

The representation of developmental disabilities in children's picture books: Analysis of five picture books

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ABSTRACT: This research study investigates developmental disabilities (DD) such as Autism Spectrum Disorder (ASD) and Down syndrome (DS) and the accuracy of their representation in children's literature. Previous research suggests that picture books published before the year 2000 contain inaccurate and unrealistic depictions of disabilities. This research focuses on examining the text and illustration of more recent books to determine the accuracy of their representations. The books that were selected are: *All My Stripes* (Rudolph & Royer, 2015), *The Girl Who Thought in Pictures* (Mosca, 2017), *My Brother Charlie* (R. Peete & H. Peete, 2010), *My Friend Has Down Syndrome* (Moore-Mallinos & Fabrega, 2008), and *My Friend Isabelle* (Woloson, 2003). The first three books are on ASD, while the last two are on DS. Four expert readers conducted the initial reading during semi-structured interviews, and the researcher who utilised a reading protocol provided an in-depth analysis. The results indicate that high-quality books with DS representations are less accessible to readers. The selected books also delay adapting to the most appropriate terminologies and inadvertently present contradictory meanings between the text and illustrations. Furthermore, despite society's growing inclusivity, there is still a lack of portrayal of proper attitudes and supportive exemplary practices towards persons with DD in the picture books.

KEYWORDS: developmental disabilities; Autism Spectrum Disorder; ASD; Down syndrome; DS; children's literature; picture books

I. INTRODUCTION

Autism Spectrum Disorder (ASD), considered initially a neurotic condition caused by inadequate parenting and a form of childhood schizophrenia (Wolff, 2004), is now recognised as a neurological difference. Similarly, derogatory terms associated with Down syndrome (DS) because of their specific facial features (Down, 1867; Ireland, 1900) are no longer used. Due to the change in diagnosis criteria, the prevalence of diagnosed ASD has increased globally within the past two decades, with 1 in 40 parent-reported ASD diagnoses among US children (Kogan et al., 2018) and 1 in 100 people in the UK (British Medical Association, 2020). The prevalence of DS is relatively stable, with an estimated prevalence rate from 6.6 to 8.3 people per 10,000 population in the UK and the US, respectively (Wu & Morris, 2013; Presson et al., 2013).

However, the increasing number of children diagnosed with ASD and DS and society's growing inclusivity makes education about disabilities at a young age imperative. Picture books have been acknowledged as powerful and valuable devices for teaching children complex or challenging topics (Leininger et al., 2010). They rely on the interplay of texts and illustrations to convey meaning (Nodelman, 1988). Nevertheless, the message implied in one mode might be contradictory in the other. Disability, in children's literature, has pervasively been used as a "narrative prosthesis" to metaphorically imply immorality and collapse (Mitchell & Snyder, 2000, p. 47) or characters with disabilities experience "narrative erasure" by the author exclusively portraying the positivity and sameness (Aho & Alter, 2018, p. 304). Substantial research has been done on the representation of physical disabilities in children's literature (Aho & Alter, 2018; Hughes, 2012) and content analysis on texts in children's picture books portraying DD. Few scholars have studied the interaction between texts and illustrations or the quality features such as the accuracy and appropriateness. Nevertheless, the language and style of a picture book should be appropriate for children's age (Moya Guijarro, 2014). Children's cognitive capacity should also be considered, particularly when picture books target children with disabilities (Prater & Dyches, 2008). Critical Discourse Analysis (CDA) is mainly used in addressing issues of power relations, inequality, ideology, and dominance in social contexts (Van Dijk, 2015; Fairclough, 2010). A critical approach to discourse analysis investigates why and how the discourse works and challenges the underlying political, social, and cultural ideologies and values (Van Dijk, 2015). The way disability is constructed is also the social negotiations between various dominant parties against the ableism ideology (Snyder & Mitchell, 2000).

CDA is used in this study to research beyond the immediate literary effects of including DD representation in children's picture books and examine the reasons for the representation. Additionally, CDA studies the social structure at both micro (e.g. language use and communication) and macro-level (e.g. ideology, power, and dominance) and makes connections between the two (Van Dijk, 2015). He states CDA is also used in investigating social and cultural changes and the related influence on contemporary societies and the discursive practices and events. As Grue (2011) points out, compared to rich CDA research on gender, racial (Roy, 2008), and power issues (Aidinlou et., 2014) in literature, there is a relative lack of CDA research on disabilities. Few have employed a CDA approach in their research about disabilities (Mitchell & Snyder, 2000) and blind myths (Kleege, 2006). However, disability studies are discourse-rooted and require CDA to engage the critical issues (Grue, 2011). Taking a CDA approach in this study helps examine the historical assumptions and values attached to disabilities and the related exemplary practices and attitudes throughout time.

Due to the multimodal texts in picture books, studying them requires diverse fields of inquiry, such as social semiotics analysis, multimodal analysis and visual grammar. Semiotics is the study of signs within societies and cultures (Van Leeuwen & Kress, 2006). According to them, it is widely used in literature and visual studies to investigate semiotic modes of language and images. Previous research has employed multimodal analysis to analyse children's picture books (Moya Guijarro, 2014; Wu, 2014; Serafini, 2010). The visual components reveal the social constructs, establish the interpersonal connection of the image among the producers, represented participants (RPs) and viewers, and form coherent messages (Van Leeuwen & Kress, 2006). The complex and subtle relationship between RPs and readers contributes to the level of involvement and intimacy. They mention that demand gazes, close-ups, and medium shots with facial expressions and presenting frontal angles rather than oblique angles reach an effect that directly addresses the viewers. They also state a compositional organisation such as framing and full-page images create distance or connectedness between the RPs and readers. The position of texts and illustration and their size also creates salience and capture the attention of readers. In this study, various visual strategies in the semiotic and multimodal analysis are employed to engage the texts and illustrations of the picture books critically.

This research is vastly different from the previous research that commonly uses content analysis to examine representation in picture books (A. Gooden & M. Gooden, 2001; Golos, 2012; Koss, 2015), in that it combines two approaches: expert readers response and discourse analysis. Educational studies typically use experts or expert-novice paradigms to examine quality performance (Newell & Simon, 1972). Previous research had used a limited number of experts in their research. For example, only three (Johnston & Afflerbach, 1985) and six (Graves, 2001) experts have been used in reading comprehension, one expert in teaching pedagogy (Chen, 2001). Past studies on quality examination of the picture books with the representation of disability characters also used readers' initial responses, such as school children (Smith-D'Arezzo, 2003). In this research, four expert readers and the researcher participated in examining the quality performance of the picture books to increase credibility. The research shows a smaller number of high-quality picture books on DS than ASD representations. The delay in incorporating the latest and appropriate terminologies has resulted in contradictory meanings in different modes of texts. The expert readers and the researcher are concerned about the over-representation of savantism in ASD and the under-representation of schooling of DS, which might deepen misunderstanding and stereotypes among the public. Portrayals of peer acceptance and solid support in picture books are still lacking.

II. METHODOLOGY

Data collection

Picture Books Selection: The researcher selected five picture books representing ASD and DS (published in the UK and the US). Examining their fifteen-year span in the publication also showed the change in the publishing industry and the evolution of societal beliefs.

The books are selected for the study based on the following criteria:

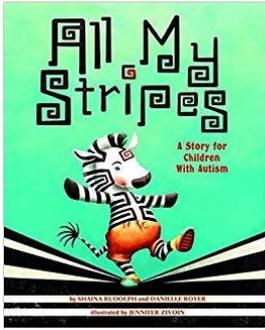
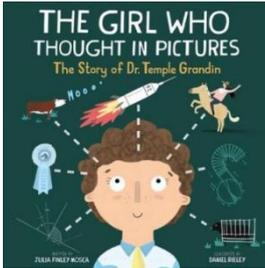
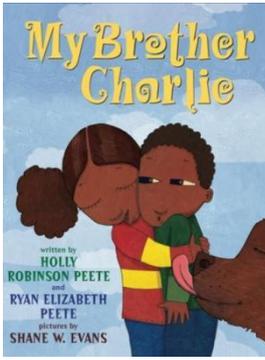
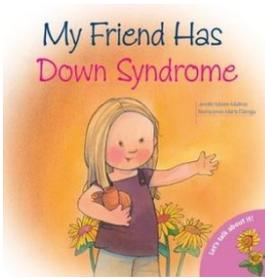
- a) Including a main or supporting character with developmental disabilities, i.e., ASD or DS;
- b) Genre: Fiction or non-fiction (autobiographical);
- c) Suggested age of the reader: 4-10 years old;
- d) Publication year: Recent, from 2000 to 2018;
- e) Appeared in at least two of the three sources: books included in award lists, bestseller lists, or published by the ASD and DS advocacy agencies in the US and the UK.

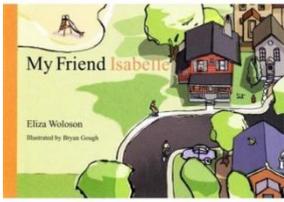
This study includes the primary and supporting characters because the stories told from different points of view

can provide insights into the different attitudes towards DD. Initially conducted in 2019, the study only includes picture books published from 2000 to 2018 to focus on contemporary representations of DD to investigate its correspondence with developing academic research and inclusive policies in this field.

Table 1

Synopsis the five picture books selected for this study

Title	Synopsis	Book Cover
<i>All My Stripes</i> (2015)	Zane, the zebra with autism, runs home telling his mother about problems he faced during his school day. She reminds him that while others may only see his "autism stripe", he has stripes for honesty, caring, and much more.	
<i>The Girl Who Thought in Pictures</i> (2017)	The young Temple Grandin, who experienced challenges and unconventional experiences at school, becomes famously known as an autistic animal scientist and designer of cruelty-free livestock facilities.	
<i>My Brother Charlie</i> (2010)	Callie and her family's life changed after Callie's fraternal twin brother Charlie is diagnosed with autism. She finds that although it is hard to communicate with Charlie through words at times, he is in most ways a loving brother with many unique talents.	
<i>My Friend Has Down Syndrome</i> (2008)	Tammy and "I" met at summer camp and developed a warm relationship despite Tammy having Down syndrome. Tammy had many talents and taught "me" to play the guitar. "I" learnt everybody is good at something and could just need extra help with other things.	

<p><i>My Friend Isabelle (2003)</i></p>	<p>The two friends, Isabelle and Charlie, both like to dance, draw, eat Cheerios, play at the park, and cry when their feelings are hurt. They also share differences: Isabelle has DS and Charlie does not.</p>	
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Semi-structured interviews: Semi-structured interviews are particularly used in qualitative research in the field of education (Cohen et al., 2002). Compared to structured and unstructured interviews, semi-structured interviews have the flexibility of facilitating open-ended questions adapted to particular respondents (Punch & Oancea, 2014). The researcher had shown familiarity with the picture books during the book selection process. To reduce the research bias, the researcher recruited three Applied Behaviour Analysis (ABA) practitioners from an ASD intervention centre in China and a PhD student in education who is an English teacher at a mainstream secondary school to be the expert readers. They were unfamiliar with the selected picture books. Still, the three ABA practitioners had at least two-year work experience with children with ASD (aged 2-6 across the spectrum) and DS (aged 2-5) and had profound knowledge about DD. The English teacher had some basic knowledge about ASD and DS.

Three separate online semi-structured interviews with ABA practitioners were conducted during different periods of the same day, and the participants were not allowed to communicate with the other participants. Another interview with the English teacher was conducted face-to-face. Each interview lasted around half an hour, excluding the time spent on reading. When reading the five books, the participants took notes of their first impressions and then answered the researcher's series of questions about their initial response. The researcher developed interview questions based on previous research that used schoolchildren as readers (Smith-D'Arezzo, 2003, p. 80). Compared to simply looking at children's responses, this study aimed to explore how expert readers respond to the selected books might. The methods of Smith-D'Arezzo were strategically used to find an additional perspective in investigating children's literature. The interview questions were developed as follow: "What was your first visceral reaction to the book? Would you recommend it to a parent, a child, or a teacher? What was your emotional response to the book? What did you like or dislike about the book?" What differences do you observe in the representation of ASD and DD? The researcher used the same interview schedule to increase dependability. The interviews were audiotaped and transcribed.

III. DATA ANALYSIS

Thematic Analysis: Data collected from interviews was analysed via thematic analysis, a method that can be used to identify and organise insights into patterns of meanings (Braun & Clarke, 2012), to uncover the expert readers' responses and meanings. Tape-recorded interviews and relevant notes taken during the interviews were transcribed and analysed for in-depth insights into disability representation. The researcher first jotted down the descriptive codes on the printed transcripts of interviews with expert readers. Then, the researcher looked for code patterns, which were later subsumed into major themes and categories. The expert readers were coded with letters: P1 (ABA practitioner 1), P2 (ABA practitioner 2), P3 (ABA practitioner 3), or T (PhD student and teacher). Their initial responses to the five books were compared and discussed. Participants were shown the interview transcripts to check for accuracy and interpretations made by the researcher. The transcripts were returned to the researcher within two days, and a few modifications were made so that their opinions were truly represented by forming a member check (Lincoln & Guba, 1985).

Critical Discourse Analysis: Based on a Reading Protocol, the researcher designed a reading protocol adapted from Dyches and Prater's (2000) "Rating Scale for Quality Characterisations of Individuals with Disabilities in Children's Literature". The researcher also incorporated Piaget's (1971) theory of Stages in Intellectual Development to examine the appropriateness of the picture books. Specialists widely adopt this theory in research of children's literature to assess and categorise literary works for children of various ages and reading capacities (Moya Guijarro, 2014). The reading protocol includes five sections: personal portrayal, exemplary practices, social interactions, the literary quality of the text, and the visual quality of illustrations. The researcher conducted

discourse analysis by utilising the reading protocol to question and confirm the expert readers' initial response, as well as to closely examine the portrayals of characters in the text, the illustrations for details such as composition, colour, characters' facial expressions, and body language, and the function of the texts and illustrations as well as the relationship between them.

IV. DISCUSSION

The research results consist of two parts: expert readers' response coding and researcher's discourse analysis. From the expert readers' response, one major theme was RELEVANCE, and its related categories were **work experience** and **preconception**. The other major theme was RECOMMENDATION, under which the major categories were **illustration quality**, **text quality**, and **awareness promotion**. Findings of discourse analysis based on the reading protocol were condensed and categorised into five categories: personal portrayal, exemplary practices, social interactions and relationships, appropriateness, and effectiveness.

Expert Readers' Response

Relevance: All three practitioners found the book *All My Stripes* (Rudolph & Royer, 2015) highly related to their work and could identify the typical behaviours of ASD individuals in Zane. For example, two practitioners pointed out Zane's heightened sensory sensitivity to sound and touch that made him react negatively to mundane things like touching paint and fire alarms going off. They remarked this representation was authentic because children with ASD they worked with had sensory problems and got frightened by specific sounds. Two practitioners found Zane's difficulty in interpreting metaphors match typical profile of individuals with ASD, which is shown by Zane taking the teacher's saying, "whatever floats your boat" literally and spending "the rest of the afternoon looking for a boat in the classroom" (Rudolph & Royer, 2015, p.18-19). P2 also commented that Zane's failure to initiate conversation could connect to her work experience, and she could "feel their struggles". Though Zane knows the video game his classmates talk about, he opted to stare at the floor instead. The book was authentic as it served as self-help to special needs teachers, as P1 remarked that:

The little zebra encounters many difficulties...As special needs teachers, our job is to focus on their difficulties and facilitate interventions in our daily teaching. This book is like a self-help book. It reminds me of their previous values and different sides of children with ASD when I was too busy with work and seemed to forget. Just like Zane, they can be caring and honest. However, the mainstream teacher who did not have experience with children with special needs could not directly identify Zane's differences and found the metaphors about his autistic stripe vague and hard to understand.

One practitioner mentioned that in the book *The Girl Who Thought in Pictures* (Mosca, 2017), they observed young Temple's avoidance of hug, "spinning in circles" in ASD children she worked with (Mosca, 2017, p.6). Temple's atypical behaviours coincided with cattle's circling habit to gain calm, which further her interest in animal science. While this practitioner also pointed out Temple's talents, such as pictorial thinking, might mislead parents to believe savantism exist in every ASD child; however, the proper upbringing environment and support from families and teachers could facilitate children's discovery of their strengths.

All the practitioners identified in the book *My Brother Charlie* (R. Peete & H.Peete, 2010)'s different way of expressing love and feelings was common among children with ASD, especially those who were not verbal. P1 remarked that: This book reminds me of the children I worked with...When we (practitioners) first encounter them, we were prepared that they wouldn't be interested in interactions with peers or adults. But they would share fun toys and the food they like with me, and when they come across something they are afraid of, they would hold my hands and hide in my arms. Just like Charlie, they express their feelings through behaviours instead of words.

P2 mainly worked with children with ASD aged 3-4, and it was difficult for her to know their minds. When she read the RJ's quotes at the end of the author's note, "if I could tell people one thing about autism it would be that I don't want to be this way" (R. Peete & H.Peete, 2010, p. 34), she said:

I had not know children with ASD could think this way...I thought they were only interested in their own lives. But the verbal children could compare their lives with other typically developing children...we should pay attention to their different expressions and meet their needs.All participants mentioned Tammy's facial features-"flat faces and large, almond-shaped eyes, short arms and legs, small ears, and a small mouth"- are realistically portrayed in *My Friend Has Down Syndrome* (Moore-Mallinos & Fabrega, 2008, p.20). Peers in the book are scared and worried that they "might all catch DS" and suggest "Tammy should go to a special camp"(Moore-Mallinos & Fabrega, 2008, p.16) . The mainstream teacher pointed that it is a typical response

among children before they know about DS. P3 had worked with children DS in the intervention centre and remarked that people, even practitioners who never met individuals with DS before might find their noticeable facial features challenging to accept at first. She remarked that, however, the adorable illustrations and children's true friendship depicted in the story encourage the readers to face DS children with genuineness and bravery. In *My Friend Isabelle* (Woloson, 2003), all participants noticed the condition of DS is revealed in the author's note at the end. Therefore, the portrayal of Isabelle's facial features is recognised at a second look at the book. Therefore, P3 suggested the illustration to be more realistic to be educational for readers.

Recommendation: All the participants mentioned that the colour in *All My Stripes* (Rudolph & Royer, 2015) is bright and cheerful, and P2 mentioned that the story told from the first person's view was quite engaging. Thus, participants affirmed that it would be suitable for children readers. Two practitioners and the teacher appraised the Reading guide and Note to caregivers and parents to be educationally informative and practically helpful because they could use them to identify the typical challenges and strengths of ASD and teach their students. Two practitioners pointed out the theme "different, not less" in *The Girl Who Thought in Pictures* (Mosca, 2017, p.11) could encourage children with ASD to discover their strengths and live a decent life. The mainstream teacher said the zero-cruelty concept in treating cattle and universal equality shown in "pigs didn't care if her hair was a mess" (Mosca, 2017, p.17) promote, from a different and holistic perspective, awareness among children that individuals with ASD enjoyed equality and identical rights. P3 was attracted by the opening parallelism "If you've ever felt different, if you've ever been low, if you don't quite fit in" (Mosca, 2017, p.4) and recommended the book to ASD readers, especially those high-functioning ones, who share a similar experience. P1 mentioned the book could act as self-help for ASD individuals since they were documented to experience a high rate of depression and anxiety (Ghaziuddin, 2002). The practitioners all agreed that the introduction and note of Temple Grandin, the author's chat with her, and the bibliography made the book an excellent educational tool for parents.

Two practitioners recommended *My Brother Charlie* (R. Peete & H. Peete, 2010) to families since it proves a healthy and warm family environment could reduce aggressive and problem behaviours and facilitate character development. The story is told from the point of view of Charlie's fraternal sister Callie. Another practitioner appraised the book as an excellent social story showing how siblings of children with ASD could provide emotional support. The mainstream teacher also recommended the book to the only child in families and those who lack family care to enjoy the loving story.

One practitioner and the mainstream teacher suggested the camper teacher in *My Friend Has Down Syndrome* (Moore-Mallinos & Fabrega, 2008) is patient and inspiring and the information shared about DS is crucial to children's acceptance of DS. The mainstream teacher said the camper teacher is warm and competent in teaching sensible topics in class. By organising activities that engage students of various abilities, such as tagging, making pottery and talent show, the educator shows everyone needs help with some things... Besides parents, educators guide children in classrooms and society to accept individuals with special needs and provide support. Another practitioner mentioned the parent guide enclosed in the book provides guidance to parents and siblings and contributes to a solid support system. All participants agreed that *My Friend Isabelle* (Woloson, 2003) is suitable for both typically and atypically developing children because its central theme is friendship. The mainstream teacher mentioned Isabelle lives in an inclusive and dynamic community, and her difference is respectfully accepted. Also, the theme "the differences are what makes the world so great" (Woloson, 2003, p.13) emphasises the importance of diversity and comforts anyone who is different. One practitioner and the teacher noticed in the texts, the words are not just placed left to right in straight lines; they are placed playfully but strategically on the page. For example, the word "twirl" is presented in a twirl, and the word "fast" is in a tilt, which is interesting.

Discourse Analysis Based on the Reading Protocol

Personal Portrayal: Zane in *All My Stripes* (Rudolph & Royer, 2015) has difficulties in interpreting metaphor, social communication and interaction, and sensory processing, which matches research findings that, although figurative languages such as metaphors are common in daily language use, children with ASD show deficient performance in metaphor, metonymy, and humour comprehension and tend to have literal interpretation (Happé, 1993; Rapin & Dunn, 2003; Rundblad & Annaz, 2010; Mashal & Kasirer, 2011). Zane's difficulty in social interaction and heightened sensory sensitivity to sound and touch correspond with the well-documented peer difficulties and sensory differences (Hauck et al., 1995). He is also portrayed to have many strengths such as navigation ability and visual memory, as well characteristics such as empathy, honesty, and curiosity for knowledge. Figure 1 shows the strengths that are metaphorically represented through his pilot stripe, caring stripe, honesty stripe, and curiosity stripe. The texts are empowering, albeit the illustration of the autistic symbol, the autism stripe, in the shape of a squared swirl, is separated from his other attributes instead of being integrated with

the other symbols. Lastly, the terminology "autism" used in the book cover failed to accommodate the more inclusive "autism spectrum disorder".

Figure 1
Illustrations of Zane's various stripes in All My Stripes



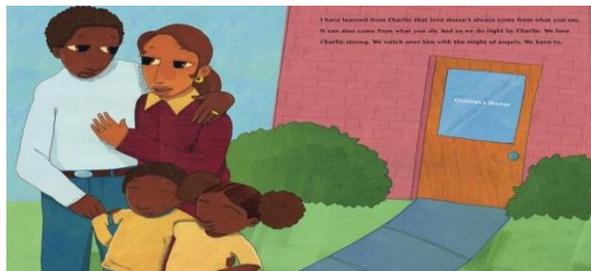
The biographical book *The Girl Who Thought in Pictures* (Mosca, 2017) depicts Temple's sensory differences in great detail. She is sensitive to noise, light, and crowds and is uncomfortable with touches like "big squeeze hug" and "frilly dresses" (Mosca, 2017, p. 8). On top of that, Temple shares similar tastes as typically developing children in loving ice cream and art. Temple's talents, such as pictorial thinking style and extraordinary visual memory, on which she relies to build a hug machine for farming cattle and her strengths of being brave, persistent, and self-determinant, make her a round character with multifaceted personalities. Charlie in *My Brother Charlie* (R. Peete & H. Peete, 2010) has difficulties with social interaction, such as detachment and avoidance of physical contact. He is portrayed with various abilities such as playing "'Itsy Bitsy Spider' on the piano", reciting "the names of all the American presidents" and having "his special way with animals" (R. Peete & H. Peete, 2010, p.20). Charlie's comfort for his sister, saying "over and over again 'I love you'" (R. Peete & H. Peete, 2010, p.26), echoes with the doctor's disapproval in the beginning. This detail coincides with findings that people with ASD can infer the mental states of others and respond empathetically to the feelings of others (Yirmiya et al., 1992; Scheeren et al., 2013), which helps reshape the preconceived misconceptions about ASD that they are mind blind and lack of empathy (Baron-Cohen, 1995). The theme in the story "Charlie has autism. But autism doesn't have Charlie" (R. Peete & H. Peete, 2010, p.29), at the first glance, seems touching and shows the family's acceptance. However, as Dunn and Andrew (2015) suggest viewing ASD as an illness instead of a neurological difference renders it as something to be avoided instead of an integral part of a person. The expression here indicates discriminatory language and shows Charlie's condition is tolerated in the family apart from his other desirable characteristics.

My Friend Has Down's Syndrome (Moore-Mallinos & Fabrega, 2008) accurately portrays Tammy's facial characteristics, including a flat facial profile, a small mouth (Clarke & Faragher, 2014), and her physical characteristics. Tammy's difficulty in sports like "rather slow at running races and tag" (Moore-Mallinos & Fabrega, 2008, p.25) and talents in art like making pottery and playing the guitar could also be identified in the existing literature on the affected gross motor skills and less affected fine motor skills of children with DS (Palisano et al., 2001; Pitetti et al., 2013; Connolly et al., 1993). The illustrations in *My Friend Isabelle* (Woloson, 2003) feature a simplistic and basic art style. In contrast, Isabelle's facial features and relatively smaller shorter body size than her peers are identifiable and fit the profile of DS (Clarke & Faragher, 2014). Isabelle has difficulty in language as her "words are sometimes hard to understand" (Woloson, 2003, p.12) and delayed gross motor skills as she takes her time to run. Isabelle is adequately portrayed to do many things and has unaffected fine motor skills (e.g. drawing and playing house).

Exemplary Practices: Zane, in *All My Stripes* (Rudolph & Royer, 2015), attends a mainstream school. His teachers are supportive and seemed well-trained to teach children with special needs. One respects his sensory difference and allows him to paint without a brush, and the other encourages him to design his planet. However, the book shows that inclusive practices are still needed at this school, such as providing proactive solutions to the fire alarm. *My Brother Charlie* is based on a real-life story and shows the practice of diagnosing ASD as a mental illness in that era. It is written by a mother-sister duo in the family about a boy named RJ with autism. RJ, in

real-life, received his diagnosis at three years old in 2000. Research and media in the 1980s and 1990s overwhelmingly presented persons with autism as mind blind, unable to empathise or mentalise with others' feelings (Baron-Cohen et al., 1985). The doctor in the story also told Charlie's mother that he would "never say I love you" and struggle to "make friends, or show his feelings, or stay safe" (Rudolph & Royer, 2015, p.10). Figure 2 shows the Charlie family talking outside the doctor's office, turning to each other for support after learning the "tragic" news.

Figure 2
Illustration of the Charlie family in My Brother Charlie



The *Girl Who Thought in Pictures* (Mosca, 2017) shows the congruent attitude of distancing and practice of institutionalisation towards ASD during Temple's era. Born in 1947 and misdiagnosed at three when autism was conceived as brain damage, Temple's doctor told her parents that "her brain's not quite right" and they "must send her away" (Mosca, 2017, p.11). Viewing ASD as a problem that resides in the individual and requires correction for "normalisation" (Linton, 1998) is problematic as it results in "the logical culture of euthanasia" Garland-Thomson (2004, p.779) where disabled bodies are either rehabilitated or eliminated. Nowadays, ASD is seen as a neurological difference, and in the latter part of the story, it is deemed as "different, not less" by Temple's speech therapist (Mosca, 2017, p.13). Temple's two experiences of expulsion and support from two different mainstream schools indicate contradictory practices and inclusion still not standard during Temple' era. In *My Friend Has Down Syndrome* (Moore-Mallinos & Fabrega, 2008), DS was introduced as a misconception of infectious disease among the campers in a summer camp. Viewing disability through a medical lens can render the misconception that disability is a biologically inferior disease and requires special treatment like institutionalisation (Keith, 2001). Campers' negative attitudes are corrected by the camp teacher's talk about DS and replaced by patience, understanding, and support. Research suggests that provision of information about DS is important for more positive attitudes and peer acceptance among typical developing children (Laws & Kelly, 2005). Using a peer support group in this story also contributes to addressing social needs of DS children and social acceptance of typical children (Frederickson & Turner, 2003). Additionally, the camp teacher's confidence and competence in promoting understanding and awareness among children indicate that educators' expertise and strategies in the social development of typically developing children are essential to addressing disability issues and promoting friendship in mainstream education (Buysse et al., 2008; Hollingsworth & Buysse, 2009).

My Friend Isabelle (Woloson, 2003) is published in 2003 and is a relatively early published book selected for this study. It shares the simple idea that "the differences are what makes the world so great" (Woloson, 2003, p.13). Isabelle is portrayed in an inclusive and dynamic community, which is interpreted in illustrations on one double spread and the cover. It shows disability can be well incorporated and accepted in an inclusive community.

Social Interactions and Relationships: Classmates in *All My Stripes* (Rudolph & Royer, 2015) exclude Zane, and he is portrayed as helpless against ridicule and teases. Children with ASD are easily to be the targets of bullying for their differences. Instead, a design of peer groups at school in the plot could help address the anxiety issues and special needs of ASD children. More information about ASD for students before introducing ASD children also promotes social acceptance.

The biography *The Girl Who Thought in Pictures* (Mosca, 2017) shows Temple's childhood experiences of being excluded by children and teachers at school. The illustrations of Temple during her childhood are small and placed in the margin surrounded by vast space. The emptiness acts as a frame and creates a sense of constraint, detachment, and isolation (Nodelman, 1988). Thus, the contrast emphasises the relationship between Temple and the environment, showing her sadness and helplessness.

My Brother Charlie (R. Peete & H. Peete, 2010) shows the family's growth from not understanding the nature of

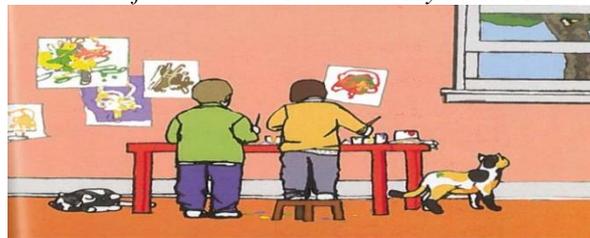
ASD to acceptance. The doctor's affirmation of Charlie's inability to say "I love you" like typically developing children makes his mother sad, and his need to be alone is annoying to his sibling as it "ruins the best playdates" (R. Peete & H. Peete, 2010, p.14). However, they later accept Charlie with his special way of expressing love. Charlie also contributes to Callie's emotional growth from being sad and frustrated due to his brother's diagnosis to being anxious to understanding and the later pride.

Tammy and the persona in *My Friend Has Down Syndrome* (Moore-Mallinos & Fabrega, 2008) share a reciprocal friendship: Tammy teaches the persona to play the guitar while the persona shows her to play tag vice versa. Tammy also contributes to her growth by encouraging her not to quit a talent show, which aligns with literature that individuals with DS are sociable and have similar peer social networks in many aspects as typically developing children matched on mental age (Guralnick et al., 2011).

My Friend Isabelle (Woloson, 2003) depicts a reciprocal friendship. Charlie feels his "life is more fun with friends like Isabelle" (Woloson, 2003, p.28) despite Isabelle's differences. Figure 3 shows Charlie and Isabelle painting together, which demonstrates equity and respect. In the middle shot, Isabelle stands on a chair and paint at the same height as Charlie, despite being shorter. The warm orange background suggests cheerfulness (Nodelman, 1988).

Figure 3

Illustration of Charlie and Isabelle in *My Friend Isabelle*



Appropriateness: The additional information and solid support structure at the end of *All My Stripes* (Rudolph & Royer, 2015) are quite helpful for parents and caregivers to introduce children with ASD to their conditions and understand their specific differences and potential strengths (Miller, 2018). Zane's conversation with his mother has an engaging dialogical structure and serves as an interesting twist in the plot. Though Zane's difficulty in understanding figurative language is well mentioned, the animated character and the heavy metaphor-based illustrations about stripes might not be cognitively appropriate. The mainstream teacher in this study also remarked that the metaphors about his autistic stripe were vague and hard to understand, and his differences brought by ASD were not flagged up, which needs adults' explanations. Thus, readers with ASD might find the symbolic meanings of different stripes hard to understand and the animated character annoying rather than appealing and affirming. The illustrations enhance Zane's emotions not mentioned in the texts with an effective compositional organisation such as frames and angles. In Figure 4, the desk and the knocked-down chair that Zane hides under form a frame within the first picture; the second picture presents Zane through a low angle shot with his legs forming a frame surrounding the bully and the bullied child; the last double spread in the book is unframed and uses a low angle. The different frames suggest Zane's change of emotions from being constrained by his environment to brave and confident to free and happy.

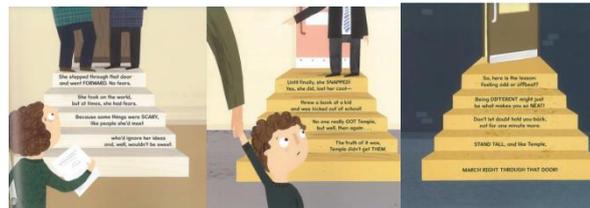
Figure 4

Illustrations of "frames" in *All My Stripes*



The Girl Who Thought in Pictures (Mosca, 2017) features rhyming couplets throughout, engaging younger readers to join in and read aloud. As the targeted readers aged 5-10 (pre-operational stage) might have not fully developed the ability to conceptualise time (Piaget & Inhelder, 1956), Figure 5 shows the reoccurring doors that are strategically used to indicate different stages of Temple's life: being expelled from school as a child, walking through the realm of science, and embracing future opportunities. Additionally, the timeline at the end of the book helps the readers understand the plot and refer to the story. The informative appendices at the end of the book create full engagement with the story and knowledge development.

Figure 5
Illustrations of the symbolic "doors" in *The Girl Who Thought in Pictures*



Two plots in the book-Temple's childhood with ASD and her scientific pursuits-are elaborate with exciting details. The multiple themes such as ASD awareness, inclusivity, and female empowerment could relate to readers from diverse backgrounds and interests. The overall illustration style features concise and straightforward lines, images, and diagrams. The differently sized lettering also represents a varying degree of loudness which can the attract reader's attention.

My Brother Charlie(R. Peete & H.Peete, 2010) is a realistic fiction book with much information and can be text-heavy. At the same time, it is suitable for children in the concrete operational development stage (7-11 years old) who are ready for more complex information (Piaget, 1971). However, as the expert readers and the researcher agreed, the illustration quality needs improvement because the font size is too small to engage children and adults readers.

My Friend Has Down Syndrome(Moore-Mallinos & Fabrega, 2008) contains quite a few interrogative sentences to facilitate an interaction between the characters and the readers. The opening line "Do you have a special friend?"(Moore-Mallinos & Fabrega, 2008, p. 4) sets the conversational tone instead of being didactic; questions such as "What if Tammy didn't like me and didn't want me to be her buddy" and "Did you know that some kids with Down syndrome grew up to be actors and actresses?" could effectively attract young readers' attention by asking them to come up with solutions and to relate to their own life (Moore-Mallinos & Fabrega, 2008, p. 22). In Figure 6, the abstract concept of gene is well explained by portraying chromosomes and describing genes as "tiny bits of matter inside our bodies" (Moore-Mallinos & Fabrega, 2008, p.19), which makes it more comprehensible for readers at the concrete operations stage. The use of close-ups, middle to eye-level angles and "focalisation", the change of focus (Painter et al., 2013), could encourage the readers to be more involved in the character's fictional world and create interaction with the characters. Here, on the ninth double spread, as is shown in Figure 6, the persona is portrayed with an offer gaze that redirects the readers' eyes to look at what she sees and focus on the ASD awareness talk done by the camp teacher. The subsequent double spread is a close-up consisting of a speech bubble with the figure of Tammy imagined by persona inside.

Figure 6
The interactive illustration in *My Friend Has Down Syndrome*



My Friend Isabelle (Woloson, 2003) reaches readers in the pre-operational stage (2-7 years old), and features general differences and similarities between the friends. The book is cognitively appropriate for beginning readers for its simple texts and illustration style. On the one hand, the limited text on each page and simple vocabulary about antonyms, such as tall and short and fast and slow, can be readily used to introduce topics like age, physical appearances, and hobbies and discuss similarities differences in the reading class. The story revolves around Isabelle and Charlie's home, toys, and neighbourhood, which is close to a child's life and cognitively appropriate for children at the pre-operational stage who learn through picture books about themselves and their environment (Mayo Guijarro, 2014). On the other hand, the illustrations are presented schematically based on the objects' basic features to avoid complexion. For example, Isabelle's eyes are represented by two round dots. The visual appearances of the words are dynamic and playful, which creates cheerfulness, thus supporting and amplifying the general atmosphere of the book as a whole (Nodelman, 1988). The illustrations offer symmetrical information with text interpreting the story well, which helps the beginning readers understand and retell the story though they might have not yet fully developed the ability to read written language (Mayo Guijarro, 2014). However, the researcher and one practitioner in this study suggest that though this book incorporates a character with DS and is not about DS, more scientific information about the condition could make the book more educationally meaningful.

Comparisons Between the Representation of ASD and DS

Access to Quality Picture Books: During the book selection procedure, the researcher found a consistently fewer number of books with representations of DS than ASD, regardless of them being award winners, bestsellers or books endorsed by advocacy agencies. Noticeably, no award-winning picture books on DS representation met the research criteria in the same database for ASD. The search on bestsellers also showed fewer results about DS. As to picture books endorsed by advocacy agencies, the researcher found similar numbers of books: two for DS and three for ASD. Magination Press, American Psychiatric Association (APA)'s children's book imprint, has published two out of three books selected about ASD. However, this press has not published picture books on DS.

Accuracy of Quality Picture Books about ASD: The representation of characters with ASD is consistent with the description from DSM-V (APA, 2013) and ICD-10 (World Health Organisation [WHO], 2016) and research findings within the field. However, there is an overrepresentation of savant skills. The most frequently portrayed characteristics involve the preference to be alone, having difficulties in mentalising and understanding metaphoric language, hypersensitivity to noise, touch, light, avoidance of hugs, crowds, intolerance to certain types of clothing or textures, and a fascination for spinning objects. These characteristics are necessary because they form part of the ASD diagnosis criteria that apply to the majority of the population. The less frequently represented characteristics include difficulty in math and speech delay, which is in line with existing literature that only affects a part of the ASD population. However, there might be an overrepresentation of savant skills in the sample. Savant skills of outstanding visual and rote memory, including pictorial thinking and memory, navigation skills, and reciting facts like names of all the American presidents, are shown in all of the three books about ASD, despite research study indicating that only 10% of the population with ASD have savantism (Osteen, 2010). This finding corresponds with previous research on overrepresentation in media and literature, resulting in misunderstanding and further discrimination (Nordahl-Hansen et al., 2018).

Apart from the difficulties and challenges, characters with ASD also present personal strengths, which helps build a positive image for the population. *All My Stripes* (Rudolph & Royer, 2015) portrays the character with ASD as caring, which aligns with the recent research findings of their affective empathy in experience sharing and moral agency (Mazza, 2014; Kennett, 2012). Though *My Brother Charlie* (R. Peete & H. Peete, 2010) portrayals the lack of empathy among individuals with ASD, it is congruent to the prevalent theories such as Theory of Mind and mindblindness (Baron-Cohen et al., 1985) in the 1990s when Charlie is diagnosed. Despite friendship being crucial for children to develop prosocial behaviours and children with ASD being reported to enjoy reciprocal friendships (Chamberlain et al., 2007; Kasari et al., 2011), none of the three books on ASD depicts friendship. Therefore, future picture books could incorporate friendship to portray more credible characteristics of individuals with ASD. Two problematic exemplary practices are identified despite all the school-aged characters being shown to attend mainstream schools. On the one hand, an inclusive environment, such as a low-distraction environment, is not portrayed in the books. Peers in the books are also not contributing to a supportive learning experience. Lindsay (2007) suggests that despite the growing positive attitudes to inclusion among educators, there lack a policy of total inclusion. On the other hand, the three books all, to some extent, show inappropriate terminology and have discriminatory language according to today's standards. The latest and more inclusive language "for readers of children with ASD" is not used on the book cover of *All My Stripes* (Rudolph & Royer, 2015); ASD is

not treated as an integral part of a person by stating "Charlie has autism. But autism doesn't have Charlie" in *My Brother Charlie* (R. Peete & H. Peete, 2010); the illustration of Zane's autism stripe in *All My Stripes* implies autism is separated from his other attributes instead of being integrated. The frequent occurrence of inappropriate terminology, language and illustrations could be that the research and practices in this area are too fast-changing to create a gap between literature books and academics to present the characters with ASD in the latest acknowledged way.

DS characters are accurately portrayed in texts and illustrations in terms of facial and physical differences. *My Friend Has Down Syndrome* (Moore-Mallinos & Fabrega, 2008) presents an extra-curriculum activity, advocating the idea that people with DS are entitled to enjoy recreational activities. However, neither of the selected books on DS represents schooling or occupational participation, partly because one character is a pre-school girl, and the other attends a summer camp. However, the underrepresentation of schooling may result from the public's prejudice on the capacity and autonomy of children with DD. It is widely reported that children with DS experience various health, motor, and sensory challenges, which might impact their learning motivation and contribute to relatively low school attendance rate (Turner et al., 2008; Gilmore & Cuskelly, 2014). However, environmental influences, such as low expectations from parents and teachers, also predict their attendance. This finding aligns with Renwick, Schormans and Shore's (2013) observation on the underrepresentation of occupation participation among individuals with DS could result from stigma and stereotypes attached to them. However, they are more capable than is generally assumed. There is increasing advocacy in including social identity, social communication, and challenges of individuals with DD in representations (Renwick et al., 2013; Kelley et al., 2015). Picture books in the future shall incorporate mainstream education and specialised teaching to portray the characterised development achieved among individuals with DS and the distinctive teaching based on children's difference (Porter, 2005).

Noticeably, both books are told from the viewpoint of a friend. Although individuals with DS are characterised as sociable (Guralnick et al., 2011), being de-voiced also means that the characters are disempowered, which renders them invisible (Oliver, 2001). Prater and Dyches (2008) explain that it is harder to have a picture book told from the point of view of persons with intellectual disabilities. Their capacity is presumed and influenced by the public's prejudice. Thus, it is crucial for authors and illustrators to have personal connections to individuals with DD, be it family, neighbour, special educator, and have sensitive readers to proofread to maintain accurate portrayal (Kelley et al., 2015).

V. IMPLICATIONS

Practitioners and Caregivers: Picture books are a powerful tool to promote understanding of DD in classrooms, schools, and communities. Our teachers, special education teachers, specialists, and speech and language pathologists (SPL) can use them to advocate for individuals with DD. Due to the evolving understanding of DD and the growing research and evidence in education, language and practices in some early published books may be problematic. Critical educators could use them to teach critical readers to identify and challenge the representations in the books and interrogate how, when, and why the disability representation could influence social understanding. These picture books provide a chance for pre-service cares to connect to individuals with DD emotionally. As the ABA practitioners in this research mentioned, the empowering picture books could be self-help books for practitioners to remind them of the precious values of children with DD and encourage them to be brave to change their worlds. Parents of children with or without DD could use picture books to facilitate understanding, acceptance, and support during the shared-reading time. Furthermore, the solid support system enclosed at the end of books could guide families through struggles and provide insights on parenting strategies.

Publishers (Including Authors and Illustrators): Publishers are influential in the vastness of mass-marketing who have authority over the representations (Taxel & Ward, 2000); therefore, they can produce picture books that can help young readers "see", experience, and understand disability in new ways (Medoza & Reese, 2001). Publishers with personal connections with individuals with DD and sensitive readers could provide more accurate portrayals. Furthermore, empowering disability representations are needed to reformulate disability to be positive and desirable. Authors and illustrators are suggested to consider readers' age level and cognitive style if the book is intended for younger children and children with disabilities. As several selected books are text-heavy and didactic, instead, using more interrogative sentences and dialogues could make the book more engaging. Illustrations with close-ups and offer gazes also help attract attention and create interactions (Mayo Guijarro, 2014). For younger readers, a timeline attached to a book with a complex story could help them understand the plot, and metaphors could help them understand the abstract concepts about DD. It is also practical to provide additional information about DD and support tips for practitioners and families. Lastly, translation versions of quality picture books could

be readily available to reach more potential readers.

VI. CONCLUSION

Limitations of this paper are also identified. A limited number of five recent and quality picture books with representations of ASD and DS were selected based on one database for the award-winning picture books with the representation of DD and Amazon' bestseller lists on inclusive literature for bestsellers. However, this result is expected as few quality picture books exist that meet the overlapping criteria on the market for public access. Additionally, only ASD and DS were investigated in this study because of the limited availability of picture books with representations of other types of DD. While this research has the above limitations, approaches in this research are still valuable and important because typical studies in children's literature involve content analysis without expert readers. Four expert readers with professional experience and four semi-structured interviews in this study shed light on how to use picture books in mainstream classrooms, intervention centres, family settings and ways to improve picture books. The CDA approach used in this research has not been widely used in problematising disability representations in literature. However, with its pervasive use in politics, gender, and race, CDA approach has also proved useful in investigating disability issues and identifying problems in language and illustration portrayals.

The researcher found most of the five picture books could provide accurate and realistic portrayals of DD in texts and illustrations. At the same time, some fail to use appropriate terminology and non-discriminatory language and illustrations, partly because of the fast-developing understanding of DD. The books also show increasing inclusive schooling and community, and services available thanks to policy protection on human rights; however, poor peer acceptance and inclusive environment portrayed in the books suggest total inclusion remains an issue. The use of rhymes, dialogues, and interrogative sentences creates sound literary effects. Illustrations with close-ups and offer gazes could attract readers' attention and create interaction. Books providing additional information, timeline and cognitively appropriate texts and illustrations could reach the targeted readers effectively. However, the expert readers and the researcher suggested that larger font sizes and less dense text could engage younger readers more.

In comparing ASD and DS's representation, pictures books on ASD outnumber those on DS, making books on ASD easier to obtain. In the portrayals of social interactions, characters with DS are shown to enjoy friendship, while those with ASD receive less understanding and support. In terms of capacity representation, a potential over-representation of savantism in ASD and under-representation in schooling and occupational experiences in DS may also be a problem. It may deepen the public's misunderstanding of ASD and DS, which leads to prejudice and stigmatisation. This research study also provides implications for practitioners, parents, caregivers and publishers to create empowering but realistic picture books and critically use the books for awareness implementation. Based on the limitations identified, future research is suggested to include more picture books by employing multiple databases and bestseller lists and focus on other types of DD, such as ADHD, William syndrome, Fragile X syndrome, learning disability, and cerebral palsy and to explore the patterns of addressing disabilities and invite children with DDs (and their families) to participate in the research for more comprehensive responses.

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