum whether he was in the classroom or on the playground. His tantrums consisted of throwing his body on the ground, hitting the ground with his fists, kicking his legs, and screaming at the top of his lungs. On an average day, Student 1 would tantrum eight times in the classroom and four times on the playground. Obviously, this was very disruptive to other students in the classroom.

Comic Strip Conversations were introduced to him to help generate other possible solutions to his tantrums and to help him communicate his needs more clearly.

He expressed excitement over being allowed to draw and quickly understood the purposes of Comic Strip Conversations. He was able to “see” that if he did not tantrum, he would be given a reward for good behavior. He began to draw Comic Strip Conversations completely on his own by the third week of implementation and was adept in creating alternative solutions to his tantrums and to help him communicate his needs more clearly.

By the sixth week, he reduced all classroom tantrums by 80%. He also reduced his playground tantrums by 60%. Student 1 continues to use Comic Strip Conversations as one avenue to see other solutions to his tantrums. However, because his tantrums have not been eliminated completely, alternative strategies have been added to assist him in the reduction of this disruptive behavior.

*Student 2 – 10 year old white female identified as LD*

Student 2 enjoys playing with others on the playground and actively wants to be a part of student-led and student-created games on the playground. Other students on the playground do not mind if she joins them; however, she has begun arguing with the students over the rules of each game. Therefore, she has been shunned from playground games within the first few weeks of school because of her lack of willingness to follow the rules created by the student groups. Student 2 ends up crying throughout recess times because she wants to join the others, but has not shown the capacity to agree with and follow the rules to the games. She then has a difficult time calming down when it is time to return to the classroom. This unwillingness to cooperate with others on the playground was becoming a great distraction to her academics following recess.

Comic Strip Conversations were introduced with the expectation that she would be better able to “see” how her behavior on the playground made her unable to join others in games. During the first week of Comic Strip Conversations, Student 2 seemed apprehensive and was not willing to contribute to the “conversation.” The teacher created each Comic Strip Conversation for the first five days of the intervention.

On the second day of the second week, Student 2 began to add to the Comic Strip Conversations by drawing herself as the one everyone was picking on. The teacher who worked with her on this continued to point out the fact that students created the rules so that the games would be fair and that other students wanted to follow the rules.

By the middle of the third week, Student 2 asked if she could join the group of students again on the playground. She promised that she would follow their rules even though she did not agree with them. The teacher created a Comic Strip Conversation where Student 2 and the students on the playground were discussing the fact that Student 2 would like to rejoin their group. This time she was ready to follow the rules. Although this Comic Strip Conversation was completely teacher-generated, Student 2 practiced with the dialogue so
that she would be prepared to express her understanding of the student-made rules.

At the end of the third week, Student 2 successfully rejoined the games on the playground. Throughout the fourth week, she continued to generate Comic Strip Conversations to describe the interactions on the playground and to adequately “see” what was expected of her when she participated in the games. Only one further Comic Strip Conversation was necessary in the final two weeks of the intervention. This occurred because two new students joined the group during recess and Student 2 had difficulty including them in the game.

Overall, Student 2 improved her perception of the social situation, exhibited appropriate social skills to participate successfully in the playground games on a daily basis, and increased her willingness to follow playground rules by 100%.

**Student 3 – 6 year old Hispanic male identified as MMR**

Students in this special day class were given one hour a day where they rotated to different academic centers with leadership of the teacher or a paraeducator at each center. Student 3 repeatedly refused to work in small groups during center time in the classroom despite which center or educator he was assigned to first. He worked well independently or even in large groups when the desks were separated. He especially enjoyed science and art. However, when he had to sit at a table with three or four other students, he would repeatedly get out of his seat or duck under the table. When asked to stay seated, he would throw his papers around or refuse to participate with the group.

Comic Strip Conversations were introduced to Student 3 with the expectation that he would better “see” the way his behaviors affected others around him and kept him from studying his favorite subjects. He showed interest in this strategy because it removed him from having to participate in a small group and because it involved art. The teacher became concerned that he continued to refuse to work with others during center time so that he would have the opportunity to draw Comic Strip Conversations. Therefore, he was told that each morning, he would create a Comic Strip Conversation on how he would act appropriately during small group time. In addition, the teacher also worked with him on a Comic Strip Conversation at the end of the day as a reward for good behavior during center time.

Student 3 was able to stay seated and work with others in small groups during all subjects after five weeks of Comic Strip Conversations. He continues to keep a Comic Strip Conversation book to work on each morning and afternoon.

**Student 4 – 9 year old white male identified as E/BD**

The reduction of physical violence on the playground and in the classroom was the target behavior for Student 4. This student was considered one of the most dangerous to other students at this school site. Numerous interventions had been tried with some to little success. The decision to add Comic Strip Conversations to the repertoire of Student 4’s behavioral interventions was done with the understanding that other interventions would be continued.

After Comic Strip Conversations were introduced to Student 4, he showed no interest in cooperating with this new strategy. For three weeks, the teacher continued to work with him on creating Comic Strip Conversations to help him understand what others might be thinking when he attacked them. He became more interested in the strategy, but still did not want to draw them himself. He began to add to the dialogue and assist the teacher in creating the thoughts of others by the end of the third week.

By the end of the fifth week, Student 4 began to draw one out of four pictures in the Comic Strip Conversations. He was also creating all of the dialogue, but still wanted the teacher to draw 75% of the pictures for each situation. The teachers and researchers agreed that this was acceptable because his behavior was slowly improving. Student 4 continues to use Comic Strip Conversations as part of his daily routine. He has reduced his physical violence by 50%.
Overview of Results

Both teachers specifically looked for improvement in the following areas: (1) appropriate perceptions of social situations, (2) social skills growth, (3) student generation of solutions to difficult social situations, and (4) a decrease in problem behaviors (specifically the target behavior).

Problem behaviors decreased overall although two students (Students 1 and 4) continued to have difficulty controlling themselves on the playground.

Discussion

Overall, significant improvements in social skill perceptions using Comic Strip Conversations for students with mild/moderate disabilities at the primary level were found. All four target students were better able to generate solutions to social situations after using Comic Strip Conversations than before they were introduced to the strategy. Students with severe problem behaviors still needed additional strategies and resources to improve their difficult behaviors, but Comic Strip Conversations was one avenue to assist these students in having better self-perceptions about their behavior in a social situation. Current research points to the effectiveness of realistic social perceptions in the improvement of problem behaviors. Therefore, Comic Strip Conversations is an effective first step in improving problem behaviors for students with mild/moderate disabilities.

One limitation of this research was that there were only four students who were targeted for intervention using Comic Strip Conversations. Future research should focus not only on more participants, but also on students with social skill deficits from a variety of general and special education settings.

References


Let’s Play: Teaching Play Skills To Young Children With Autism

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Abstract: Watch any young child and you will likely see him or her engaged in some form of play. Play is an integral part of early childhood development in which typically developing children learn social and language skills, as well as appropriate behaviors, problem solving, and a variety of other cognitive skills. By its very definition, autism is a disorder in which play is impaired or lacking, thus, many children with autism do not experience the natural benefits of play, as do their typical peers. Children with autism must be specifically taught to engage in social and play activities, and often require direct instruction to learn to play with others. Instruction in play skills is noted in the literature as important for young children with autism, yet little evidence suggests which of several teaching methods is most effective. This article describes several aspects of play, discusses various means of teaching play skills to children with autism, and makes suggestions for future research. Further, a case study comparing the efficacy of two methods for play skills instruction is presented.

Play is considered the “very fabric of childhood culture” (Quill, 1995, p. 214). Research supports that through play, typical children acquire many skills that are critical to their development. Among these are language skills, social competence, appropriate behaviors, fine and gross motor skills, memory skills, imagination, emotional control, and confidence (Bredekamp & Copple, 1997; Gitlin-Weiner, Sandgrund, & Schaefer, 2000; Saracho & Spodek, 1998). Play is so important in that it has become an integral part of effective early childhood practices (National Association for the Education of Young Children, NAEYC 1991). Well-known developmental theorists including Erikson, Piaget and Vygotsky considered play to be a critical component to early development (Lefrancios, 1994; Smoluch & Smolucha, 1998). Though historically play has not always been viewed as a key component of children’s growth and development, today it is becoming increasingly the focus of research and instruction for children of all abilities. For children with autism, the development of play, as well as other key developmental skills, is often limited or lacking (Scheuermann & Webber, 2002). In this article, we provide an overview of the historical and philosophical foundations of children’s play, describe typical play development, discuss the play characteristics of children with autism, describe current play instruction practices, and provide a hypothesis for future research focus.

Historical and Theoretical Foundations of Play

The value of play has evolved over time. Prior to the middle ages play was an important aspect of all children’s lives. By the Renaissance, the European attitude towards children and their need for play became increasingly negative. Children were expected to work, and their idleness was considered sinful (Hughes, 1999). Though more affluent children were depicted in artwork with toys, the majority of the toys were delicate, fragile, and meant for adults rather than children. By the 1600’s the European view of children and the value of play began to change. The French became
more tolerant of play, but the English still felt that working was more important. The early European immigrants brought these beliefs to America. The Puritans saw their children as individuals who needed discipline and instruction. Play was discouraged, though was no longer seen as sinful. Children were considered the hope of the Puritan future, and as such were expected to study and train for job opportunities (Hughes). The 1800’s carried an air of ambivalence toward play. Play was acceptable if it involved work-oriented tasks. Parents allowed play activities that increased a child’s mastery of his or her environment (Hughes). By the 1900’s understanding the perspectives and feelings of children became important, and thus began the science of child development.

There are many theories regarding why children are drawn to play activities. Spencer believed that children possess an excess of energy that was once required for survival of the species. In opposition with Spencer’s theory, Patrick thought that play was a tool to re-energize children; children are more likely to play when they are tired. G. Stanley Hall, a psychologist, had an evolutionist’s perspective towards play. For example, an infant crawling in play is reflective of the evolutionary period when humans crawled on all fours. Karl Groos, a zoologist, believed that both animals and children engage in play activities to prepare them for their adult roles (Elkind, 2003).

More contemporary views of play emphasize its intellectual, social, and emotional benefits (Hughes, 1999). Sigmund Freud viewed play as an outlet for anxiety. He felt that play allowed children to express feelings and behaviors that were otherwise considered inappropriate. Contrary to Freud’s point of view, Erickson believed that play brings about physical and social skills that enhance a child’s self-esteem (Hughes). Bruner considered play to be an opportunity for children to problem solve in comfortable and stress-free activities. Jean Piaget felt that play involved the fusion of physical and mental activities previously learned (Hughes). Lev Vygotsky’s theory valued the social aspects of play. He believed that during dramatic play, the child conveys his or her readiness to learn new skills from adults (Elkind, 2003).

Typical Play Development

Regardless of theory, there are five necessary elements of play: 1) Play is intrinsically motivated; 2) Play activities are freely chosen; 3) Play is pleasurable; 4) Play involves an element of make believe; 5) Play actively engages the participant (Wolfberg, 2003). Children move through several stages and types of play as they progress through early childhood, from sensorimotor play (involving oral exploration of objects or banging and shaking toys) to relational play (lining toys up side-by-side), to symbolic (i.e., pretend) and functional play (Libby, Powell, Messer, & Jordan, 1998; Stahmer, 1995). Very young children may prefer to play alone, or to engage in what is known as parallel play, which involves playing near or next to someone, but not interacting with them. Early forms of play may or may not involve others, though by around age two children are able to engage in social play with others. Also referred to as pretend play, symbolic play begins to emerge between 18 months and two years. Dimensions of symbolic play include “play acts that the child directs toward objects, self, or others and that signify events” (Wolfberg, 1999, p. 49). There are essentially two areas of symbolic play. First, functional symbolic play is the use of toys or objects in the way in which they were intended. For example, moving a train along its track or pushing a toy shopping cart. Secondly, imaginative symbolic play is when children either use objects as if they were other things (example, a doll’s hairbrush becomes an airplane), or when play involves make-believe (pretending) and/or has a theme (such as a pretend tea party).

Social play, also referred to as cooperative play, begins to develop in the second year of life, though various dimensions exist in younger children. The social dimensions of play include proximity and involvement with other children (Wolfberg, 1999). Included are isolate play (playing alone), orientation or observational play (watching others play), parallel play (playing alongside one or more peers without interaction), common focus play (engagement in a joint activity with one or more peers), and common goal play (collaboration with one or more peers with an organized purpose) (Wolfberg).

Play is a natural part of a child’s early de-
velopment, leading to increasingly complex social and communication skills. Though most children learn these skills through play with others, children with autism often do not follow the typical pattern of play development. We know that play is an area of weakness for children with autism by the very nature of the disorder: a defining characteristic of autism is lack of pretend or imitative play (American Psychiatric Association 1994). In addition, their development of specific play skills often does not follow that of typical children. Children with autism often display fewer symbolic and less complex play actions (Stahmer, 1995), an inability to engage in typical play alone or with peers (Schleien, Mustonen, Runders, & Fox, 1990; Terpstra, Higgins, & Pierce, 2002), difficulty with symbolic play (Libby et al., 1998), persistence in sensorimotor play beyond developmental level (Libby, et al.), participation in predominantly parallel play as opposed to social play, and use of toys in a repetitive manner, rather than their intended use (Libby et al.) (for example, spinning the wheels of a truck rather than pushing it along on its wheels). Children with autism rarely engage in symbolic play (Hughes, 1998). In fact, compared to children with other cognitive or developmental disabilities (e.g., mental retardation), children with autism are far less likely to engage in functional or imaginative play (Hughes). Further, social-communicative play behaviors such as eye contact, joint attention, sharing, turn-taking, and shared interest are typically deficit in children with autism and they tend to avoid contact with other people, making play with others difficult to establish (Wolffberg, 1999). These difficulties all provide evidence that teaching play skills to children with autism is a necessary and critical goal for their development.

Teaching Play to Children with Autism

Play skills instruction has only recently become a focus of research for children with autism. Several approaches are available and have been used to teach a wide range of skills to children with autism, including play. Following is a description of these.

Milieu Strategies

Milieu teaching is sometimes referred to as naturalistic or incidental teaching, which involves “teaching a child a particular skill in the context of its use” (Pierce & Schreibman, 1997, p. 208). Milieu teaching strategies involve several components: use of novel materials, teachers joining the activities with the children, offering choices, use of incidental teaching strategies (e.g., placing a preferred item out of reach requiring the child to make a communicative request for it), “using comments and questions to facilitate the child’s interest and/or play-related talk,” generating elaboration of child’s talk, and inviting interaction with peers (Kohler et al., 2001, p. 95). In this way, the milieu teaching approach takes advantage of teachable moments and sets up the environment so that those moments are most likely to happen. The milieu teaching approach has been used to successfully teach play skills to preschool (Garfinkle & Schwartz, 2002) as well as school-aged children with autism (Kohler et al., 2001; Stahmer, 1995). Milieu teaching has also been successfully used to teach functional language and social interactions to students with autism and other disabilities (Alpert & Kaiser, 1992; Hemmeter & Kaiser, 1994; Kohler, Anthony, Steighner, & Hoyson, 1998; McGee, Morrier, & Daly, 1999). An important dimension of Milieu teaching is that it occurs within the context of everyday, natural environments, and that interactions with typical peers is also key (Diamond & Carpenter, 2000). Therefore, Milieu teaching appears to be an ideal option for teaching children with disabilities in inclusive educational environments. One method of Milieu teaching involves modeling (Kaczmarek, Hepting, & Dzubak, 1996). Modeling involves the teacher verbally modeling for the student comments or questions regarding actions in or items with which the child in engaged (Kaczmarek et al.).

One model for play instruction is Greenspan’s Floor Time Model. This model is a means for expanding a child’s social, emotional, and communicative repertoire through engagement in play activities. One of the key dimensions to Floor Time is that the adult follows the child’s lead, much the same as milieu teaching. However, the Floor Time Model specifically states that the adult should
not “turn the session into a learning or teaching experience” (Greenspan, 2004). Thus, Floor Time is fundamentally different in that specific skill instruction is not a key focus of interaction, as it is in milieu. Further, the Floor Time Model suggests using the practices of the model in daily activities outside of play, such as while dressing and at mealtime. Floor Time is an effective method for improving interaction and problem solving for young children with developmental disabilities, though limited research has been done to suggest that it is particularly effective for children with autism. However, some of the concepts of Floor Time could be used effectively to enhance play skills for children with autism. For example, using affect to engage the child, interacting with the materials with which the child is already playing, and expanding language and ideas (Greenspan).

Another model, Integrated Play Groups (IPG, Wolfberg, 1999), involves guided participation with typical peers as a major feature. Wolfberg describes the groups as including novice players (children with autism) and expert players (competent peers). An adult play guide supports groups. The goal of IPG is to improve reciprocal social and symbolic play in children with autism. IPG has received very little attention in the literature. Its creator, Wolfberg has conducted case studies documenting its effectiveness with children with autism. Replication is recommended, as IPG seems promising as a means for improving play behaviors of children with autism.

Peer-Mediated Instruction

A second approach to instruction for children with autism is peer-mediated instruction. This approach is considered to be an emerging and effective practice (Odom et al., 2003). In this approach, typical peers are trained to engage or instruct persons with autism in specific skills (Odom et al.). A number of skills have been taught to individuals with autism, including communication (Goldstein, Kaczmarek, Pennington, & Shafer, 1992), social interactions (Goldstein et al.; Haring & Breen, 1992; Laushey & Heflin, 2000; McGee, Almeida, Suelzer-Azaroff, & Feldman, 1992), social skills (Roeyers, 1995), academic tasks (Kamps et al., 1995), and self-help skills (Greer, Dorow, Williams, McCorkle, & Asnes, 1991). Peer-mediation involves typical peers as role models as well as trainers. Though not used specifically to teach play skills, peer-mediated instruction is considered to hold promise for a variety of skill areas for children with autism.

Discrete Trial Training

A final type of instructional approach associated with teaching children with autism a variety of skills is known as Discrete Trial Training (DTT). This is a type of instruction that involves highly structured teacher direction in a trial-by-trial format, meaning that the child is instructed on a single skill a number of times during a single session, utilizing a series of prompts and rewards to shape behaviors (Scheuermann & Webber, 2002). In the literature, DTT has not been routinely used with children with autism for the purposes of teaching play skills, though it has often been successfully used for teaching other skills such as joint attention, and imitation (Green, 1996), which are social-communicative skills developed in early play. In a 1987 study, young children with autism were successfully taught independent as well as cooperative play through the use of DTT (Lovaas, 1987 as cited in Green). Research supports the use of direct instruction by teachers in isolated settings to teach play skills, which is similar to, though less structured than, DTT (Gonzales-Lopez & Kamps, 1997; Jahr, Eldevik, & Eikeseth, 2000). While direct instruction and DTT are considered effective means for teaching a variety of skills to children with autism, including language and motor skills, it is recognized that instruction of social skills (such as play) are best taught in a more natural, integrated setting (Scheuermann & Webber).

Case Study

The participant, a four-year old male, Asian-American child with autism participated in a case study on the efficacy of discrete trial instruction versus naturalistic/milieu instruction. The study was conducted over 45 sessions, utilizing an alternating treatments design. Treatments were counterbalanced daily, rather than each session as is customary, so as to avoid confusion for the participant. Children with autism rarely react well to changes in routine, and therefore, alternating
days rather than sessions was presumed to minimize disruptive behavior resulting from significant changes in routine each day. Prior to the study, the participant was not familiar with the tutor for this research project. The tutor met with the participant once prior to beginning the project for observation. Per project protocol, the tutor alternated between discrete trial and naturalistic teaching strategies, instructing for one hour each session. During the discrete trial phases, the tutor conducted five trials for the targeted play skill, observed the child for five minutes, conducted five trials, observed for five minutes, and so forth, throughout the outdoor playtime session. Discrete trial instruction included tutor commands to “do this” followed by an adult model. If the participant did not respond or did not respond correctly, he was physically or verbally prompted to do so, followed by a verbal praise for correctness. Peers did not participate in the discrete trial instructional phase, though they may have been present (e.g., holding the bucket for a peer). During the naturalistic instructional phase, the tutor instructed the participant through naturalistic peer and adult modeling and praise with at least one typical peer present for five minutes, followed by five minutes of observation, conducted throughout the outdoor playtime session. Naturalistic modeling included statements from the peer and the tutor such as “Hey, Tom, pour the water” or “Look what John is doing!” and the like. If the participant did not respond or responded incorrectly, no response was given. Play skills targeted for instruction were determined by the lead author, the participant’s mother, and based on play activities of typical peers, prior to study implementation. The study was conducted in the participant’s integrated preschool setting. Instruction occurred during outdoor play activities daily for three weeks. Figure 1 depicts the results of the instruction.

Results

Results indicated that the participant achieved greater success in specific play skill instruction through the naturalistic instructional approach than through discrete trial instruction (see Figure 1). Through this approach, he achieved consistently higher percentages of correct independent responses (see Table 1 for a comparison of skills and percentages). The tutor commented that when using discrete trial instruction, the participant required more prompting than with the naturalistic approach. Further, on one occasion, the participant required no verbal prompts whatsoever from the tutor, and simply upon entering the play space, picked up a bucket and began engaging in a play activity with peers. This behavior was further noted by one of the
participant’s teachers (who was unfamiliar with the purpose of the project), with regard to painting with water. She noted to the tutor that (after instruction in this activity through naturalistic instruction), the participant independently picked up a brush and began engaging in the activity during outside play time, with no adult supervision or instruction (the tutor was not present on this day). The tutor observed that the participant required verbal prompting during naturalistic instruction in order to begin the activity, but then was able to independently perform the tasks. With discrete trial, however, he required prompting on each individual trial, and showed neither initiation, nor independence for the tasks with or without adult prompts during the observation phases of instruction. However, during the observation phases the participant was able to be successful in play and social activities on the same level as his typical peers following naturalistic instruction. It is based on the data and these observations by the tutor that the participant appears to respond better at school to naturalistic instruction from a trained adult, in the natural play setting, with typical peers than he does in a discrete trial instructional approach.

Limitations of the case study. It should be noted that in most cases, the participant was taught a specific skill through discrete trial instruction prior to being taught the same skill via naturalistic instruction. This inadvertently may have contributed to his increased percentages in the naturalistic instructional approach. Even so, based on comments made by the tutor, the participant appeared more engaged, less distracted, and generally seemed to enjoy tasks more through the naturalistic instructional approach. He required less redirection and fewer prompts during naturalistic instruction than through discrete trial. Finally, it appeared that once able to successfully engage in a play activity, he was able to independently make a choice for that activity and carry it out with minimal to no prompting from the tutor.

Need for Future Research

Literature supports teaching play skills to children with autism. In particular, studies have found that after instruction, children with autism displayed fewer inappropriate behaviors (Roeyers, 1995), increased interaction with peers (Gonzales-Lopez & Kamps, 1997; Kohler et al., 2001; McGee et al., 1992; Roeyers), and increased symbolic, functional and social play (Stahmer, 1995). Many of these studies have focused on teacher-directed or peer-mediated approaches or on older children with autism. While teacher-directed or peer-mediated strategies have merit, they often lack the spontaneity and self-motivated exploration that characterizes typical play. Thus, there exists a critical need for identification of appropriate instructional approaches for younger children with autism within the context of natural play environments.

There is also a noticeable gap in the autism literature with regard to effective instruction for specific play skills. Specifically, those studies that are most commonly noted as evidencing best practices tend to be single subject or case study designs. Though useful in establishing approaches that may be suitable for some children with autism, and respected among researchers in the autism field (Odom et al., 2003), there is a critical need for experimental designs that can be replicated and involve larger numbers of subjects to provide clearer evidence of approach utility for a greater number of individuals with autism.

Multiple skill areas are often deficit in persons with autism and therefore the target of

<table>
<thead>
<tr>
<th>Discrete Trial Instruction</th>
<th>Naturalistic Instruction</th>
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<tr>
<td>Throw ball = 0–40%</td>
<td>Throwing ball (w/ peer) = 60–100%</td>
</tr>
<tr>
<td>Paint w/ water = 20–60%</td>
<td>Paint w/ water = 40–80%</td>
</tr>
<tr>
<td>Pour water for peers = 0–20%</td>
<td>Pour water for peers = 100%</td>
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<td>Highest percentage achieved = 60%</td>
<td>Highest percentage achieved = 100%</td>
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instruction, including language, motor, cognitive, and social skills. Typical instruction has often involved teacher-directed or manipulated strategies or those that involve the training of typical peers to encourage or instruct on particular skills. Though effective, there is a lack of research indicating the extent to which children with autism learn and acquire skills such as language and motor through more natural means as do their typically developing peers, namely through play. Though research supports that children with autism can be taught to play, these skills are also deficient in children with autism. There is a considerable amount of evidence suggesting that they do not play nor do they develop play as typical children do. One question to consider is whether or not young children with autism can in fact acquire language, motor, cognitive, and social skills more naturally and typically, through typical play opportunities with support from teachers and/or peers. We suggest that the future of play skills instruction and its research for children with autism focus not only on the instruction of play itself, but also on the peripheral benefits of play. Specifically, it is hypothesized that if children with autism are able to play appropriately (like their typically developing peers) this should lead to the development of other skills similar to those acquired by typical children naturally through play. Investigations that seek to understand and shed light on the connection between play and the acquisition of other appropriate skills should therefore also be of focus in future research.

**Conclusion**

Children love to play; it is simply what children do. However, for many children with autism, play is not something they do, either because they lack the skills or because they choose to “do” other things (e.g., engage in self stimulatory behaviors, etc.). This noticeable lack of play not only sets children with autism apart from their typical peers, it may prevent them from experiencing the natural benefits of play such as improvements in a variety of language, social, cognitive, and motor skills. Though play does not appear to come naturally for many children with autism, instruction in play skills has been shown effective in developing and improving play skills.

More research is needed to determine which of several instructional approaches leads to greatest gains in play skills as well as whether or not improvements in play skills has similar peripheral effects on language, motor, and cognitive skills for children with autism as they do for typically developing children.

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Teacher Interaction Styles and Task Engagement of Elementary Students with Cognitive Disabilities

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Abstract: Interaction styles of special education teachers were investigated using semi-structured observation of 13 student-teacher pairs during one-on-one language arts instruction of elementary students with cognitive disabilities. Teacher use of directions and responses of differing communication modes and types were analyzed. Student task-engagement behaviors (i.e., engage, intrusive/disruptive, on-task, and off-task) provided a context for understanding differences in teacher styles. The results indicate that, similar to previous studies of mother-child interaction in developmental disabilities, special educator style is more directive than responsive; they used directions over twice that of responses. Gestural prompts and questions were the most frequently used directions. Teacher directions – individual as well as aggregate measures – were related to the rate dimension, but not the duration dimension, of student active task engagement, suggesting short-lived effects of teacher directions. Thus, while teachers may observe a desired change in student performance, the change may not be durable and, hence, may not be as desirable as they had believed. Implications and cautions of the current findings are discussed.

Interpersonal environments provided by significant others — parents, teachers, and peers — are critical in development of children who are identified to have, or have a potential to develop, significant developmental problems (Clark & Seifer, 1985; El-Ghoroury & Romanczyk, 1999). As predicted from research of typically developing children, studies with children with disabilities and other developmental problems (e.g., prematurity) confirmed that maternal responsiveness was related to various favorable developmental outcomes, including attachment (De Wolff & van IJzendoorn, 1997), cognitive functioning (Clark & Seifer; Mahoney, Finger, & Powell, 1985), language development (Kaiser et al., 1996; Mahoney, 1988), social-communicative skills (Clark & Seifer; Fischer, 1987), and compliance (Maurer & Sherrod, 1987).

Early studies of mother-child social interactions of young children with cognitive impairments (e.g., mental retardation, Down Syndrome, developmental delay) indicated that, compared to parents of typically developing children, mothers of these children exhibited interactional patterns that were directive, controlling, dominant, as well as less responsive (Jones, 1980; Buium, Rynders, & Turnure, 1974). Even though there are some reasons to believe that these maternal interaction styles are a reaction to developmental problems in these children (Maurer & Sherrod, 1987; Watson, 1998), intervention studies also demonstrated that children’s developmental competence can be enhanced further in areas of language (Girolametto & Tannock, 1994; Warren & Yoder, 1994) and social-communicative skills (Kaiser et al., 1996; Girolametto, 1988) by changing parental interaction styles to be more responsive and less directive.

Teacher style becomes especially important when children have developmental and learning problems. First, children with disabilities have more intense, individualized contacts with special education teachers through special education services (Heward, 2000). Second, children with disabilities, because of characteristics associated with their disabilities, may be more susceptible to adult influences. For instance, infants with mental retardation were found to have difficulties in
shifting attention in response to parental attempts for redirection compared to mental-age matched, high-risk infants (Landry & Chapieski, 1989). Therefore, adults need to be especially diligent to be contingent and responsive to these children’s attentional focus in order for effective learning to happen. Interestingly, children with cognitive disabilities are more likely to show dependency to adult input (i.e., outerdirectedness) than are typically developing children (Harter & Zigler, 1974; Zigler, 1971). Similarly, Beyda, Zentall, and Ferko (2002) reported that middle school students with behavior disorders were more dependent on teacher practices than were their peers without disabilities in general education settings. In this study, significant association between student-centered teacher practices and positive, task-appropriate student behaviors as well as association between negative teacher practices (e.g., teacher-directed classroom management) and negative student behaviors were observed only in students with behavior disorders.

Considering the established importance of parental interaction styles in children’s development, teacher interaction styles and their developmental significance in children with disabilities has been a relatively neglected area of study. Rimm-Kaufman, Voorhees, Snell, and La Paro (2003) point out that special education research literature is abundant with studies of instructional strategies, teaching practices, and curriculum materials (e.g., Kame’enui, Carnine, Dixon, Simmons, & Coyle, 2002), without much attention to teachers themselves. Mize and Pettit (1997) showed that parenting styles and parenting practices made unique and additive contributions to typically developing children’s social competence. The parental teaching practice (e.g., social coaching) was only moderately related to the parenting style (e.g., responsive style), indicating independence of these two aspects. Therefore, teacher interaction style is a promising point of investigation that could contribute to children’s learning above and beyond what is achieved by existing instructional strategies.

Unfortunately, the portrayal of teacher-pupil interactions in cognitive disabilities in the modest base of extant research is not very positive when the responsiveness is considered. A common finding in studies of parent-child interactions is that parental responsiveness is a consistent predictor of better child outcomes. Yet, one persistent finding from classroom observational studies is that classroom communication is, perhaps understandably, dominated and controlled by teachers in both regular classrooms (Bunce, 1993; Ornstein, 1986) and special education classrooms (Craig & Collins, 1970; Fink, 1972).

Instructional intent on an adult’s part is known to contribute to a heightened level of directiveness (Davis, Stroud, & Green, 1988; Landry, Garner, Pirie, & Swank, 1994), and the current research base indicates that a consistent directive style of interaction has a potential to unfavorably influence development of children with developmental disabilities. If these are true, what would be the consequences of interaction styles of special education teachers whose primary responsibilities are ‘instruction’? Two areas of research provide some clues to answering this question: literature on teacher styles on communicative or linguistic performance of students with disabilities, and literature on teacher verbal practices, particularly what is commonly called ‘opportunities to response’ (OTR), and their effects on student task engagement behaviors.

**Teacher Styles and Communication of Students with Disabilities**

As far as communication and language is concerned, special education teachers do not seem to provide an optimal linguistic environment during their interactions with students with various disabilities, including deafness (Beattie & Kysela, 1995; Wood & Wood, 1984), behavior disorders (DeVoe & McMillen, 1994), learning disabilities (Klein & Harris, 1986), developmental disabilities (Girolametto, Hoaken, Weitzman, & van Lieshout, 2000; Mahoney & Wheeden, 1999; Pecyna Rhyner, Lehr, & Pudlas, 1990), and severe-profound disabilities (Beveridge & Hurrell, 1980; Stillman, Williams, & Linam, 1997). A consistent finding of these studies is that teacher talk in classrooms is filled with directions, most often in the form of questions (Craig & Collins, 1970; DeVoe & McMillen; Klein & Harris; Girolametto, Hoaken, et al.), and teachers give few chances to their stu-
students to continue and elaborate student-initiated topics (i.e., low responsiveness) (Pecyna Rhyner et al.; Stipek & Sanborn, 1985). Generally, teacher directiveness is negatively associated with language productivity of students, such as MLU, different words used, or multi-word phrases (Beattie & Kysela). Students’ social functioning, particularly social initiation, is also negatively affected by high level of teacher directiveness and control (Mahoney & Wheeden; Mirenda & Donnellan, 1986).

**Teacher Directions and Task-Engagement of Students with Disabilities**

Interestingly, teacher direction is considered as very appropriate within the context of effective instruction, with respect to student task engagement or on-task behaviors. Sutherland, Wehby, and Yoder (2002) stated that effective instruction, characterized by high academic achievement and low problem behaviors, has two critical components that are similar to directiveness and responsiveness dimensions: the rate of opportunities given to students to actively respond to academic requests (OTR) and the amount of praise students receive for appropriate behaviors. OTR is more or less universally accepted as a key indicator of effective instruction (CEC, 1987, as cited in Sutherland, Alder, & Gunter, 2003). Higher OTR has been associated with or resulted in increased academic achievement in reading (Carnine, 1976), mathematics (Skinner, Belfiore, Mace, Williams-Wilson, & Jones, 1997), and ratings of teacher effectiveness (Espin & Yell, 1994). In a series of studies, Sutherland and his colleagues (Sutherland et al., 2003; Sutherland & Wehby, 2001; Sutherland et al., 2002) demonstrated positive relationships between OTR and task engagement and negative relationships between OTR and problem behaviors in children with behavior disorders. Despite these reported benefits, the observed OTR in teachers during actual classroom instruction was generally low ranging from 0.019 per minute from general education teachers (Van Acker & Grant, 1996) to 3.52 per minute from special education teachers (after intervention) (Sutherland et al., 2003).

Although teacher directions, especially academic requests like OTR, have favorable effects on student engagement, some researchers have expressed concerns regarding the role of directiveness in student learning. For example, Sapona, Bauer, and Phillips (1989) emphatically argued that the teacher directive stance, as compared to the facilitative stance, is not conducive to cultivating self-directed learning in students. There is some evidence showing that children who were exposed to directive teachers or were interrupted often with teacher help during tasks tend to persist less in subsequent, independent problem solving situations (Stipek & Sanborn 1985). The finding that student social functioning, particularly social initiation, is also negatively affected by high level of teacher directiveness and control (Mahoney & Wheeden, 1999; Mirenda & Donnellan, 1986; Wood & Wood, 1984) provides another support to this concern.

To summarize, the current pattern of findings (i.e., special education teachers who are both insufficiently responsive as interaction partners and insufficiently directive as instruction providers) may reflect two potentially competing goals of instruction for students with cognitive disabilities, with respect to their social and communicative development as well as academic learning. The extant research base does not provide a clear direction regarding specific (behavioral) manifestations of effective interaction styles of special education teachers that are conducive to both children’s development as well as learning. The present study was proposed and implemented to address this gap in our understanding of teacher use of directions and responses during their instruction of school-age children with cognitive disabilities, using task-engagement behaviors as student outcome measures. These behaviors were selected not only because of apparent importance to teachers (i.e., face validity), but also because they have been shown to be directly or indirectly related to students’ performance on academic tests, particularly academic responding or engagement (Greenwood, Carta, Kamps, Terry, & Delquadri, 1994). Also, these behaviors are amenable to instructional interventions and, thus, have served as one of the central targets to improve teacher effectiveness or teaching strategies (Espin & Yell, 1994; Logan & Keele, 1997).

Finally, relationships involving different
forms of teacher directions of varying degrees of explicitness were also examined. Increased attention has been given to identify specific forms of directions that may be conducive to children’s learning, and conditions under which directions may be more effective, rather than asking whether directiveness is adaptive or maladaptive. For example, directives that are difficult and complex, directives that request developmentally challenging actions, or directives that are issued out of child’s focus of attention were associated with less desirable child behaviors (Curcio & Paccia, 1987; Mahoney & Neville-Smith, 1996; McCathren, Yoder, & Warren, 1995; Watson, 1998), compared to directives that are less complicated and those given within the focus of child’s attention. To extend this line of research, teacher directions of varying explicitness were included as target variables. The specific research questions that guided the study are as follows:

How do special education teachers use directions and responses during one-on-one instruction of elementary students with cognitive disabilities?

How are teachers’ interaction styles related to task-related behaviors in students with cognitive disabilities?

Method

Participants

Thirteen student-teacher dyads, each composed of an elementary student with cognitive disability and his/her special education teacher, participated in the study. Students with cognitive disabilities were included in the study if they were (a) receiving special education services for mild-moderate mental impairments or developmental cognitive disabilities, (b) in the grades 3rd through 5th, and (c) using speech as a primary means of communication. To control for potential confounding effects, children were excluded if they had sensory impairments or physical disabilities. Children whose primary home language was other than English were also excluded. Qualifications for teachers as participants were (a) being fully licensed to teach in the area of special education, and (b) providing instruction for participating students regularly. All participants were recruited from public schools in a large metropolitan city and neighboring suburban areas in the Midwest.

After obtaining informed consents from teachers and parents, participating teachers provided brief demographic information about themselves and their students as well as students’ testing scores available from the most recent special education eligibility reports. All participating teachers were women, reflecting the current pool of special education teachers. In general, teachers who participated in the study were mature (mean age of 42.54 years old, range 26-53), were experienced (mean teaching experience of 17.72 years, range 4-32), and held multiple special education teaching licensures (mean number of 2.08 licensures, range 1-3). These teachers had been teaching the participating students for an average of 3.08 years (range 0.5-6 years).

Student participants were comprised of nine girls and four boys, with a mean age of 10.91 years (range 9.3-11.9 years). The primary diagnoses were developmental cognitive disability for seven students and mild-moderate mental impairments for six students. These differing labels are due to the state changing labels for mental retardation. Additionally, seven of 13 participating students either had a secondary diagnosis of speech-language impairment or were receiving speech-language services as part of their instructional programs. Testing scores could be obtained for only part of the participating students because one of the school districts, where five participant dyads were recruited, had a district-wide policy of not reporting standard scores in special education evaluation reports. Diagnoses of participating students from this district were confirmed by the participating teachers based on students’ performance range in intelligence tests and general performance level of adaptive behaviors. From available test scores, student participants had a mean IQ score of 60.56 (range 50-73, n = 9) and a mean receptive language standard score of 72.00 (range 59-84, n = 7).

Procedure

Instructional interactions of each child-teacher dyad were videotaped using SONY
Digital Video Camera Recorders (Model No. DCR-TRV 27) across two sessions, each 10-25 minutes long, during one-on-one language arts (i.e., reading, writing, or spelling) instruction. Language arts instruction was selected as the observational context because it is one of the most typical instructional activities occurring in elementary classrooms for students with or without disabilities. Teachers were asked to schedule observation sessions within naturally scheduled classroom instructional routines, and to engage in activities that were part of regular instructional programming of the target student during observations. Videotaping occurred in the participating children’s special education classrooms (i.e., resource rooms or self-contained classrooms) for all but one student. For one student, instruction for observation occurred in a school conference room due to the teacher’s concerns regarding possible disruption to and from other students in the classroom. After these observation sessions, this teacher reported interactions during the observation as typical. All observations were conducted toward the end of school year (i.e., March through June) when teachers and students were well accustomed to each other. No observation sessions were more than two weeks apart for all dyads.

To videotape instructional interactions of each dyad, the camcorder was set up in a way that behaviors of both the teacher and the child could be recorded. To reduce reactivity from participants, the following actions were taken: (a) before actual data collection began, at least one practice videotaping session was conducted during regular instruction of target students; (b) the camcorder was set up in an unobtrusive location; (c) a tripod was used and the observer stayed away from the instructional area except to check proper operation of videotaping; and (d) participating teachers and children were kept blind to specific hypotheses of the study, although information regarding a general purpose and experimental procedures was provided during the informed consent process.

From each videotaped instructional session, a 15-minute segment with minimal disruption (e.g., teacher out of camera, etc.) was transformed as digitally compressed video clips onto CD. The first 10-minute segment of each observation session was coded for study variables. The duration of observation sessions and coding periods were relatively short but similar to other microanalytic observation studies of teacher-child (e.g., Girolametto, Hoaken, et al., 2000; Girolametto, Weitzman, van Lieshout, & Duffy, 2000; Mahoney & Wheeden, 1999) or parent-child interactions (Tannock, 1988).

Coding and observational software. From the videotaped observations, MovieStarTM software was used to create digitally compressed video clips for coding. For coding and data analysis, PROCODER (Tapp & Walden, 2000) and Multiple Option Observational System for Experimental Studies (MOOSES) (Tapp, Wehby, & Ellis, 1995) software packages were used. From the compressed video-clips of observation sessions, three general classes of target behaviors were identified, coded, and analyzed: teacher nonverbal behaviors (i.e., nonverbal directions and responses), teacher verbal behaviors (i.e., verbal directions and responses), and student task behaviors. Three slightly different coding procedures were used for each class of behaviors. Teacher nonverbal behaviors (i.e., nonverbal directions and responses) were directly coded from video-clips of observation sessions, using the PROCODER program.

To code teacher verbal behaviors, each observation session was first transcribed including a description of nonverbal interactions between a teacher and a student. Then, based on the transcripts, the observer coded teacher verbal behaviors by (a) first, segmenting teacher verbalizations into analysis units, (b) second, determining whether each unit was teacher verbal directions or responses, (c) third, assigning and recording a specific code for teacher verbal behaviors for those units that were either teacher verbal directions or responses, and (d) fourth, transferring codes on the transcripts into PROCODER files. Whenever necessary, observers viewed video-clips to aid initial coding on the transcripts. The unit used to code teacher verbal behaviors was the Analysis of Speech Unit, or AS-Unit, as proposed by Foster, Tonkin, and Wigglesworth (2000). An AS-unit is “a single speaker’s utterance consisting of an independent clause, or sub-clausal unit, together with
any subordinate clause(s) associated with either” (p. 365).

Student task behaviors were coded using the similar coding procedures as those of teacher nonverbal behaviors. While watching video-clips of instructional interactions, the observer pressed assigned keys for student task behaviors at the onset of each task behavior. Codes for student task behaviors were set up as mutually exhaustive and exclusive so that at any moment only one particular kind of student task engagement behaviors was recorded, while codes for teacher behaviors were set up as mutually exclusive. The resulting PROCODER data files contained information regarding code occurrences, timing of each code occurrence, and, for student task-related behaviors, duration of each occurrence.

Observer Training and Reliability

Observers were trained and interobserver agreement (IOA) was established prior to data coding. The first author served as a primary observer and three PhD level graduate students served as independent observers for reliability checks. Disagreement in coding during the practice periods was resolved through discussion. Training was continued until two observers reached the agreement ratio of 80% or higher in three consecutive training tapes. Interobserver agreement was assessed by calculating point-by-point agreement ratio for occurrences of target behavior (House, House, & Campbell, 1981). Agreement checks of teacher verbal behaviors were conducted using coded transcripts; observers (coders) went over the coded transcripts and recorded each occurrence of target behavior as agreement or disagreement. For teacher nonverbal behaviors and student task behaviors, agreement checks were conducted over the MOOSES program. MOOSES computed event frequency agreement (i.e., occurrence agreement) using a 5-second time window around each event file in the primary observer’s file. Agreement was considered as a match between an event code of a primary observer and the same code found in the second observer’s file within the time window. All unmatched codes were considered to be disagreements. Interobserver agreement was then calculated by dividing the number of agreements by the number of agreements plus disagreements and multiplying it by 100.

Interobserver agreement data was collected for 27% of observation sessions that were randomly selected across different participant dyads and observation sessions. The mean occurrence agreement was 89.8% (range, 83-100%) for teacher nonverbal directions, 87.1% (range, 81-100%) for teacher nonverbal responses, 91.9% (range, 87-94%) for teacher verbal directions, 90.3% (range, 81-96%) for teacher verbal responses, and 85.7% (range, 81-90%) for student task behaviors.

Codes and Study Variables

For teachers, directions and responses were coded as events. Teacher direction codes were divided further depending on the form and degree of explicitness, as portrayed in Table 1. Included in teacher verbal directions were Command, Question, and Suggestion and, in teacher nonverbal directions, Full Physical Prompt, Partial Physical Prompt, and Gestural Prompt. Teacher responses were divided further depending on level of elaboration. Included in teacher verbal responses were Elaboration, Repeat, and Acknowledgement and, in teacher nonverbal responses, Compliance, Imitation, and Nonverbal Acknowledgment. For the teachers, analyses were conducted on the rate (i.e., frequency divided by duration of observation session) of verbal directions, nonverbal directions, total directions, verbal responses, nonverbal responses, and total responses. Because the rates of physical prompts were very low, Full and Partial Physical Prompts were not included in computing rates of Total Direction and subsequent statistical analyses. These analytic units are presented as secondary indices in Table 1.

For students, task-related behaviors were coded as duration, as presented in Table 2. Codes and definitions for students’ task-related behaviors – Engagement (active task-conducive), On-Task (passive task-conducive), Intrusive (active, task-interfering), and Off-Task (passive, task interfering) – were adapted from Espin and Yell’s (1994) Pupil Observation Procedures. For the students, analyses were conducted on the rate and duration of task behaviors (i.e., Engagement + On-Task)
Table 1
Mean, SD, and Range of Teacher Directions and Responses

<table>
<thead>
<tr>
<th>Target Behavior</th>
<th>Frequency</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>(SD)</td>
</tr>
<tr>
<td>Verbal Direction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Command</td>
<td>31.31</td>
<td>(18.92)</td>
</tr>
<tr>
<td>Question</td>
<td>67.23</td>
<td>(26.78)</td>
</tr>
<tr>
<td>Suggestion</td>
<td>46.15</td>
<td>(25.90)</td>
</tr>
<tr>
<td>Nonverbal Direction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full Physical Prompt</td>
<td>0.62</td>
<td>(0.96)</td>
</tr>
<tr>
<td>Partial Physical Prompt</td>
<td>1.46</td>
<td>(2.15)</td>
</tr>
<tr>
<td>Gestural Prompt</td>
<td>156.08</td>
<td>(113.11)</td>
</tr>
<tr>
<td>Verbal Response</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elaboration</td>
<td>32.69</td>
<td>(11.86)</td>
</tr>
<tr>
<td>Repeat</td>
<td>13.23</td>
<td>(8.32)</td>
</tr>
<tr>
<td>Acknowledge</td>
<td>43.23</td>
<td>(19.72)</td>
</tr>
<tr>
<td>Nonverbal Responseb</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Compliance</td>
<td>1.62</td>
<td>(3.66)</td>
</tr>
<tr>
<td>NV Acknowledge</td>
<td>34.00</td>
<td>(21.59)</td>
</tr>
<tr>
<td>Secondary Indices</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Verbal Direction</td>
<td>7.23</td>
<td>(2.54)</td>
</tr>
<tr>
<td>Nonverbal Direction</td>
<td>7.90</td>
<td>(5.70)</td>
</tr>
<tr>
<td>Total Directionc</td>
<td>15.04</td>
<td>(7.62)</td>
</tr>
<tr>
<td>Verbal Response</td>
<td>4.45</td>
<td>(1.34)</td>
</tr>
<tr>
<td>Nonverbal Response</td>
<td>1.78</td>
<td>(1.20)</td>
</tr>
<tr>
<td>Total Response</td>
<td>6.15</td>
<td>(2.02)</td>
</tr>
</tbody>
</table>

Note. a Number of occurrences summed across two 10-minute observation sessions. b Imitation was observed only once for the entire observation sessions, thus deleted from summary. c Due to extremely low occurrences, full and partial physical prompts were not included in computing Total Direction to streamline subsequent analyses.

Table 2
Mean, SD, and Range of Student Task-related Behaviors

<table>
<thead>
<tr>
<th>Target Behavior</th>
<th>Rate</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>(SD)</td>
</tr>
<tr>
<td>Engagement</td>
<td>5.03</td>
<td>(1.30)</td>
</tr>
<tr>
<td>On-Task</td>
<td>5.20</td>
<td>(1.25)</td>
</tr>
<tr>
<td>Intrusive</td>
<td>0.81</td>
<td>(0.84)</td>
</tr>
<tr>
<td>Off-Task</td>
<td>0.54</td>
<td>(0.45)</td>
</tr>
<tr>
<td>Secondary Indices</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Task Behavior</td>
<td>10.24</td>
<td>(2.52)</td>
</tr>
<tr>
<td>Non-Task Behavior</td>
<td>1.36</td>
<td>(1.00)</td>
</tr>
</tbody>
</table>

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and non-task behaviors (Intrusive + Off-Task); see the secondary indices in Table 2. A detailed description of operational definitions of target behaviors as well as the segmentation rules used for the study is available from the first author.

Analysis

Relationships between teacher directiveness and responsiveness and student task behaviors were examined by correlational analysis (Schneider & Hecht, 1995). Due to the small number of participant pairs, a nonparametric correlation analysis of Spearman’s rho correlation was used (a) to guard against the normality assumption required for the parametric Pearson correlation analysis and (b) to increase power of detecting significant relationships even with small number of subject dyads. An examination of relationships between teacher behaviors and student behaviors required a large number of analyses. To reduce potential number of analyses to be conducted, only those target behaviors with sufficient occurrences were included. Considering the exploratory nature of the current study, a liberal alpha level of .05 was chosen to control for the Type II error.

Results

Special Education Teachers’ Use Directions and Responses

Means, standard deviations, and ranges of teacher target behaviors are presented in the Table 1. The most frequent type of teacher direction was the Gestural Prompt, a nonverbal direction (an average rate of 7.80/min). The next most frequent teacher direction was Question, a verbal direction (an average rate of 3.36/min). Nonverbal Direction (i.e., composite of Gestural, Full Physical, and Partial Physical Prompt) was used more frequently (an average 7.91/min) than Verbal Direction (i.e., composite of Command, Question, and Suggestion) (an average rate 7.23/min) due to high rates of Gestural Prompt (98.7%). Summed together, special education teachers used directions on average 15.04 times per minute, or approximately for every 4 seconds, during one-on-one instruction of their elementary students with cognitive disabilities.

The most frequently used teacher responses was (Verbal) Acknowledgment, which occurred an average rate of 2.16/min. The second most frequent teacher responses were Nonverbal Acknowledgment with an average rate of 1.70/min. This was followed by Elaboration, used an average rate of 1.63/min. Verbal Response was more frequent than Nonverbal Responses with average rates of 4.45/min and 1.78/min. Overall, special education teachers responded to students 6.16 times per minute or approximately for every 10 seconds, which is less than half (41%) the rate of teacher direction use.

A wide variability was observed in individual special education teachers’ use of directions and responses. For example, one teacher used Gestural Prompt 10 times during the 20-minute observation period, while another teacher used them 383 times during the same period. Likewise one teacher used directions sparingly (3.60/min), while another teacher used directions frequently (28.05/min) during instruction. Similar variability but of less magnitude was also observed in teacher responses. One teacher responded to her student infrequently (3.60/min), but another teacher responded to her student far more frequently (10.25/min).

Task Engagement of Students with Cognitive Disabilities

Table 2 includes information about means, standard deviations, and ranges of student target behaviors. Within the context of one-on-one instruction, elementary students with cognitive disabilities were most likely to spend their instructional time actively Engaged in task (an average of 58.15% of time or an average rate of 5.03/min), followed by passive orientation to task (i.e., On-Task) (an average of 34.60% time or an average rate of 5.20/min). Overall, student participants exhibited Task-Behavior (i.e., a composite of Engagement and On-Task) for an average of 92.75% of time. Non-Task Behavior, which is a composite of Intrusiveness and Off-Task, occurred infrequently for an average of 6.73% of the observation period.
Relationships Between Teacher Interaction Styles and Student Task-Engagement

To reduce the number of correlational analyses, thus to reduce probability of Type I error, data were examined and data reduction was attempted. First, teacher target behaviors that occurred infrequently (i.e., Full Physical Prompt, Partial Physical Prompt, and Compliance) were excluded from further analysis. Second, when there were no statistically significant differences between Session 1 scores and session 2 scores, based on Wilcoxon Signed Ranks Tests, scores from two observation sessions were combined to produce one overall score (except for the Off-Task). Third, when there was significant and strong correlation \((r \geq .80)\) between duration and frequency scores, only duration scores were used. The criterion correlation existed only for the Intrusiveness and Off-Task.

**Teacher directions.** Table 3 summarizes results of correlation analysis involving directions. Statistically significant, high positive correlations were observed between teacher Command, Suggestion, Gestural Prompt, Verbal Direction, and Total Direction and rates of student Engagement \((r = .68 - .81)\), On-Task \((r = .67 - .80)\), and Task-behaviors \((r = .66 - .80)\). There were no or very small correlations between teacher Question and rates of student Engagement, On-Task, and Task-related behaviors \((r = -.02 - .16)\). With respect to relative duration indices of student behaviors, statistically significant and high correlations were observed only between the relative duration of On-Task and teacher Suggestion \((r = .76)\), Gestural Prompt \((r = .67)\), and Total Direction \((r = .67)\). Teacher directions, both individual directions and composite variables, were not correlated with student Off-Task or Intrusiveness, except for the significant relationship between teacher Question and Session 2 Off-Task \((r = .60)\).

Potential changes in the relationships as a function of explicitness of directions were examined only for teacher verbal directions – Command, Question, and Suggestion – because Physical Prompts occurred very infrequently. Correlation coefficients involving teacher Command and those involving

<table>
<thead>
<tr>
<th>Table 3</th>
<th>Correlation* between Teacher Directions and Student Behaviors</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Command*</td>
</tr>
<tr>
<td><strong>Engagement</strong></td>
<td></td>
</tr>
<tr>
<td>Rate</td>
<td>.680*</td>
</tr>
<tr>
<td>% Time</td>
<td>.033</td>
</tr>
<tr>
<td><strong>On-Task</strong></td>
<td></td>
</tr>
<tr>
<td>Rate</td>
<td>.740**</td>
</tr>
<tr>
<td>% Time</td>
<td>.176</td>
</tr>
<tr>
<td><strong>Task</strong></td>
<td></td>
</tr>
<tr>
<td>Rate</td>
<td>.737**</td>
</tr>
<tr>
<td>% Time</td>
<td>-.476</td>
</tr>
<tr>
<td><strong>Intrusive</strong></td>
<td></td>
</tr>
<tr>
<td>% Time</td>
<td>.395</td>
</tr>
<tr>
<td><strong>Off-Task</strong></td>
<td></td>
</tr>
<tr>
<td>% Time 1*</td>
<td>-.037</td>
</tr>
<tr>
<td>% Time 2*</td>
<td>.208</td>
</tr>
<tr>
<td><strong>Non-Task</strong></td>
<td></td>
</tr>
<tr>
<td>% Time</td>
<td>.476</td>
</tr>
</tbody>
</table>

*Note.*  
* * * Spearman’s rho correlation.  
** Rate per minute.  
** Session 1 and Session 2 indices.  
* \(p < .05\).  
** \(p < .01\).
teacher Suggestion were of similar magnitude across pairs of comparison (refer to Table 3). Correlations involving Command were consistently higher than those involving Question with respect to rates of student Engagement ($r = .68$ vs. $r = .16$, respectively), On-Task ($r = .74$ vs. $r = .09$), and Task Behavior ($r = .74$ vs. $r = .09$). On the other hand, although Suggestion was a less explicit teacher direction than Question, correlations involving Suggestion were greater than those involving Question in terms of rates of student Engagement ($r = .69$ vs. $r = .16$, respectively), On-Task ($r = .67$ vs. $r = .09$), and Task Behavior ($r = .67$ vs. $r = .09$). Similarly, no notable differences in magnitude of correlation were observed in correlations involving relative durations of student behaviors except the relative duration of On-Task ($r = .18$, $r = .12$, and $r = .76$ for Command, Question, and Suggestion, respectively) and Task Behavior ($r = -.48$, $r = -.03$, and $r = .47$). Therefore, no consistent trend was observed with respect to explicitness of teacher directions and its relationship to student task behaviors. 

**Teacher responses.** The results involving teacher responses were shown in the Table 4. At the individual (teacher) response variable level, only teacher Elaboration was significantly related to the rate of student Engagement ($r = .57$). The composite of teacher verbal responses (i.e., Verbal Response) was significantly related to the rates of student Engagement ($r = .67$), On-Task ($r = .57$), and Task behaviors ($r = .60$). However, when all teacher responses were considered (i.e., Total Response), only the rate of student Engagement showed significant relationship ($r = .59$). Similar to teacher directions, significant correlations were observed only with rates of student task-related behaviors. Likewise, no statistically significant correlations were observed between teacher responses, both individual and composite variables, and student Off-Task and Intrusiveness. Overall, fewer statistically significant correlations were observed between various teacher responses and student task-related behaviors, compared to those involving teacher directions.

**Table 4**

<table>
<thead>
<tr>
<th></th>
<th>Elaborate</th>
<th>Repeat</th>
<th>Acknowledge</th>
<th>Nonverbal Acknowledge</th>
<th>Verbal Response</th>
<th>Total Response</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Engagement</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rate</td>
<td>.566*</td>
<td>.488</td>
<td>.531</td>
<td>.113</td>
<td>.665*</td>
<td>.587*</td>
</tr>
<tr>
<td>% Time</td>
<td>-.003</td>
<td>.279</td>
<td>.228</td>
<td>-.171</td>
<td>.324</td>
<td>.240</td>
</tr>
<tr>
<td><strong>On-Task</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rate</td>
<td>.471</td>
<td>.398</td>
<td>.478</td>
<td>.059</td>
<td>.569*</td>
<td>.476</td>
</tr>
<tr>
<td>% Time</td>
<td>.159</td>
<td>.000</td>
<td>-.030</td>
<td>-.069</td>
<td>.033</td>
<td>-.011</td>
</tr>
<tr>
<td><strong>Task</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rate</td>
<td>.499</td>
<td>.422</td>
<td>.517</td>
<td>.063</td>
<td>.604*</td>
<td>.521</td>
</tr>
<tr>
<td>% Time</td>
<td>-.204</td>
<td>-.152</td>
<td>-.261</td>
<td>-.217</td>
<td>-.253</td>
<td>-.193</td>
</tr>
<tr>
<td><strong>Intrusive</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% Time</td>
<td>.142</td>
<td>.087</td>
<td>.285</td>
<td>.303</td>
<td>.176</td>
<td>.203</td>
</tr>
<tr>
<td><strong>Off-Task</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% Time 1*</td>
<td>-.069</td>
<td>.105</td>
<td>-.205</td>
<td>-.404</td>
<td>-.132</td>
<td>-.258</td>
</tr>
<tr>
<td>% Time 2*</td>
<td>.466</td>
<td>.492</td>
<td>-.222</td>
<td>-.294</td>
<td>.288</td>
<td>.081</td>
</tr>
<tr>
<td><strong>Non-Task</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% Time</td>
<td>.204</td>
<td>.182</td>
<td>-.176</td>
<td>.124</td>
<td>.192</td>
<td>.118</td>
</tr>
</tbody>
</table>

*Note.* * Spearman’s rho correlation. ** Rate per minute. ** Session 1 and Session 2 indices. ** $p < .05$. ** $p < .01$. **
Discussion

Summary of Teacher Direction and Response Use

Mirroring findings from existing adult-child interaction studies of young children with developmental disabilities, special education teachers in the current study were more directive than responsive during their instructional interactions with their students. Specifically, special education teachers used more than twice as many directions (an average rate of 15.04/min) as responses (an average rate of 6.16/min) during one-on-one language arts instruction of their upper elementary students with cognitive disabilities. So, looking just at the observed frequency, special education teachers were more directive than responsive.

The observed rate of directions (approximately 15/min) is much higher than the observed Opportunities to Respond (OTR) (0.019 – 3.52 per min) (Van Acker & Grant, 1996; Sutherland et al., 2003) or recommended OTR (8-12 /min during independent practice) (CEC, 1987, as cited in Sutherland et al., 2003).

Several factors unique to this study may have contributed to this exceptionally high level of teacher directions, including one-on-one instruction (vs. group instruction), experienced teacher participants, and teacher reactivity during observation. As early as 1968, Fine, Allen, and Medvene described potential elevation of teacher directiveness during observation due to teacher observation anxiety. The finding that questions were the most frequent form of teacher verbal direction is consistent with the extant literature describing dominance of teacher questions in classroom exchanges (Craig & Collins, 1970; DeVoe & McMillen, 1994; Girolametto, Hoaken et al., 2000; Klein & Harris, 1986). Very few nonverbal prompts involving physical contacts were used by teachers during observation sessions. Individual differences were observed across participating special education teachers in terms of overall use of directions and responses, with more variability in direction use (800% difference) than response use (300% difference). Individual differences in teacher styles were also reported by Mahoney and Wheeden (1999) and Jordan and Lindsay, (1997), and they are believed to be more-or-less stable within individual teachers.

Upper elementary students with cognitive disabilities in this study, on the other hand, were observed engaged in behaviors that are directly related to task for the majority of observation sessions, either actively engaged or passively oriented. Behaviors that interfered with task, either actively or passively, were rarely observed (on average 7% time). Several factors appear to have contributed to this high level of task engagement in the study participants. First is the format of instruction. Students with cognitive disabilities in this study were observed during one-on-one instruction. Given high levels of teacher attention during one-on-one instruction, one could expect students to engage in more task-conducive behaviors compared to the amount that could be expected during independent seat work or large-group instruction. Also any task-interference behaviors from these students were likely to be immediately noticed by teachers and prevented from continuing, thus resulting in a very low level of task-interference behaviors observed.

Second, most teachers who participated in the current study were experienced teachers, with close to 18 years of teaching experience on average. These experienced special education teachers were more likely to have provided effective instruction, encouraging high levels of task-conducive behaviors and low level of task-interference behaviors in participating students with cognitive disabilities. The third factor is an interaction of the above two factors and the outerdirected (i.e., heavy reliance on outside cues especially from teachers or other adults) characteristics of children with cognitive disabilities (Harter & Zigler, 1974; Zigler, 1971). In other words, during one-on-one instruction, these experienced teachers provided frequent and effective directions and verbal feedback to students with cognitive disabilities and, in return, these students, being more susceptible to teacher influences, were able to be engaged in task for the majority of time.

Relationship between Teacher Instructional Behaviors and Student Task Behaviors

Many indices of teacher directions examined in this study were observed to have strong and statistically significant correlations with rates of
student engagement and on-task, including teacher Command, Suggestion, Gestural Prompt, Verbal Direction, and Total Direction. There were fewer significant and high correlations between teacher directions and duration of student engagement and on-task; only teacher Suggestion and Gestural Prompt were significantly correlated with On-Task relative duration. Interestingly, teacher Question was not significantly correlated to students’ engagement or on-task (either rate or duration) despite the fact that Question was the most frequently occurring teacher directions. Only Elaboration was significantly related to rates of student engagement among individual teacher responses. Composite variables of teacher responses - Verbal Response and Total Response - were significantly related to rates, but not duration, of student engagement.

The pattern of relationships between teacher directions and responses and student task-conducive behaviors (i.e., Engage + On-Task) was generally in line with the relationship between OTR and task engagement behaviors in the OTR literature. In the current study, teacher directions appeared to have strong ties with task-conducive behaviors of students with cognitive disabilities, both in terms of magnitude of relationships and number/types of directions. Individual directions (e.g., command, suggestion) were significantly related to student task-conducive behaviors. Similarly, in OTR research, OTR (or academic requests) were positively related to task-engagement and negatively related to disruptive behaviors (Sutherland et al., 2003; Sutherland & Wehby, 2001; Sutherland et al., 2002).

Why there were weaker and fewer significant relationships between teacher responses and student task-related behaviors, compared to teacher directions, cannot be readily explained. It may be partly due to the observed frequencies of teacher response use. Participating teachers used responses about half as often as their direction use with less variability. This reduced use and variability might have contributed to failure to detect significant relationships involving individual responses (e.g., acknowledgement). The emergence of significant relationships between composite response variables (i.e., Verbal and Total Responses) and student engagement adds support to this possibility.

Related to this is the general lack of significant correlation between task-interference behaviors (i.e., Intrusiveness and Off-Task) from students and teacher direction or response variables as Intrusiveness and Off-Task occurred so few times in the current study. While Sutherland and Wehby (2001) reported negative correlation between OTR and disruptive behaviors, in the present study, the direction of relationships were not consistent – some positive and some negative correlations with respect to both teacher directions and responses. Different patterns of relationships may emerge in students who exhibit higher levels of task-interference behaviors such as students with behavioral disorders as reported by Sutherland and Wehby.

The fact that teacher behaviors were related mainly with the ‘rate’ (or frequency) dimension of student task behaviors but not ‘duration’ dimension requires further discussion. In other words, teacher behaviors were related to how often student task behaviors occurred but not necessarily how long students were engaged in these behaviors. One way to examine this finding is to look at observed frequencies of teacher behaviors. On average, teachers issued directions approximately 15 times per minute and responses 6 times per minute; combined, teachers exhibited 21 directions or responses per minute, or issued directions or responses in every 3 seconds. This ‘saturated’ nature of teacher behaviors may be partially responsible for the observed high On-Task/Engagement (93% of time) of students with cognitive disabilities. However, this saturation with teacher behavior is also likely to be responsible for relatively short-lived occurrences of On-Task and Engagement behaviors. The mean bouts of On-Task and Engagement were 4 seconds and 7 seconds in this study, respectively. Due to almost constant stream of teacher behaviors, student task-conducive behaviors, whether they be passive or active, were interrupted frequently, which may have resulted in only short bouts of these behaviors and, thus, precluded influences on duration dimension of student task-conducive behaviors. Several scholars have warned about potentially deleterious effect of interruptions and excessive teacher directions on student engagement.
future persistence on task and self-directed learning (Mahoney & Wheeden, 1999; Stipek & Sanborn, 1985; Wood & Wood, 1984). Combined with the outer-directed characteristics of students with cognitive disability, there is reason to be cautious about all positive interpretation of statistically significant, positive relationships between teacher directions and student task-conducive behaviors.

No consistent trend was observed in the magnitude of correlation with respect to the explicitness of teacher verbal directions. Both Command, the most explicit verbal direction, and Suggestion, the least explicit one, showed higher correlations than did Question, middle in explicitness, with rates of student task-conducive behaviors, despite the fact that Question was the most frequently exhibited teacher verbal direction. This pattern of findings could be explained from grammatical complexity, rather than explicitness, of teacher directions. That is, teacher Questions (e.g., wh-questions) may be more grammatically complex and longer than teacher commands or teacher suggestions (e.g., verbal models), which may have affected understanding and compliance from students with cognitive disabilities. Previous research of parent-child interactions in developmental disabilities identified difficulty level (Mahoney & Neville-Smith, 1996) and syntactic complexity (Curcio & Paccia, 1987) as factors that determine effectiveness of parental directions.

Limitations and Future Directions

A large number of statistical analyses were conducted with data obtained from a small number of participants, necessitating consideration of both Type I and Type II errors. The small number of participants may have not allowed detection of potentially statistically significant findings particularly when the strength of relationship is small. Therefore, findings of the current study need to be approached as exploratory; replication with a large number of participant pairs is necessary. Before concluding teacher directions ‘lead to’ or ‘increase’ engagement of students with cognitive disabilities, findings of the current study need to be replicated with experimental studies that directly test causal or functional relationships. The present study provides many potential candidates for subsequent experimental studies of teacher and student behaviors.

The findings of the current study need to be interpreted in consideration of the observational context of the study. Generalization to other types of instruction (small group, large group), other subject areas (mathematics, independent living), other disability types (e.g., emotional behavioral disorders, sensory disabilities), or the entire population of special education teachers should be considered with caution. Specifically, in the present study, the choice of academic task was up to the teachers within the regular school work of participating students, with the intention of enhancing ecological validity. However, due to this fact, the difficulty level of the task was not controlled. Considering the suggested variations of teacher behaviors during different task demand (Davis et al., 1988; Girolametto, Weitzman, et al., 2000), and differential effects of adult directions of varying difficulty (Curcio & Paccia, 1987; Mahoney & Neville-Smith, 1996), the effect of difficulty level of task on teacher behaviors and their subsequent effect on student behaviors needs to be examined explicitly.

Although the observation periods of the current study are comparable to some studies of adult-child interactions (e.g., Girolametto, Hoaken, et al., 2000; Tannock, 1988), observations in the current study were relatively short and provided only a snap-shot of teacher-child instructional interactions at one point of time. The long-term effect of, or effects of prolonged exposure to, the highly directive style of special education teacher interaction styles on children’s functioning needs to be examined further. It appeared that overall teacher directions facilitated engagement of students with cognitive disabilities. It was also found that teacher directions were related to ‘rate’ dimension of task-conducive behaviors of students but not the duration dimension, showing short-lived influence of teacher directions. If this pattern of interactions persists across the school career of students with cognitive disabilities, would it be possible that students become ‘dependent’ on teacher directions in order for them to be actively engaged in the task? It is important that this long-term changes or potential shifts in stu-
dent task engagement behaviors as a function of prolonged exposure to different teacher interaction styles (e.g., different levels of directions and responses) is investigated and understood.

The present study investigated relationships of teacher behaviors (i.e., directions and responses) with a specific emphasis on task-engagement behaviors. And the tentative finding is that teacher directions appeared to serve an effective instructional function to special education teachers. This finding needs to be extended to other aspects of student academic performance such as accuracy of responding, elaborateness/complexity of student response (Jordan & Lindsay, 1997), or measures of overall academic achievement. Moreover, there are other developmental areas that studies of effects of teacher interaction styles may potentially promising, such as social-communicative development of students with cognitive disabilities. Teachers’ roles as facilitators of language and social skills of children with disabilities have been increasingly emphasized (Mc Cathren, 2000; Pecyna Rhyner et al., 1990; Sargent, 1991). Additionally, existing approaches like social skill training have been criticized for their lack of generalizability (Hughes & Sullivan, 1988; Mathur & Rutherford, 1989) and lack of effects on spontaneous social reciprocity (Strain, 2001). Adult interaction styles represented as responsiveness have been potentially shown to affect social reciprocity (Clark & Seifer, 1985; Girolametto, 1988; Tannock, 1988) or social initiation (Girolametto) of children with developmental disabilities. Studies of adult, particularly teacher, interaction styles may yield an innovative approach that improves social competency of these students in school settings.

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Impact of Factors on Curriculum and Instructional Environments for Secondary Students with Mild Mental Retardation

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Abstract: This study examined factors associated with the curriculum and instructional environments for secondary students with mild mental retardation, based on teacher report. A survey was mailed to 378 secondary special education teachers in Michigan. Teachers provided demographic information and answered questions regarding curriculum and instructional environments for secondary students with mild mental retardation. Teacher variables were found to have no association with the curriculum or instructional environments primarily used for secondary students with mild mental retardation; yet the school variable of size was found to have a relationship with instructional environments. Overall this study examined and extended the question what factors are related to the curriculum and instructional environments for secondary students with mild mental retardation.

The field of mild mental retardation is becoming endangered, with little current research and questions from the field if it is time for the population’s eulogy (Bouck, 2004a; Polloway, in preparation, 2004). Yet, the field must work to make this population of students not “endangered” in research or in practice. Hence, to protect students with mild mental retardation, particularly at the secondary level where less research is conducted than at the elementary level (see Bouck), the field must push forward with understanding educational programming (i.e. curriculum and instructional environments) for these students. The field must focus on understanding the current context surrounding the educational programming for secondary students with mild mental retardation and look towards studying this topic with respect to its impact on outcomes.

In this exploratory study, the intersection of curriculum and instructional environments for students with mild mental retardation was examined with respect to teacher variables, such as gender, highest degree held, mental retardation endorsement, and years teaching; and school variables, such as location (rural, urban, and suburban) and size. As a result of the contention that “disabilities” are partially situated within local contexts and activity settings made available to individuals, studying the potential impact of demographic profiles of teachers and schools on the types of learning opportunities afforded to secondary students with mild mental retardation becomes imperative (Pugach & Seidl, 1998; Reid & Valle, 2004). The purpose of this study was to begin to understand how teacher characteristics and school characteristics impact the provision of secondary special education services to students with mild mental retardation.

Teacher Variables

Teacher variables have been found to impact educational factors. Research has explored teacher variables that are associated with student achievement. King and MacPhail-Wilcox (1994), in their analysis as to what resources make a difference in student achievement, examined teacher variables such as years of experience, training in the form of graduate degrees, verbal achievement, and salary earned. Their results indicated that teacher experience and teacher abilities do bear a
strong and more consistent relationship with pupil performance, as measured by student achievement, than other characteristics. However, they concluded by implying that recruiting teachers with better verbal abilities or more years of experience offers little assurances that student outcomes will be positively affected in all contexts (King & MacPhail-Wilcox).

However, others have found benefits of teacher variables, such as teacher ability, teacher education, and teacher experience. The meta-analysis by Greenwald, Hedges, and Laine (1996) concluded that these variables that represent teacher quality are strongly associated with student achievement. Thus, the data suggested that obtaining more educated or more experienced teachers would result in an increase in student achievement (Greenwald, Hedges, & Laine).

While research has been conducted on the relationship between teacher variables and student achievement, little, if any, has examined the association between teacher variables and educational programming, such as curriculum and instructional environments. This is particularly so in the field of special education. A recent review of four special education journals (The Journal of Special Education, Exceptional Children, Remedial and Special Education, and Education and Training in Developmental Disabilities) between 1998 and 2004 found no articles that focused on the relationship between teacher variables and curriculum and instructional environments for special education students. In particular, there were few articles found to examine the association between gender, highest degree held, and years of teaching experience and curriculum and instructional environment. One exception was an article by Conderman and Katsiyannis (2002), which found no significant relationship between the number of years of teaching and the use of teaching approaches. However, in general, little research has explored the influence of teacher variables on curriculum and instructional environments.

School Variables

The location, or setting (e.g. rural, urban, or suburban), of a school, as well as school size has been shown to affect various factors related to education. Factors affected by a setting and size range from the socioeconomic status of the school to funding availability, curriculum options, future outcomes, and technology availability (Anyon, 2003; Downey, 1980; Kozol, 1992; Office of Special Education, 1995; Owens & Waxman, 1996). Monk and Haller (1993) illustrated the impact high school size and setting has on course offerings. These researchers found that students from small schools were offered fewer educational opportunities than students in larger schools. They concluded that clearly there was not equity in the offering of curriculum and availability of courses (Monk & Haller). Similarly, rural schools have been found to have less to offer in terms of fewer elective classes, such as art and computers, as well as advanced placement offerings (Edington & Koehler, 1987). Stringfield and Teddlie (1991) found that rural schools were more conservative in terms of education. They concluded that while this conservatism sheltered rural schools from some of the negative effects of educational “fads,” it also prevented them from participating in the valuable movements in education (Stringfield & Teddlie).

Differences between nonacademic course offerings were also found among different school locations or sizes. Research has shown that offerings for vocational education are dependent on school setting. Urban and suburban settings had more to offer in terms of vocational courses than rural schools (Hudson & Shafer, 2002). In addition, not only did rural schools offer fewer choices in vocational courses, the programs offered by rural schools were less likely to be ones that prepared students for occupations that are expected to grow (Hudson & Shafer).

A study by Baer and colleagues (2003) found that special education students in rural schools had more exposure to in-school jobs and other job experiences, as compared to students in urban schools. Special education students from urban schools had fewer career or vocational-related experiences while in school and their educational programs focused more on general education academics. Special education students from suburban settings had more vocational experiences than both rural and urban, focused on jobs during high school, and had less emphasis on general
education academics (Baer et al.). Baer and associates suggested that school location can impact the curriculum secondary special education students received, particularly in terms of preparing them for post-school outcomes and success. In addition research on instructional environments, while less than on curriculum, suggested that rural and urban schools have less inclusive education than suburban schools (Beloin & Peterson, 2000).

This study sought to answer the following research questions regarding the association between school and teacher variables and educational programming for secondary students with mild mental retardation:

What is the association between teacher characteristics, such as years of teaching experience and special education endorsements, and curriculum for secondary students with mild mental retardation?

What is the association between teacher characteristics, such as years of teaching experience and special education endorsements, and instructional environments for secondary students with mild mental retardation?

What is the association between school characteristics, such as years of school size and school location, and curriculum for secondary students with mild mental retardation?

What is the association between school characteristics, such as years of school size and school location, and instructional environments for secondary students with mild mental retardation?

Method

Participants

Three-hundred seventy-eight secondary special education teachers in Grades 9-12 were mailed surveys to complete. Participants were selected based on a population size of 593 eligible schools and 378 represents a 95 percent confidence level with a +/- 3% sampling error (Salant & Dillman, 1994; Fowler, 2002). The 378 teachers were distributed proportionally across the Michigan High School Athletic Association (MHSAA) classification code of school size: A, B, C, and D. Class A represents all high schools with enrollment of 1008 and above, Class B represents all high schools with enrollment between 488 and 1007, Class C represents high schools with enrollment between 243 and 487, and Class D represents high schools with enrollment of 242 and below (MHSAA, 2002). A list of schools in each class was obtained through the MHSAA Directory (2002). The list was then screened for schools in each class for eligibility and all non-public and specialty schools were excluded, including Parochial, Charter or Academy schools. Originally 174 schools met eligibility in class A, 162 in both class B and class C, and 95 in class D. Based upon the distribution, 111 surveys were mailed to schools in class A, 103 to schools in both class B and C, and 61 to schools in class D. Schools in all four classes who met the eligibility criterion were randomly selected, with each eligible school district having an equal chance of being in the sample. This sample selection method utilizes a Two-Stage Cluster Convenience Sample. Schools were randomly selected in stage one of the selection progress. After selecting schools for each class type, teachers were selected by building administrators in stage two, through adherence to the characteristics supplied by the researcher (e.g. special education endorsement, number of years teaching secondary special education, and number of years teaching at the particular school).

Survey Instrument

The survey instrument (available from the author upon request) focused on curriculum and instructional environments for secondary students with mild mental retardation. Peers and established professionals within the field supplied feedback and suggestions and helped to ensure the content validity of the survey. Next, a draft survey was field tested with 10 secondary special education teachers for the purpose of checking the clarity of the questions and removing or revising any that were unclear or failed to gather the intended information.

The two sections of the survey that will be discussed in this paper include the demographic information and the information regarding curriculum and instructional environ-
ments. The first section of the survey requested demographic information – school size, school setting, gender of the teacher, highest degree obtained, years of teaching experience within various constraints, and special education endorsements obtained.

Another section of the survey asked information about the curriculum and instructional environments of students with mild mental retardation. Respondents identified the total number of special education students, students with mild mental retardation, and students with learning disabilities in their school and on their individual caseload. Next, they identified the top three instructional environments utilized by both groups of students by selecting among: resource room, self-contained classrooms, community worksites, cross-categorical classrooms, general education classrooms (inclusion), general education classrooms with support personnel (co-taught classes), in-school worksites, alternative school, and vocational/tech preparation programs. Teachers then categorized the curriculum for both students with mild mental retardation and learning disabilities and selected the one utilized the most from the following options: there is no established curriculum, general education curriculum made applicable to the needs and IEP goals of students, specific special education curriculum with unique set of materials, a lower grade level general education curriculum with appropriate materials, a unique curriculum which teachers have devised based on the individual needs of their students, a functional or life management curriculum that focuses on skills most applicable to the adult world, or a vocational education curriculum (Bigge, 1988; Sabornie & deBettencourt, 1997).

Data Analysis
Survey responses were coded and entered into a SPSS database file. Data was coded following the guidelines in the codebook depending on the variables and type of question. Data was then analyzed both descriptively and inferentially, through frequency distributions and Chi Square Tests of Association. Frequency distributions were conducted on demographic variables and the variables on curriculum and instructional environments. Chi Square Tests of Association were performed to test for relationships between teacher variables (gender, degree, endorsements, and years of experience) and school variables (size and setting) and curriculum and instructional environments.

Results

Demographic Information
A 50% return rate was achieved after an initial mailing and three follow-ups, which involved post-cards, phone calls or e-mails. Respondents occupied 69% of the counties in Michigan, and the majority of the state was covered. In terms of class size, 35.4% were from class A schools, 29.6% from class B schools, 24.8% from class C schools, and 11.1% from class D schools. However, since the sample was stratified, a return of 67 schools from class A, from a possible 111, resulted in a 60% return rate. A return of 56 from class B from a possible 103 resulted in a 54% return rate, 45 from a possible 103 for class C was a 44% return rate, and 21 out of 60 from class D was a 35% return rate. Of the 189 surveys that were returned by secondary special education teachers, 49.2% indicated that they worked at a rural school. The next highest was suburban with 35.2% and then urban with 15.6%.

The majority of the sample respondents were female, with 155 (82%) of the teachers who responded indicating that they are female and 33 (17.5%) indicating male status. Fifty-six percent of the sample had a master’s degree, while 37% had a bachelor’s degree. Mean number of years of teaching was 15.74, mean number of years of teaching secondary special education was 11.52, and mean number of years of teaching at the teacher’s current position was 8.57. In total, 50.8% of respondents held an endorsement in mental retardation.

Teacher Variables
Curriculum. Frequency distributions and Chi Square Tests of Association were conducted on the different curriculum (see Table 1) and instructional environments (see Table 2) for students based on teacher variables (i.e. gender, degree held, endorsements, years of
teaching experience, and years of teaching secondary special education). Between male and female teachers there was not a lot of difference across curriculum choices, and in fact there was no statistically significant relationship between teachers’ gender and curriculum, $\chi^2(7) = 10.56, p = .159$. Both male and female teachers had a special education curriculum as the most frequent response for curriculum utilization. Male teachers did have higher frequency of reported use for a general education curriculum (21.2% vs. 14.8%), a functional curriculum (24.2% vs. 18.8%), and use of other curriculum (9.1% vs. 3.4%); yet no males reported using a unique curriculum (0% vs. 17.4%).

Teachers’ highest degree held was also not associated with the primary curriculum for secondary students with mild mental retardation, $\chi^2(21) = 17.41, p = .68$. Teachers with a bachelor’s degree or a master’s degree were similar in frequency for a functional curriculum (9.1% vs. 3.4%); yet no males reported using a unique curriculum (0% vs. 17.4%). Teachers with a master’s degree were slightly more likely to utilize a special education curriculum (27.2% vs. 22.4%), a lower grade level curriculum (14.6% vs. 11.9%), and a unique curriculum (16.5% vs. 11.9%). Similarly, there was not a statistically significant relationship between if a teacher was certified in mental retardation and curriculum, $\chi^2(7) = 3.87, p = .275$; however, they had different most utilized curriculum responses – functional curriculum for those with mental retardation certification (23.3%) and a special education curriculum for those without mental retardation certification (29.1%). While teachers with a mental retardation certification were more likely to utilize a functional curriculum (24.3% vs. 15.1%) and a unique curriculum (17.9% vs. 10.5%), they also reported a higher frequency that no established curriculum was used (6.3% vs. 3.5%).

Years of teaching experience and years of teaching secondary special education were both not statistically significantly associated with the type of curriculum teachers reported using, $\chi^2(28) = 17.26, p = .943$ and $\chi^2(42) = 31.14, p = .212$.
Clear patterns were absent between the number of years teaching (coded as less than five years, between five and ten years, between ten and twenty years, between twenty and thirty years, and over thirty years) and curriculum. Teachers with less years teaching did report using a functional curriculum more than teachers who had taught more years. They also had less use of a unique curriculum and generally greater use of no established curriculum. Overall a clear, consistent pattern was also missing from the years of teaching secondary special education teachers and curriculum utilization. However, as the number of years teaching secondary special education increased, curriculum utilization spread across fewer choices. For teachers between twenty and thirty years and over thirty years of teaching secondary special education, only three options were selected (general education curriculum, special education curriculum, and functional curriculum, all at 33.3%).

Instructional Environment. The Chi Square Test of Association produced no statistically significant relationship between gender, degree, endorsement, and years of teaching experience for instructional environments for secondary students with mild mental retardation (see Table 2 for frequencies). For gender, males were more likely to instruct in a resource room (40.6% vs. 29.3%), but females in the general education setting (8.2% vs. 3.1% for inclusion and 2.7% vs. 0% for co-taught classes); however the relationship was still not significant, $\chi^2(3) = 4.5, p = .212$.

The relationship between highest degree held and instructional environments was insignificant, $\chi^2(18) = 7.84, p = .55$; yet frequency data indicated that teachers with a master degree taught more in general education setting (8.8% vs. 3% for inclusion and 2.7% vs. 0% for co-taught classes) but less in the resource room (29.4% vs. 37.9%). There was also no statistically significant relationship between
having a mental retardation endorsement and instructional environment, \( \chi^2(6) = 8.48, p = .292 \); however, frequency data showed that teachers with mental retardation certification were more likely to utilize a self-contained setting (63\% vs. 46.4\%), but less likely to utilize a resource room (27.2\% vs. 36\%) and the general education setting (3.3\% vs. 11.6\% for inclusion).

Years of teaching experience, both total years \( (\chi^2(24) = 29.21, p = .343) \) and secondary special education \( (\chi^2(36) = 20.29, p = .948) \), were not associated with primary instructional environment for secondary students with mild mental retardation. However, the type of instructional environments reported decreased as the years of teaching, both total and only secondary special education, increased. For teachers who reported over 30 years in both categories, only two instructional environment options were given – resource room and self-contained setting (45.5\% vs. 54.5\% respectively for total years of teaching and 50\% vs. 50\% respectively for years teaching secondary special education). The general education setting, either inclusion or co-taught classes, were more likely to occur with fewer years based on the categorization of years of teaching secondary special education (13\% for those with less than 5 years, 13.3\% for between 5 and 10 years, 6.5\% for between 10 and 20 years, 4.3\% for between 20 and 30 years, and 0\% for over 30 years).

**School Variables**

**Curriculum.** School size, as in class A, B, C, and D, was not found to have a statistically significant relationship with curriculum utilization, \( \chi^2(21) = 17.561, p = .677 \) (see Table 3). However, some patterns did emerge from the frequency data. Overall, the larger schools (i.e. Class A and B) were more likely to utilize a functional curriculum (25.4\% and 20.4\%) than the smaller schools (i.e. Class C & D) (14\% and 10.5\%). The larger schools were also the only ones to report using a vocational curriculum (1.5\% and 1.9\% respectively). The smallest school reported the most utilization of a general education curriculum (31.6\% (D) vs. 7.6\% (A), 18.5\% (B), and 18.6\% (C)) as well as the least use of a special curriculum (15.8\%), vocational curriculum (0\%), and no established curriculum (0\%).

School setting was also not statistically significantly related to curriculum utilization, \( \chi^2(21) = 11.67, p = .947 \). The frequency data revealed that urban schools were the least likely to use a functional curriculum (10\%) versus rural (20\%) and suburban schools (22.7\%). Urban schools, however, were the most likely to utilize a vocational curriculum (5\%) versus rural (1.7\%) and suburban schools (4.5\%), as well as no established curriculum (5\%) versus 3.3\% (rural) and 2.3\% (suburban). Rural schools were the most likely to utilize a general education curriculum (18.3\%) versus suburban (15.9\%) and urban (15\%) and suburban schools were more likely

<table>
<thead>
<tr>
<th>Table 3</th>
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<tbody>
<tr>
<td><strong>Curriculum Utilization Across School Variables</strong></td>
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</table>

<table>
<thead>
<tr>
<th>Size</th>
<th>General Education Curriculum</th>
<th>Special Education Curriculum</th>
<th>Lower Grade Level Curriculum</th>
<th>Unique Curriculum</th>
<th>Functional Curriculum</th>
<th>Vocational Curriculum</th>
<th>No Curriculum</th>
<th>Other Curriculum</th>
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<tbody>
<tr>
<td>A</td>
<td>7.6%</td>
<td>24.2%</td>
<td>19.7%</td>
<td>11.9%</td>
<td>25.4%</td>
<td>1.5%</td>
<td>4.5%</td>
<td>4.5%</td>
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<tr>
<td>B</td>
<td>18.5%</td>
<td>27.8%</td>
<td>5.6%</td>
<td>16.7%</td>
<td>20.4%</td>
<td>1.9%</td>
<td>5.6%</td>
<td>3.7%</td>
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<tr>
<td>C</td>
<td>18.6%</td>
<td>25.6%</td>
<td>16.6%</td>
<td>14%</td>
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<td>0%</td>
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<tr>
<td>D</td>
<td>31.6%</td>
<td>15.8%</td>
<td>21.1%</td>
<td>15.8%</td>
<td>10.5%</td>
<td>0%</td>
<td>0%</td>
<td>5.3%</td>
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<tr>
<td>Setting</td>
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</tr>
<tr>
<td>Urban</td>
<td>15%</td>
<td>20%</td>
<td>20%</td>
<td>15%</td>
<td>10%</td>
<td>5%</td>
<td>5%</td>
<td>10.5%</td>
</tr>
<tr>
<td>Rural</td>
<td>18.3%</td>
<td>25%</td>
<td>13.3%</td>
<td>15%</td>
<td>20%</td>
<td>1.7%</td>
<td>3.3%</td>
<td>3.3%</td>
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<tr>
<td>Suburban</td>
<td>15.9%</td>
<td>27.3%</td>
<td>15.9%</td>
<td>11.4%</td>
<td>22.7%</td>
<td>4.5%</td>
<td>2.3%</td>
<td>0%</td>
</tr>
</tbody>
</table>

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to utilize a special education curriculum (27.3%) than rural (25%) or urban (20%).

Instructional Environment. The relationship between school size and instructional environments was statistically significant, $\chi^2(18) = 35.87, p < .05$, Cramer’s V = .258, $p < .05$. Smaller schools utilized the resource room more than would be expected (see Table 4). Whereas the most utilized instructional environment for students with mild mental retardation was the self-contained setting for three of the four school sizes, for class D the most utilized instructional environment was the resource room (55.6% for resource room versus 22.2% for self-contained setting). Similarly, for smaller schools (D and C), inclusion was utilized more than expected. For class D, inclusion was reported as the primarily instructional environment for 22.2% of respondents, the same percent that indicated a self-contained setting. This compared to inclusion as the primary instructional environment for class C (11.6%), class B (5.4%), and class A (1.6%). The frequency data indicated that overwhelmingly the self-contained setting was the primary instructional environment for secondary students with mild mental retardation for the larger schools (64.5% for class A and 64.3% for class B). The larger schools (A and B) were also the only schools to indicate a vocational or technical prep setting as the most utilized (6.5% for class A and 1.8% for class B), as well as class A was the only school size to report a community-based instruction as the most utilized instructional environment (1.6%).

While school size was associated with instructional environment utilization, school setting was not, $\chi^2(18) = 19.63, p = .354$. Frequency data revealed that a self-contained setting was the primary instructional environment across all three settings (61.1% for urban, 50% for rural, and 64.3% for suburban), yet was reported the lowest by rural schools, who did report the highest frequency of resource room usage (36.7% as compared to 16.7% for urban and 26.3% for suburban). Urban schools had the highest frequency for vocational and technical prep settings as the most utilized instructional environments (11.1% versus 1.7% for rural and 2.4% for suburban) and inclusion (11.1% as compared to 10% for rural and 2.4% for suburban). However, suburban schools were the only school setting group to report using co-taught classes as the primary instructional environment (4.8%).

Discussion

The data suggests that teacher variables – gender, degree held, endorsements, and years of teaching – were not associated with the curriculum and instructional environments primarily used for secondary students with mild mental retardation, yet the school variable of size did matter. The lack of relationship between teacher variables and curriculum and instruc-

| Table 4 |
|-----------------|-----------------|-------------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                | Resource Room   | Self-Contained    | Community-         | Vocational/     | Co-Taught       | Alternative     | Community       |
|                |                 |                   | Based Instruction | Tech Prep      | General         | School          | or in-school    |
| **Size**       |                 |                   |                   |                 | Education       |                 | Worksite        |
| A              | 21%             | 64.5%             | 1.6%              | 6.5%           | 1.6%           | 4.8%           | 0%             | 0%             |
| B              | 26.8%           | 64.3%             | 0%                | 1.8%           | 5.4%           | 0%             | 1.8%           | 0%             |
| C              | 41.9%           | 44.2%             | 0%                | 0%             | 11.6%          | 2.3%           | 0%             | 0%             |
| D              | 55.6%           | 22.2%             | 0%                | 0%             | 22.2%          | 0%             | 0%             | 0%             |
| **Setting**    |                 |                   |                   |                 |                 |                 |                 |
| Urban          | 16.7%           | 61.1%             | 0%                | 11.1%          | 11.1%          | 0%             | 0%             | 0%             |
| Rural          | 36.7%           | 50%               | 0%                | 1.7%           | 10%            | 0%             | 1.7%           | 0%             |
| Suburban       | 26.2%           | 64.3%             | 0%                | 2.4%           | 2.4%           | 4.8%           | 0%             | 0%             |
tional environments was surprising, particularly considering the literature that connects teacher variables to other facets of education, such as achievement (see Greenwood et al., 1996; King & MacPhail-Wilcox, 1994). One could hypothesize that the association between teacher variables and achievement might impact the choice of curriculum and instructional environments used for secondary students with mild mental retardation.

Several hypotheses could be formed between the association of teacher variables and curriculum and instructional environments. For example, it could be hypothesized that teachers with an endorsement in mental retardation were more likely to use a functional curriculum and teach students within a self-contained setting; yet while frequency data indicated as such, the relationship between endorsement in mental retardation and curriculum as well as instructional environments were not statistically significant. Another hypothesis was that teachers with more experience may use a functional curriculum as the primary curriculum, as they earned their degrees (based on years of teaching) at the height of the use of functional curriculum when it was taught in institutions of higher education; yet this was also not substantiated and in fact teachers who taught 10 years or less reported the highest use of functional curriculum.

While there was only one statistically significant relationship between school size and curriculum and instructional environments, the patterns of frequency counts for school variables raised questions. The frequency distribution illustrated that differences existed between schools based on their characteristics (i.e. size and setting). The question then becomes what about the value of individualization – students’ curriculum and instructional environments decided from reflecting on students’ individual needs. Another question is, should parents choose schools based on their characteristics (i.e. size and setting), if they desire certain educational programming, such as choosing big schools if they want a functional curriculum or an urban school if they want inclusion as the primary instructional environment.

In addition to the lack of relationship between teacher and school variables and curriculum, research does not appear to drive curriculum choice either, as there is little current research on students with mild mental retardation, particularly with a focus on curriculum (see Bouck, 2004a). Students with mild mental retardation, just like any other student, deserve to have curriculum implemented in a systematic way – to have a rationale for the type of curriculum they receive and an ability to determine what factors matter in curriculum utilization.

In general, the data illustrated that while there were not statistically significant relationships between teacher variables (gender, degree, endorsements, and years of teaching experience) and school variables (size and setting), curriculum choices and instructional environment utilization were different across these factors. However, the overall lack of relationship between school variables and curriculum and instructional environments, aside from the statistically significant relationship between school size and instructional environments, raises alarm. If teacher variables and school variables, in general, do not matter for curriculum and instructional environments, then what does for this population?

This study leads to more questions than answers. For example, if teacher variables and school variables are not driving the curriculum for secondary students with mild mental retardation, what is? Or, more aptly, is anything driving the curriculum utilization for secondary students with mild mental retardation? The question becomes does curriculum get implemented in schools for this population and never change, so that the current teacher variables in this research do not reflect an association with curriculum implementation. Best practices do not seem to be impacting curriculum implementation for secondary students with mild mental retardation, as best practices for secondary students with mild mental retardation have not been addressed in recent research or scholarly writing. Policy appears to stipulate a general education curriculum, through recent federal initiatives such as No Child Left Behind (NCLB, 2002) and the latest reauthorization of the Individuals with Disabilities Education Act (IDEA, 1997). In contrast, researchers in the field of mild mental retardation have advo-
cated for a functional curriculum (Bouck, 2004b; Patton, Polloway, & Smith, 2000).

**Limitations and Implications**

There are some limitations to this study that need to be acknowledged. To begin with, the sample is limited to secondary public school teachers in Michigan and of that population, those who chose to respond. The ability to generalize to other states or to extend generalizability to teachers or schools that did not respond is questionable. Another limitation pertains to the number of schools in each category – urban, rural, and suburban. Specifically, few urban schools responded. This is related to the unique situation in Michigan, in which few urban school districts exist and the skepticism of individuals inside or outside of Michigan when certain cities are labeled as urban.

Another limitation exists with the overall study, as this article represents one aspect of a larger research project. The survey used in the research project was mailed out simultaneously with another study that examined the roles and responsibilities of teachers of students with “mild disabilities,” conducted by a colleague at the same institution. The joint mailing of the surveys may have contributed to the rate of return, as teachers in certain schools may have received both, even though it was requested that individual teachers not be overburdened, and therefore, chose to respond to only one.

Future research should understand how curriculum is chosen in schools and how it gets implemented. Given that teacher variables do not seem to influence the curriculum and instructional environments that secondary students with mild mental retardation are given, the field needs to study what factors are important. Understanding who chooses the curriculum that is adopted or implemented and the instructional environments that are primarily used for these students is important to determining. Institutional, teacher, and student factors driving curriculum and instructional environments need to be researched.

In conclusion, the field of education must continue to question how the education students receive varies across school differences, such as geographic setting, size, as well as differences in teachers. In the wake of recent federal legislation, the field needs to know what is occurring in all types of schools. Even though pressure exists for all schools to equally educate students, with or without disabilities, it is essential to keep in mind the context of each school. The local context does impact education and that should always be evaluated when making educational decisions, particularly in consideration of the current climate and its emphasis on accountability.

**References**


Assistive Technology for Students with Mild Disabilities:
What’s Cool and What’s Not

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Abstract: Professionals on IEP teams increasingly are considering the potential contributions of assistive technology as they develop programs for students with disabilities. However, a significant technological "generational gap" may exist between the members of these teams and the young people they seek to serve, as the quality and quantity of student interactions with technology may differ dramatically from those of IEP team members. This gap may manifest itself in the selections of technology that may impair social acceptance of students with disabilities by their peers, or that students will not use. In this paper we suggest a variety of both low-tech and high-tech tools that hold unique dual promise to (a) facilitate successful access to the general education curriculum, and (b) enhance social acceptance by nondisabled peers.

The reauthorization of the Individuals with Disabilities Education Act of 1997 (IDEA, P. L. 105-17) mandated that education professionals consider assistive technology (AT) when developing individualized education programs (IEPs) for all students with disabilities [§1414(d)(3)(B)(iv)]. This mandate presented substantive challenges to the educational community, given that (a) more than 3.8 million children with mild disabilities had not been afforded such consideration when their IEPs were initially developed (Edyburn, 2004); and (b) teacher preparation in assistive technology best practice service delivery remains less than effective (Lahm, 2003; Wojcik, Peterson-Karlan, Watts, & Parette, 2004).

Compounding this scenario is the fact that today’s students with mild disabilities are part of the Millennial generation (Howe & Strauss, 2000) whose exposure to technology, and preferences for technology applications, may be very different from the education professionals who may be making decisions about their IEPs. Millennials, or those children born between 1978 and 1982, have been described have having many characteristics that make them strikingly different from teachers working with them who may be from different generations (e.g., Gen Xers, Baby Boomers; Raines, 2001; Tapscott, 1998). A particularly noticeable difference between Millennial children and persons from preceding generations, is their perceptions of and experiences with technology across the developmental period. Exposure to and use of technology by these students is deeply embedded in the behavior and cultural values of these children. Whereas, many current education professionals have had to accommodate to technology, that is, learning in later life how it works and how it may be effectively used, Millennial children have grown up with technology, assimilating its use (Tapscott), and learning to use it far more quickly than people from preceding generations. This disparity between familiarity with and adeptness in using technology has been noted: "As with people without disabilities, there is certainly a generational gap related to technology use, particularly computer use, with younger generations adopting and using the technology more rapidly" (Mike Wehmeyer, personal communication, April 2, 2004). Millennial children, including students with mild disabilities, have grown up in a world surrounded by varying technologies (e.g., computers; multimedia; cell phones; video games) and such exposure has shaped their

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preferences and expectations markedly. They are comfortable with using technology, and see it as a means to remain connected to the world around them (Raines).

Unfortunately, little is known about the technology use patterns and preferences of students with mild disabilities (Parette, 2004; Peterson-Karlan & Parette, 2005). Longitudinal analyses of technology use patterns of Millennials have revealed differential and growing usage of an array of technology on a daily basis (Miller & Norton, 2003; Tapscott, 1998). Similarly, studies have shown higher technology abandonment rates for school devices (that may be outmoded, such as tape recorders) among older students with disabilities (Riemer-Reiss & Wacker, 1999), along with disparate rates of computer and Internet use when comparing typical peers and persons with disabilities (cf., DeBell & Chapman, 2001; Kaye, 2000). More generally, however, technology use is deeply embedded in the lives of Millennial children on a regular basis, and in ways that are not completely understood by today’s education professionals (Parette).

Lack of understanding regarding technology use patterns and preferences of students with disabilities is further complicated by the lack of wide-scale application of universal design for learning (UDL) principles (Center for Applied Special Technology, 1999-2004; Rose & Meyer, 2000). The focus of UDL is on creating learning environments where students “have access to the learning itself, that they experience changes in their knowledge and skills and that they grow in their capacity to learn” (Rose & Meyer, p. 68).

If, in fact, education professionals are insensitive to the preferred technologies that students with disabilities may currently demonstrate that can facilitate their learning and increase their access to the general education curriculum, they may inadvertently be inhibiting optimal learning experiences for these students. One recent approach to addressing such concerns has been development of a technology ‘toolkit’, i.e., compilations of an array of technology devices having broad applicability to many students with mild disabilities in a particular classroom (Edyburn, 2000; Parette & Wojcik, 2004; Puckett, 2004; Watts, Thompson, & Wojcik, 2004). For example, Parette and Wojcik described specific categories in which technology held potential utility to increase access to the general education curriculum and facilitate learning for students with mental retardation. Puckett described an approach to identifying software, equipment, and strategies to support students with mild disabilities in general education standards in math and language arts. Other studies have been conducted to develop toolkits for students with severe disabilities (Heart of Illinois Low Incidence Association Resource Academy, 2004), develop skills in literacy (Fonner & Marfilius, 2005), and create broad toolkits having applicability to a diverse range of students (George, Fulcher, & Nichols, 2001; Lahm, Bell, & Blackhurst, 2002). Such efforts reflect a movement toward better understanding the relationship between specific technology applications and positive classroom outcomes among students with disabilities.

Based on experiences of the authors of this article with regard to toolkit development and its applications in classroom settings, a range of technology devices have been identified that hold particular promise both from a UDL perspective, as well as a cultural perspective (i.e., sensitivity to Millennial children and preferences they may have for devices). We have termed these devices ‘cool’, or having appeal to current school-age students with mild disabilities given both their design and appearance, but their potential to facilitate learning and acceptance by typical peers who also use an array of technology solutions in their daily lives.

What’s Cool

In making decisions about the preferences of students with mild disabilities for specific types of technologies, multiple perspectives must be given consideration. First, the student’s perceptions of particular devices and their utility have to be considered. While research has yet to systematically examine student-perceived success in classrooms as a function of particular technology use, inferences have typically been drawn based on decisions made by education professionals and families in developing IEPs.
Cool Tools that May Assist in Writing

Students with mild disabilities often experience difficulty with one or more aspects of the writing process (Behrmann & Jerome, 2002). Conveying ideas using written language often presents challenges to students with mild disabilities (Johnson & Myklebust, 1967; Myklebust, 1973; Poplin, Gray, Larsen, Bankowski, & Mehring, 1980). Overall production may also be impeded. Students are frequently unable to write their thoughts quickly enough (De La Paz & Graham, 1995) which may limit the amount of ideas the student is actually able to commit to print. Graham, (1990) also noted that some students with mild disabilities experienced difficulty with text production skills as the mechanics of writing interfered with both the quantity and quality of their writing. “For individuals with learning disabilities, composing orally may allow them to circumvent transcription or text production problems (e.g., handwriting, spelling, and punctuation), which in turn may allow greater focus on higher-order concerns such as planning and content generation” (De La Paz, 1999, p. 173). All of these factors interfere with the writing process.

Low-Tech Solutions

There are a number of currently available technology-based tools that hold promise for assisting students with mild disabilities in the writing process. When looking at students who have difficulty with the mechanical process of writing, many low-tech solutions are available. Generally, low-tech solutions include devices that are easy to use, inexpensive, are widely available, and require little training to use effectively (Parette, 2005; Parette & Brotherson, 2004). Examples of low-tech solutions that can assist students with writing include pencil grips, raised line paper, and line guides, such as those available from Onion Mountain Technology, Inc (http://www.onionmountaintech.com/).

Portable Word Processors

Many students with mild disabilities tend to find it easier to type than to write using long-hand. One tool that has tremendous power to assist in this process is a portable word processor, also known as a portable keyboarding device. Russell, Bebell, Cowan, and Corbelli, (2002) found that when students used portable word processors in the classroom, the quantity and quality of their writing significantly increased. Portable word processors offer many of the same features included in typical word processing programs, e.g., spell check; editing tools (cut, copy and paste); and saving drafts for later revision. Compared to a laptop, which is typically quite expensive and often heavy to transport across environmental settings, portable word processors are relatively inexpensive and usually are powered with common battery types, although some are rechargeable. Many portable word processors allow content to be saved and filed within the unit and later printed directly to a printer or transferred to a computer for further editing. Some portable word processors, such as those marketed by Alphasmart® (e.g., Alphasmart 3000 and Neo, http://www.alphasmart.com) allow add-on applications that can be installed and provide additional assistance the student. Some of these applications allow the student to download worksheets directly into the unit so that the student may type his or her answers. Other portable word processors, like the Alphasmart® Dana operate using the Palm Operating System® allowing for increased functionality incorporating many different applications beyond word processing, e.g., date book management, calculators, and contact lists.

Talking Word Processors

Talking word processors are also useful tools to assist students with mild disabilities in the writing process. Talking word processors produce computer generated speech that corresponds to the text entered by the student. Speech may be generated after each letter, word, sentence or paragraph that is entered. This speech feedback has been proven helpful in assisting students to produce less spelling errors in their final products (Schlosser, Blischak, Belfiore, Bartley, & Barnett, 1998) as well as assisting in the revision and editing process (MacArthur, 1996).

Many talking word processors also provide talking spell checkers. When conducting a
spell check, a student is typically presented with a list of words that are possible corrections to an incorrectly spelled word. Talking spell checkers allow the student to hear each of the words presented in the correction list, thus increasing the chance that the student will choose the correct word from the list by reducing the demand of decoding each of the words presented (Lewis, 1998).

**Word Prediction Programs**

Another useful category of tools that can assist in the writing process is word prediction programs. These programs apply complex algorithms including variables such as spelling rules, phonic rules, and/or grammar rules to predict what the student may write. Based on text entered by the student, word prediction programs provide a list of most probable words that the student may need next in his or her writing. Word prediction programs have been found to assist the student in generating text with less spelling errors (Minas, Biros, & Burenstein, 1995; Lewis, 1998; MacArthur, 1996, 1998a, 1998b). It is important to note that the algorithms used in various word processing programs are not identical (Marfilius & Fonner, 2003). In other words, some word prediction programs employ algorithms that depend solely on spelling rules while others take a more comprehensive approach incorporating multiple rules sets related to writing.

**Computer Based Organizational Tools**

Adding to our toolkit on writing, there are a number of tools that can assist students with the organization of their writing (Behrmann & Jerome, 2002). These tools employ research-driven practices, such as semantic webbing, to allow the student to visually plan and manipulate the content of his or her writing. Some tools, such as Inspiration and Kidspiration software distributed by Inspiration® Software, Inc., (http://www.inspiration.com) provide supports using visual semantic webs which can also be viewed as an outline. Other tools like Draft:Builder® marketed by Don Johnston, Inc. (http://www.donjohnston.com) and Writer’s Companion™ (http://www.writerscomp.com), provide additional scaffolding leading the student from the planning phases to a completed draft of his or her writing.

**Speech Recognition**

Speech recognition technology has improved greatly over the last decade and has become more accessible as well. Speech recognition programs allow a student to directly dictate into a word processing application. As the student dictates, his or her speech is converted into editable text. Some research suggests that speech recognition programs may allow students to better convey their thoughts by reducing the physical writing demands of traditional handwriting (De La Paz, 1999). Other studies have shown that overall written product tends to be of higher quality using speech recognition when compared to other methods of writing (Higgins & Raskind, 1995) and may even have added benefits in the areas of spelling skills and reading (Higgins & Raskind, 2000). Speech recognition programs may be (a) add-on programs working jointly with a standard word processor; or (b) included with the word processing software itself, e.g., Microsoft® Office Word XP and Microsoft® Office Word 2003 (http://www.microsoft.com).

**Cool Tools that May Assist in Reading**

A majority of students identified with mild disabilities have their primary academic difficulties in the area of reading (Bender, 2004; Katims, 2000; Lerner, 2003). Many of the difficulties associated with reading include perceptual difficulties, decoding problems, and comprehension difficulties. Fortunately, there are a number of tools that can be added to a toolkit that can assist students with mild disabilities in the reading process. These include (a) low-tech reading tools, (b) audible text, (c) text-to-speech, and (d) symbol-supported text.

**Low-Tech Reading Tools**

A number of low-tech tools are available to assist students with mild disabilities with reading. For example, students who experience difficulties with tracking may benefit from a line guide provided by a simple index card or...
a commercially made reading ruler. Magnification devices enable print size to be increased, thus facilitating the reading process for those students requiring larger print. Finally, tools such as color acetate overlays may adjust the contrast in which the text is presented allowing students to better access the print.

Audible Text

Audible text conveys printed text in an auditory form. Audible text supports reading by supplementing the text with the opportunity to ‘read along’ or by supplanting the printed version completely, thereby allowing the student to capitalize on existing auditory comprehension strengths. In either case, audible text has been found to increase overall comprehension of text (Sudzina & Foreman, 1990). Books on tape can be accessed from Recordings for the Blind and Dyslexic® (RFB&D, http://www.rfbd.org/) and the National Library Service for the Blind and Physically Handicapped (NLS, http://www.loc.gov/nls/) in the Library of Congress. Taped textbooks are available from RFB&D, while taped leisure-reading books and magazines can be obtained from NLS. Taped books from these sources are available on loan and must be played on specially designed tape-recorders that also can be borrowed. Many trade books and school publications are now also being published in an auditory format either on tape or CD. Furthermore, services like Audible.com® (http://www.audible.com) provides entire books in auditory form that can be downloaded from the Internet and then played on a computer, transferred to an MP3 player, or even burned to CD and played on any radio having a CD player.

Text-to-Speech

Text-to-speech (TTS) may be considered a subcategory of audible text. These applications are computer software programs that generate synthesized speech based on digital text that may (a) assist students in better attending to the text presented (Hecker, Burns, Elkind, Elkind, & Katz, 2002), and (b) have a positive impact on comprehension (Scrase, 1997). The features associated with TTS applications are widely varied. One example of TTS is ReadPlease (http://www.readplease.com), a free application that will read any text that is pasted into the application by the student. Font size, the rate at which the text is read, and the voice that is used to read the text is all user-controlled.

Other TTS applications allow a student to scan printed text and then have the text displayed on the computer screen accompanied with synthesized speech output from the computer. The process by which this conversion from printed text to digital text occurs is called Optical Character Recognition (OCR). Examples of TTS applications that integrate OCR into their system include (a) WYNNTM (http://www.freeds.com/WYNN/index.asp), (b) Kurzweil, 3000 for Windows® (http://www.kurzweiledu.com/products_k3000win.asp), and (c) Text Help! Read and Write Gold (http://www.texthelp.com).

Other TTS applications, such as Text Aloud (www.nextup.com) allow a student to convert digital text into a portable MP3 file that reads the text using synthesized speech. Finally, some TTS applications can be found on dedicated devices, or those designed for a specific purpose. Such is the case of the Reading Pen II and Quicktionary Pen marketed by Wizcom Technologies Ltd. (http://www.wizcom.com). Both of these devices are hand-held scanners that will read back one or more words scanned into them. The Quicktionary pen also has the added feature of accessing dictionary definitions that may also be read back to the student.

Symbol-Supported Text

Use of pictures to support the decoding of text has been applied to assist students in the reading process. A few technologies on the market support this process for students with mild disabilities. For example, BoardMaker (http://www.mayer-johnson.com) is a software program having an extensive searchable library of symbols paired with text. Symbol-text pairs can be positioned together to create sentences. Writing with Symbols 2000™ (http://www.mayer-johnson.com) is a symbol word processor that allows a person to type and automatically have symbols appear either above or below the words that are typed.
Finally, Slater Software, Inc. distributes PixWriter (http://www.slatersoftware.com) that allows text to be parsed with symbols creating strings of symbol-supported text.

**Cool Tools that May Assist in Math**

Tools to support students with mild disabilities in the area of mathematics may be the most underdeveloped set of toolkit technologies that have been given consideration by special education professionals (Wojcik, 2004). However, experiences of the authors have shown that there are several tools that may support students with mild disabilities effectively in the areas of (a) electronic worksheets, (b) electronic measuring tools, and (c) calculators. Each of these is described in the following section.

**Electronic Worksheets**

Electronic worksheets allow students to engage in mathematical processes in a computer based virtual environment. For example, Intellitools® distributes Mathpad™ (http://www.intellitools.com), a software program that allows students to set up and solve various mathematical algorithms (e.g., addition and subtraction) within a computer-based workspace. This workspace promotes alignment of columns appropriately, as well as making notations for operations like ‘carrying over’ and ‘regrouping’.

Inspiration® Software, Inc., markets Inspiration® and Kidspiration® (http://www.inspiration.com) that allow students to use a virtual environment to manipulate objects on screen to solve math problems. Finally, software applications like Intellimathics® (http://www.intellitools.com) also allow students to move manipulate virtual objects, but also allow the virtual environment to provide feedback, e.g., summation and feedback on various attributes of the manipulatives.

**Electronic Measuring Tools**

Some students with mild disabilities may have difficulty using traditional measuring tools because of the way the measuring tools are read. Small measuring marks and small numbers may be difficult to perceive and/or interpret correctly. Within the past decade, a number of tools have been developed, many available through local hardware stores, to assist in this process. For example, tape measures with digital read outs allow students to measure items just as they would with a typical tape measure. However, instead of reading the measurement on the actual tape part of the device, a digital read out provides the measurement. The display can often be toggled to show different units (inches vs. feet) or different measurement systems (British vs. Metric). Some measuring devices employ a laser to gauge the distance between the device and a specific object or location. In addition, there are number of these devices that have speech output as well as digital output.

**Calculators**

Calculators are perhaps the most common mathematical technology tools used in the classroom. However, a range of calculator options must be considered before choosing an appropriate calculator for a student with mild disabilities. Standard calculators offer support in mathematical computation, and vary both in shape and size while offering a variety of display options.

Talking calculators provide speech feedback with relation to the keys pressed and the final answer provided. Some talking calculators provide answers as they would be read. For example, the number ‘101’ would be read as ‘one hundred one.’ Other calculators read answers as a string of individual digits where ‘101’ would be read as ‘one zero one.’ Some students with mild disabilities may benefit more from one of these styles over the other.

Specialized calculators have limited scope of performance but are designed to assist with particular mathematical tasks. For example, the Attainment Company, Inc. (http://www.attainmentcompany.com/) has developed the Coin-u-Lator that is designed with realistic looking buttons corresponding to quarters, dimes, nickels, and pennies. By sliding a switch and pressing the appropriate buttons, students are able to either add or subtract monetary values.

Finally, there are a number of software-based calculators having other unique features that would be helpful for students.
with mild disabilities. The calculator collection from Edmark software (http://www.riverdeep.com) has features that allow students to retrieve information about numbers such as whether a number is prime or composite, odd or even, and its factors and multiples. It also allows for graphic displays of fractions and currency. The algebra calculator, also from Edmark software, allows students to (a) enter an algebraic expression with a single variable, (b) enter a value for the variable, and (c) evaluate the expression using the entered value. The algebra calculator also shows all of the steps necessary to evaluate the expression.

Cool Tools that May Assist in Memory and Organization

Memory and organization often pose difficulties for students with mild disabilities (Behrmann & Jerome, 2002; Edyburn, 2000). Particular problems encountered in this area may be grouped in three main categories: (a) physical organization, (b) procedural organization, and (c) temporal organization (Wojcik, 2004). Physical organization refers to a system of organization used by the student. This system may include such low-tech tools as manila folders, binders, slotted pouches, and other like items. Procedural organization refers to actually using one’s organization system. This might include such actions as immediately placing homework assignments into folders corresponding to relevant academic subject areas so that it could easily be retrieved on returning home. Temporal organization refers to organizing oneself in relation to time. This would include being able to prioritize tasks in such a way that each task is completed by the time they are due. In looking at technology tools for organization, there are many low-tech solutions, such as materials commonly available at local office supply stores (e.g., folders, binders, filing systems, labeling systems, etc.). However, there are also a variety of powerful higher technology tools that can assist students with mild disabilities, including (a) electronic organizational tools, (b) Web organizational resources, and (c) hand-held tools. Each of these is discussed in the following sections.

Electronic Organizational Tools

Electronic organizational tools include set of devices that assist in one or more aspects of organization. Tools such as the StepPad (http://www.attainmentcompany.com/) or the Step by Step (www.ablenet.com) allow voiced messages to be recorded in a sequence. The voiced messages are played back in the same sequence in which they were recorded. This can be very helpful for students who have difficulty remembering a sequence of steps for a given task. Other devices like the TimePad (www.attainmentinc.com) allow voiced messages to be recorded and delivered back at a specific time which can be helpful for student who need reminders at specific times throughout the day. Simple tape recorders or digital voice recorders can aid a student by allowing recording of reminders for an audio ‘to do list’.

Web Organizational Resources

There are a number of personal information management systems on the World Wide Web that can be assistance to students with mild disabilities (Edyburn, 2000). One such tool is MyYahoo!® (http://www.yahoo.com). Although not a unique service as similar services exist from MSN, there are features existent in these services that may be very helpful. For example, MyYahoo!® provides an online calendar. This calendar can be accessed from any location with Internet access. It also generates a daily event list that can be accessed on the web and/or by email and may be printed for access away from the Internet. The calendar function may help students organize assignments and other events. MyYahoo!® also provides a briefcase function that allows students to upload and store files. This feature provides a way for students to have a ‘virtual backpack’ allowing them to access and download files on which they are working. Again, these files can be accessed from any place in which internet access is available.

Handheld Devices

Handheld devices provide a portable way of storing and retrieving vast amounts of information. Most handheld devices, regardless of
operating system, automatically come outfitted with basic personal information management applications like a date book, contact list, and note taker. These applications often require individuals to be able to input the information and then read it at a later time when the individual need to retrieve the information. This can cause some issues for some students who have difficulties for written expression or reading. However, some companies like AbleLink Technologies (http://www.ablelinktech.com) have developed applications that can assist individuals by creating picture and speech-based reminders. These reminders may take the form of a step-by-step task list, or may be a time delivered message that combines picture, text and speech cues. These applications have been found helpful in assisting individuals with disabilities in completing tasks and managing events in their lives (Davies, Stock, & Wehmeyer, 2002a, 2002b).

Cool Technologies That are Up and Coming

While many technologies already exist that may assist students with mild disabilities, there are many new technologies being developed daily. Not surprisingly, many of these technologies involve the Internet or some other form of networking. Four technologies that are important to note as holding great potential for students with mild disabilities include (a) blogs, (b) Wikis, (c) Webcollaborator, and (d) RSS Site Summary.

Blogs

Abbreviated from the term ‘web logs’, a blog is defined as “a frequent, chronological publication of personal thoughts and Web links” (Blog definition, 2004). Blogs allow students to post textual content to a public space, and are hosted by a number of services such as Bloglines (http://www.bloglines.com) or Blogger (http://www.blogger.com). Any post to a blog by a student can have the option to have comments posted related to the student’s post. This can be helpful in a number of ways. A blog can serve as a (a) common place for questions and answers, (b) way to do dialogue journals, or (c) way to collect and aggregate information when doing research. Since the blog is on the Web, it can be accessed and modified from any location having Internet access.

Wikis

Another powerful emerging technology that holds great promise for students with mild disabilities are Wikis. A Wiki is “a piece of server software that allows users to freely create and edit Web page content using any Web browser” (What is Wiki, 2002). Since Wikis are collaboratively built live web pages (see e.g., Wikipedia, http://www.wikipedia.com, an online collaboratively built encyclopedia), they may be especially helpful in assisting students with mild disabilities complete a collaborative writing project in which peers and the teacher can provide feedback.

WebCollaborator

WebCollaborator (www.webcollaborator.com) is a free technology that uses a Wiki as its core that (a) coordinates collaborations automatically, (b) keeps backups of every revision ever made to a project, (c) allows users to see who made changes to a collaboratively created project, and (d) allows users to privatize their collaborative space by only letting permitted individuals access the document. WebCollaborator automatically saves the changes in separate version files that can be accessed at any time. Again, this provides a common space for students and teachers to discuss and revise writing. This can also be an interactive place for teachers and students to communicate for a dynamic ‘to do’ list. Literally, the possibilities for classroom applications are constrained only by one’s imagination.

RSS Site Summary

RSS (RDF Site Summary; formerly called Rich Site Summary) is defined as a method of describing news and other Web content that is available distribution or syndication from an online publisher to Web users (RSS, 2001-2004). More generally, RSS stands for “really simple syndication,” and provides a means for Websites desiring to ‘publish’ some of its content (e.g., news headlines or stories, discussion forum excerpts, software announcements,
and any form of content retrievable with a URL) by simply creating a description of the content and specifically where the content is on its site in the form of an RSS document. The publishing site then registers its RSS document with one of several existing directories of RSS publishers. A user with a Web browser or a special program that can read RSS-distributed content can read periodically-provided distributions (RSS).

Many websites are now publishing RSS feeds which are XML based information lists that are updated as the website is updated. An RSS reader interprets and displays the RSS feed allowing the student to view a condensed list of topic specific information that is recent in nature. Since the information is already compiled in one place, this reduces the amount of text a student would need to sift through on a given topic. Since RSS feeds, by their nature, are updated as new content are added and are, therefore, always presenting new information, some RSS feeders will aggregate new postings over a period of a few days and others will only show the RSS feed that is current for the website.

Conclusion

Advances in technology and decreases in general cost to consumers will insure that such supportive and cool technologies as discussed above will continue to emerge. These will add to and change the potential of our ‘toolkit’ to benefit students with learning and academic disabilities. But potential will be realized only if certain key issues are addressed. First and foremost, research examining the educational outcomes of technology use is needed to confirm the educational benefit suggested by the initial studies. Designs which permit the direct measurement of technology-enabled versus non-technology enabled educational outcomes (Smith, 2000) on (a) curriculum-based measures (Center for Applied Special Technology, 2002; Hall & Mengel, 2003); (b) classroom performance (e.g., work completion, homework submission, quantity of work); (c) classroom-based evaluation (e.g., exams, writing samples, reports, projects); and (d) performance on standards-based district and state educational progress assessments.

In parallel with educational outcomes, the preferences of Millennial generation students for these existing and emergent technologies must also be determined. At the elementary school level, it might be assumed that functionality and improved educational performance would trump cool and, further, that as students approach adolescence cool trumps function, but it is unknown at this point when cosmesis, the self-perceived acceptability to others (King, 1999), actually influences the acceptance, rejection or abandonment of beneficial technologies.

Interacting with students’ perceptions of the acceptability of using the technology may be the visibility (King, 1999) of the technology, i.e., the obviousness of its use as a disability-related product. Audio text delivered via the same MP3 player used by peers to listen to their music would be virtually invisible; recordings for the blind accessed through variable speed tape recorders would be highly visible. The portable keyboarding device, while effective and efficient for reducing the demands of handwriting may be rejected or abandoned by the pre- or early adolescent because it is visible and perceived to be unacceptable only to become acceptable again later. Only longitudinal research into patterns of rejection and abandonment (and perhaps later ‘reinstatement’) can address these speculative developmental concerns.

To realize the potential of cool technology, the adults who educate these students must also embrace and use them. As a start, the use of such technologies as presented here must be permissible and acceptable to both special education and general education teachers, and, it is already known that there are differences in the way that adaptations and accommodations are deemed permissible and acceptable (Scott, Vitale, & Masten, 1998). Two factors that may affect such decisions are the familiarity of the teacher with technology and the perceived role of the technology. Research is needed that will clarify the role familiarity and general competence with technology has upon acceptance and permissibility; such research, should examine the generational influences among younger and older teachers.

As the boundaries between assistive and educational technology become blurred, another permissibility issue that is emerging is
the role of technology. Instructional or remedial technologies are those that are used to develop skills among students, while compensatory technologies are those that produce enhancement of function possible over the life span (Edyburn, 2002). While it might be speculated that at the elementary grade levels, and possibly up into early middle school, that technologies for writing, reading and math, are acceptable and permissible because they are seen as more clearly having an instructional or remedial role; the status of such technologies for compensatory use at the secondary level are not yet known. Thus, the potential for educational benefit may be lost if the use of the technology is discouraged or rejected in or outside of the resource room as being an “unfair advantage” to the student with learning or academic disabilities.

We feel that the cool technologies discussed herein hold great potential to contribute to the optimal academic success for many students with mild disabilities in classroom settings nationwide. However, much remains to be done by both practitioners and researchers to fully understand the roles of newly emerging technologies in academic settings, as well as the outcomes of their implementation.

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References


