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Abstract

Little is known about how children with autism spectrum disorder (ASD) experience reading instruction in the context of a natural learning environment. This qualitative study centered on three students with ASD who received reading instruction primarily in the general education classroom setting. Observation, interview, and archival data were collected and analyzed to learn how students with ASD engaged in reading instruction and responded to teacher strategies employed to facilitate learning. Findings describe the strengths shown and challenges experienced by children with ASD during literacy instruction. Limited exposure to systematic comprehension instruction hindered the literacy acquisition of learners ASD. Implications for general and special educators are described.

Keywords

autism spectrum disorder, autism, Asperger syndrome, reading, reading instruction

The emerging literature base on the reading development of children with autism spectrum disorder (ASD) has described a number of children who effectively decode but struggle with language and reading comprehension (Calhoun, 2001; Mayes & Calhoun 2003a, 2003b; Nation, Clarke, Wright, & Williams, 2006). Because autism is a spectrum disorder, language and cognitive development among children with ASD is highly variable. It is therefore not surprising that literacy and reading skills also vary among individuals with ASD. For example, in addition to difficulty acquiring language and reading comprehension, some children with ASD may have trouble developing decoding skills necessary to master the mechanics of reading, and still others may be unable to complete subtests on some standardized reading measures, making it difficult to discern their actual reading abilities (Mayes & Calhoun, 2003a, 2003b; Nation et al., 2006). Moreover, children with Asperger syndrome may develop grade-level or better decoding skills and demonstrate an ability to comprehend factual information but experience difficulty making inferences (Griswold, Barnhill, Myles, Hagiwara, & Simpson, 2002; Myles et al., 2002). This inconsistency demonstrates the heterogeneity typifying reading proficiency across the autism spectrum (Mayes & Calhoun, 2003a, 2003b; Nation et al., 2006).

Despite variation in reading development associated with ASD, studies consistently show that students with ASD who

are able to read frequently have difficulty interpreting text (Mayes & Calhoun, 2003a; 2003b; Nation et al., 2006; Wahlberg & Magliano, 2004). Preliminary evidence correlates the poor performance of children with ASD on reading comprehension measures with low scores on measures of vocabulary and oral language comprehension (Nation et al., 2006).

The No Child Left Behind Act of 2001 (NCLB, 2001) and Individuals With Disabilities Education Improvement Act (IDEA, 2004) 2004 require that all children receive evidence-based reading instruction consistent with the findings from the National Reading Panel (NRP; National Institute of Child Health and Human Development [NICHD], 2000), which includes the following essential components of reading: phonemic awareness, phonics, oral reading fluency, vocabulary, and comprehension strategies (NCLB, 2001). Emerging evidence indicates that children with ASD can benefit from reading instruction consistent with NRP recommendations, yet such studies are limited

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Table 1. Description of Participants With Autism Spectrum Disorder

Student	Gender	Diagnosis	Setting/Description
Jasmine, age 5, kindergarten	Female	Autism	Received education in an inclusive kindergarten classroom and resource room for reading; services in speech and occupational therapy; previously suspended for issues related to behavior; performed on grade level or above academically; used some conventional speech and some echolalia (e.g., repeating teacher directions, information from videos); grade-equivalent score of 2.0 on <i>Phonological Awareness Literacy Screening (PALS)</i> ; individualized education program (IEP) goals related to comprehension and writing (e.g., making predictions, retelling, story grammar)
Alex, age 7, second grade	Male	Asperger syndrome	Fully included in the general education second-grade classroom; services in speech, language, and occupational therapy; rarely initiated to participate in discussions; IEP indicates strengths in reading high-frequency words and making self-corrections following misreading but difficulty with comprehension; goals include maintaining focus, handwriting, participating in class discussions, organizing materials, and responding to literature; IEP also noted need for a lot of movement, breaks in school day are helpful, and social stories; PALS grade equivalent score of 2.0
Brad, age 10, fifth grade	Male	Autism	Fully included in his fifth-grade class; services for speech and language; performed on or above grade level in most academic areas; showed anxiety related to fire alarms and often talked about selective topics of interest; math was a strength; <i>Woodcock Johnson III Tests of Achievement</i> Broad Reading Score = 103; IEP goals related to reading comprehension; IEP indicated need for preferred seating, small group reading, study guides, daily planner, a buddy, and positive feedback.

in number and scope (for reviews, see Chiang & Lin, 2007; Whalon, Al Otaiba, & Delano, 2009).

Given the intricate relationship between language and reading development along with the complexity of ASD, more research is needed to gain a better understanding of how individuals with various characteristics spanning the autism spectrum engage reading instruction. Studies documenting the performance of children with ASD on available standardized reading measures reveal variation in reading ability across the autism spectrum, but little is known about how this population of learners experiences reading in the context of a natural learning environment. Therefore, the purpose of this study was to analyze a subset of data collected during a larger qualitative study of three elementary school students with ASD to explore how they engage and participate in daily reading and language arts instruction as well as respond to teacher strategies to facilitate learning. The larger study focused more broadly on investigating the instructional context of the general education classroom for students with ASD, whereas this discussion centers on student and teacher navigation of reading and language arts activities.

Method

Participants and Setting

This study took place in a suburban elementary school in the mid-Atlantic region. Three children with ASD participated. Table 1 provides a brief description of each child.

All children had a diagnosis of an ASD and were described by their teachers as “high functioning.” Each participant received his or her education primarily in a general education class setting; one received supplemental reading instruction in a resource room setting.

Data Collection

Data collection for this study occurred over a 7-month period and comprised three components: (a) classroom observations of target students’ literacy-related instruction in inclusive and resource room settings, (b) teacher and student interviews, and (c) inspection and analysis of student archival records. Field notes and transcribed videotapes of observations served as the primary method of data collection. Interviews and document analysis were completed to complement, clarify, and provide greater depth to observational data.

Observations were conducted in each participant’s reading and language arts classroom(s) and were videotaped. Activities that qualified as reading and language arts instruction differed by grade. That is, in kindergarten instances pertaining to reading and literacy development included circle time activities that targeted language and early reading skills (e.g., circle time, sharing, letter and word identification) as well as instruction around text (e.g., word identification while reading connected text, reading aloud, silent reading, and teacher questions related to text). In second grade, observations were conducted during reading and language arts lessons that addressed decoding skills, understanding

connected text, and writing (e.g., phonics instruction, reading aloud, silent reading, vocabulary, teacher questions pertaining to connected text, and writing). In fifth grade, observations involved reading connected text, and writing (e.g., reading aloud, silent reading, dictionary work, teacher questions about text read, reciting poetry, and writing). Each observation was conducted for the full length of the lesson and varied by participant, with the shortest observation lasting 20 min (in kindergarten) and the longest lasting 58 min ($M = 36$ min).

During observations, descriptive and extensive field notes were taken to include a description of the physical surroundings, instructional activities, participant behaviors, and interactions that took place. Field notes were recorded verbatim whenever possible (Spradley, 1980). Classroom activities were recorded using concrete language to provide a clear account of what took place, while the observer's own feelings, reactions, and reflections about what was observed were recorded separately in memos (Spradley, 1980). Immediately following the observation, we documented any additional preliminary interpretations or subtle behaviors garnered from the field notes. We typed field notes as soon as possible after the observation. After typing notes, we watched the videotapes of the individual observations and transcribed each verbatim to expand our initial notes (Spradley, 1980). The videotapes allowed for close analysis of language and paralinguistic information, and provided a forum for members of the research team to analyze specific incidents in the data and ensure all members were viewing and recording events with the same level of depth and breadth. We paid particular attention to teacher and student dialogue during academic lessons. In total, target students were observed 27 times, with 12 of those observations (4 of each student) conducted in reading and language arts settings.

Both interview and archival document data were gathered to augment observation data, providing greater depth and understanding of what was observed, as well as to verify or disconfirm ongoing interpretations in the analysis. Interviews were conducted both formally and informally with general education teachers and participants with ASD. All formal interviews consisted of a structured interview format with standardized questions and the opportunity to follow the lead of the interviewee and probe for greater detail, clarification, and/or member check interviewer interpretations as needed (Patton, 2002). Given the social nature of naturalistic inquiry, informal, spontaneous conversations occurred throughout the research. Immediately following these conversations, summaries were recorded in brief field notes or memos (Corbin & Strauss, 2007). Last, archival records contained in each participant's cumulative folder were inspected closely. These documents included psychoeducational data, reports of behavioral infraction and suspensions,

individualized education programs, report cards, and other test data.

Methods of data triangulation included data method, data source, and investigator triangulation (Patton, 2002). We included multiple methods of data collection (observational, interview, document analysis) and compared instances of data across and within each method. Investigator triangulation was accomplished by the ongoing collaboration of the research team who participated in both data collection and analysis. We discussed emerging interpretations as well as alternative explanations of the data at length and at regular intervals until consensus was reached. Last, member checking was conducted during interviews to elicit feedback regarding initial interpretations as well as to provide greater depth and detail (Schwandt, 2007). Any elaborations or clarifications were recorded in the data.

Data Analysis

All verbatim observation transcripts, interviews, and archival documents were reviewed for examples and/or episodes of reading and language arts activities. All data gathered were analyzed for concepts, context, and process using the constant comparative method (Corbin & Strauss, 2007). That is, each incident of behavior was coded and continually compared with other instances in the data for similarities and differences. By continually comparing specific incidents in the data, investigators refine identified concepts, explain their properties, and explore their relationship to one another. While engaged in this method, we documented the analytic process in memos (Corbin & Strauss, 2007). Specifically, memos were used to connect and elaborate on emerging concepts and conceptual understandings revealed in the data. Memos often included responses to researcher-generated questions about conditions under which concepts occurred, responses to like conditions, and consequences or outcomes of each (Corbin & Strauss, 2007). Namely, we considered actions, interactions, and responses, and looked for patterns identifying relationships among each in the data. Once themes emerged explaining these connections, we used memos and original data to fill in the details, generating a comprehensive account (Corbin & Strauss, 2007). Findings were integrated to form tentative explanations of how children with ASD experience literacy instruction in the general education context.

Results

Common themes emerged in the data across all participating students with ASD, but because participants represented a range of age and grade levels, the contexts in which each received reading and language and arts instruction differed. Accordingly, findings from the cross-case analysis are first

presented by theme. Next, the individual experiences of each child with ASD are presented in narrative cases. These cases are arranged thematically, include all data sources, and give the contextual details necessary to understand the uniqueness of each case (Patton, 2002).

From analysis of the data, six overarching themes emerged. Specifically, (a) *the observed curricular path from early to later elementary grades emphasized a progression from learning to read to reading to learn*. As a result, instruction in kindergarten emphasized decoding, whereas in later grades students were expected to read for meaning. (b) *Children with ASD had strengths and challenges related to reading development*. That is, participants showed strengths in decoding and difficulty with reading comprehension. Given the prerequisite communication skills required to participate in discussions about text, (c) *children with ASD required supports to engage in the social aspects of reading and language arts instruction*. Recognizing the need for supports, (d) *teachers attempted a variety of strategies using a process of trial and error*. Depending on instructional need, (e) *children with ASD were observed to initiate supports themselves during reading and language arts instruction*. Despite the use of supports, the limited use of explicit comprehension instruction was less conducive to the needs of children with ASD. As a result of the emphasis on learning to read in the early grades, reading instruction lacked a needed focus on comprehension. Therefore, (f) *reading and language arts instruction did not always reflect or meet the individual needs of the learner with ASD*.

Jasmine

Even as a kindergartner, Jasmine demonstrated a love for reading. She frequently sought out books, and teachers used books as rewards for her participation in other academic activities. When observed taking the *Phonological Awareness Literacy Screening* (PALS), Jasmine demonstrated her ability to hear sounds in words, spell, and identify individual sounds. For example, Jasmine completed an alliteration task with 100% accuracy (i.e., identified words with the same initial sounds). Moreover, her teacher noted that Jasmine was able to identify some advanced digraphs and diphthongs. During PALS testing, Jasmine indicated using magnetic letters that /ou/ and /ow/ represent the same sound. She also spelled words such as *out, down, dove, under, and over*. Jasmine was often observed reading *Clifford* books, and as she read she ran her finger across the page as she verbalized some of the words.

In terms of early reading development, Jasmine's skills surpassed her peers in a number of ways. For example, when referring to Jasmine's ability to decode text, her teacher noted that she was the "best reader in the class." In fact, peers were observed initiating toward Jasmine to hear

her read. Before circle time during one observation, students sat on the floor reading. Jasmine read a book quietly but aloud to herself. A boy approached and eventually sat beside Jasmine. Most of the students flipped through books and talked to each other, but Jasmine focused on reading. After the boy sat down, Jasmine continued to read aloud as the boy watched her and listened. A little girl came over and said something to the boy, and he replied, "I want to hear [Jasmine] read." Jasmine continued to read as they both listened. Then a third little girl sat down between Jasmine and the boy, and began talking. At this point Jasmine got up and moved to another part of the rug. In this instance, reading appeared to serve as a form of social support. Jasmine was also noted to use books to initiate conversations with others, including peers and the first author during her interview.

Classroom context. During observations of Jasmine's kindergarten classroom, the teacher emphasized early reading or literacy skills such as phonemic awareness, alphabet recognition, phonics, listening comprehension, and sight words. Time was also dedicated to language development through circle activities such as sharing, conversations about weather, and the like. Many of these whole-group discussions were fact based and included several environmental supports. Specifically, the teacher provided a number of visuals to support understanding of vocabulary and concepts (e.g., pictures representing sunny, windy, cloudy, snowy) and concrete representations of concepts through manipulatives (e.g., colored objects to show a pattern). Also, the teacher established a number of routines (e.g., circle time, centers, and transition activities), which provided a predictable structure so the children knew what to expect. Routines comprised verbal scripts as well as visual and written cues (i.e., signs with weather words and corresponding picture, days of the week cards, calendar, and morning message text) that indicated to the child what was expected and that provided Jasmine with an immediate way to communicate. The combination of these strategies appeared to assist Jasmine with participation.

The structure and supports provided by the kindergarten teacher capitalized on Jasmine's reading strengths and her comfort with structure and routine. Jasmine was often observed participating from a distance. That is, she showed attention and engagement by watching and smiling. At times she became animated with excitement by smiling, waving her hands, playing with her braids, or jumping as she watched the activities of circle time. Periodically, Jasmine physically removed herself from the circle and stood a few feet behind her peers but continued to demonstrate excitement related to the activity. Despite this physical distance, Jasmine's teacher did not assume that Jasmine was not attending during the discussion. In fact, her teacher acknowledged that she determined Jasmine's level of engagement by her ability to complete tasks as opposed to

her ability to participate through more traditional means. Jasmine's teacher explained, "She shows me she is participating by being able to do the task, not necessarily following directions." She described how in one instructional activity, Jasmine sat away from the group making words with magnetic letters as they learned about the life cycle of the butterfly. When asked to sequence the stages of the lifecycle, Jasmine was able to complete the task.

Classroom examples illustrating themes. Although Jasmine participated verbally less often than her peers, the structure and strategies employed by her teacher encouraged some verbal participation. Jasmine responded to visual and written cues more often than verbal. For example, one of the teacher's strategies involved sabotage, or showing students a word and asking them if it was a different word (e.g., "Is this Tuesday?" while holding a card that said Thursday). During such an activity, Jasmine became very animated and excited (e.g., smiling, jumping, shaking braids) and her participation increased, yet her response often differed from her peers. When the teacher asked, "Is this Tuesday?" the class responded by answering the question, "no." Jasmine provided an expanded response by reading the card, "That says Thursday." The teacher used sabotage often and Jasmine consistently responded to the yes-no prompt with, "That says . . ." Notably, after Jasmine replied using "That says . . ." once or twice during a single circle time session, her peers began responding similarly.

In addition, when having difficulty verbally contributing to an activity, Jasmine showed a desire to engage by invoking the circle time script. For example, on one occasion the teacher and students were working on the calendar and the teacher pointed to the text on the board that said, "Today is Day 2. We are going to computers." She then turned to address a behavior problem, and Jasmine immediately followed up with the script "Tomorrow will be . . ." The teacher then repeated and responded to Jasmine's initiation attempt, "Today is Day Number 2. We go to computers. Tomorrow where are we going to go, [Jasmine]?" Jasmine responded "library," and the teacher confirmed. Similarly, when Jasmine wanted to contribute to an activity, but was unsure how, she occasionally initiated using a script even if the scripted comment failed to reflect the context. For example, during a counting coins activity, the numbers change with the coins symbolically representing quantities, making the task symbolic and less concrete. During this activity there is less predictability, but Jasmine watched closely and remained engaged. Eventually she initiated part of the circle time script, "If today is Tuesday, then tomorrow is?"

In addition to taking advantage of teacher-provided supports, Jasmine found support within text. In one instance, Jasmine's teacher was absent and a substitute explained how to complete a math worksheet. Jasmine left the group and sat at a round table with an ABC book. Jeff, a peer, came over to the table to join Jasmine. As Jasmine began to read the book

aloud, "A, apple, /a/." Jeff repeated what Jasmine said, "A, apple, /a/." Jasmine looked at Jeff, turned the page to the letter B and said, "B, boy, /b/," and Jeff repeated. Jasmine looked back at him and said, "Let's do some colors" in a motivating teacher voice. She followed up with, "What color is the apple? What color is the boy? What color is the car?" as Jeff responded to each question. In a similar strategy, Jasmine used the structure of PALS testing to engage her teacher. After the teacher asked Jasmine to spell *down*, Jasmine spelled *dove* and tapped her teacher's hand and said, "Dove." The teacher replied with encouragement, "You're getting close. No we don't want dove. What comes after the o in down? What comes after the o?" Jasmine began playing with the letters and making *down* and the teacher said, "You're being silly with me aren't you?" Jasmine replied, "yeah" with a laugh. The teacher confirmed by asking Jasmine to spell *down* and she said, "d, o, w, n" as she constructed the word with magnetic letters.

Jasmine had a difficult time with the conversational aspects of language and with responding to teacher questions when required to spontaneously use language without concrete supports (e.g., text, visuals) or scripts. During such conversations, the teacher provided verbal scaffolding. For example, circle time began everyday with the helper from the previous class sharing with the group. When observed following the day Jasmine led the group, the teacher reminded students that Jasmine was their helper on Friday and asked Jasmine "Do you want to share something with us today?" Jasmine jumped up before the teacher could finish her question and responded, "Yes, yes!" The teacher began the conversation with an open-ended question, "What would you like to tell us?" as she looked expectantly at Jasmine. Clearly excited, Jasmine jumped up and down and replied, "I'd like to tell us something." Jasmine faced the teacher (with her back to the class), and the teacher encouraged her to share with the group, "Tell us something. Turn around so everybody can see you." Jasmine turned around, and placed her hands on her hips. To help Jasmine, the teacher began scaffolding through questioning, "What did you do this weekend?" Jasmine replied, "What I did this weekend?" Still excited about sharing with the class, Jasmine jumped up and down, shaking her hands in the air and smiling. The teacher scaffolded further by asking closed questions, "Did you play an instrument this weekend?" Jasmine replied, "Yes" she jumped up and down as if happy to share. The teacher followed up, "What instrument did you play?" As she jumped, Jasmine replied, "I played the clarinet." The teacher said, "Yes, what song do you play on the clarinet?" and Jasmine told the group, "I play Twinkle, Twinkle Little Star." The teacher then asked, "Do you play any other songs?" Jasmine confirmed, "Yes," and the teacher followed with "What songs?" Jasmine replied, "Other songs." The teacher supported Jasmine through the interaction, and

although Jasmine required supports, she remained engaged, clearly wanting to share with her peers.

In addition to the aforementioned emergent literacy activities, Jasmine also received reading instruction in a resource room setting. According to her teacher, Jasmine was pulled to benefit from small-group instruction. In this setting the focus was on early struggling readers and targeted word recognition. When observed, students were engaging in beginning letter–sound correspondence activities such as using magnetic letters to form their own names and reading highly decodable books (e.g., “I,” “run,” “stop”). This form of instruction seemed to disinterest Jasmine. When presented with a highly decodable book, she refused to participate by leaving the table and flopping to the floor. Once she was given a *Clifford* book (readability Grade 2), she sat at the table and read quietly. Unlike Jasmine, it was clear that the other students in the classroom needed direct instruction related to decoding and word recognition. As a result, there was no specific instruction targeting her instructional level, and Jasmine practiced reading independently.

Summary. The structure and delivery of a variety of kindergarten activities provided Jasmine with supports to immediately participate and allowed her to become more flexible with language as evidenced by her interactions with others during structured activities. Jasmine’s teacher employed a range of strategies to encourage her participation (e.g., routines, scripts, visual and concrete supports), and Jasmine utilized each strategy and occasionally initiated independently similar strategies. To participate in conversations without supports, Jasmine needed the verbal scaffolding from the teacher. Because responding to open-ended questions was problematic for Jasmine, some verbal scaffolds were reduced to closed or even yes–no questions.

Reading and language arts activities in this kindergarten classroom focused primarily on early literacy skills and less on skills related to comprehension. Jasmine’s teacher expressed Jasmine’s need for physical, hands-on activities of high interest. Such activities were noted to increase Jasmine’s participation and engagement in both interviews and observations. At the same time, Jasmine’s challenges with language comprehension place her at risk for later problems with reading comprehension. The de-emphasis on activities specifically addressing language and reading comprehension may actually be harmful to Jasmine as well as her peers, especially those with language difficulties. To illustrate, in one sharing session, Jasmine shared a book she created in November. In the book students wrote what they wanted to be when they grew up, and Jasmine wrote “a turkey.” The instructional emphasis on letter–sound recognition and decoding may not have been sufficient to support Jasmine’s learning, particularly in terms of comprehension building. Targeted instruction in specific, explicit comprehension strategies to support Jasmine’s language comprehension in the context of connected text may be necessary.

Alex

Alex demonstrated good decoding skills but problems related to reading comprehension and discussion of text. When reading aloud, Alex read quickly and with accuracy. He was also observed identifying digraphs (e.g., /kn/, /wr/, /gn/, /ph/). Alex’s teacher confirmed his difficulties with reading comprehension and suggested that a lot of his academic difficulties stemmed from his social difficulties and “feelings about himself.” Alex claimed to enjoy reading, saying, “I like reading,” and showed an interest in the subject. When his teacher prepared to read books aloud, Alex occasionally commented, “I read that yesterday, I’ve read that,” and “Oohh,” took an excited tone, often smiled, and at times raised his hands as in triumph or clapped. His teacher also reported that Alex enjoyed nonfiction text, but at times selected nonfiction material that was above his reading level.

Classroom context. In this second-grade classroom, observed reading instruction often targeted learning-to-read skills, but emphasis on comprehension increased from that observed in kindergarten. Teachers continued to provide instruction in phonics and spelling, but the skills were more advanced (e.g., digraphs and diphthongs). Alex’s teacher facilitated discussion based on the sounds heard in words read and letter combinations that make similar sounds. The teacher and students identified patterns in words and sorted words for phonetic patterns as well as common word endings. When having trouble sounding out words, the teacher often verbally cued students to use their phonics skills. Some instruction directly addressed vocabulary such as synonyms, antonyms, and homophones. The teacher provided definitions for words while reading aloud and occasionally provided visual representations of words less familiar to students. In the observed classroom, the teacher spent a lot of time reading trade books aloud, and students read independently and wrote often. Independent reading often included books from the Accelerated Reader (AR) program, or students selected a trade book from a bin containing books on their teacher identified reading level. In the AR program, students independently read books on their reading level and then took a multiple-choice test on the computer to assess their understanding of the story. Students earned points and traded points for prizes.

Classroom examples illustrating themes. During one observation, Alex completed an informal reading inventory with his teacher at a table while the class completed a writing assignment. The teacher began the inventory by telling Alex the title, “Sock Snatcher,” and providing a brief synopsis, “Tim and his family have a new puppy and suddenly everyone’s socks begin to disappear.” She then asked, “Who could the pesky sock snatcher be?” She used inflection in her voice to introduce the story. The story was about a new puppy who was upset that his owners had not given him a name. Because he was upset, he stole the family’s socks.

Alex read part of the story aloud and part silently. After reading, the teacher explained that Alex was to retell the story, reminding him to include the characters, setting, and events in sequential order. She then asked him if he remembered and he said, "Yes." Alex began to retell, "The girl was getting her socks and couldn't find her socks because the dog got them." The teacher followed up with some questions for specificity, "Who was the girl?" Alex replied, "I don't know." His teacher then asked, "Was she a neighbor?" Alex said, "No, she lived with them." The teacher queried again, "So, she's the what?" Alex replied, "The girl." Alex did not remember the names of the characters and he had trouble identifying the setting, "Where did the story take place?" Alex answered, "The socks." The teacher scaffolded through questioning to help Alex identify details from the story.

As Alex continued his retell, he said, "And dad was trying to look, I mean [shakes his head no], mom was trying to look for her sock and the girl got hers and then it was the boy, Tim." The teacher praised him for identifying the boy by name and then Alex continued, "The dog stole his football sock and then he came over to his bed and saw all the socks on his bed." The teacher continued to question Alex to help him remember that everyone in the family had a sock stolen and what kind of sock each character was missing. Then, she questioned the characters motive, "Why did puppy take the socks anyway?" Alex replied, "Because he wanted to play with something and he didn't know what to play with and then he found the socks." The teacher pointed out the paragraph in the reading that mentions the puppy did not have a name. She asked Alex to reread that paragraph. Alex reread aloud, and the teacher asked, "So why do you think puppy snatched the socks?" Alex replied while reading, "Their new puppy, um, um, they couldn't think of a name." The final question asked for a prediction, "At the end of the story the whole family was together, what do you think was going to happen next?" Alex replied, "He is going to try to take the shoes."

As this example illustrates, Alex clearly demonstrated difficulty with comprehension of text. On other occasions Alex struggled with AR tests (e.g., 5 of 10 correct) and was observed retaking AR tests. His teacher mentioned that Alex had a hard time with discussions around text, and she began asking him to "read a small amount and I wouldn't have him talk about it, but I'd have him draw about it . . . instead of having to talk, and then he could explain it to me." Although Alex was not observed drawing to support his discussion of text, he did use concrete supports provided by his teacher (e.g., visual models, pictures, word walls, and peer-modeled behaviors) to support discussions of text.

Alex often responded to information and questions literally. In a review of antonyms and synonyms, children had difficulty pronouncing the words (e.g., *cinnamon*). Because of their difficulty, the teacher referred to synonyms and antonyms as "crazy words." Alex queried, "Are they crazy?" In a separate observation, his literal interpretations were

supported through concrete pictures. When reading a book to introduce homonyms, the teacher read, "This is mommy. Mommy says she is a little hoarse and needs throat spray." The picture showed a little girl and her mommy, a horse, and Alex replied, "That's mom! What do they mean?" The teacher followed up by explaining the difference between *hoarse* and *horse* and writing the words on the board. Alex immediately began to understand the concept and really seemed to enjoy the book. When the teacher read about a boy who has "bear feet" and showed students the illustration of a boy with "bear" feet, Alex laughed out loud. The teacher asked what was meant, and Alex replied with the words "bare feet" in an excited tone. Although the listener failed to understand which *bare* or *bear* he implied, Alex continued to participate and showed understanding. Later, the teacher read, "I heard daddy talk about foot prince in the snow," and showed a picture of a prince rather than prints. She elaborated with a discussion of different kinds of prints, including footprints, thumbprints, and handprints, and Alex responded "or a print out of a printer." In these examples, the clear and outrageous visuals and Alex's understanding of the literal helped him learn a new concept—homonyms.

In addition to concrete pictures, Alex utilized other concrete supports provided by the teacher. For example, his teacher created a word wall, modeled how to complete activities and written products and posted them as examples, and supported verbal instructions or steps by writing them on the board. Alex consistently attended to each of these when working independently. This behavior was encouraged by the teacher to promote autonomy. In addition, the teacher used literature to introduce a variety of concepts and to support writing. When the teacher read aloud, the lessons were interactive, with the teacher asking questions and students commenting, responding in unison, and sharing emotion. Alex was less likely to participate in such interactions, yet he showed that he was engaged. When he did verbally participate it was through the assistance of the aforementioned concrete supports or by using his peers as models. For example, following teacher questions, students typically began raising their hands. Alex did not consistently raise his hand, but when he did, it was typically delayed. Alex noticeably looked at his peers raising their hands and then raised his hand. If called on, Alex generally responded correctly, but there were times that he did not answer the question or provided an incorrect response. The following example demonstrates Alex's use of a variety of supports.

When introducing a lesson on author's style, the teacher explained that students would write a story using the same "style" as the author of the book she would read. When the teacher picked up a book, all of the students responded with excitement including Alex who said, "I've read that!" The book was *Rosie's Walk*, and the teacher explained they would get the opportunity to write about their own walk. All students, including Alex, showed excitement. Alex smiled

and bounced up and down, and his peers smiled and talked about their excitement. The teacher said, you can write about your dog's walk and used her dog as an example, "Lucy's walk." Students offered ideas including dad's walk, mom's walk, bunny's walk, and so on. The majority of students showed enthusiasm by looking at each other and making comments, and Alex showed his interest by smiling, facing forward, and watching the teacher, but without adding to the dialogue.

The teacher continued to set the stage for the reading by requesting students pay close attention to the direction words such as *over*, *under*, *through*, and *across*. Then, she shared the cover with students and asked them about the setting. Students begin calling out "a farm." The teacher reminded them to raise their hand. After the reminder, Alex raised his hand, and the teacher called on him, "It's a farm." The teacher confirmed and pointed out that there was an enemy in the picture. Students began calling out, "a wolf." The teacher said, "no." More students volunteered, "a fox." The teacher explained that the fox is the enemy, and the funny part of the story is that Rosie never knows that the fox is after her as she walks. Alex did not participate by calling out but showed attending behaviors by watching the teacher and looking at the book. Then the teacher called on a student and asked, "Why would the fox be after Rosie?" The student replied, "Because the fox likes to eat eggs." Throughout the reading, the teacher noted the special direction words and at times students initiated by calling them out. In general, Alex watched without verbally participating. Moreover, the other students showed reaction to the story more often by putting their hands over their mouths to indicate excitement about what would happen next and making sounds indicating emotion after an event. Alex was noted to smile and attend but showed no visible or audible emotional reaction to the story.

After the reading, the teacher asked students to identify the direction words. Students began to raise their hands. Initially Alex did not raise his hand, but after a peer was called on and responded, it appeared that Alex looked around the group and raised his hand. When called on he said, "Under." A peer commented on his response: "Good." As the students called out the words, the teacher wrote them. At times she pointed out digraphs in the words. To prepare students for their writing activity, the teacher modeled writing the same story about the fox called *Rufus' Walk*. The teacher and students walked through the book together as the teacher wrote new sentences with the information dictated by the students. Students called out in unison and added their ideas, but Alex did not participate in conversation. He attended by watching his peers. When students returned to their desks to write their stories, Alex looked at the model provided by the teacher to write his story about "turtle."

Alex utilized a variety of strategies and was more likely to participate when interactions required students to raise

their hands rather than respond in unison. When conversations and support involved discourse without the use of concrete representations, Alex was less likely to participate. In an interview, Alex's teacher explained that he had difficulty contributing to discussion, saying, "I look to see if children are engaged in each other's conversations and listening—He really never showed that." To assist Alex, his teacher broke up reading in small segments and asked him to visualize what was read.

During one observation, the teacher read aloud *Punctuation Takes a Vacation*. In this story, different forms of punctuation describe their roles in written language. The book gradually becomes more abstract with fewer textual supports. Initially, the text provides greater cues, which were emphasized by the teacher as she read: "Is this the kind of thanks we get, asked a question mark?" The teacher asked students to identify the type of statement, and a student called out, "Oh it's a question." Then she read, "Well, huffed an exclamation point!" and students raised their hands to identify the statement as an exclamation. Alex did not participate verbally in the discussion, but he looked at the book and teacher as he pulled strings out of his socks.

Interestingly, as the book became more abstract with fewer textual supports and familiar forms of punctuation presented, student-initiated responses decreased. For example, in the book, the punctuation took a vacation and mailed letters back to the class. The teacher read the letters aloud, and students guessed what type of punctuation wrote the letter. On the first example, "Do you miss us? How much? Why couldn't we take a vacation sooner? Guess who?" Initially a student replied, "Punctuation" and one peer said, "Question." Another postcard read, "Greetings. This postcard doesn't take a place of a letter." The teacher then stressed, "Doesn't take the place of a letter?" Students began to comment, but only a couple guessed "apostrophes." Again, Alex did not participate verbally during this discussion, but he was not alone. He looked at the teacher and watched his peers as he continued to play with the strings in his socks, but he did not actively participate in the conversations. About half to three fourths of the students answered teacher questions at any given time, and the teacher provided a lot of verbal scaffolding. By the end of the story, not all of the students understood the book. One child commented, "They cannot spell." The teacher attempted to clarify that this was punctuation: "Well it's the punctuation that took a vacation, and they had to borrow from Mr. Wrongo's class, and it was just," the teacher paused for students to fill in, "wrong" and she confirmed "wrong." But, later the student commented to a peer, "Yeah, cause then you couldn't spell a word."

From this observation it was clear that the teacher's supports were needed for all students, that in second grade

many students continued to become familiar with concepts and required supports when thinking of these concepts in abstract ways. The children who did verbally participate often seemed to have a better understanding of the forms of punctuation than their peers and were in a better position to respond to riddles or more abstract cues. Although the verbal scaffolding worked for many students, it seemed Alex required concrete supports (e.g., text, pictures in a book) to participate in reciprocal academic interactions.

Summary. Despite Alex's difficulty with comprehension, no specific comprehension strategy instruction was observed. There was some discussion of vocabulary, especially synonyms, antonyms, homophones, and the like, but the majority of comprehension instruction involved guided discussions with the teacher and AR. Because Alex showed difficulties comprehending both written and spoken language, comprehension strategy instruction appeared necessary.

Brad

According to Brad's fifth-grade teacher, reading instruction focused primarily on "word recognition, comprehension, and word study." She explained that Brad decoded "beautifully" but struggled with reading comprehension. Brad's teacher also mentioned that it was "difficult to get him engaged in a story." To address Brad's difficulty with comprehension, the teacher stated that "working with him one to one was the best way" and that when reading with the class "he got easily frustrated." During observations, Brad read aloud clearly, at a good pace and with accuracy, but had difficulty participating in conversations about text. He read independently in class and completed assigned seatwork (e.g., vocabulary worksheet, dictionary work). During his interview, Brad noted that reading was his "second favorite" subject.

Classroom context. In contrast to the kindergarten and second-grade classrooms observed, reading instruction included an increased emphasis on comprehension. In the observed class, reading activities primarily centered on a novel and included independent reading, small-group reading with questions generated by the teacher related to story content, and dictionary work with teacher-selected vocabulary from the story. Small-group discussions of the novel concentrated on teacher questions to ensure student understanding of the main ideas such as characters and their motivations, setting, major events, and story problems. The teacher also questioned students about vocabulary and encouraged them to relate text to their own experiences. In addition, students read, wrote, and recited poetry.

Classroom examples illustrating themes. Consistent across observations of Brad was his difficulty comprehending text. During one observation with a substitute teacher, she questioned Brad and a peer about the book they were reading.

Brad replied, "It's about homework, people turning in homework, and um and um the Bacon's." When asked the same question his peer said, "Well, there's this girl named Maddie, and her best friend. And, they think this one boy in their class is really cute." The substitute asked Brad if he agreed and he confirmed. The student continued, "And Maddie wants to buy a present for her mom for Mother's day, and she is saving up her money for it, and she has a babysitting job to save money." A third peer agreed with this synopsis. The substitute asked, "What does she want to get her mother for mother's day?" Brad said, "Something real nice." His peers stated she wanted to buy a pin. In an interview earlier that week, when asked what he was reading in class, Brad said, "Circle of Gold by Candi Dawson Boyd." When probed further, he explained, "It's about a girl named Maddie. I can't, well, I don't remember it right now, but will when I read it."

With the emphasis on comprehension, a considerable amount of time was spent discussing text. Discussing text involved small groups of students taking turns reading aloud as the teacher questioned them about the content. To participate, students had to be prepared for a variety of questions that directly related to text or required them to link information read to their own experiences. During small-group instruction, Brad appeared to engage distantly from the group. That is, Brad read text aloud when called on, and occasionally looked around at his peers, but did not volunteer to participate. When Brad read, he often read with his back to the group, and fidgeted (e.g., tugged on his socks). The teacher often redirected Brad toward the group. A primary way that his teacher engaged him was through questioning.

For example, during one observation, the students sat on a rug in the front of the room taking turns reading aloud as the teacher asked questions and assisted with comprehension. The teacher asked students about their favorite character and why. Two students responded with a name and a description of what they liked about that character. As students spoke, Brad played with a plug-in air freshener and did not attend to the discussion. In what appeared to be an attempt to redirect Brad to the group, the teacher inquired about his favorite character. Brad replied, "I would choose the fox." At this point, the students began giggling because the story was not about a fox but about a young boy and his sled dog. Brad told his peers, "Shut it." Understanding Brad's frustration, the teacher attempted clarification by asking, "Which fox?" and Brad pointed to the picture on the cover. She then asked him why he chose that character, and he said, "Because he's funny," which was not a true character trait of the sled dog. Assuming that Brad was talking about the sled dog, the teacher probed further by asking Brad if the young boy and the dog were friends, and he affirmed the friendship. She then queried Brad for an

example of their friendship. Brad did not answer, and the teacher followed up with a question, "Did they do something?" to which Brad replied, "Yes." She then asked him to explain, and he told her he "cannot explain." The teacher then changed her line of questioning and asked if the story was fictional, and Brad replied, "Yes." She attempted to clarify, "This could not happen?" Brad said, "No." Then, she asked the group if anyone disagreed, and all of the students raised their hands. The group began discussing why this story could be nonfiction. One student explained it was similar to a nonfiction movie she saw and provided some of the similar details, and another student commented that the animals were not talking and behaved in the way animals typically do. As the group discussed why the text could be nonfiction, Brad did not participate in the discussion and looked around the room and at the ceiling.

This discussion was lively, with verbal interactions bouncing between peers and the teacher, but Brad was unable to participate. His peers laughed and appeared to enjoy making connections from the book to their experiences. It seemed that Brad did not know what to expect when being asked questions related to a reading, demonstrating difficulty anticipating what information the teacher may ask. He became antsy (picking at socks, rubbing skin, etc.) and at times showed frustration. Although the teacher's desire to engage Brad was clear through her multiple attempts to engage him in dialogue, Brad clearly miscomprehended the reading. His teacher continued to encourage him to explain his ideas further, but Brad's lack of understanding and perceived physical and social disengagement from the group continued in spite of teacher attempts to verbally scaffold and redirect. The demands of the interaction were too difficult for Brad and subsequently had the negative impact of manifesting his differences, thereby further distancing him from the group. Moreover, the interaction was of little academic value for Brad. Teacher attempts to promote a successful interaction in effect reduced the academic rigor of the dialogue from an open-ended line of questioning to a question requiring a yes-no response (e.g., "Were they friends?" and/or "This could not happen?").

In addition to his teacher's support, Brad attempted to apply his own strategy when asked who his favorite character was and why. He did this by looking at the picture on the book cover. The picture, however, was an insufficient support. Brad was observed to use other concrete supports with varying levels of success. For instance, while reading aloud, Brad's teacher stopped him and asked, "Who is Lester?" Brad immediately went back to the text and reread the last line, "Take it to Lester right away." The teacher repeated her question, and Brad replied, "I don't know." Although this strategy failed in this instance, there may have been times when rereading proved beneficial. Also, on a few occasions while reading independently, Brad read with the

dictionary in his lap. As he read, Brad periodically scanned the dictionary with his finger to locate a word, read the definition, and then immediately went back to reading. Although only invoked on a few occasions, another strategy Brad attempted was to ask questions about content. For instance, Brad asked for word meanings, and in one instance he asked how a story character's mother could tell her something when her mother had died. The substitute teacher clarified by pointing out the word *remembered* and suggested that the little girl was thinking back, or accessing her memories. Brad's strategy use demonstrated that he recognized his own difficulty comprehending text and showed his desire to understand. Therefore, it is apparent that as reading becomes more abstract and concrete supports are limited, Brad may be likely to need additional, more reliable strategies.

Despite the supports provided by the teacher, and Brad's attempts to monitor his own comprehension, his difficulty continued and began to distance him from his peers. For example, when Brad's teacher asked, "Who is searchlight?" Brad did his best to answer based on the question clues provided within the question, "A person who searches lights." Peers laughed and he said, "Stop laughing." The teacher commented, "I think he had a good answer, but it is not what a searchlight is in this story. Do you know who searchlight is in this story at all?" Brad replied, "I don't know it at all." The teacher then asked if someone could help him by providing a "hint" and Brad said, "Charlie can help." His peer said, "It's got 4 legs and it's on the cover." Brad replied, "Eewww" and the students laughed. Now the teacher prompted him to look at the cover and asked, "What would the searchlight be?" Brad then pointed to the pictures on the book, and the teacher asked, "Why would he be called searchlight?" Brad said he didn't know. At that point, students began guessing, "Maybe he can see in the dark." "His eyes are green and they glow in the dark or something." Brad was left out of the conversation.

Summary. Brad not only demonstrated difficulty with comprehension but also found comprehension supports unpredictable. By fifth grade, students with ASD may require consistent, supportive strategies for monitoring comprehension. At this level, texts have evolved from predictable trade books that center on developing fluency to novels that include fewer picture supports. And in this context, the primary form of support involved verbal dialogue about text. Many of Brad's peers seemed to enjoy the discussions, generating their own questions and ideas, thereby potentially obtaining instructional benefit. Brad repeatedly demonstrated difficulty participating in these social, yet academic conversations. As Brad progresses through school, texts will continue to become more abstract, and he will contend with the expectation of reading to learn academic content. The concrete supports found within texts and provided by teachers in earlier grades will gradually

become less accessible. Therefore, direct and systematic reading comprehension strategy instruction is an instructional priority.

Discussion

Consistent with previous research on reading characteristics of children with ASD, students in this study showed strengths in decoding yet struggled with language and reading comprehension (Calhoun, 2001; Mayes & Calhoun, 2003a; 2003b; Nation et al., 2006). Many of the students' difficulties stemmed from the instructional focus during literacy activities. For instance, evidence of comprehension difficulties were more pronounced in data collected on Alex and Brad. This was not because Jasmine was observed to comprehend well but rather because instances of instruction specifically addressing reading comprehension were generally not observed. Even in later grades, reading instruction lacked a focus on targeted comprehension strategy instruction. This limited emphasis on comprehension was inconsistent in meeting the individual needs of the student with ASD and further minimized opportunities for the comprehension development of all learners. Moreover, the largely teacher-directed questioning that was observed resulted in all students generally assuming the passive role of responder as opposed to active coconstructor of knowledge.

The lack of focus on strategic instruction targeting reading and language comprehension in the early grades, and its continued development in grades beyond, is not unique to students with ASD. In fact, Snow (2002) suggested that children comprehending on grade level in the primary grades will not necessarily comprehend on grade level in the future and emphasized targeting oral language development earlier. Many researchers have advocated for a focused approach to language and reading comprehension instruction from the earliest grades (Oakhill & Cain, 2007; Paris, Carpenter, Paris, & Hamilton, 2005; Snow, 2002); however, consistent with the current study, research shows that time donated to specific comprehension instruction is insufficient in the primary and later elementary grades (Snow, 2002). Yet, both NCLB (2002) and IDEA (2004) mandate evidence-based reading instruction for all children, consistent with recommendations made by the NRP. Without having observed this type of instruction in the present study, we are left with important, yet unanswered questions. Would children with ASD have demonstrated greater reading comprehension if the instructional programs had met NRP standards? Conversely, if the literacy instruction met NRP standards, might the findings of this study have been different? A deliberate focus on language and reading comprehension is important for all children, but because of the language profile associated with ASD, and evidence of their comprehension difficulties (Griswold et al., 2002; Mayes & Calhoun, 2003a; 2003b;

Nation et al., 2006; Wahlberg & Magliano, 2004), early comprehension instruction may prove even more critical for this growing population of learners.

Implications for Research and Practice

In the current study, children with ASD required strategies to support text comprehension and to promote their verbal contributions to academic discussions around text. There was no evidence that their difficulty stemmed from a lack of interest; in fact, the opposite occurred. Children with ASD were observed to initiate supports to promote their own engagement in literacy-related activities. Although with varying degrees of success, students with ASD were noted to invoke structure and routines or concrete supports (e.g., dictionary, teacher-created models, visuals) when struggling with reading and language comprehension, thereby demonstrating capacity for self-monitoring. Moreover, although no direct comprehension instruction was observed, teachers did introduce a number of strategies that made abstract, language-based tasks more concrete and contextualized (e.g., visual supports, schedules, scripts, and models). On the other hand, teachers' provision of verbal scaffolds without concrete supports was less effective. This is not surprising given that many children with ASD have difficulties with learning in social contexts, comprehending language, and applying language to real-world events not in the here and now (Tager-Flusberg, Paul, & Lord, 2005).

The finding that children with ASD benefit more from concrete rather than social supports presents a challenge for educators. Because classroom discourse differs from other ways children learn to use language, an inability to learn from these conversations can lead to academic failure (Trent, Artiles, & Englert, 1998). As we observed, it is possible to provide too much support and scaffolding, which can hinder rather than facilitate learning. Teachers were observed to verbally scaffold to such a degree that open-ended questions were reduced in format to closed, yes-no questions, thus altering the meaning and intent of the original question. These attempts appeared reactive based on the initial performance of the child with ASD. Rather than immediately responding to students' misunderstanding, teachers require a more deliberate plan to initiate student supports.

This study has significant implications for inclusive education. Implementing strategies to enhance the reading and language development of all students, but in particular those with ASD, will require collaboration between general and special educators. The child with ASD is likely to experience difficulty with both expressive and receptive language. Consequently, he or she may need explicit assistance in navigating talk in the classroom. One possibility may be to teach reading comprehension strategies that explicitly address how to interact with text and about text with others.

Questioning strategies such as questioning the author and question and answer relationships directly teach children how to form and ask questions. Moreover, the NRP identified question-generation strategies as the single most effective reading comprehension strategy (NICHD, 2000). Some children with ASD may actually require additional accommodations, many of which are described in the literature (Hart & Whalon, 2008). The input of both general and special educators is necessary when formulating and integrating content-specific strategies that may require additional adaptations to meet the needs of a variety of learners. Furthermore, teacher education programs and district-level professional development must ensure that future and practicing general and special education teachers (a) are aware of how the characteristics of children with ASD impact learning and instruction and (b) implement the most up-to-date, evidence-based practices.

Future research should investigate the impact of early comprehension strategy instruction on the reading development of children with ASD. Because reading comprehension involves a number of skills that develop over time, comprehension strategy instruction research should include longitudinal studies that investigate the impact of such techniques, not only on the reading comprehension of children with ASD but also on their linguistic, cognitive, and social skill development. Such studies could build the knowledge base on effective approaches for children with ASD, as well as the broader field of literacy for a range of learners.

Limitations

This study is descriptive and exploratory in nature, and documents a subset of findings from a larger data set that also included observations during mathematics instruction and transition periods. The results of this portion of the study document how children with ASD and their teachers navigated reading and language arts instructional activities in real time. Consistent with qualitative approaches, this study was not conducted for the purpose of generalization but rather to give a thorough and sequential look at the instructional behaviors of teachers and the corresponding responses of students with ASD. Because of the limited sample size and smaller subset of data, results should be interpreted carefully, and although not representative of the experiences of students with ASD in general, the results are instructive for educators in similar contexts.

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References

- Calhoun, J. A. (2001). Factors affecting the reading of rimes in words and nonwords in beginning readers with cognitive disabilities and typically developing readers. *Journal of Autism and Developmental Disorders, 31*, 491–504.
- Chiang, H., & Lin, Y-H. (2007). Reading comprehension instruction for students with autism spectrum disorders: A review of the literature. *Focus on Autism and Other Developmental Disabilities, 22*, 259–267.
- Corbin, J., & Strauss, A. (2007). *Basics of qualitative research* (3rd. ed.). Thousand Oaks, CA: Sage.
- Griswold, E., Barnhill, G. P., Myles, B. S., Hagiwara, T., & Simpson, R. I. (2002). Asperger syndrome and academic achievement. *Focus on Autism and Other Developmental Disabilities, 17*, 94–103.
- Hart, J. E., & Whalon, K. J. (2008). 20 ways to promote academic engagement and communication of students with autism spectrum disorder in inclusive settings. *Intervention of School and Clinic, 44*, 116–120.
- Individuals With Disabilities Education Improvement Act, 20 U.S.C. § 1400 *et seq.* (2004).
- Mayes, S. D., & Calhoun, S. L. (2003a). Ability profiles in children with autism: Influence of age and IQ. *Autism, 6*, 65–80.
- Mayes, S. D., & Calhoun, S. L. (2003b). Analysis of WISC-III, Stanford-Binet: IV, and academic achievement test scores in children with autism. *Journal of Autism and Developmental Disorders, 33*, 329–341.
- Myles, B. S., Hilgenfeld, T. D., Barnhill, G., Griswold, D., Hagiwara, T., & Simpson, R. L. (2002). Analysis of reading skills in individuals with Asperger's syndrome. *Focus on ASD and Other Developmental Disabilities, 17*, 44–47.
- Nation, K., Clarke, P., Wright, B., & Williams, C. (2006). Patterns of reading ability in children with autism spectrum disorder. *Journal of Autism and Developmental Disorders, 36*, 911–919.
- National Institute of Child Health and Human Development. (2000). *Report of the National Reading Panel. Teaching children to read: An evidence-based assessment of the scientific research literature on reading and its implications for reading instruction* (NIH Publication No. 00-4769). Washington, DC: U.S. Government Printing Office.
- No Child Left Behind Act, 20 U.S.C. 70 § 6301 *et seq.* (2001).
- Oakhill, J., & Cain, K. (2007). Introduction to comprehension development. In K. Cain & J. Oakhill (Eds.), *Children's comprehension problems in oral and written language: A cognitive perspective* (pp. 3–40). New York: Guilford.
- Paris, S. G., Carpenter, R. D., Paris, A. H., & Hamilton, E. E. (2005). Spurious and genuine correlates of children's reading comprehension. In S. G. Paris & S. A. Stahl (Eds.), *Current issues in reading comprehension and assessment* (pp. 131–160). Mahwah, NJ: Lawrence Erlbaum.
- Patton, M. Q. (2002). *Qualitative research and evaluation methods* (3rd. ed.). Thousand Oaks, CA: Sage.

- Schwant, T. A. (2007). *Dictionary of qualitative inquiry* (3rd ed.). Thousand Oaks, CA: Sage Publications.
- Snow, C. (2002). *Reading for understanding: Toward an R&D program in reading comprehension*. Santa Monica, CA: RAND.
- Spradley, J. P. (1980). *Participant observation*. Fort Worth, TX: Harcourt.
- Tager-Flusberg, H., Paul, R., & Lord, C. (2005). Language and communication in autism. In F. R. Volkmar, P. Rhea, A. Klin, & D. Cohen (Eds.), *Handbook of autism and pervasive developmental disorders* (3rd ed., pp. 335–365). New York: John Wiley.
- Trent, S. C., Artiles, A. J., & Englert, C. S. (1998). From deficit thinking to social constructivism: A review of theory, research and practice in special education. *Review of Research in Education, 23*, 277–307.
- Wahlberg, T., & Magliano, J. P. (2004). The ability of high function individuals with autism to comprehend written discourse. *Discourse Processes, 38*, 119–144.
- Whalon, K. J., Al Otaiba, S., & Delano, M. (2009). Evidence based reading instruction for individuals with autism spectrum disorders. *Focus on Autism and Developmental Disabilities, 24*, 3–16.

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