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Lise Lemoine, Benoit Schneider

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Author note:

Lists all authors and their institutional affiliations:

Lise Lemoine: Assistant Professor of Developmental Psychology, University of Rennes, France (LP3C: Laboratoire de Psychologie: Cognition, Comportements, Communication - EA 1285)

Benoît Schneider: Professor of Psychology, University of Lorraine, France (2LPN: Laboratoire Lorrain de Psychologie et Neurosciences de la Dynamique des Comportements - EA 7489)

Correspondence concerning this article should be addressed to:

Lise Lemoine:

lise.lemoine@univ-rennes2.fr

Université Rennes 2, Campus Villejean. Place du recteur Henri Le Moal, CS 24307, 35043 Rennes Cedex (France).
0676344505

Title:

Autism Spectrum Disorder in French children's Literature: an analysis of portrayals of children with autism in the light of the DSM-5.

Abstract:

Children's books featuring characters with disabilities can be used as awareness-raising tools in educational situations. We analyzed a corpus of 61 children's books about Autism Spectrum Disorder (ASD) that were published in French between 2000 and 2019. Via a thematic analysis of the books' contents, comparing books aimed at three age groups (3-5 years, 6-8 years, 9-11 years) and three publication periods (1999-2005, 2006-2012, 2013-2019), we assessed the correspondence between the books' presentations of ASD and the scientific definition of autism set out in the DSM-5. The books' descriptions of ASD cover all of the DSM-5 diagnostic criteria, and this was the case whatever the target age, although books aimed at older readers provided more detailed descriptions of ASD. The number of books about ASD for young children has increased greatly in recent years, but we did not find any change in the quality of the descriptions of ASD. In addition to the DSM-5 criteria, the books evoke other behavioral characteristics of children with ASD. These criteria, together with the context in which the stories are set (family, school, cultural), must be considered when assessing a book's educational potential. In addition, comparisons of books from different countries can throw light on international and intercultural differences in representations of ASD.

Keywords:

Autism, disability, children's literature, diagnostic criteria, DSM-5, awareness raising.

1. Introduction

Many teachers use books to initiate dialogue about difficult issues, choosing stories, whether realistic or fantastic, that describe socially and culturally acceptable responses to situations young readers may encounter. Analyzing these books contributes to research into representations of children and childhood and the societal issues associated with these representations (Schneider & Mietkiewicz, 2013). Such analyses can also reveal society's attitudes to children with disabilities, their families, and support institutions, and how these attitudes have evolved.

Children's books are mirrors, in that they enable children to see themselves in the characters and stories portrayed and to accept differences in others: "Engaging in the simulative experiences of fiction literature can facilitate the understanding of others who are different from ourselves and can augment our capacity for empathy and social inference" (Mar & Oatley, 2008, p. 173¹). They also act as filters, as they provide a certain distance from the situations described (Léon, 2004).

Depending on the conceptions they give, especially when the characters are realistic, these books can help children accept differences and thereby allow them to develop more

¹ Quoted in Kelley et al. (2015).

positive feelings toward people with disabilities (Azano et al., 2017; Dyches et al., 2018; Rieger & McGrail, 2015). For example, following a study in the United Kingdom involving 67 children between the ages of 5 and 10, Cameron and Rulland (2006) saw friendships blossom between children with and without disabilities, and the neurotypical children began behaving more positively towards those with disabilities.

1.1. Children's Books, Disabilities, and Inclusion

Children's Books as an Awareness Raising Tool

Children's books are a tool that can be used to encourage dialogue about disabilities, support families, and facilitate the work of teachers and other educators. Since the 1990s, and particularly since the 1994 World Conference on Special Needs Education: Access and Quality (UNESCO, 1994), schools have tried to adapt to the diversity of their students, especially with respect to students with disabilities. This change contributed to the move from a "segregationist" approach involving specialized education to an "integrationist" approach recognizing the right of children with disabilities to be educated in as "ordinary" an environment as possible, and then to the current concept of "inclusive" education. At the same time, the medical model, which tends to confound individuals with their impairment, has given way to a social model (Fougeyrollas, 2002), in which disabilities are seen in terms of interactions between personal characteristics and environmental constraints (e.g., a person in a wheelchair wishing to go up to a higher floor is not disabled if they have access to an elevator). The revised International Classification of Functioning, Disability and Health, published by the World Health Organization in 2000,² was a major landmark in this process and has inspired many European countries to adopt a more inclusive approach to education (Arnold & Horan, 2017). In some countries, including France, these changes have been enshrined in law.³

However, implementing an inclusive approach to schooling does not automatically mean that students with disabilities will be accepted by their neurotypical classmates or that friendships will develop between students with and without disabilities (Azano et al., 2017; Boutot, 2007). Consequently, efforts have to be made to promote integration. Children's books are an easily accessible resource that teachers and other professionals who work with children (educators, speech therapists, psychologists, etc.) can use to raise awareness of people with disabilities and help children develop both self-knowledge and knowledge of others (Dyches et al., 2006; Leininger et al., 2010). Nevertheless, how disabilities are depicted in children's books is a theme that remains under-researched, especially in Europe.

Children's Books and Disabilities

Some studies have stressed both the importance of children's literature and the rarity of suitable books (Matthew & Clow, 2007). Kurtts and Gavigan (2008) suggested that a bibliotherapeutic approach, centered round books featuring characters with impairments, could help students develop more empathetic attitudes towards children with disabilities. Although Backer (2009) described individual examples of teachers who use children's books

² International Classification of Functioning, Disability and Health (ICF), World Health Organization, <https://www.who.int/classifications/icf/en/>

³ Act of February 11, 2005 "for equal rights and opportunities, participation, and citizenship of people with disabilities" (Act n°2005-102, OJ of February 12, 2005)

in class and Wilkins et al. (2016) used a corpus of 12 children's books to explore children's perceptions of disabilities, few studies have examined the contents of these books.

Recent years have seen a gradual increase in the number of books featuring characters with disabilities, thanks to a general move by publishers to make children's literature more inclusive. This move is in step with changes in public policy aimed at helping people with disabilities, heralded, most notably, by the United States' Individuals with Disabilities Education Act of 1975 (Azano et al., 2017).

Nevertheless, merely publishing more books about a wider variety of disabilities does not automatically mean that these books will portray disabilities in accurate, realistic, non-stereotypical, or positive ways. For example, Beckett et al.'s (2010) survey of books about disabilities published in the United Kingdom found great disparities in quality: although some books were of high quality, many others conveyed negative stereotypes of disabilities. Beckett et al. underlined the need for authors, illustrators, and publishers to move beyond these stereotypes. Similarly, an analysis of portrayals of deafness in 20 children's books (target ages 4 to 8 years) published between 1991 and 2008 showed that deaf children tended to be portrayed in terms of "pathological" specificities, expressed via stereotypical deficiency behaviors, rather than in terms of "cultural" characteristics, such as using sign language, being part of a community, or using technology (Golos et al., 2012).

Studies published in French include Joselin's (2008) comparison of Italian and French children's books, which found links between changes in representations of disabilities and the introduction of more inclusive policies. In addition, Lemoine and colleagues examined the ways children's books describe the physical, intellectual, and social characteristics of children with Down Syndrome (Lemoine et al., 2012), and then went on to study the impacts of Down Syndrome on sibling relationships (Lemoine et al., 2016b). The same authors also conducted an exploratory study to compare portrayals of children with ASD in children's books with the diagnostic criteria for ASD (Lemoine et al., 2016a). They found that, despite some inaccuracies, books containing characters with ASD are generally well researched and highlight the aptitudes and adaptive capacities of children with ASD, while unambiguously describing impairments

Dyches and colleagues conducted a series of comparative analyses of children's books featuring developmental disorders and disabilities. Their results, based on books published up until 2009, revealed a trend toward depicting more diverse characters with more positive characteristics, who showed self-determination, and who played more constructive roles in more inclusive recreational activities (Dyches et al., 2001; Dyches et al., 2009). Finally, several authors have outlined the criteria these books must fulfill in order to effectively raise awareness of disabilities (Wopperer, 2011; Dyches & Pratter, 2009; Sigmon et al., 2016).

1.2. Autism Spectrum Disorder

The last ten years have seen both a marked increase in the number of children diagnosed with ASD and the expansion of inclusive policies aimed at helping these children. As a result, ever more schools, teachers, educators, and children are coming into contact with children with disabilities without necessarily having the information or tools they need to deal with these new situations (Kelley, 2014).

The Prevalence of ASD

According to one European report, the prevalence of ASD around the world increased by a factor of between 20 and 30 during the 1960s and 1970s (Baio, 2012, cited by Gaffney & Wilkins, 2016). More recently, data collected by the United States Department of Education for the decade from 1998 to 2008 showed a 509% rise both in ASD diagnoses and in the average number of children with ASD registered with schools (Marks & Kurth, 2013). Also in the United States, the Centers for Disease Control's Autism and Developmental Disabilities Monitoring Network has tracked the rise in ASD diagnoses since 2000. Indicators drawn from the medical and school files of 8-year-old children in 11 communities (which cover more than 8.5% of all 8-year-old children in the United States) show a steady increase in the prevalence of ASD from 1 child in 150 in 2002 to 1 child in 54 in 2016,⁴ with boys four times as likely as girls to be diagnosed as having ASD. Similarly, Blumberg et al. (2013) estimated a prevalence of 1 in 50. In France, the National Institute for Health and Medical Research (INSERM)⁵ estimates that 1 in every 100 French children has ASD, with boys three times as likely as girls to have ASD.

France's 2005 Disabilities Act (footnote 3) made it mandatory for all children with disabilities to attend school. More than 70% of children with disabilities are now integrated into ordinary classes and this percentage is rising continuously. For example, the ratio of children with disabilities attending ordinary schools compared with those attending specialized schools (Local Unit for School Inclusion) increased from 1 : 1.6 in 2004 to 1 : 2.3 in 2015 (DEPP, 2016). In addition, France has introduced specific measures for children with ASD through four successive "Autism Plans".⁶

Children's Books about ASD

Teachers and other education professionals, whether specialized or not, often use a variety of books describing the symptoms and characteristics of ASD to raise children's awareness of the disorder. Because they do not always have the training or experience needed to decide which books provide realistic portrayals of the characteristics of ASD, they need guidelines they can use when choosing books. The only way to draw up such guidelines is by examining books' contents in detail.

Gaffney et al. (2016) noted an increase in the number of children's books relating to ASD, reflected in the number of such books available on Amazon, which rose from 358 before 2010 to 643 between 2010 and 2014, as well as in the number of books actually published, which rose from 6 before 1990 to 23 between 1990 and 1999, and to 393 between 2000 and 2010. In addition, there are relatively more books about ASD than about intellectual development disorders, compared with the prevalence of these two disabilities in the community (Dyches et al., 2009), a fact the authors attribute to the media attention given to the increasing number of children diagnosed with ASD.

Despite this growth in the number of children's books about ASD, detailed analyses of their characteristics are rare. Kelley et al. (2015) analyzed the contents of 15 fictional picture

⁴ <https://www.cdc.gov/ncbddd/autism/data.html> (consulted on August 3, 2020).

⁵ <https://spectredelautism.com/trouble-du-spectre-de-l-autism-ASD/statistiques-autism-ASD/> (updated in January 2020). (consulted on August 3, 2020).

⁶ <https://handicap.gouv.fr/archives/ancienne-rub-autism/strategie-nationale-pour-l-autism-2018-2022/> [autism plans: 2005-2007; 2008-2010; 2013-2017; 2018-2022] (consulted on August 3, 2020).

books aimed at school-age children (without stating their ages more precisely), published between 1996 and 2012. Their analysis provided data on 178 symptoms that corresponded with criteria described in the DSM-5. Coding each symptom in terms of seven diagnostic criteria showed that 38% of the symptoms described in the books referred to a deficit in social communication and 62% referred to atypical or repetitive behaviors. Lemoine et al. (2016a) conducted a similar analysis of 22 books published in French between 2000 and 2013. This work provides the basis for the present study, which analyzed a much larger corpus (61 books).

Gaffney and Wilkins (2016) evaluated 48 books for young children (picture books designed to be read aloud), published between 2010 and 2015 and featuring children with ASD. Incorporating input from special education professionals, teachers from ordinary schools, and teacher trainers, they found that nine books were appropriate for being read to very young children.

Azano et al. (2017) and Sigmon et al. (2017) analyzed a selection of 35 books published between 1996 and 2014 (narrative picture books that deal explicitly with ASD through fiction or “informative-fiction”). However, they did not provide any details of the books’ contents other than a brief summary of their main features relating to five recurring themes (presence of the main indicators of ASD; characters with ASD portrayed as being “at risk”; highlighting similarities and differences with neurotypical characters; the importance of language; the variety of perspectives given according to the type of narrator).

Dyches et al. (2018) examined the way characters with intellectual disabilities are portrayed in 38 children’s books published in 2016 and 2017, with the intention of comparing these data with the results of earlier studies (Dyches et al., 2001, 2005, 2009; Leininger et al. 2010). They found that most children’s books present characters with ASD in a positive way. Eighty percent of the 38 books contained characters with ASD, who were portrayed positively and realistically, but whose personalities tended to remain static throughout the story. They had positive social relations and were included in their environment (Dyches et al., 2018). Nevertheless, even though it is essential to portray characters with disabilities positively, other analytical criteria must also be taken into account. The first of these criteria is the traits used to depict characters as having ASD (see Lemoine et al., 2016a, above). The situations and contexts in which the stories take place and how characters’ relations with their peers and their environment evolve are also important (see Lemoine et al., 2016a).

2. Research Questions

The preceding paragraphs highlight the need for detailed analyses of how ASD is portrayed in children’s books. Our review of the literature suggested several ways in which previous studies can be extended and enabled us to formulate a number of research questions. Our main objective was to describe the main characteristics of children with ASD portrayed in these books (questions A1 and A2). We also investigated possible links between target age and depictions of ASD (question B), trends in the number of books about ASD being published (questions C and E), and possible links between increases in scientific understanding of ASD and portrayals of ASD in children’s books (question D). Our research questions were:

(A1) To what extent do portrayals of ASD conform to the DSM-5’s diagnostic criteria for ASD?

(A2) Do portrayals of ASD also include characteristics not described in the DSM-5?

(B) Do the characteristics attributed to children with ASD differ according to a book’s target age?

(C) Has the number of children’s books about ASD published in French increased over the years, as has occurred in other countries?

(D) Are improvements in scientific understanding of ASD reflected in the content of children’s books addressing the issue?

(E) Has the increased ability to diagnose ASD earlier led to the publication of more books about ASD for younger children?

The studies described in our literature review included books published in or before 2015 (or 2017 in the case of Dyches et al., 2018). The present study includes books published up until 2019. All these books were published in French (although some are translations) and were aimed at French speakers living in a Franco-European context. Hence, our analysis could form the basis for a comparison with previous studies, most of which were conducted in North America.

3. Methodology

3.1. Constitution of the Corpus: Inclusion Criteria and Characteristics of the Books

Number of Books and Inclusion Criteria

Our corpus contained 61 books (picture books or short novels, but not graphic novels) published between the end of 1999 and the end of 2019. They were all written in or translated into French and aimed at children aged between 3 and 11 years. They were all works of fiction (we excluded awareness-raising books with no narrative) and were explicitly about autism (autism included in the title, the body of the book, or on the back cover). The 61 books in the corpus are listed in Appendix 1.

Book Search

We found titles for inclusion in the corpus by combining searches of children’s literature websites (Ricochet,⁷ Babélio⁸), websites run by associations for families of children with disabilities, disability professionals, the CANOPE network (creates teaching materials and provides support to teachers), libraries, and specialist booksellers, together with *Les livres du mois*,⁹ a magazine for librarians and booksellers.

Animalization

Many studies have excluded books that use animalization to portray characters with ASD. We decided to include such books in our study because “anthropomorphized” animals are so widely used in children’s books and so greatly enjoyed by young children (Lemoine et al., 2020) that we felt that excluding such books (Azano et al., 2017) would bias our analyses. We come back to this point in the Results section (§4.5). So readers can assess the appropriateness of this decision, we describe in Appendix 3 how animalization is used in these books, providing numerous examples.

ASD and Specific Syndromes

⁷ <http://www.ricochet-jeunes.org/>

⁸ <http://www.babelio.com/>

⁹ *Les livres du mois. Bibliographie de la France, Livres Hebdo*, Paris (monthly magazine published by the bookselling trade)

Asperger's Syndrome and Rett Syndrome are no longer included in the DSM-5 as forms of ASD (published in France in 2015). However, books about these syndromes are included in publishers lists of books about autism in general, so children, parents, and teachers may buy them thinking they are about ASD. For this reason, Lemoine et al. (2016a) included these syndromes in their analysis, but them placed in a separate category, In the present study, we did not create a specific category for books about Rett Syndrome (1 book: [24]) and Asperger's Syndrome (10 books: [4, 5, 10, 18, 19, 20, 42, 45, 50, 60]), but we come back to this point in the discussion.

Target Age

We based each book's target age on the age stated on the book's cover and on listings provided by specialist websites. We examined the books according to three age groups, which coincide with the age groups used by many publishers and children's libraries: 3 to 5 years, 6 to 8 years, 9 to 11 years.

Publication Date

For the publication date, we took the date of the latest edition of a book, as we wanted to include all the books within each format that publishers had decided to make available to French-speaking readers at a given date. We divided publication dates into three 7-year periods: 1999 to 2005, 2006 to 2012, 2013 to 2019.

Number of Pages

The number of pages in a book is a good indicator of the story's complexity. The books in our corpus contained between 9 [25] and 295 pages [18], with the number of pages depending greatly on reader age. The mean number of pages for each age group was 26.7 pages for 3-5 years, 34 pages for 6-8 years, and 131 pages for 9-11 years.

Country of Origin

Thirty-seven of the books in our corpus (61%) were first published in France, 13 (21%) were first published in Quebec, and 11 (18%) were first published elsewhere (2 in the United Kingdom, 2 in the USA, 2 in New Caledonia, 1 in Belgium, 1 in Korea, 1 in Spain, 1 in Monaco, and 1 in Lebanon). Fifty-five books were written in French and six books were translated into French from English (4 books: 2 UK, 2 USA), Korean (1 book), or Spanish (1 book).

3.2. Data Analysis

We began by conducting a quantitative analysis of the 61 books as a function of their publication date and target age. We then analyzed the contents of the books in order to compare the traits and behaviors of their characters with ASD with the diagnostic criteria listed in the DSM-5, which describes two main categories of symptoms:

- A. Persistent deficit in social communication and social interaction across contexts, not accounted for by general developmental delays, and manifest by 3 of 3 symptoms (A1, A2, A3).
- B. Restricted, repetitive patterns of behavior, interests, or activities as manifested by at least 2 of 4 symptoms (B1, B2, B3, B4).

We noted the traits and behaviors of the characters with ASD in each book and categorized them with respect to the above-mentioned sub-categories, using an analysis grid based on the grid drawn up by Lemoine et al. (2016a). Our analyses were based on coding carried out by three researchers, all of whom are native French speakers (doctors of developmental, clinical, and educational psychology). Each book was coded independently by two of the three researchers. In cases of disagreement, the third researcher read the book and decisions were taken after discussion.

Appendix 2 provides a detailed presentation of the results, illustrated by extracts from the books. We adopted this presentation in order to:

- Show how we categorized symptom behaviors, despite the wide variety in the books' formats, and how the books address these behaviors;
- Illustrate the narrative styles used by the books' authors and help readers interested in the books' pedagogical uses evaluate their contents.

In addition, we paid special attention to accounts of Asperger's Syndrome,¹⁰ which is described as a specific disorder in some of the books.

After analyzing the behaviors used to portray ASD with respect to the DSM-5 diagnostic criteria, we described the themes that recur in the books in terms of both the behaviors attributed to children with ASD and the situations and contexts in which the stories take place. To do this, we carried out a semantic category analysis (Bardin, 2014) based on a similar coding procedure by the three researchers.

4. Results

4.1. Frequency of Occurrence of the DSM-5 Diagnostic Criteria in the Books

The books appear to have been well researched and to provide a reasonably comprehensive overview of symptoms (see Table 1): 87% of the books contain characters who meet criterion A1, more than two-thirds of them contain characters who meet criteria A2 (66%) or B1 (74%), and half of them contain characters who meet criteria A3 (51%), B2 (46%), B3 (51%), or B4 (61%). The reason so many of the books describe characters who meet criterion A1 – "Deficits in social-emotional reciprocity" – is undoubtedly because children find it difficult to understand a peer who does not engage in normal back-and-forth conversation, who does not initiate exchanges, respond when addressed, or share his/her emotions. In addition, it is relatively easy for a narrative to incorporate a child who does not respond to solicitations.

Table 1. Frequency of DSM-5 Diagnostic Criteria in the Books as a Function of Reader Age and Publication Date

DSM-5 criteria	N books and %	N by reader's age			N by publication date		
		3-5 years	6-8 years	9-11 years	1999- 2005	2006- 2012	2013- 2019
	Tot = 61	20	28	13	12	16	33
A1	53 (87%)	18 (90%)	23 (82%)	12 (92%)	10 (83%)	14 (88%)	29 (88%)

¹⁰ The term Asperger's Syndrome has been removed from the DSM-5, but the DSM-5 was not published in France until 2015

Failure of back-and-forth conversation/to share emotions/to initiate or respond to social interaction							
A2 No visual contact/abnormal body language and gestures/lack of facial expression	40 (66%)	11 (55%)	19 (68%)	10 (77%)	9 (77%)	13 (81%)	18 (55%)
A3 Difficulty adjusting behavior to social context/difficulty playing/no friends	31 (51%)	8 (40%)	16 (57%)	7 (54%)	9 (75%)	7 (44%)	15 (45%)
B1 Stereotyped movements: motor stereotypies, aligning objects, flipping objects, etc.	45 (74%)	13 (65%)	20 (71%)	12 (92%)	10 (83%)	11 (67%)	24 (73%)
B2 Insistence on sameness, routines, ritualized behaviors	28 (46%)	6 (30%)	14 (50%)	8 (62%)	7 (58%)	8 (50%)	13 (39%)
B3 Restricted, fixated interests: attachment to unusual objects, circumscribed interests	31 (51%)	7 (35%)	15 (54%)	9 (69%)	8 (67%)	10 (63%)	13 (39%)
B4 Hypersensitivity/excessive smelling/touching, visual fascination with light/movement	37 (61%)	12 (60%)	14 (50%)	11 (85%)	9 (75%)	10 (63%)	18 (55%)
Mean for the 7 criteria	37.86 (62.1%)	10.71 (53.6%)	17.29 (61.7%)	9.86 (75.8%)	8.86 (73.8%)	10.43 (65.2%)	18.57 (56.3%)

4.2. Frequency of Diagnostic Criteria as a Function of Reader Age

Each DSM-5 criterion is described in a substantial proportion of the books, whatever the target age (Table 1), with the percentages of books mentioning each criteria ranging from 30% to 90% for the youngest age group, from 50% to 82% for the middle age group, and from 54% to 92% for the oldest age group. Thus, the frequency with which the criteria are mentioned seems to increase with target age. However, this result is probably explained by the complexity of the scenarios, which also increases with target age (see section 3.1: number of pages as indicator of story complexity). Although the books provide quite “realistic” descriptions of symptoms as defined by the DSM-5, the requirement to meet 3/3 sub-criteria in order to meet criterion A is not always met, even if many of the books aimed at older children almost meet this criterion by virtue of their more complex storylines.

4.3. Frequency of Diagnostic Criteria as a Function of Publication Date

The number of criteria described in the books does not appear to be linked to publication/republication date, as there was no significant difference in frequencies of criteria between the oldest (58% to 83%), intermediate (44% to 88%), or most recent (39% to 88%) books. Hence, France’s “Autism Plans” (see section 1.2 and footnote 5) do not seem to have affected the number of criteria included in the books. We come back to this point in the Discussion.

4.4. Relationship between Reader Age and Publication Date

Many more books were published between 2013 and 2019 than during either 1999-2005 or 2006-2012 (33 vs. 12 vs. 16). Although rises in the number of books published occurred across all three age categories, by far the largest increase was in books for children aged 3-5 years, as 15 books in this category were published during 2013-2019, compared with only 3 books in 1999-2005 and 2 books in 2006-2012. In the case of books for 6- to 8-year-olds, there was a substantial increase in publication rate between 1999-2005 (5 books) and 2006-2012 (11 books), after which the rate stabilized (12 books in 2013-2019). The number of books for 9- to 11-year-olds also increased, but much less markedly (4 books in 1999-2005, 3 books in 2006-2012 vs. 6 books in 2013-2019). These changes undoubtedly reflect the ability to diagnose ASD earlier and the implementation of more inclusive schooling policies (via France’s “Autism Plans”).

Table 2: Number and Percentage of Books as a Function of Reader Age and Publication Date (three 7-year periods). See Appendix 1 for a full bibliography of the books in our corpus

	1999-2005	2006-2012	2013-2019	Total
3-5 years	3	2	15	20 (32.8%)
6-8 years	5	11	12	28 (45.9%)
9-11 years	4	3	6	13 (21.3%)
Total	12 (19.7%)	16 (26.2%)	33 (54.1%)	61 (100%)

4.5. Other Traits of Characters with ASD in Children’s Books

Appendix 3 provides detailed examples illustrating the three main devices, alongside DSM-5 symptoms, authors use to portray the behaviors of children with ASD: animalization, likening children with ASD to beings from another world, and describing them as having extreme reactions to apparently inconsequential stimuli.

Animalization

Thirty of the books draw parallels between children with ASD and animals or describe them as humanoids with animal traits. Although anthropomorphism is frequently employed in children's fiction, in books about autism it is specifically used to highlight the singular ways in which children with ASD sometimes behave. Nevertheless, it risks promoting the sort of animalistic representations of disability that have long fed people's fears and fantasies, as typified by the case of Victor, the "wild boy of Aveyron" (Malson, 1999).

Children from Another World

More than half of the books (39/61 = 64%) describe children with ASD as mysterious, living elsewhere, on another planet, between two worlds, or within themselves; as strangers to the real world, full of solitude and fear. They react in ways that are disconcerting for everyone who has difficulty entering their world, for which "you don't know if there is a key, an incantation, a secret code... in order to get in" [16].

"Extreme" Reactions

In more than half of the books (34/61 = 56%) the children with ASD over-react if they feel they are being attacked: they scream, fly into fits of rage, and are violent towards others or themselves.

Shouting and Screaming.

In more than a third of the books (24/61 = 39%) the children with ASD scream loudly or with exceptional power (strident, desperate, full of suffering). These screams can be so piercing it sounds like they are tearing their voices apart [41].

Tantrums.

Sixteen books (26%) describe the tantrums children with ASD can throw if they feel they are being assaulted, especially by noise, to which they are hypersensitive (see criterion B2), or if someone interferes with their world. These tantrums are so violent they are compared to natural disasters, unpredictable, uncontrollable, and devastating.

Self-Harm.

Ten books (19%) describe children with ASD harming themselves, either by banging their heads (on the floor, against the wall, with a stick), pulling their hair, biting their lips, scratching themselves, or twisting their fingers.

The books probably stress behaviors such as shouting and screaming, tantrums, and self-harm, because these behaviors are particularly visible and disturbing for peers. Moreover, describing these characteristics is a convenient way of depicting how disconcerting certain aspects of children with ASD's behavior can be. However, most recent books refrain from describing these extreme behaviors, so references to screaming and tantrums are rare and depictions of self-harm are absent from books published between 2013 and 2019.

Infrequent characteristics.

Characteristics and behaviors more rarely attributed to children with ASD include sleep disorders (10 books), seeing things differently and being extremely creative and inventive (10 books), eating disorders (10 books), running away from home (4 books), and putting themselves in danger (1 book).

4.6. Behaviors Relating to Others and to Situational Factors

Sibling Relations

Sibling relations are examined by 25 books (41% of the corpus). These books are distributed across all three age groups, as they include 7 books aimed at 3-5 year-olds, 13 books aimed at 6-8 year-olds, and 5 books aimed at 9-11 year-olds.

Children with ASD often appear enigmatic and elusive to their siblings. Their failure to respond to invitations to play or talk and their inability to share their emotions lead their siblings to feel sad, distressed, or frightened. Some siblings also feel shame and guilt due to the feelings their brothers or sisters with ASD arouse and the reactions they provoke, especially if these reactions are violent or angry. However, siblings also know how to adapt and often find creative ways of defusing crises, creating a secure environment, or providing reference points, which can help produce forms of complicity. Nevertheless, this complicity is fragile and relationships are difficult to build (“It wasn’t easy to accept this little brother, so different from the brother Flore had dreamed of before he was born” [8]) due to the ambivalent nature of the sibling’s feelings. This is especially true if parents are intolerant of these feelings. In fact, parents often require neurotypical siblings to show great responsibility towards or even make sacrifices for their brother or sister with ASD, probably because the parents themselves have had to make sacrifices. For example, a family might decide to move so their child with ASD can be looked after better (“Mom had heard about a young doctor in Paris who achieved miracles with children like Alienor. So we swapped our house with the green shutters for a tiny apartment” [27]).

Lemoine et al. (2016b) compared the ways in which children’s books portray sibling relationships in families with a child with a disability with descriptions of sibling relationships in the scientific literature. The birth of a child with a disability can be traumatic for siblings (Schauder & Durand, 2004). Brothers and sisters often feel ashamed and find it difficult to accept the disability (answer questions, endure the looks and intolerance of others) within their social sphere, whether among their extended family, friends, or classmates, or with acquaintances, or strangers (Scelles et al., 2007). Comparative studies of neurodevelopmental disorders (such as Prader-Willi Syndrome, ASD, Down Syndrome, or other intellectual disorders of unknown etiology) show that the impact varies according to the disorder (O’Neil & Murray, 2016) and that ASD can be a major risk factor for sibling relations. Thus, the behavioral difficulties of a child with a disability can hinder the construction of sibling relationships. We suggest that children’s books are a medium that can be used to stimulate dialogue and thereby allow siblings to express their feelings towards their sibling with a disability. Doing so would help build sibling relations and also improve the sibling’s well-being.

Schooling

Issues relating to schooling are a common theme in the books in our corpus, as it is mentioned in 31 books (31/61 = 56%), most of which describe ordinary school settings (31/34 = 91%). Schooling is a central aspect of 24 of these 31 books (71%). In terms of target age, school is central to 11 of 11 books for children aged 3-5 years, in 7 of 12 books for children aged 6-8 years, and in 6 of 11 books for children aged 9-11 years.

Learning difficulties are mentioned only marginally, as the books tend to focus on the difficulties children with ASD have in interacting with their peers due to their behaviors being frightening or difficult to understand, or because they have difficulty following collective rules.

Consequently, other children find it hard to play with children with ASD, many of whom do not like recess as it is too noisy. Moreover, the more lenient treatment/discipline children with ASD sometimes appear to receive from teachers can arouse feelings of resentment among their peers. Characters with ASD are rarely made fun of. On the contrary, recent books for 9-11 year olds, in which some children with ASD are described as not having learning difficulties (on the contrary, they often have outstanding skills), have begun addressing the issue of bullying. We come back to this point in the discussion. For characters with ASD, building friendships is difficult (but not impossible), even though their peers are often empathetic and encouraged by teachers to help and be nice to their classmate with ASD. Sometimes, the teacher explicitly tells her students that having a child with ASD is a bonus for the class (“Laurent, you have been the four-leafed clover of the day. You are very special and we are lucky to have you with us... Thank you for sharing some of what you know and your passion.” [15]).

With a very few exceptions, the teachers in the books evoke the need for mutual respect, kindness, tolerance, solidarity, and cooperation in order to live together. This is in line with the shift toward a more social approach to disability (Fougeyrollas, 2002), the WHO’s revised International Classification of Functioning, Disability and Health (WHO, 2000), the adoption of more inclusive schooling practices in Europe (Arnold & Horan, 2017), and the changes to French law described in the Introduction (Act of 2005). Thus, disabilities are now seen in terms of interactions between individual characteristics and the environment, with the corollary that providing a suitable environment is essential in order to promote greater inclusivity. But, clearly, a person with a disability is not alone responsible for their environment.

Sex of the Character with a Disability

The sex of the character with ASD in children’s books was initially considered in terms of the ratio of boys to girls with ASD in books and in real life. However, it is also worth looking at this issue from the point of view of gender stereotypes.

The main character in 47 of the books (47/61 = 77%) is a boy. These characters are referred to by their first name (e.g., Arno [5], Marc [6], Max [8], Charlie [10], Henri [11], Zack [17], Léo [19, 20]), a nickname (Petit Soleil [2]), or are not named (e.g., “the child” [14], “my big brother” [21] [36]). Some male characters are small animals (e.g., a fish called Hercule [25], a bear cub called Noa [37], a little dog called TED¹¹ [48], a little zebra called Arthur [56]). In the remaining 14 books, the main character is a girl, referred to by her first name (e.g., Daphné [1], Sarah [4, 7], Suzan [40] Marie [41], Mina [51]) or, in two of the books, a little animal (a dragonfly called Lilibel [46], a blackbird called Neigeuse [58]).

Thus, the ratio of boys to girls with ASD in our corpus is approximately 3.5 to 1, which is slightly lower than the long-accepted actual ratio of 4 or 5 to 1 between boys with ASD and girls with ASD. This ratio was thought to be slightly lower in the case of intellectual disorders and slightly higher in the case of motor disabilities. However, recent large-scale epidemiological studies (which have been better able to identify women with normal, or even “high-level” intellectual abilities; Lai et al., 2014) have provided estimates for this ratio of between 2 and 5 to 1, and no longer show any link to intellectual deficits. In their studies of children’s books about ASD, Dyches and colleagues’ (op. cit.) noted that that the characters with ASD were all male in 2001, but 28% of these characters were female in 2018.

¹¹ A play on words: in French, TED is the acronym for autism spectrum disorder (*troubles envahissants du développement*).

Nevertheless, the prevalence of male characters with ASD must be examined with caution, as all children's books that describe people with disabilities show a bias toward male characters (Joselin, 2010).

Moreover, we feel that the stereotypes associated with male and female characters with ASD is a more important issue than the ratio between genders. Joselin and Pelbois (2016) highlighted the presence of such stereotypes in school and inclusive schooling settings (27 books published between 1998 and 2013), where girls with disabilities are portrayed as docile and submissive and where gender stereotypes differ according to the type of disability. For example, the archetypal girl with a motor disability is a diligent student in a wheelchair. Differences between girls and boys are less marked in the case of Down Syndrome, probably due to the sweet and passive image associated with this condition. In the case of ASD, boys are much more likely than girls to be depicted as violent and aggressive.

5. Discussion

(A1) *To what extent do portrayals of ASD conform to the DSM-5's diagnostic criteria for ASD?* As in Lemoine et al. (2016), the books in our corpus covered all the DSM-5 criteria and, through the variety of the situations described, they provide a reasonably complete and well-researched picture of the characteristics (symptoms) of children with ASD. The character with ASD in most of the books, including those for the youngest age group, meets several DSM criteria. Our decision to focus our analyses on behavioral/diagnostic criteria undoubtedly magnified the "well-researched" dimension of the portrayals, but it confirms and helps underline this general trend in books about disabilities, as reported by Dyches and colleagues (2001, 2009). Among the diagnostic criteria described in the books, the most frequently cited behaviors were those affecting social interactions, as 87% of the books described criteria A1 and 67.7% of the books described three groups of symptoms from DSM-5 category A. In contrast, only 56.8% of the books described one or more of the symptoms from DSM-5 category B. This finding underlines the importance of taking into account situational factors and shows that the books in our corpus focused mostly on relational and educational issues associated with ASD.

(A2) *Do portrayals of ASD also include characteristics not described in the DSM-5?* We found that the criteria described in the DSM-5 do not cover all the characteristics authors use to describe the behaviors children with ASD in different situations. For example, many children's books portray children with ASD as displaying extreme reactions to certain stimuli or liken their behaviors to those associated with symbolic representations of animals.

(B) *Do the characteristics attributed to children with ASD differ according to a book's target age?* Target age is the main factor explaining differences between the books: because children's reading and comprehension abilities improve as they get older, authors can write more complex stories for these children. However, our most striking finding regarding target age is the recent substantial increase in the number of books being published for very young children.

(C) *Has the number of children's books about ASD published in French increased over the years, as in other countries?* The last two decades have seen a substantial increase in the number of books about ASD being published in French. This increase can be seen in books for all three target ages, but it was most pronounced in the case of books for young children, for whom the number of titles available grew massively in the period 2013 to 2019. This increase appears to be related to greater societal interest in ASD.

(D and E) *Are improvements in scientific understanding of ASD reflected in the content of children's books addressing the issue? Has the increased ability to diagnose ASD earlier led to the publication of more books about ASD for younger children?* All the books in our corpus, whatever their publication date, were well researched. The most complete portraits of ASD are provided by the few books that have been republished in a second or subsequent edition [18, 30, 40]. Moreover, these books were originally published in the United Kingdom or North America (Quebec, USA). Nevertheless, we would highlight three observations relating to this increase in the number of books for young children :

- This higher publication rate has not been accompanied by an increase in the number of ASD symptoms described in the books. Some books published in the last two years seem to feature children with exceptional talents (stated explicitly [11] or suggested by a child with ASD having superior abilities to their peers) and to avoid referring to intellectual impairments (which are not mentioned in descriptions of children with ASD), which is undoubtedly out of step with reality.

- We also found that many descriptions of school life in recently published books for older readers evoke the issue of "bullying" as a way of illustrating the difficulties children with ASD have in being accepted by their peers. Are these frequent portrayals of children with ASD being rejected in such situations a true reflection of reality or has the current prominence of the issue of bullying at school led authors to overstate the problem with respect to children with ASD?

- Our observations concerning gender stereotypes again show that stories are influenced by the social context in which they are written, and not just the latest scientific knowledge. Hence, even if they are oriented by the specificities of ASD, they are shaped by a wide variety of permanently evolving social representations.

Limits

We centered our methodology around the criteria listed in the DSM-5. Although this approach provided valuable information about the contents of the books and their suitability for helping children understand their peers with ASD, it cannot fully describe the books' contents on its own. Another two major aspects must be taken into account. First, we felt it was important to include three traits or behaviors of children with ASD that are described in the books but that do not correspond directly to any of the DSM-5's seven criteria. The previous sections describe behaviors that are portrayed frequently enough to deserve special mention. Second, by focusing on the behaviors of characters with ASD, our analysis minimized the importance of the children's living environment. It is also possible that our choice highlights behaviors that are perceived as negative because they are "symptoms".

In addition, we did not analyze the pictures contained in the books. As the number and function of illustrations varies according to the type of book, and therefore according to target age, the content of illustrations and the ways illustrations and text are linked deserve further study.

Future Research

Future research on books about ASD should examine sibling relationships and schooling in more detail. To give just one example, depictions of the day-to-day settings in which children with ASD live their lives should be explored more fully. Although it is important to describe everyday settings, such as school, that will be familiar to young readers, it is

equally important to show neurotypical children all the situations children with ASD have to face, including, of course, their family lives and their relationships with their siblings. But children with disabilities also meet professionals in a wide range of specialties and encounter specialist institutions that are unknown to neurotypical children. Hence, as well as including everyday settings, children's books need to present situations that occur less frequently but which are nevertheless important to understanding the life paths of children with disabilities. Some of these situations, such as consultations with a psychologist, may also be relevant to neurotypical children.

Although our study focused on analyzing the content of books about ASD, future research should look at how they can be used in educational situations and the impact of incorporating such materials into teaching practices.

International and Intercultural Comparisons

Our study was not designed to provide a comparative analysis, so the following remarks are highly tentative. Recent years have seen an increase in the number of books about ASD published in French, but we did not find a concomitant increase in the precision of the descriptions of ASD. The English language literature suggests that progress in this respect has been greater in North America, for example, and resulted in children's books providing a more positive vision of disabilities. However, American authors also appear to avoid explicitly mentioning autism for fear of "labeling children".

These observations suggest that changes in society's perspective on ASD have at least as much influence on books' contents as advances in scientific knowledge, with the result that evolutions in content are likely to be punctuated by "culturally situated" representations (as illustrated by the reference to animality and its cultural history in section 4.5.). Cultural influences on depictions of disability are clearly illustrated by Gonen et al.'s (2015) analysis of 234 books of fairytales published in Turkey, 30 of which describe characters with disabilities. These descriptions are frequently much more negative than those provided by the books in our corpus and they do not mention ASD.

Factors such as the existence of literary prizes (e.g., the Dorian Gray Prize in the USA) can also drive improvements in the quality of books.¹²

Conclusion

Children's books about ASD need to cover a wide variety of themes, because fictional portrayals of ASD can help children, parents, educators, and teachers address aspects of the daily lives of children with neurodevelopmental disorders (sibling relations, schooling, etc.). They also allow adults to help neurotypical children understand the behaviors of children with ASD, so they can come to terms with their feelings toward peers with ASD and therefore interact more calmly with them. Identifying the themes addressed in different children's books can help guide decisions about which books are most suitable for presenting issues relating to disabilities and promoting inclusion (social, at school, at leisure centers, etc.). It

¹²France has the "Prix Handi-livres", which remains little known; much less known than, for example the Prix Chronos for children's books about the relations between generations <http://www.fondshs.fr/le-prix-handi-livres/prix-handi-livres-2020>
<http://www.prix-chronos.org/>

also opens up a novel approach for examining the relations between scientific progress and social representations of ASD.

Can these children's books help overcome stereotypes of autism and of disabilities in general? As we noted in the introduction, the social model of disability stresses the importance of the environment in determining whether an impairment is a disability, as environments can be adapted to reduce an impairment's impact and facilitate inclusion. We suggest that children's books about ASD and neurodevelopmental disorders can help children understand atypical behaviors and remove certain apprehensions and fears. Moreover, by acting as both mirrors and filters, they can provide openings for dialogue and for bringing people together – two essential steps in creating a more inclusive society.

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Appendix 1: Corpus of books about ASD

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Appendix 2: Qualitative Analysis of the Books in the Corpus as a Function of the DSM-5 Criteria

A. PERSISTENT DEFICITS IN SOCIAL COMMUNICATION AND SOCIAL INTERACTION ACROSS CONTEXTS, NOT ACCOUNTED FOR BY GENERAL DEVELOPMENTAL DELAYS, AND MANIFEST BY 3 OF 3 SYMPTOMS

1. Criterion A1:

Deficits in social-emotional reciprocity; ranging 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.

Deficits in back-and-forth conversation (n = 42)

Characters with ASD often appear not to hear when others talk to them (“It’s like Éloi didn’t hear me” [39]), sometimes to such a degree that one might think they are deaf (“You’d often think Ted was deaf because he rarely reacts when called” [48]), and they do not respond when spoken to (“No matter what, Paul never replies” [34]). They act as if other people do not exist (“Sometimes when I speak to Adrien he ignores me” [33]). Some characters with ASD are described as not speaking (“This illness, autism, prevented her little sister speaking” [1]), or as being unusual among children with ASD because they do speak (“Unlike most people with autism, he spoke” [31]). Not speaking can be presented as intentional (“...like before the time I decided to speak” [5]; “She doesn’t speak. She knows how to speak, but she doesn’t speak” [34]). When a character with ASD does speak, it may be in an unusual way, with a high-pitched voice [10, 33], making noises with their mouths or their tongues [52, 55], producing “fuzzy” sentences [13], or speaking very quickly and loudly [22] (“Achille swallowed his words and attention like a vortex in the center of the universe” [22]). They may also start speaking at an unusually late age (“You’re speaking at last! You’re speaking at last!” – at the age of 6 [5]), just repeat what is said to them, or talk to themselves (“Sometimes when I speak to him, he repeats what I said, like an echo” [33]; “Once he gets started, there’s no stopping him. A bit like a machine with no off switch. Even behind his bedroom door with padded walls, you could still hear him” [22]). Sometimes, communication difficulties are presented as being much wider than problems with speaking (“Children with autism have difficulty communicating” [17]; “Matthieu gets in touch with things, but not with people” [31]; “She can’t have a true conversation with you” [40]; “Dolphin is the only word, apart from mom, that he says over and over. Repeating words and actions is a sign of autism” [8]). Sometimes the character with ASD cannot speak; in which case, they communicate through an object, such as a pictogram [47], a tablet (“Aurore can’t talk... but she communicates through her tablet” [29]), or drawings (“Mina doesn’t say much. But she does have things to say. Sometimes very important things, in which case she draws” [51]).

Deficits in social-emotional reciprocity and in sharing emotions (n = 24)

Some characters with ASD are portrayed as having difficulty recognizing or expressing emotions. In the case of recognizing emotions, children with ASD may be depicted as not being able to decipher the emotions on the faces of the people they are interacting with [5, 37, 46, 50] or to evaluate what people are thinking when they smile [50]. Sometimes they interpret these expressions in terms of emojis (“His face was like this: 😞”) [5], to such an extent that they learn how to decipher emotions, not intuitively, but by recognizing clues (“...eyebrows close together, horizontal lines across the forehead, lips clasped together, which meant he was angry” [18]).

In terms of expressing emotions, many of the books describe particularities in the way the character with ASD laughs. He or she may laugh out loud [16, 55], choke with laughter [31], laugh for no obvious reason [28, 50], or laugh at inappropriate times [13, 33, 55] (“Sometimes he would laugh, even though I was angry” [33]). These characters rarely smile [18] or produce a phony smile, turning up the corners of their mouths [13, 19], their faces darkening for no reason [13], or blushing [43, 52]. They may be unable to express their emotions, whether they are happy or sad [20, 59] (“He is very happy, even if he doesn’t know how to show it” [20]). They may be very demonstrative in expressing their feelings, giving big

hugs or throwing themselves on their friends in front of everybody, even when they are quite old [4], or they may appear unaffected by the joys and sorrows of the people around them [22]. They may be disgusted by the sound of kissing or they may kiss in unusual ways (“...giving a kiss as light as a butterfly” [4]), kiss “very hard” [8], or like a rocket (“He came up to me like a rocket, kissed me quickly on the top of my back, near my neck, and went and hid behind our curtains” [52]). Or they may refuse to be kissed (“He wouldn’t be kissed” [11]; “The child shied away from noise and kisses. All kisses” [14]).

Good language skills but find communicating difficult due to failure to exercise reciprocity (n = 15)

Characters with ASD often have good language skills and may even speak too formally (talk like dictionaries), but they can appear impertinent because they often fail to exercise reciprocity and instead use scholarly terms, suggest more formal synonyms, or correct the other person’s grammar [5, 19, 20, 22, 50]. They may tell other children that their reasoning is wrong [18] or, when their peers are searching for the answer to a teacher’s question, they may quote the syllabus, saying the answer is easy or just a matter of deduction [20]. They may also adopt an authoritarian or sententious tone [20] (“Did you know that, in some countries, they are considered weeds? A bit like the *Taraxacum officinale*, here, that is, dandelions” [15]) and give the impression of being “know-it-alls” [20].

They use literal language [18, 20], do not joke [18], do not lie [18], and do not make inferences, so they need things to be expressed literally [5, 20], otherwise they misunderstand what was meant and may reply in a way that sounds insolent (e.g., retorting “Of course, I’m not blind” when a teacher asks: “There’s a piece of paper on the floor; can you see it?” [5]). Characters with ASD are portrayed as taking words at face value and not understanding double meanings [5, 18, 50] (“you’re my heart” [5]; “little love bird” [50]). As a result, they are perplexed by figurative expressions: Why would someone say he “fits the mold” [5] when he is not a jelly? How can looking after him be an “assault course” [5] for his mother when she does not wear a uniform or carry a gun? How could he have “lost his tongue” when he can feel it in his mouth [5]? Or how could he have swallowed it (“I haven’t swallowed my tongue. If I had, I’d be dead” [11])? How can “nature include all tastes”¹³ (“I spent the rest of the afternoon wondering what nature could taste like” [56])? And he sees “finishing his plate” as eating the crockery, not the contents (“When dad asked Max if he wanted to finish his plate, he started chewing it” [8]).

Finally, due to a lack of filters, characters with ASD often says things other people may think but keep to themselves [4, 5, 18, 36, 39, 45, 46, 60]. Ignoring social conventions in this way can make the child with ASD appear rude, even if their remarks are not ill intentioned (“Marie, where’s your pacifier! blared Sarah. Did you lose it during the night, like at home?” – broadcasting her sister’s shameful secret [4]; “She’s ugly... Aren’t lady principals supposed to be pretty?” – talking to his parents in front of the school principal [5]; “Aunt Gloria, I said, taking a piece of bread, wouldn’t it be better for your health if you stopped smoking?” [18]; “Miss, you’re shouting too loudly”, he said, speaking as loudly as Mrs. Cliquedur” [36]; “Michèle, you’re beautiful!” That started them all giggling again. But he was only saying what everyone else was thinking” [45]; “Because I’m a superhero, I like telling people what they look like, to help them” [60]. For example, “when it comes to following social conventions, he

¹³ A French expression meaning “there’s no accounting for taste”.

can't be relied on" and often ends up committing a "social gaffe", even if he knows that pointing out people's blunders is likely to annoy them" [11].

2. Criterion A2:

A2. Deficits in nonverbal communicative behaviors used for social interaction; ranging 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 expression or gestures.

Characters with ASD can find it hard to look at the people they are talking with and it is especially hard for them to make eye contact ("He had trouble looking people in the eye" [6]; "He didn't look at us when we spoke to him" [55]; "Looking people in the eyes scares me" [60]), so they try to look away ("He looked away as soon as I looked up" [18]). Because catching someone's eye is unsettling for them ("Holding hands, we looked straight into each other's eyes and I felt my head go off to the side" [18]; "Looking someone in the eye can be difficult for a person with autism" [8]; "He is not very expressive and he rarely looks others in the eye" [11]). They look elsewhere, above or below the head of the person they are talking to [40, 45], stare at an imaginary point only they can see [40], or look at the ground ("Because I was looking at the ground, they didn't realize I was talking to them" [56]) or at their feet [11]. They also look out of the window [35, 45], or in the air [19, 27, 49] ("She always stared at an imaginary point, tilting her head to one side" [40]).

They act as if the people they are speaking with are not there and pretend they cannot see them ("She looked through people as if they weren't there" [40]; "But he wasn't looking at anything or anyone" [48]; "Pibi, her eyes fixed straight ahead, walked passed me without looking at me" [57]). It is as if they are blind [40] or staring off into space [58]. Their eyes may be unfocused [13], half closed and squinting [58], or "full of dreams" [30] ("His eyes remained unfocused and you could sometimes see his gaze slip away" [58]).

One book describes a character who cannot read body language ("People like me don't have that ability. They have to learn body language, like you learn a foreign language, and that takes time" [18]). The character in this story looks for clues to help her interpret other people's intentions: "Kat kicked me in the shin, which meant she wanted me to shut up" [18].

3. Criterion A3:

Deficits in developing, maintaining and understanding, 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.

Some of the books describe characters with ASD who have few friends and are isolated; they sit alone in a corner [12], in a big, empty space [10]. Sometimes, the only people they consider friends are adults ("I only had three friends and they were all adults, mom, dad, and Mr. Shepherd, my teacher" [18]; "For a start, he had never managed to make friends his age..." [11]) or think that no one understands them ("No one understands me. NO ONE!" [15]).

These children do not play or know how to play with others (“It’s just that he doesn’t know HOW to play...” [2]; “His brother never manages to enjoy himself and isn’t interested in the presents he gets” [8]). Therefore, they play alone [48, 52], push others away [34], or keep their distance (“As soon as I come closer, he gets up and moves away, behind a tree” [36]). They do not take part in games [7], especially during recess (“When the children play in the playground, Eliott doesn’t join in” [42]), because space frightens them [6]. Some know only one game (“It was the only game I knew how to play, when I was little, and it was my favorite” [18]) or play strange games, such as running their hands across windows [23] or playing with a balloon [25]. They have different ways of playing [39, 53], never know when it is their turn to play [33], or do not know how to imitate or pretend [2, 18, 33] (“Florian told me it was hard for him to use his imagination or make believe” [33]) and are uncomfortable in social situations “It’s not like in French, where there is always an exception, or in gym class, where you have to interact with others” [11]).

B. RESTRICTED, REPETITIVE PATTERNS OF BEHAVIOR, INTERESTS, OR ACTIVITIES AS MANIFESTED BY AT LEAST 2 OF 4 SYMPTOMS:

4. Criterion B1:

Stereotyped or repetitive motor movements, use of objects, or speech (e.g., simple motor stereotypies, lining up toys or flipping objects, echolalia, idiosyncratic phrases).

Characters with ASD may move their bodies in unusual and stereotyped ways: tipping back and forth with their arms wrapped round their knees [9], while singing [13], rolling up into balls [19], one foot on the other [19], moving their chests front to back [4], rocking back and forth [45] (“But sometimes Mina, too, is agitated, and her entire little body looks like it is fighting the storm, the lightning that tears the sky” [51]; “His body rocked night and day. And that made the wall shake” [14]), sometimes as if in a cradle [13, 42] (“He started gently rocking his chest back and forward, forward and back, as if he was wearing ear buds and keeping time with the music” [45]; “Max starts rocking back and forth. Rocking helps Max calm down” [8]). The books describe other repetitive movements such as jumping on a trampoline every day or for hours [18, 60], endlessly fiddling with a baseball cap and pulling it down over the eyes [52], letting sand run through the fingers for long periods of time [19], repeating the same movements ad infinitum [30, 31] (“He strokes your hair for ages, replies Marie, always with the same movement, like a scratched record” [30]).

They may have unusual ways of walking, for example, leaning against walls [7], humming and swaying from side to side [22], not paying attention to others [46], making detours [15], going barefoot in inappropriate situations [39] (“Éloi walks on tip-toes, like a little mouse” [39]), taking rapid steps [28, 40], or dancing or prancing [42, 57] (“He spins round like a top” [30]; “...like in a crazy, deafening dance [28]; “She remained still for hours” [7]).

They may also move their arms and legs in repetitive and stereotyped ways or make haphazard movements [21]. They wave their arms strangely (as if they were flapping their wings or were trying to fly) or swing them through the air “like windscreen wipers” [6] (“She flapped her arms hard, as if she wanted to get back to her nest” [51]; “He sat down and started putting his hand in and out of his pocket, non-stop” [47]).

Some children endlessly turn the wheels (or steering wheel) of a toy car [2, 34], spin the roundabout in the park [12], or a top [23, 34] (“I have my top in my hand and I have been

spinning it and spinning it for ages” [23]). They also align objects (“Moreover, he couldn’t stop himself moving things, lining them up or putting them in what he felt was the perfect order” [19]; “He wants to sort the bricks by color. (...) Sorting things like this did Max good” [8]).

5. Criterion B2:

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

Some characters with ASD hate change, whether in places [5, 20] or their routines [13, 18], to the point that “when mom goes into the garden to pick radishes, Timothée replants them” [54]. They need precise reference points so they know what to expect [19].

They achieve this by adopting highly ritualized, non-verbal behaviors, such as counting in their heads (“...in the dark, eyes open, ten times off the trot to 77” [5]; “...the seconds throughout recess” [5]; “...the number of cereals swallowed or the number of steps, tirelessly measuring the garden” [18]). Some of them organize their things in very precise ways, with an exact place for each object (“exactly ten centimeters from the gate, and the pedals perfectly vertical” [19]).

Others want to wear the same clothes every day [18, 43], or do not want to wear any clothes [26]), get dressed in the same order and put on shoes, gloves, etc. in a precise order [43]. Yet others want to go back to the same places [30, 41], do things at precise times [43] (“At a minute past twelve, I go home” [43]), follow the same routes [49], or do the same activities, such as build towers [39], watch the same videos, or play the same games [33]. Some characters with ASD always sit in the same way, in the same place [61]; others have ritualized ways of pouring stones into a bucket [32] or opening yoghurt pots and keeping the lids [54]. They may also have eating rituals, eating only white foods [22] or only macaroni [38], or refusing to eat foods in unknown forms [53].

6. Criterion B3:

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 interests).

Characters with ASD may have highly restricted, fixated, and abnormally intense interests (one child is so attached to his baseball cap that he is never without it and includes it repeatedly in his drawings [52]), often associated with extremely good but selective memory abilities. These may be linked to modes of transport, such as “the subway, which he knew like the back of his hand” [30], or airplanes (“Sometimes, Zack would talk about planes non-stop” [17]), the weather or radio frequencies [18, 27] (“I thought about convective currents, isobars, and isotherms. I made up my own shipping forecast) [18]), calendars (“Suzana is like a walking calendar. Even though no one had ever explained to her days, weeks, months, years, she can tell you the day of the week that corresponds to any date. She can go 60 years into the past and 20 years into the future” [40]), or video games [56]. Or specific patterns, such as stripes

“Clovis not only wore stripy underpants, but also a stripy sweater, stripy trousers and stripy socks (...) with his stripy soap!” [26]).

Some of the books describe abnormally intense interests in numbers, such as the seconds ticking by [5, 18], precise times and dates [18, 43] (“Today is Monday. Not just any Monday. Monday June 2nd, in the 23rd week. And 23 is an odd number” [43]), or arithmetic [7, 45] (“I tried to guess the age of the people I didn’t know. I added together the ages, real or approximate, of everyone present. I came to a total of 233, and then I calculated their average age: 33.3” [18]; “It’s bath time! Again? I just had one 1,440 minutes ago” [15]; “He likes the precision of words just as much as that of numbers... Their unarguable truth reassures him. Numbers are pillars nothing can knock down” [11]).

Characters with ASD may also have strange tics, such as playing tirelessly with their fins (for the little fish) [25], playing with balls of paper [30], feeling the wind in the bindweed [32], or looking for unimportant things they consider treasures [60]; and they can spend hours doing them [34].

7. Criterion B4:

Hyper- or hyporeactivity to sensory input or unusual interest 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 light or movement).

Some characters with ASD over-react to certain things because their senses (hearing and touch, but also sight and smell) are hypersensitive. This can lead to tantrums.

For example, some characters have “ultra-sensitive” ears [36] and therefore react violently to noises other people would find normal, such as children playing outside [5, 19], children speaking loudly [5, 19], loud noises [39], storms [39], the school bell ringing in the playground [5], the scraping of chair legs [5], bursts of laughter [6], ambulance sirens [27], cock crows [48], the rustling of leaves [52], or sounds that appear amplified [19] (“A horn blowing, a door slamming, a leaf falling from a tree. You never know. Sometimes there’s nothing and still he has a tantrum. Mom says it’s the sound of silence that distresses him” [27]). These noises can have a serious impact on the children concerned, frightening them [5], hurting their ears [60] (“I am far from the noise and the shouting, and that’s good for my ears” (during recess) [15]), or making them panic [19]. Such noises can seem unbearable [39] or be seen “as a large, terrifying monster” [48]. Some children feel the need to cover their ears (“My hands went up to my ears to protect them from the din” [5]; His disability makes Max hypersensitive to noise” [8].

Some children have a heightened sense of touch (“Timothée is more sensitive to touch than us” [53]), so they cannot bear or are frightened of being touched [5, 6]. Some do not like being kissed, even by their parents [18, 37], hugged [39] or carried [49], or having someone touch or hold their hand [23]. Others do not like touching other people [18], or touching people without asking them [46]. In addition, they might not like touching certain things, like the little zebra who does not want to get paint on his hoofs during art class, unlike all his classmates [56].

They will not let themselves be touched, preferring to move away [5], or taking back their hand and whining [40], refusing hugs [11], which can be difficult for others, especially

their mothers (“She went to hold him in her arms, but stopped, undoubtedly for fear he would reject her” [11]).

Lights and smells can also upset them [46, 48]. Flickering lights, such as neon signs or flames [5, 2], can hurt their eyes so much they have to look away [23], can fill their heads so they hide their eyes and can no longer speak [5], or can make them panic (“He never came into the kitchen when the gas cooker was lit or, if he did, it was on all fours, with his nose to the floor so he couldn’t see the burners” [22]). They notice smells other people do not notice [17], are hypersensitive to them [46], or even terrified of them (“But if there’s a smell he doesn’t like, like pigeon droppings, he becomes so disgusted he barks desperately for hours, as if barking could chase the horrible smell away” [48]).

Other characters with ASD are fascinated by things they see. Their attention is captured by things that would not attract a second glance from others, such as lights [5, 23], things that shine [49], white spots in front of the eyes [5], or simply light (“Stop looking at the light, Timothée, you’ll hurt your eyes! I can’t stop myself. It’s as pretty as fireworks” [53]). Their attention is also attracted by movement [6, 10], waves [19], the paddles of a boat [15], a mobile above a cradle [30], a rabbit’s twitching nose [6], or running water (“He’s fascinated by water and can spend hours watching it run down the plughole.” [33]). They are also attracted by unusual things, such as bindweed flowers [33], or details others do not see [60]. Some characters are captivated by screens [31, 33] or spend hours looking at circular objects (“We spend hours in front of signs, the pizza on the truck, wheels, and manholes!” [49]), or they may be fascinated by colors [20, 46], which they may associate with tastes (“She loves red, often sweet”) [46].

Appendix 3: Qualitative analysis of the Books in the Corpus: Other Characteristics of Characters with ASD

Animalization

Half of the books in the corpus (30 out of 61 = 49%) draw parallels between children with ASD and animals. One way this is done is by employing words and expressions that are generally used in relation to animals, for example, the child grunts (loudly) [2, 10], crouches [30, 31], shrieks, flies away, flaps their arms in order to fly [16, 49], forages [24], bites [38, 53], claws [21, 33], scratches the doors [5], is “tamed”, like the fox in *The Little Prince* [6], or sniffs food or people (“Timothée gets to know people like this, he sniffs all our friends” [54]).

Behaviors are also compared to those of animals by describing the character with ASD as “having an animal instinct” [31], “standing like a beast” [31], “making animal noises and spreading dirt everywhere” [32], “grunting like an animal” [32], “being a bit wild” [30], “squawking like a wounded or wild animal” [27, 32] (“Marc was like a wild animal that doesn’t want to come out of his cage” [6]; “Clovis was as wooly as a sheep, as funny as a monkey, mute as a fish, naked as a worm. As happy as a zebra!” [26]).

Fifteen of the books highlight the particularity of the character with ASD’s behaviors by comparing these behaviors with a specific animal, as in having the memory of an elephant [33], squawking like a bird [21], screeching like a gull [49] or an eagle [43], growling like a bear [21], trumpeting like an elephant [21], howling like a wolf [31] or snuffling like a guinea-pig [52]. Some children are said to move in an animal-like way, by flapping their wings (arms) like a bird [53, 55], hopping like a rabbit [9], emerging like a butterfly [24], careering like a mad dog [31], climbing like a monkey [31], sprawling like a cat [31, 43], tip-toeing like a mouse [39],

or flitting like a bat (“Matthieu flitted round me like a bat, without touching me but without seeing me, with a sort of radar” [31]; “She flapped her wings hard, as if she wanted to get to her nest, hide in a tree” [51]).

References to animals are a central theme in these books, as children with ASD are compared to animals or depicted as humanoids with animal characteristics in 28 of the 61 books. In six of the books, the character with ASD is an anthropomorphized animal (little fish [25], bear cub [37], dragonfly [46], puppy [48], zebra [56], blackbird [49]), which is a frequently used device in children’s picture books. Another six books are about children who talk to animals but who never communicate with people. For some of these children, animals (robin [5], shellfish [10], rabbit [6], cat [13, 60]) are their only friends (“He talks to the animals, who come from all over the neighborhood to listen to him” [21]). The child in one of the books can read birds’ feathers (“She said again, this child is mad... In Africa, crazy people are witches, wise men who read the truth in the clouds and in birds’ feathers” [30]). Finally, ASD can make a child appear vulnerable and therefore in need of protection, like a beloved pet (“We looked after him, so no one hurt him, like our little disabled rabbit” [27]).

Children from Another World

Some characters with ASD live in their own world [53, 61]. They shut themselves away or are shut away [2, 10], [9], or they bury themselves away [57] in places where nothing can hurt them, where they feel protected [22, 58]. They do not want to leave these places [37], because they are sheltered from the outside world, which they observe through a window [23], but which they do not understand [12, 46] or which frightens them. They may not be aware of the outside world [53], as if they were alone [48] or on another planet [31]. Their world may be a bubble [17, 52] in which they are prisoners [16, 25], or a shell [4, 10, 13], a balloon, a cocoon [30], or a fortress [27] (“The world is not outside, it is in them [...] they live alone within themselves in another dimension we cannot know” [31]; “Flore feels she has been invited into her own world” [31]; “...a world no-one else knows” [51]).

They are also portrayed as coming from another world [16, 24] that is strange [16] or different [17], from outside the world [40] or another (unknown) planet [9, 11, 16], from another universe [21] or an elsewhere [21, 35] that may be made of fears and dreams [48] (“Nothing could calm him and it was a real battle he was fighting in his head against the world of fears that could, he believed, swallow him up” [48]).

Others are said to come from more specific places, such as the jungle [23], the forest [57], clouds [48], the moon [30, 55], or (the branch of) a star [16, 21], where “reception” is poor (“In François’ head there always seems to be a storm scrambling the signal. He doesn’t receive messages very clearly. It’s as if his antennae were broken” [59]). They are extra-terrestrials [17, 29] who sometimes come back to earth [9, 30], but they do not look at earthlings [31] and are “out west”.

“Extreme” Reactions

Shouting and Screaming

Several books describe characters with ASD as being able to scream and shout extremely loudly (“...an enormous shout” [26]; “She shouted so loud, I thought she was trying to rip her voice” [41]; “...piercing howls” [47]).

Characters cry out in suffering and pain [19, 24], give screams of despair [3, 13] or “desperate roars [28], sometimes for no apparent reason [3, 54]. These screams can happen anywhere, including on a bus or in shops [6, 34] and they never stop, even if other people try to calm them [22, 42]. Screams may be accompanied by grins [13], shouts “like bursts of laughter” [42], or piercing whistles [58], or they may be silent (“Her mouth open, she looked like she was about to shout, but not a sound came out; like in nightmares when you are scared to death” [4]).

Tantrums

Fifteen books address the tantrums children with ASD sometimes throw if they feel they are being assaulted, notably by noises to which they are hypersensitive (see criterion B4), if their rituals are disturbed (see criterion B2), or if someone interferes with their world. Tantrums are so noisy that they are often likened to extreme weather events, such as tornadoes or storms [6, 30], hurricanes [38], or whirlwinds in which the child drowns [31], or to moments of madness [22, 27], “a mad rage” [47]. The child becomes so enraged [6, 24, 44] his “fits of anger shake the walls” [26]. Tantrums are “as unpredictable as the weather”, because they happen suddenly [44], for reasons that appear inexplicable (“It can happen any time, for any reason” [27]) or inconsequential, such as turning off the TV [22].

Characters with ASD may roll in the sand [41], throw themselves onto the ground (taking off their clothes or shoes) [6, 55], hit the floor and walls [30], or be aggressive [22], difficult to control [22], or bite people who try to control them [31]. They may hit people, punch friends in the back [2], throw things, overturn their tray in the canteen, or kick [44]. One child “whacks his boat against the table” [22]; another throws chairs at friends [6]. Nevertheless, this aggression is not usually directed at another person: tantrums result in a remote control crashing next to the TV, a flower pot being knocked to the floor [22], a rabbit being batted away with the back of the hand and sliding across the floor [6]. Some characters hit anything within reach [3, 6] (“...a barrage of kicking and punching, Marc looked like a windmill, his arms and legs whipping the air” [6]).

Self-Harm

Although one of the books notes that the central character “doesn’t harm himself, unlike many children with autism” [31], 10 of the books describe characters who hurt themselves (badly) [7, 27], notably by hitting (banging) their head against the floor, against the wall, or with a stick [13, 49, 57], pulling their hair [13, 19], biting themselves (their lips) [52, 53], scratching themselves, or twisting their fingers [7]. For example, in three books aimed at readers aged 6-8 a girl “twists her fingers, pulls her own hair, scratches herself and hurts herself...” [7], and two young boys deliberately hurt themselves (“He hit his head with one of them. He hit himself so hard the branch broke. So he started again with another one” [57]; “And then my friend threw himself on the ground and started banging his head on the rocks.” [13]).

Appendix 4: Table 2

Table 3. Number and Percentage of Books as a Function of Reader's Age and Publication Date

Publication period Age group	1999 – 2005 (7 years)	2006 – 2012 (7 years)	2013 – 2019 (7 years)	Total
3 - 5 years (3 years)	3 53 (00), 54 (05), 59 (04)	2 39 (08), 44 (08)	15 2 (13), 8 (19), 12 (16), 15 (19), 21 (15), 25 (16), 26 (19), 35 (13), 37 (17), 38 (13), 42 (15), 46 (17), 51 (19), 56 (18), 60 (16)	20 32.8%
6 - 8 years (3 years)	5 32 (02), 33 (01), 34 (04), 57 (03), 58 (99)	11 3 (08), 6 (09), 7 (12), 16 (12), 17 (10), 28 (06), 43 (09), 45 (06), 48 (09), 49 (11), 55 (10)	12 1 (15), 4 (13), 9 (13), 13(16), 14 (18), 23 (15), 24 (13), 36 (16), 41 (13), 50 (14), 52 (17), 61 (16)	28 45.9%
9 - 11 years (3 years)	4 27 (03), 30 (00), 31 (02), 40 (00)	3 18 (09), 19 (06), 20 (11)	6 5 (14), 10 (17), 11 (19), 22 (14), 29 (19), 47 (18)	13 21.3%
Total	12 19.7%	16 26.2%	33 54.1%	61