Teaching Sam to Read: An Integrated Team Approach with One Child with Autism Spectrum Disorder

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Abstract

Few evidence-based practices are available to guide educators in teaching reading to children with Autism Spectrum Disorder who have complex learning and behavioral needs associated with the symptoms of ASD and common co-occurring conditions, such as Attention Deficit/Hyperactive Disorder and Specific Learning Disability. Some researchers have suggested aligning interventions with the general learning profile of children with ASD. Other studies recommend using a comprehensive treatment model for behaviors associated with ASD. This case study documents how utilizing a comprehensive approach to address the unique learning profile of one child with multiple neurodevelopmental disorders led to significant gains in that child's reading achievement. The authors suggest that the combination of interventions for one child with one learning profile may be effective for other children with ASD with a similar constellation of symptoms.

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The volume of materials addressing teaching children with Autism Spectrum Disorder (ASD) to read is replete with correlational studies as well as suggestions and conjecture (e.g., Nation & Norbury, 2005; Whalon & Hart, 2011). The literature is limited, despite the volume, in that there is little research about the use of instructional strategies, packages of interventions, or comprehensive treatment models to support teachers of students with ASD. Frith (2012) commented, "We are still in the dark ages as far as educational interventions are concerned" (p. 2088).

Comprehensive treatment models, or packages of interventions associated with ASD have been in existence for over 30 years. Furthermore, successes of these packages and approaches are well documented (Odom, Boyd, Hall, & Hume, 2010). These models, however, such as Lovaas (Lovaas Institute, 2014), mostly focus upon treating behaviors and developmental delays associated with ASD instead of focusing upon the teaching of academic skills, specifically reading.

While instructional packages, linking behavioral interventions to increase academic achievement for children with either behavior disorders or learning disabilities (Dolezal, Weber, Evavold, Wylie, & McLaughlin, 2007; Edwards, Salant, Howard, Brougher, & McLaughlin, 1995; Holz, Peck, McLaughlin, Stookey, 1997) do exist and are often reported in the literature, limited literature supports the principle of instructional packages, or comprehensive treatment models,

for use with students with ASD who are high functioning and need support with academics. A possible reason for this may be the complexity of the combination of symptoms that are unique to persons with ASD. Carnahan et al. (2009) did recognize the variety of learning profiles of children with ASD and attempted to match specific literacy strategies with general classroom management systems (e.g., visual supports, video modeling, and work systems). However, the authors did not address the varied atypical behaviors that also impact the ability of children with ASD to benefit from validated instructional practices.

One important observation derived from the literature was that the teaching of reading to children with ASD is not a unified construct, meaning that one size does not fit all. Some authors did note that children with ASD who are high functioning (i.e., having intact language and at least average IQ) have strong decoding skills and weak comprehension skills (Huemer & Mann, 2009). Furthermore, some children with ASD have the ability to focus on detailed visual information and have good rote memory, which also contributes to strong decoding skills. Despite these general patterns, however, children with ASD have shown marked variability in basic reading, which is due, in part, to large differences in oral language abilities (Norbury & Nation, 2011). Finally, Nation, Clarke, Wright, and Williams (2006) suggested that children with ASD, on the whole, have strengths in decoding and greater difficulty with language and reading comprehension. They also noted, however, the wide heterogeneity in reading ability for those on the ASD continuum. Hence, not all children with ASD have good rote memory, intact language, at least average IQ, and ability to focus on detailed visual information. Therefore, it is likely that teaching reading to children with ASD is not as easy as identifying one or more research-based strategies.

It is our contention that any academic instruction, especially reading, is most successful if grounded in the complex interplay between common constellations of symptoms across the variable manifestations of ASD. Such symptoms might include over-attention to detail with a limited ability to generalize information to a broader context, lack of social awareness, weak ability to interpret the intentions of others, and weakly developed executive functions (e.g., emotional control, inhibiting impulses, planning and organizing, shifting attention, or self-monitoring) (Burnette et al., 2005; Ozonoff, Pennington, & Rogers, 1991). The challenge of teaching a child with ASD to read may be even further compounded when commonly occurring comorbid developmental disorders are present (e.g., ADHD, Learning Disabilities, Intellectual Disability) (Matson & Nebel-Schwalm, 2007).

Considering the variety of possible presentations of symptoms across ASD, comorbid conditions, and the reading skill level of an individual child, including phonemic awareness, phonics, fluency, vocabulary and comprehension (National Reading Panel, 2006), it is probable that a treatment program with multiple components is needed to address each child's unique academic and behavioral needs. If this is so, then it is also possible that one package of interventions that addresses one constellation of symptoms may also be indicated for another child who presents with a similar array of academic and behavioral attributes. The purpose of the present study is to describe an integrated treatment approach that included explicit instruction and behavioral supports in reading for one child whose learning profile was complicated by significant symptoms of ASD, comorbid ADHD Combined Type, and Specific Learning Disability. This is presented in the hopes that a thorough description of the symptoms, the instructional program,

and the instructional process will give some guidance for teaching children who present with a similar pattern of characteristics.

Description of Sam

Sam, a pseudonym for the purpose of confidentiality, was a 5-1/2-year-old male who lived with his biological mother and father and two siblings in a residential home in a suburban area. Sam was diagnosed through a well-known Autism Center in the Pacific Northwest and met the diagnostic criteria for ASD, ADHD-Combined Type, and Specific Learning Disability. At the start of intervention, Sam had been placed in a general education kindergarten classroom for approximately six months. According to school reports, Sam had made minimal academic progress. He refused to participate in classroom activities and lessons, including lessons provided in small groups. Behaviorally, Sam exhibited frequent tantrums and isolated himself from his peers. The most common behavior management strategy was removal from the classroom. Sam was provided with limited supports or services beyond what is typically provided in a general education kindergarten classroom.

Cognitive Abilities

Sam's cognitive abilities were measured in February 2011 by a child psychologist in private practice who used the Stanford-Binet Intelligence Scales – Fifth Edition (Roid, G, 2003). Sam's full scale IQ was measured at 109. This score fell at the high end of the Average range. A complete breakdown of individual indexes is not available since the report did not contain detailed information.

Behavioral Characteristics

October 2012, Sam's behavior was evaluated by the school psychologist at his local elementary school. According to the psycho-educational report, Sam displayed significant levels of behavior at school and home consistent with his diagnoses of ASD and ADHD. Scores based on Sam's teachers' and parents' ratings on the Behavior Assessment System for Children – 2nd Edition (BASC-2) (Reynolds & Kamphaus, 2004) revealed clinically significant levels of Internalizing and Externalizing behaviors, yielding Behavior Symptom Index scores that also fell in the Clinically Significant range. More specifically, Sam was rated as being significantly more active than his peers, showed higher levels of anxiety and/or depression, displayed a number of behaviors that would be considered strange or odd, and struggled significantly with changes to his routine and environment and with functional communication.

Results of the Behavior Rating Inventory of Executive Function (BRIEF) (Gioia, Isquith, Guy, & Kenworthy, 2000), completed by Sam's teachers and parents, yielded clinically significant scores on the Behavioral Regulation and Global Executive Composite indices. These findings suggested that Sam showed significant difficulties with numerous executive functions, including inhibiting impulses, shifting attention, controlling emotions, initiating tasks, holding information in his mind for the purpose of completing a task, planning/organizing, self-monitoring, and being aware of his own functioning.

Anecdotal behavior reports were consistent with the results of the BASC-2 (Reynolds & Kamphaus, 2004) and BRIEF (Gioia et al., 2000). Reportedly, Sam displayed outbursts when

frustrated or experienced a change in his routine. According to his mother and teachers, Sam had meltdowns lasting anywhere from 20 minutes to 2 to 4 hours, sometimes up to three times per day. Moreover, Sam's classroom teachers noted that he struggled to follow school and classroom rules. Despite having one-to-one teacher assistance at his desk, Sam often refused to participate in academic tasks, getting out of his chair and roaming the classroom. A summary on Sam's psycho-education report (10/2012) stated, "… demonstrates significant difficulty controlling his impulses and maintaining the level of attention necessary to be successful in the general education classroom." All of these behavior problems are typically seen in children diagnosed with ASD.

Sensory Processing

It is common for children with Autism Spectrum Disorder to experience difficulties processing sensory stimuli that can make academic achievement more challenging (Baker, Lane, Angley, & Young, 2008; Ashburner, Ziviani, & Rodger, 2008). The Sensory Processing Measure (SPM) (Parham, Ecker, Kuhaneck, Henry, & Glennon, 2007) is a standardized, norm-referenced measure that is used to identify children with sensory processing difficulties. The SPM was completed by the school's special education teacher and by Sam's mother. Sam's standard scores for both the home and school settings (74 for both domains), fell far below normal, indicating significant dysfunction in sensory processing.

Language Development

By definition (DSM-V, 2013), children with Autism Spectrum Disorder will demonstrate impairments in the area of communication. In Sam's case, he did not begin to speak in complete sentences until he was four years of age. Additionally, Sam had a speech impediment requiring interventions for articulation. However, according to results of a comprehensive evaluation, dated 10/23/2012, Sam's receptive vocabulary and oral expressions skills were within the normal range as assessed by the Peabody Picture Vocabulary Test (Dunn & Dunn, 2007) and the Wechsler Individual Achievement Test – 3rd Edition (WIAT-3) (NCS Pearson, 2009).

Academic Skills

Sam's academic skills were assessed during a psycho-educational evaluation conducted on 10/23/2012. Results of the WIAT-3 indicated Sam's standard scores fell far below normal on measures of Early Reading Skills (74) and Written Expression (73). Additionally, indicative of delayed development of Sam's fine-muscle motor skills, his standard score of 75 fell far below normal for Fine Motor coordination as measured on the Miller Function & Participation Scales (Miller, 2006). His performance on the Participation scale also indicated significant delays for both home and school ecologies. Consistent with these latter findings, his teacher reported Sam had difficulty with drawing and coloring, and stated that Sam often displayed rage-like behaviors when asked to do paper/pencil tasks.

At the outset of intervention, Sam was able to name only 3 letters in the alphabet out of the 26. According to curriculum-based measurements, he did not know any of the sounds for the letters, and he did not recognize individual sounds in words. Additionally, he did not attend to or understand aspects of the larger concept of phonological awareness, such as rhyming. Furthermore, Sam did not appear to easily form stable visual representations and showed difficulty in retrieving previously taught specific phonemic information even within the same

day. The phenomena may have been due to a learning disability or due to inattention or to factors associated with ASD. Moreover, he did not easily infer cause and effect or relationships of one item to another, had difficulty in application of new skills, and had difficulty generalizing to alternative contexts. Finally, Sam expressed no interest in learning to read. He actively resisted any attempts to be taught academic content and had meltdowns when requested to perform any instructional tasks.

In order to teach Sam to read, three basic issues needed to be addressed: (a) behavior and attention, two separate but related factors, (b), motivation (c) and method of reading instruction.

Description of the Intervention Program

Qualifications of Interventionist

The interventionist was a reading specialist who held a Ph.D. in Special Education. She had 30 years of teaching experience with children with reading disabilities and children at-risk for school failure. She had taught elementary, middle, and high school. She had been trained in Direct Instruction (Gersten & Keating, 1987) and behavior management. Furthermore, she supervised college practicum students in special education who were learning to teach using Direct Instruction materials. She provided reading instruction using Reading Mastery Fast Cycle (Engelmann & Bruner, 2003).

Dealing with Behavior, Attention and Motivation

Because Sam was highly distractible, it was necessary that the interventionist provided one-to-one instruction in a quiet spot with minimal auditory or visual distractions. Initial lessons were no more than five to ten minutes in duration, but occurred several times during the day for short, focused instruction. In order to increase motivation, an extrinsic reinforcement system was used. The purpose of the extrinsic system was to develop a positive attitude toward reading while building competence that could ultimately transfer to internal motivation. Sam earned points for attention to task, working hard, and accuracy. Points applied to either a small toy or preferred activity at the end of each lesson. Specific verbal praise was paired with the points throughout the lesson to provide ongoing motivation.

Instructional Program

Reading Mastery Fast Cycle (Engelmann & Bruner, 2003) is often used as a reading intervention in special education resource rooms. It is a code-based, or synthetic phonics, approach that is explicit and systematic. The program incorporates an orthography that allows children to distinguish the 40 unique phonemes in the English language. Furthermore, Reading Mastery is explicit in that the teacher models all instruction, provides guided practice, and teaches to mastery. It is highly scripted for the purpose of providing consistent instructional language, allowing students to attend to the content of instruction instead of attending to ambiguous language that can interfere with conceptual understandings. Reading Mastery is interactive, requiring student active responses at a high rate.

Reading Mastery Fast Cycle (Engelmann & Bruner, 2003) is systematic, meaning it begins with instruction that is easiest and logically builds to more difficult concepts. It provides a full array of letter-sound correspondences, diagraphs, and blends (National Reading Panel, 2006). Reading

Mastery begins with simple phonological awareness tasks and then links phonemes to graphemes. Initial tasks include blending and segmenting words. Regular word patterns are taught and practiced in order of degree of difficulty. Additionally, common irregular words (e.g., was, said) are introduced early on in order for children to combine words into sentences. Increasingly difficult decodable text is used for practice as concepts and multisyllabic words are introduced. Multiple supports for reading are integrated into the program and then gradually eliminated. For example, orthography is gradually faded until letters and letter combinations appear as they do in normal text.

Description of the Teaching Process

The following describes what might best be termed as a series of stages in the instructional process. The description is not meant as a prescribed sequence of steps, but shares with the reader the evolution of the process, based upon Sam's needs as they changed across time

Beginning Stage

In the first stage of instruction, the interventionist implemented Reading Mastery Fast Cycle (Engelmann & Bruner, 2003) along with behavior management strategies that used points and specific praise as types of reinforcement. Behavior management was important because Sam initially exhibited inattention and resistance to reading, perhaps due to the difficulty of tasks. Sam did not attend to individual sounds in words and did not link or remember the relationship of sounds to letters.

Short instructional sessions (i.e., approximate 5 to 10 minutes) were repeated up to three times throughout the day. Instruction began with simple phonemic awareness activities, helping Sam to identify individual sounds in words. Next the most common sounds of letters were introduced with one new sound presented about each week of instruction. In the beginning, Sam had difficulty remembering the sound of a previously taught letter when another was introduced. Consequently, he was unable to build upon the knowledge of sounds in order to form words. Sam slowly gained competence after repeated trials.

In order to keep Sam motivated, reinforcements were changed almost on a daily basis. Additionally, the instructor used Premack's Principle (Roeckelein, 1998) (i.e., "first-then" statements), which was sometimes effective in maintaining his attention for a few extra minutes of instruction. After several weeks, Sam gained some competence in blending letters to form short regular words (e.g., mad, bed, am, rug, mat, sat, sit, lamp). Next, the interventionist linked words into short sentences and provided a purpose for Sam to sound out words and to develop automaticity. For example, the interventionist organized a treasure hunt with clues incorporating words that Sam knew. By following the clues, Sam ultimately received his prize. Progress was steady, but at a much slower rate than other children with reading disabilities alone. Instruction continued for approximately 60 days. The intensive schedule of intervention was necessary because any break in instruction resulted in significant loss of skills, even from day to day.

Second Stage

Due to the limited availability of behavioral therapists in the service area, Sam did not begin Applied Behavior Analysis (ABA) with a board certified ABA therapist until 60 days after

academic intervention began. As a result of teaming academic instruction with the added support of a qualified ABA therapist, Sam's progress in reading increased. This assistance of the ABA therapist enabled the interventionist to focus solely upon instructional procedures. The therapist was able to allocate reinforcement at a more appropriate ratio. Consequently, the behavior therapist effectively prevented most meltdowns, maintained attention for longer periods of time, and reduced high levels of activity during reading instruction. Sam was able to accomplish at least one full Reading Mastery Fast Cycle (Engelmann & Bruner, 2003) lesson per session. Reading lessons quickly progressed to incorporating sound combinations, multiple irregular words, and practice in decodable text, requiring skills that Sam had mastered.

Third Stage

After an additional 30 days of instruction with ABA therapist's support, Sam's family secured pharmaceutical intervention for his attention and behavior symptoms. Suggestive of the benefit of medication, the frequency and duration of Sam's meltdowns decreased both at school and home. Sam sustained his attention for much longer periods and demonstrated an increased willingness to attempt even more difficult tasks. The therapist continued providing ABA at the same quality and quantity of support as in Stage Two. Sam responded even more positively to the effects of planned reinforcements, allowing the variable ratio of behaviors to reinforcement to be gradually increased. Sam's automaticity with word recognition improved significantly, and he demonstrated a greater ability to retrieve sounds and words. Sam began to generalize words to his environment, even reading simple roadside signs.

Fourth Stage

Reading instruction continued through the summer months. About the middle of first grade, a full nine months after initiating intervention, Sam's skills had improved to the point of decoding regular words and some multisyllabic words taught within Reading Mastery Fast Cycle (Engelmann & Bruner, 2003). He recognized sight words and comprehended information he read at grade level in the program. The ABA therapist faded out the external reinforcements. Sam came to his reading lessons without conflict and no longer needed concrete rewards. Verbal praise that was specific for "good reading" was continued.

Sam then began to participate in a small reading group at school. The school's instruction focused upon memorization of sight words that were mostly irregular and upon predictable text. This was in direct contrast to the method of Direct Instruction (Gersten, & Keating, 1987) that the interventionist utilized. Even though Sam, at first, gained little academic benefit from the school-based reading instruction, his social skills did improve through participation in the small group activity. Sam continued to make progress in Reading Mastery Fast Cycle (Engelmann & Bruner, 2003). In fact, he regularly applied the sound-out strategy to words in novel contexts. Sam's reading skills and his motivation to read improved to the extent that extrinsic reinforcement and management of difficult behaviors were no longer necessary. As a result, the ABA therapist no longer participated in the reading lessons.

An Update on Sam's Reading Progress

Even though Sam made significant progress in the development of his reading skills, it was not all roses. He still had difficulty intuiting relationships and generalizing concepts to new

environments; therefore, reading instruction for Sam then focused upon comprehension. A significant milestone for Sam was that he had begun the self-teaching process of reading (Share, 1995). He decoded most words within an authentic context and read above grade level. Despite the combination of difficult behaviors, inattention, lack of phonological awareness, and limited auditory and visual memory as barriers to learning to read, Sam came a long way.

Discussion

The important and obvious limitation to this study is that it addresses only one child and one package of interventions. The most difficult aspect of doing any type of research with children with autism, especially for children with autism and associated disabilities is the small number of participants available for research that can lead to generalizable conclusions and the wide, as well as unique, variations of autism and other disabilities manifested on an individual level.

The purpose of this article was not to prescribe a definitive process or a specific instructional program or even one strategy for children with ASD. Instead, our goal was to share one package of instructional and behavioral supports that were successful with one child with a specific learning profile as suggested by Carnahan et al. (2009). Sam presented with a multitude of symptoms (e.g., inattention, high levels of frustration, hyperactivity, resistance to instruction, need for sameness, and weak phonological processing) associated with his developmental disabilities. In turn, we responded to each symptom with a targeted intervention that was already well supported by established research (e.g., collaborative teaming with ABA therapist, medication, explicit instructional methods, intensive instructional schedule), in effect creating an integrated treatment package tailored to the needs of one child.

It may be thought that no one single intervention was responsible for Sam's progress in learning to read. Instead, the amalgam of the various supports and interventions were believed to account for his academic gains. Hence, an important concept for educators to appreciate is that there is no one magic bullet for instruction for a child with a complex array of learning challenges. An explicit, systematic program is not likely to yield positive results by itself. Moreover, behavioral interventions and/or medication are not likely to teach a child how to read. When a mix of symptoms of underlying neurodevelopmental disabilities are present, a comprehensive approach to academic instruction, specifically reading instruction that targets all those symptoms is warranted.

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