DSM-5 Autism Spectrum Disorder Symptomology in Fictional Picture Books

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Abstract: In the last decade, schools have seen an increasing number of children with autism spectrum disorder (ASD) and the current estimated average of children in the United States who are diagnosed with an ASD is one out of 68 (Centers for Disease Control and Prevention, 2014). One way for educators and elementary students to learn about ASD is through picture books; however, there have been a dearth of close examinations of books with characters that have autism. A content analysis of 15 fictional narrative picture books yielded data consisting of 178 symptoms that were identified based on the American Psychiatric Association’s DSM-5 (2013). Each symptom was isolated and coded utilizing seven diagnostic criteria. Results indicate that 38% of the symptoms presented in the picture books represent social communication deficits and 62% represent the presence of atypical or repetitive behaviors. Educators, such as regular classroom practitioners and special education teachers working with heterogeneous groups of children, are urged to use a variety of books that accurately represent all symptoms of ASD to encourage peer sensitivity and awareness of classmates with ASD. Teacher educators, specifically those instructors who train speech and language pathologists and special education teachers, are urged to use picture books with characters that have autism as an introduction to identifying symptoms of ASD.

Autism is a “developmental disorder characterized by marked difficulty in communication and social relations and by the presence of atypical behaviors such as unusual responses to sensation, repetitive movements, and insistence on routine or sameness” (Neisworth & Wolfe, 2005, p. 20). More than three decades ago, the DSM III (1980) first recognized autism as a disability. Since that time, and as experts in the field have studied and learned about autism, the DSM III has been revised three times (DSM III, DSM III-R, DSM-IV/DSM-IVR). In March 2013, the DSM-5 presented the most up to date version of the diagnostic criteria (see Table 1).

Although doctors and therapists have become well-versed in identifying and understanding autism, the general public is still learning about the relatively new developmental disability. Further, given the increase in diagnosis, from 1 out of 150 (Centers for Disease Control and Prevention, 2007), to most recently 1 out of 50 (Blumberg et al., 2013), the need to understand autism is required more than ever. Schools are increasingly inundated with students on the spectrum and have limited funds and limited experience knowing how to appropriately service the students.

Given the increasing number of students with ASD in the education system, it is critical that educators have an effective way of teaching typically developing students about their peers with ASD. One way that people learn about others is via media, that is, books, television, movies, news, and currently, social media. The purpose of this research is to closely examine how books have depicted individuals with autism. Employing the newly published DSM-5, we use the seven (7) diagnostic crite-
TABLE 1

<table>
<thead>
<tr>
<th>Category</th>
<th>Code</th>
<th>Characteristics</th>
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<tbody>
<tr>
<td>Social Communication and Social Interaction</td>
<td>S1</td>
<td>Deficits in social-emotional reciprocity, ranging, for example, from abnormal social approach and failure of normal back-and-forth conversation; to reduced sharing of interests, emotions, or affect; to failure to initiate or respond to social interactions.</td>
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<td></td>
<td>S2</td>
<td>Deficits in nonverbal communicative behaviors used for social interaction, ranging, for example, from poorly integrated verbal and nonverbal communication; to abnormalities in eye contact and body language or deficits in understanding and use of gestures; to a total lack of facial expressions and nonverbal communication.</td>
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<td></td>
<td>S3</td>
<td>Deficits in developing, maintaining, and understanding relationships, ranging, for example, from difficulties adjusting behavior to suit various social contexts; to difficulties in sharing imaginative play or in making friends; to absence of interest in peers.</td>
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<tr>
<td>Restricted, Repetitive Patterns of Behavior, Interests, or Activities</td>
<td>R1</td>
<td>Stereotyped or repetitive motor movements, use of objects, or speech (e.g., simple motor stereotypies, lining up toys or flipping objects, echolalia, idiosyncratic phrases).</td>
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<td></td>
<td>R2</td>
<td>Insistence on sameness, inflexible adherence to routines, or ritualized patterns or verbal nonverbal behavior (e.g., extreme distress at small changes, difficulties with transitions, rigid thinking patterns, greeting rituals, need to take same route or eat food every day).</td>
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<td></td>
<td>R3</td>
<td>Highly restricted, fixated interests that are abnormal in intensity or focus (e.g., strong attachment to or preoccupation with unusual objects, excessively circumscribed or perseverative interest).</td>
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<tr>
<td></td>
<td>R4</td>
<td>Hyper- or hyporeactivity to sensory input or unusual interests in sensory aspects of the environment (e.g., apparent indifference to pain/temperature, adverse response to specific sounds or textures, excessive smeling or touching of objects, visual fascination with lights or movement).</td>
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For thousands of years, communities have engaged in storytelling, not only to entertain, but also to pass knowledge across generations to communicate and preserve values, beliefs, and social practices. The power of storytelling is becoming more apparent with the advanced technology in brain imaging. Recent research on neuroimaging (Speer, Reynolds, Swallow, & Zacks, 2009) concludes that when participants read narratives, they “activate specific visual, motor, and conceptual features of activities while reading about analogous changes in activities in the context of a narrative” (p. 995). In other words, when someone reads a story and envisions what happens in that story, what happens in the brain and the thinking that goes on in the brain is similar to actually experiencing the phenomenon. Similarly, empirical studies (Djikic, Oatley, Zoeterman, & Peterson, 2009; Mar, Oatley, Hirsh, dela Paz, & Peterson, 2006; Oatley, 1999) of fiction literature suggest that fiction can elicit emotional simulation that transforms a person. “Engaging in the simulation experiences of fiction literature can facilitate the understand-
ing of others who are different from ourselves and can augment our capacity for empathy and social inference” (Mar & Oatley, 2008, p. 173). That being said, narrative fiction with characters that have autism can be a viable means of helping people understand this disability.

The Need to Evaluate Narrative Fiction

Although fictional narrative could be used as an instrument to help educators understand the phenomenon and experience of autism, it is essential to examine carefully children’s and young adult fiction using a critical analysis (Kelley, 2006, 2008; Kelley & Darragh, 2010; Kelley, Stair, & Price, 2013), in order to select books that accurately portray individuals with ASD. As mentioned above, fictional stories can help people understand others; however, inaccurate information is problematic, since readers are more apt to believe false claims when they are unfamiliar with a given topic (Prentice, Gerrig, & Bailis, 1997; Wheeler, Green, & Brock, 1999) or read it multiple times (Henkel & Mattson, 2011). “People are credulous creatures who find it very easy to believe and very difficult to doubt” (Gilbert, 1991, p. 117). As such, it is imperative to present fictional stories that are accurate and authentic. Only a few studies evaluate literature about characters with developmental disabilities (e.g., Dyches & Prater, 2005; Dyches, Prater, & Cramer, 2001; Larson, Whitin, & Vultaggio, 2010; Leininger, Dyches, Prater, & Heath, 2010); however, none of these studies include a systematic assessment of ASD symptoms.

In sum, accurate and authentic narrative fiction can be a powerful resource for educators and students to experience the daily challenges as well as triumphs of a person with autism that can prove influential in helping them gain a new perspective and understanding of the disorder. As such, our guiding question for this analysis is: Which symptoms are present in current fictional picture book narratives that portray individuals with ASD?

Method

A content analysis procedure was used to identify which symptoms are portrayed in current fictional picture book narratives that feature individuals with ASD.

Text Set Selection Process

To find picture storybooks with characters who have autism, we utilized the following resources: 1) website databases (e.g., Amazon and Worldcat), 2) websites dedicated to autism (e.g., www.autismspeaks.com, www.autism.org.uk), and 3) articles about children’s literature about children with special needs (e.g., Dyches & Prater, 2005; Dyches, Prater, & Heath, 2010; Larson et al., 2010). The initial corpus yielded 65 books.

Next, books were selected through a three-tier process. The first tier ensured that the book was in print and realistic fiction. Many books about autism are informational texts for children and adult readers. While these texts serve an important purpose in explaining and describing ASD symptoms, they are informative in nature and do not create the emotional connection between reader and story as suggested by the research on neuroimaging. The first tier selection process also required that the book center on a major character with autism of school age. The required audience for the book was also intended to be school age students.

The second tier of the selection process focused on accuracy. It was important that the texts portray accurate information about persons with autism. Specifically, did the texts provide correct information regarding ASD symptoms with regard to social communication deficits and repetitive and restrictive interests?

Finally, the third tier of the selection process ensured that the texts incorporated appropriate disability discourse. It was required that the text set avoid stereotypes and oversimplifications of characters with autism. Texts that did not use “People First” language (i.e., child with autism as opposed to autistic child), or used deficit descriptions of characters with autism, were excluded. This corpus yielded 15 books that became the data set.

Procedure

The coding instrument (Table 1) was developed to record the type of ASD symptoms
identified within each line of text from the selected data set (Social Communication and Social Interaction or Restricted, Repetitive Patterns of Behavior, Interests, or Activities). First, two authors collaboratively identified ASD symptoms described within each text. A third author independently reviewed the selected data set of 15 picture books further isolating ASD symptoms until a total of 178 symptoms had been identified. Next, four coders individually coded the 178 ASD symptoms: two speech language pathologists, one literary expert, and one undergraduate student with multiple years of experience in an ASD classroom.

The coding system was developed using the DSM-5 symptoms describing ASD (see Table 1). After individual coding was completed, the three authors met and consensus coded 2–3 books at a time to compare codes. When discrepancies emerged in the coding process, discussion and analysis of the symptoms and codes continued until consensus was reached among all three authors. For example, if a symptom was ambiguous and yielded different codes, the authors considered the symptom within the context of the text before and after the indicated symptom, as well as the illustrations depicted in regards to the symptom.

Analysis & Data
In this section we present examples of ASD symptoms to demonstrate how the symptoms were depicted in some of the picture books. First, we provide the exact wording of an ASD symptom as described in the DSM-5. Second, we share examples from the picture books that depict the given symptom. Third, we explain why the given excerpt was coded as such.

Social Communication and Social Interaction

S1 description. “Deficits in social-emotional reciprocity, ranging, for example, from abnormal social approach and failure of normal back-and-forth conversation; to reduced sharing of interests, emotions, or affect; to failure to initiate or respond to social interactions” (American Psychiatric Association, 2013).

S1 example analysis. On the first page of Ian’s Walk (Lears & Ritz, 1998) the narrator, Julie, introduces the reader to her younger brother, Ian by stating, “Ian doesn’t answer me, though, because he has autism” (p. 1). There are many reasons a person may not answer another person, such as being mad at a person, not hearing a person, or having a mouthful of food; however, the author identifies Ian’s condition of autism as being his reason for not responding. Since we know that Ian has autism, we can pinpoint the reason for Ian’s failure to engage in typical back-and-forth conversation as a symptom of ASD.

S2 description. “Deficits in nonverbal communicative behaviors used for social interaction, ranging, for example, from poorly integrated verbal and nonverbal communication; to abnormalities in eye contact and body language or deficits in understanding and use of gestures; to a total lack of facial expressions and nonverbal communication” (American Psychiatric Association, 2013).

S2 example analysis. In the story Waiting for Benjamin (Altman, 2008) Benjamin, the character with ASD, has difficulty listening and looking at other people. Benjamin’s brother, Alexander, explains, “Part of his brain is different, and that makes it hard for Benjamin to listen and to look at us, . . .” (Altman, 2008, p. 10). Similarly, in Understanding Sam (Nickerk & Venter, 2006), Sam’s doctor explains Asperger’s Syndrome to Sam’s parents by stating that some kids “. . . may not look at you when you talk” (p. 29). These two examples depicting the lack of eye contact explicitly demonstrate deficits in nonverbal communication.

S3 description. “Deficits in developing, maintaining, and understanding relationships, ranging, for example, from difficulties adjusting behavior to suit various social contexts; to difficulties in sharing imaginative Play or in making friends; to absence of interest in peers” (American Psychiatric Association, 2013).

S3 example analysis. In Andy and His Yellow Frisbee (Thompson, 1996), Andy, is a young school-aged boy that prefers to spin his frisbee rather than play with other children during recess. For example, a statement like “Andy liked to keep to himself” (Thompson, 1996, p. 6) demonstrates the lack of interest in peers. Similarly, in My Brother Charlie (Peete & Peete, 2010), Charlie will not play with his twin sister. The sister contends, “But Charlie was differ-
ent. He wouldn’t play with me,” (p. 8) describes the relationship difficulties in social contexts, specifically playing or making friends, that are present in children with ASD.

Restricted, Repetitive Patterns of Behavior, Interests, or Activities

R1 description. “Stereotyped or repetitive motor movements, use of objects, or speech (e.g., simple motor stereotypies, lining up toys or flipping objects, echolalia, idiosyncratic phrases)” (American Psychiatric Association, 2013).

R1 example analysis. As the children in Ian’s Walk (Lears, 1998) return home, they stop at the pond and Ian, the character with ASD, plays with stones and then lines them up in a row. The act of lining up objects is not in itself a definite characteristic of autism. People lineup objects for many different purposes. A storeowner may line up the objects on a display table so that customers can easily see the merchandise. A young child may line up stuffed animals during imaginative play; maybe the child is pretending that the animals are on the bus or a train. During math class, a student may line up objects so that they are easier to count. Unlike in the previous examples, Ian seems to be lining up objects, because he enjoys the activity of lining up objects. “He lines them up in a straight row along the edge of the walkway. I stand in front of him so no one steps on his fingers” (p. 24). In the illustration, Ian is lying on his side with his cheek on the pavement and the stones are lined up in his vision. His older sister is standing so that her feet frame Ian’s head and creates a sort of blockade from pedestrians passing by. In other words, the sister is protecting Ian from being stepped on by people walking down the sidewalk. Ian is demonstrating how a stereotypical motor activity, that is, lining up objects, takes precedence over his own safety.

R2 description. “Insistence on sameness, inflexible adherence to routines, or ritualized patterns or verbal nonverbal behavior (e.g., extreme distress at small changes, difficulties with transitions, rigid thinking patterns, greeting rituals, need to take same route or eat food every day)” (American Psychiatric Association, 2013).

R2 example analysis. In Waiting for Benjamin (Altman, 2008) the sentence “He always cries if it [water cup] isn’t exactly in the middle of the table when Mom tucks him in (p. 18)” describes Benjamin’s attachment to routines and sameness. Benjamin gets upset if ritualized patterns are disrupted, such as having his water cup in a different spot on the table. While consensus coding the abovementioned excerpt, the authors unanimously agreed that the R2 code clearly described the sentence. That being said, occasionally the authors would have to discuss sentences to come to an agreement on which code would accurately describe a sentence in a story. For example, in the book Tacos Anyone? (Ellis, 2005b), the phrase “Sometimes, he [Michael] makes screaming sounds and body movements, like slapping his leg over and over again” (p. 5). When coding this excerpt, the authors considered the R1 code because Michael was repeating the action of slapping his leg, as well as the R4 code because the act of slapping indicates sensory input. In order to code this excerpt the authors relied on the illustrations that accompanied the text in the book in which Michel is jumping on a bed that has a toy car with a broken wheel. In the next picture frame, Michael is sitting on his mother’s lap while she rocks him and explains to Michael’s brother that something must have upset him. “Mom says he’s trying to tell us something and we should listen” (p. 6). As such, the authors agreed that the broken toy caused extreme distress thereby lending the sentence to be coded as R2. However, one of the authors during initial coding could have labeled that phrase as R4 due to the sensory aspect of the action.

R3 description. “Highly restricted, fixated interests that are abnormal in intensity or focus (e.g. strong attachment to or preoccupation with unusual objects, excessively circumscribed or perseverative interest)” (American Psychiatric Association, 2013).

R3 example analysis. In Pedro’s Whale (Kluth & Schwarz, 2010), Pedro has a strong attachment to whales. In addition to insistence on carrying a stuffed whale, Pedro knows many facts about whales. “More than anything in the world, Pedro loved whales” (p. 1). Similarly, in My Brother Charlie (Niekerk & Venter, 2006), Charlie has an unusual preoccupation with
presidents. “He knows the names of all the American presidents!” (p. 20). Both examples demonstrate a fixated or special interest, one character for whales and the other for presidents.

R4 description. “Hyper- or hyporeactivity to sensory input or unusual interests in sensory aspects of the environment (e.g., apparent indifference to pain/temperature, adverse response to specific sounds or textures, excessive smelling or touching of objects, visual fascination with lights or movement)” (American Psychiatric Association, 2013).

R4 example analysis. In Apples for Cheyenne (Gerlach, 2012), after Rachel groomed a horse named Cheyenne, Rachel rocks her body to remind herself of the sensation of riding Cheyenne. “. . . Rachel rocks back and forth. Rocking feels good to her body, the way riding Cheyenne feels good. It helps her feel calm” (p. 33). Similarly, in Understanding Sam (Nierkerk & Venter, 2006), Sam refuses to wear his new coat because of its texture. “It hurts my skin. I don’t like it!” (p. 10). Both examples demonstrate hyperactivity sensory input. In contrast, the character Ian in the book Ian’s Walk (Lears & Ritz, 1998), Ian doesn’t seem to notice noises that bother most people. “When a fire truck rushes by with its siren wailing and horn blaring, Ian hardly seems to notice” (p. 6). This is an example of hyporeactivity, and Ian does not react to the stimulus, that is the loud noise, in the same way as his sisters. In all cases, the characters exhibit non-typical reactions to their environment.

Results
After analyzing the 15 selected picture books with the aforementioned coding system, descriptive statistics were used to look for trends and patterns in the data set in order to answer the guiding research question: Which symptoms are presented in current fictional picture book narratives that portray individuals with autism spectrum disorder? A total of 178 symptoms were derived from the 15 picture books. Of the 178 symptoms, 38% of them were representative of the social communication deficits described by the DSM-5, while a majority of them (62%) were coded as repetitive or restrictive behaviors.

When analyzing the data further, 34 out of 178 symptoms (19%) were from the S1 category (see Figure 1), 4 (.02%) fell into the S2
category, and 29 (16%) were coded as S3. With regard to repetitive or restrictive behaviors, 38 of the 178 symptoms (21%) were classified as R1, 21 (12%) were coded as R2, 18 (10%) were coded as R3, and 34 (19%) were categorized as R4 (see Figure 1). Further, some books depicted a variety of symptoms whereas other books often repeated that same symptoms (see Table 2).

**Discussion**

Book depictions relied heavily on repetitive and restrictive interests, especially with regard to sensory aspects of ASD. In general, the text set as a whole did represent the overall complexity of autism to varying degrees, but individual picture books were less representative. Accurate depictions were often stereotyped. For example, authors referred to eye gaze and described “no eye contact,” but the DSM-5 states “inappropriate eye gaze” which could take the form of “lack of eye contact” or “too much eye contact” such as staring. However, the books do begin to provide some insight into autism in young children and will be helpful for or increasing awareness of ASD.

When reviewing books about autism, it may be helpful to look at the characteristics of the author. Many authors of the picture books that we analyzed had some direct relationship to a child with autism. To be specific, three of the authors had children with ASD, three of the authors work or have worked in educational settings teaching students with ASD, two authors are speech language pathologists, and two are specialist who work with families and children who have ASD. The perspective of the author often comes through in the book they are presenting. For example, the educators and speech language pathologists often include educational components about classrooms or recess in their stories (e.g., Pedro’s Whale (2010), Looking After Louis (2004), while books written by parents often have a sibling or community component to them (e.g., My Brother Charlie (2010), Since We’re Friends (2012)). Of all the picture books that were reviewed, only one author, Birgitta Sif who wrote Oliver (2012), had a literary background as opposed to an autism background.

The gender of the characters identified with ASD within our text set included twelve males, two females, and one character was not clearly identified as male or female within the text (see Table 1). That being said, 80% of the characters with ASD were male. This large percentage is not surprising as males are five
times more likely to be diagnosed with autism than females. As such, the overall representation of gender depictions in books with characters that have autism coincides with the current statistics about autism.

When looking at the depiction of symptomology as depicted chronologically by publication year (see Figure 2), an interesting aspect is noted. The older books, *Andy and His Yellow Frisbee* (1996) and *Ian’s Walk* (1998) have high frequency counts for restrictive and repetitive patterns of behavior. Andy is preoccupied with spinning a Frisbee (code R1) and Ian demonstrates different types of hyper or hypo sensitive to his environment (code R4). There is a six-year gap between when books that appear to focus more on the sensory aspects of autism were published, and newer books that started to capture the language deficits were published. In later publications, the books depict a variety of symptoms. The increased variety in symptoms may be due to the increasing awareness that autism has been experiencing. For example, in 1988, the autism prevalence rate was 1 in 2500 children (Yeargin-Allsopp et al., 2003) and the primary media reference was the movie *Rain Man* (MGM & Levinson, 1988). Since that time, the autism rate has skyrocketed to 1 in 68 (CDC, 2014) and the number of movies, television shows, and narrative characters with autism has increased dramatically. Awareness increased dramatically with the formulation of Autism Speaks in 2006, and the passing of the Combatting Autism Act: Public Law 109–416 in that same year.

**Implications**

This research has implications for educators currently working with students in our schools. Educators need accessible resources, such as this study, to understand the power of narrative fiction stories, and the importance of understanding persons with ASD within our classrooms, schools, and communities. Classroom teachers, special education teachers, speech and language pathologists (SPL), specialists, counselors, and administrators can utilize the texts shared within this study as resources within small group and whole class read aloud instructional time, facilitating students' social skills and awareness of people with ASD. Educators can begin dialogues amongst themselves from this research to advocate for students with ASD, augmenting their “capacity for empathy” (Mar & Oatley, 2008, p. 173).

The research has significant implications for our teacher and SLP educators. Much of our undergraduate and graduate studies of persons with ASD involve an in-depth understanding of the disorder, and how to modify and adapt the behaviors exhibited by those with ASD. This research will attempt to balance the modification of instruction with fictional stories about children with autism, allowing our pre-service educators a chance to connect to a character with ASD emotionally, whilst learning about his or her disorder. Teacher educators could include these texts within autism courses to share with pre-service teachers the importance of accurately portray-
All groups of people through a close examination of fictional texts.

An author’s background has important implications for books about ASD that have potential use in classroom settings. Books need to be both authentic and engaging and an overwhelming majority of authors had the autism piece to support the authenticity of their work, but no formal training in how to write children’s books. Authors with awareness of autism could benefit from partnering with literary experts in the future as more works are added to the field.

For authors and editors, we recommend that more books include the social communication and social interaction challenges of children with ASD. For educators and parents we recommend reading books that portray the complexity of autism symptoms.

Limitations

There are limitations to this study. First, interpretation of the DMS-5 ASD symptoms within picture books is subjective. Although the authors conferred regularly to increase interrater reliability for the categorization of ASD symptoms represented within the texts, we do not profess total confidence of symptom categorization. Second, the DMS-5 is a cultural product created by professionals who deem what is observable typical and atypical behavior. That is, the DMS-5 itself is a subjective document. Third, ASD symptom categorization was mostly limited to the content of text lines only. We only included illustration information and content analysis when we had discrepancies with codes. Fourth, the book selection process narrowed the text set to narrative fiction with a clear storyline. For example, books that explained a sibling’s symptoms but were not written as story with a plot were not included in text set. However, if these books were part of the data set, the results of symptomology may have yielded different results.

Future Directions for Research

Given the ever-increasing number of picture books being written about ASD, an expansion of the existing research to include picture books that have been published since 2012 is recommended. While the current research looked at a content analysis of the picture books, in the future, an analysis based on the images in the picture books could prove informative. In addition, a logical extension of the DSM-5 analysis to include chapter books written about fictional characters with ASD is recommended. This extension is currently underway. Given the results of the current study, an important future aspect of this research would be to analyze the use of the picture books in the classroom. Specifically, will reading picture books about children with autism in a classroom setting increase children’s understanding of ASD? While this research specifically looked at symptoms of fictional characters with ASD, it would be interesting to analyze the DSM-5 symptoms present in non-fiction or realistic informational texts about individuals with ASD.

References


Juvenile Literature Cited


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