


The home literacy environment of school-age autistic children with high support needs

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Abstract

Background: As a group, autistic children with high support needs (with adaptive functioning in the range of an intellectual disability) are at risk of significant literacy difficulties. We investigated the parent-reported home literacy environment of this group of children.

Method: Sixty-two parents of autistic children (4.5 to 18.25 years) attending an autism-specific school completed a home literacy survey reporting on their child's: (1) alphabet knowledge, (2) interest in reading, (3) activities/interactions around books, (4) reading ability, and (5) writing ability.

Results: We found significant positive correlations between parent-reported child interest in reading and literacy-related interactions and skills, but not with child age. Children using spoken words to communicate obtained significantly greater scores on four home-literacy subscales, but not on reading interest.

Conclusions: A better understanding of the home literacy activities of autistic children with high-support needs is needed to inform educational practices aimed at promoting literacy development in this vulnerable population.

KEYWORDS

autism, home literacy environment, intellectual disability, parent-report, survey

1 | INTRODUCTION

The home literacy environment includes children's literacy-related activities, resources, supports, and experiences in their home environment (Whitehurst & Lonigan, 1998). The importance of the home literacy environment in promoting children's emergent literacy skills has long been recognised. Emergent literacy skills (i.e., precursor language and literacy skills to conventional reading ability) include the print-related skills (e.g., alphabet knowledge and phonological awareness) that are needed for learning to decode, as well as the meaning-related skills (e.g., vocabulary, grammar) required for reading comprehension (National Reading Panel, 2000; Whitehurst & Lonigan, 1998).

Importantly, children with rich home literacy environments during the preschool years often demonstrate stronger emergent literacy skills and are thus better prepared to commence formal reading instruction (Bus et al., 1995; Lonigan et al., 2013) and become successful readers (Catts et al., 2015). As such, understanding the home literacy environment of at-risk groups of children could inform educational practices to facilitate literacy development. One group of children, who are at high risk of persistent literacy difficulties are autistic children, particularly those with high support needs including co-occurring intellectual disability and/or minimal spoken language skills. As a group these children are likely to remain in the emergent literacy stage of learning long after they commence their formal schooling (see Clendon

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et al., 2021). The current study investigated the home literacy environment of school-age autistic children with high support needs, who attended an autism-specific specialist school in Australia; a group which to date has received limited attention in the literature (Russell et al., 2019; Sorenson Duncan et al., 2021).

Autism is a neurodevelopmental condition, characterised by social communication differences and the presence of restricted and/or repetitive behaviours that significantly impact a person's daily functioning (American Psychiatric Association, 2022). Autistic children are a heterogenous group, with some children demonstrating highly developed spoken language and cognitive skills and others not developing functional spoken language skills (i.e., non-speaking, ~30% of the population; Tager-Flusberg & Kasari, 2013) and/or demonstrating intellectual disability (~30%; Maenner et al., 2020). Autistic children face an elevated likelihood of encountering challenges in developing their (emergent) literacy skills for various reasons, including the influence of core autism characteristics, spoken language impairment, and/or the presence of co-occurring cognitive features. For example, restricted interests and social communication differences for some autistic children may result in a lower interest in social interactions around books. This may help explain why some autistic children are less interested in shared book reading activities than their non-autistic peers (Dydia et al., 2014; Fleury & Hugh, 2018; Westerveld & van Bysterveldt, 2017), potentially resulting in less literacy-learning opportunities in the home. Intellectual disability may hamper children's learning in general, consistent with the diagnostic criteria (American Psychiatric Association, 2013), including the acquisition of emergent literacy skills, such as letter sound knowledge or phonological awareness. Moreover, frequently observed difficulties in acquiring spoken language can result in difficulties in emergent literacy skills, similar to those observed in children with language disorders (Cabell et al., 2009; Lanter et al., 2012), with negative long-term implications for children's reading ability (Hall & Segarra, 2007).

Studies investigating the home literacy environment of autistic children have mainly focused on preschoolers and young school-age children (see Biggs et al., 2023). Overall, no parent-reported differences have been found in environmental aspects, such as frequency of shared book reading or the number of books in the home between families with autistic children and families with neurotypical children (Lanter et al., 2013), or children with other disabilities (Westerveld & van Bysterveldt, 2017). However, based on parent-report, autistic children were less likely to show enjoyment during shared book reading (Lanter et al., 2013), and parents have reported lower child interest from autistic children in book reading activities (Simpson et al., 2020; Westerveld & van Bysterveldt, 2017) compared to similar-age non-autistic children. Highlighting the importance of child interest in literacy-related activities for emergent literacy development, Dydia et al. (2014) observed a direct link between parent-reported print interest (child's interest in the child's name and words) and children's alphabet knowledge, even after controlling for language ability.

Oral language ability plays a crucial role in emergent literacy skill acquisition and development in autistic children, consistent with observations with neurotypical children (National Reading

Panel, 2000). For example, strong associations have been observed between oral language ability and emergent literacy skills (Dydia et al., 2014; Jacobs & Richdale, 2013), and Lanter et al. (2012) found that autistic children with co-occurring language disorders achieved lower scores in emergent literacy on a standardised assessment than age-matched autistic children with language skills in the expected age-range. Furthermore, it is well-established that children who are non-speaking are at heightened risk for experiencing significant and persistent literacy learning challenges (e.g., Dahlgren Sandberg, 2001; Foley & Wolter, 2010), potentially influenced through differences in home literacy experiences (e.g., Light & Kelford Smith, 1993). Light and Kelford Smith (1993) compared the home literacy experiences of 15 preschoolers with physical disability who used augmentative and alternative communication (AAC) devices to peers without disability and found the two groups were similar in the amount of literacy materials and modelling of literacy use available. However, children who were non-speaking had fewer opportunities to access print-based materials themselves and to participate in writing/drawing activities, and they had fewer opportunities to communicate within literacy activities. Further, Barton-Hulseley et al. (2022) investigated the home and school literacy experiences of preschool-age children with developmental disabilities ($n = 38$), including autism, 10 of whom were non-speaking (i.e., communicated with sign/gestures or used an AAC device). Their overall findings suggested that if children had access to expressive modalities (e.g., AAC, gestures), children were able to engage more in shared literacy activities than children who did not. However, it is not clear if this relationship between access to expressive modalities and engagement was significant, nor whether there were differences between autistic and non-autistic preschoolers.

Oral language impairment, reduced levels of interest in shared reading, and/or a reduced desire to access books for pleasure may potentially be barriers to literacy learning once children start school and, in turn, impact reading development throughout the school years. Yet, few studies have investigated the home literacy environments of school-age autistic children (Arciuli et al., 2013; Huang et al., 2022; Lucas & Norbury, 2018). Arciuli et al. (2013) found a significant positive relationship between parent report of their child's adaptive behaviour and direct assessment of autistic children's reading skills. Specifically, higher levels of communication on subscales of adaptive behaviour (Vineland Adaptive Behaviour Scales; VABS-II, Sparrow et al., 2005) were significantly related to stronger reading performance in 7- to 11-year-old autistic children, highlighting the importance of everyday communication skills to reading ability. Further, Lucas and Norbury (2018) found that autistic children ($n = 40$, ages 7–13) engaged in shared reading for a shorter duration than their non-autistic peers ($n = 20$, age-matched). Of interest, Lucas and Norbury (2018) further investigated if differences in shared book reading duration were related to children's spoken language abilities. They found that parents of school-age autistic children with co-occurring language disorders read more often (55%) on a daily basis than parents of school-age autistic children with age-appropriate language skills (32%). The authors speculated that parents adapted their home reading practices (i.e., higher frequency of reading with their child)

depending on their child's level of support needed to facilitate their language and reading development. It should be noted that this group of children demonstrated cognitive skills in the (low) average range and therefore these results may not generalise to children with intellectual disability.

To the authors' knowledge only one previous study investigated the home literacy environment of autistic students with high support needs (Walker et al., 2022), with a focus on describing the environment. The study by Walker et al. involved 63 parents of primary school-age autistic students (ages 3 to 11 years) with moderate to severe intellectual impairment attending an autism-specific school in the UK, most of whom used fewer than 10 words in spontaneous functional communication. Using a mixed-methods design, the authors investigated parent efforts to engage their autistic children in reading activities and support them in learning to read by describing the home literacy environment and experiences. Their results indicated parents valued literacy learning as reflected in generally literacy-rich home environments (e.g., high frequency of shared reading), but that engaging their children in literacy related activities could be challenging. Despite these challenges, parents regarded shared reading related activities as important quality time with their children. Unfortunately, the children's specific language ability levels were not reported (i.e., speaking vs. non-speaking).

1.1 | Current study

The current study builds on the descriptive study by Walker et al. (2022), extending to an Australian context with a cohort of autistic students with high support needs through exploring relations between parent-reported literacy-related skills and interactions, children's interest in reading, and children's language ability. We also investigated if age, level of adaptive functioning, or use of spoken language to communicate (speaking vs. non-speaking) were associated with any of the parent-reported literacy-related skills and interactions. Our research questions were:

1. What are the correlations between the parent-reported (emergent) literacy-related skills (alphabet knowledge, reading, and writing) and interactions (around print) and their child's interest in print-related activities?
2. What is the relationship between children's age, their adaptive functioning, and the parent-reported (emergent) literacy-related skills and interactions?
3. Are there differences in parent-reported literacy-related skills and interactions and child interest in print-related activities in the home for children who use spoken words compared to their non-speaking peers?

We hypothesised significant correlations between child interest in print-related activities and their (emergent) literacy skills and interactions with stories/books (Dyria et al., 2014; Huang et al., 2022; Westerveld & van Bysterveldt, 2017). We tentatively predicted a

positive relationship between children's literacy-related skills and their age; and a negative relationship between age and children's interactions with stories/books in the home. Our predictions were tentative given limited research examining the home literacy environments of older school-age autistic students with intellectual disability, however, it is likely that literacy experiences and activities within the home are different for older students (Biggs et al., 2023). There may be a shift in responsibility for literacy teaching from home (with parents) to school (with teachers), with increasing time spent in education as children move through formal schooling. We tentatively hypothesised a positive association between adaptive functioning and parent-reported (emergent) literacy-related skills and interactions (Arciuli et al., 2013), given higher support needs may lead to greater focus on everyday life skills (e.g., self-care). Based on the limited research to date, we tentatively anticipated lower literacy-related skills and fewer literacy-related activities for non-speaking children (Dahlgren Sandberg, 2001) compared to speaking children, further informed by Walker et al. (2022) outlining the difficulties many parents encountered engaging their autistic children with high support needs in literacy-related activities.

2 | METHOD

2.1 | Procedure

This study used a cross-sectional survey design. Ethics approval for this study was obtained through Griffith University (HREC 2018/814). Data were collected in 2019. All parents provided written consent prior to completing the questionnaire to use their responses in our study and to obtain a copy of their child's performance on the Adaptive Behaviour Assessment System (ABAS-3, Harrison & Oakland, 2015) from the school's records.

2.2 | Participants

Participants were recruited from an autism-specific specialist school for students with a primary diagnosis of autism, located in Sydney, Australia. Most students at the school are diagnosed with 'level 3' autism (i.e., requiring intensive additional support) and would meet criteria for an intellectual disability (i.e., significant adaptive and intellectual functioning impairments as per current diagnostic criteria, American Psychiatric Association, 2022) as reported by the school, although these were not explicit entry criteria for attending the school. Consistent with potential intellectual disability, children's adaptive behaviour scores (ABAS-3 parent report scores, Harrison & Oakland, 2015) ranged from 44 to 71 (see Table 1). Diagnosis of autism was made independently of the school prior to entry, usually made by a multi-disciplinary team, including a paediatrician and psychologist, against DSM-5 criteria (American Psychiatric Association, 2022). At the time of the study, there were 87 students at the school. The school caters for students in their first year of

TABLE 1 Descriptive statistics for home literacy environment questionnaire and demographic information.

	N	Mean (SD)	Range	Cronbach's α
Age (years)	62	10.75 (4.00)	4.5–18.25	-
ABAS score	45	52.56 (6.59)	44–71	-
Alphabet knowledge	62	11.76 (6.02)	4–20	.92
Child interest	62	14.08 (5.66)	5–28	.76
Child interactions	62	12.42 (4.78)	6–25	.78
Reading total	62	10.68 (5.65)	2–20	.89
Writing total	62	6.02 (4.10)	0–12	.86

Note: ABAS, Adaptive Behaviour Assessment System (ABAS-3; Harrison & Oakland, 2015).

formal schooling (kindergarten) up to their final year of formal schooling. Sixty-two parents (71% of enrolled students) agreed to take part in the study and complete the questionnaire, reporting on 19 girls (30.6%) and 43 boys (69.4%). Anecdotally, some parents of older children declined to participate because of their children's very low level of functioning. Regardless, there were children from all year-levels, with ages ranging from 4.5 years to 18.25 years (Mean: 10.75 years; SD 4.0 years; median 10.5 years; mode 6.6 years). Of the 62 students, seven students were primarily exposed to a language other than English at home (three of whom were non-speaking).

2.3 | Materials

2.3.1 | Adaptive behaviour

The Adaptive Behaviour Adaptive System – 3rd Edition (ABAS-3; Harrison & Oakland, 2015) is a standardised parent-report questionnaire of children's adaptive behaviour in three broad adaptive domains (conceptual, social, and practical), also yielding a summary score (Global Adaptive Composite). The ABAS-3 takes about 15–20 min to complete and was administered as part of the school's usual data collection processes which were shared with parental consent. It has been used widely with autistic children and children with intellectual disability, with validity evidence reported in the manual along with evidence of good internal consistency and test-retest reliability (Harrison & Oakland, 2015). Global Adaptive Composite standard scores (mean 100, SD = 15) obtained from the manual are used in the present study for analysis.

2.3.2 | Home literacy questionnaire

The questionnaire was based on the home literacy questionnaire developed by Boudreau (2005) and adapted in our previous studies (e.g., Simpson et al., 2020; Westerveld et al., 2017). For the current study, we added questions about the children's communication mode/s and questions around writing (see Appendix A). Parents were asked to rate their child's skills, behaviours, or interactions on a scale from 1 (never) to 5 (very often). Questions were grouped into

five subscales based on Boudreau (2005) which demonstrated acceptable to good reliability for the present dataset, consistent with Boudreau (2005). Subscales included (1) Alphabet knowledge: knowledge of letters and sounds (4 items, $\alpha = .92$); (2) Child interest: children's orientation towards literacy (7 items, $\alpha = .76$); (3) Child interactions: children's interactions around books (6 items, $\alpha = .78$); (4) Reading: the child's response to print (4 items, $\alpha = .89$); and (5) Writing: child's writing/attempts (3 items $\alpha = .86$). Parents were given the opportunity to leave additional comments.

2.4 | Data analysis

Data were screened for meeting assumptions of analyses. The Shapiro–Wilk test of normality indicated that the distribution of the variables was non-normal, therefore non-parametric inferential statistics were used for analyses. To answer our research questions one and two we used Spearman correlations (ρ) with missing data deleted pairwise. To examine whether differences in parent-reported (emergent) literacy and writing skills, child interest, and child interactions around print were associated with communication through spoken words, a series of Mann–Whitney *U* tests were conducted. To correct for multiple comparisons, alpha was amended to .01. Descriptive statistics for key measures (survey subscales: Alphabet Knowledge, Child Interest, Child Interaction, Reading Total, and Writing Total), along with ABAS scores and child age can be seen in Table 1.

3 | RESULTS

3.1 | Parent responses to the home literacy questionnaire

Of the 62 parents, 22 parents (35.5%) reported reading to their child often or very often. The remaining parents reported this was sometimes ($n = 20$; 32.3%), seldom ($n = 14$; 22.6%), or never ($n = 6$; 9.7%). We evaluated if frequency of shared book reading changed as children got older, and we found a significant, negative, low correlation ($\rho = -.29$, $p = .019$), indicating frequency of shared book reading in the home decreases with child age. When asked at what age parents

started reading to their child, 57 parents completed this question. Forty-one parents indicated they started reading before the age of one (71.9%), 11 parents (17.7%) reported between 1 and 2 years of age, with others indicating between 2 and 3 (one parent), between 3 and 4 (two parents) or after 5 years of age (two parents). Two parents wrote (in the free-text comment box) that despite trying from a young age, their child was never interested in shared book reading. Finally, the majority of parents ($n = 56$; 90.3%) reported their children owned at least 20 children's books, with only one parent indicating they owned none.

3.2 | Child interest, (emergent) literacy skills, and children's interactions around print

Correlations between subscales were strong, significant ($p < .05$) and positive (Spearman's Rho: $\rho = .50$ to $.84$), see Table 2. The greater the child's interest in literacy-related activities (Child Interest), the greater their parent-reported alphabet knowledge ($\rho = .65$), (emergent) reading ($\rho = .80$) and writing ($\rho = .64$) skills, and interactions around print ($\rho = .57$). Reading and writing ability were also positively correlated with each other ($\rho = .72$).

3.3 | Child age, adaptive functioning, (emergent) literacy and writing skills, and interactions around print

Age did not correlate with any of the home-literacy subscales ($\rho = -.10$ to $.24$), see Table 2. The ABAS score showed non-

significant correlations with all but one home literacy subscale (Alphabet knowledge, $\rho = .30$), with it being a significant moderate correlate. The ABAS score correlated with age ($\rho = .66$), whereby the older the child, the greater their adaptive functioning.

3.4 | Child spoken language ability, literacy-related skills and interactions, and child interest

Children were reported to use a range of communication methods: gesture ($n = 56$), vocalisations ($n = 51$), facial expressions ($n = 49$), spoken words ($n = 40$), photographs ($n = 31$), objects or a Picture Exchange Communication System ($n = 17$), communication board or book with symbols ($n = 15$), communication device or app with symbols ($n = 15$), and/or sign ($n = 9$). Children who used spoken words ($n = 40$) obtained significantly greater scores on four of the five home literacy subscales than children who were non-speaking ($n = 22$): Alphabet knowledge, Child interactions, Reading, and Writing, see Table 3. No significant difference was found for Child interest. To evaluate if there were differences in frequency of reading ('How often do you read to your child') and children's language ability, we conducted a non-parametric t -test, which was non-significant ($p > .05$).

4 | DISCUSSION

We used a cross-sectional survey design to explore the literacy-related skills and interactions of school-age autistic students with high support needs in their home environment. Most parents reported they started reading to their child from a very young age (before the age of

TABLE 2 Spearman correlations (ρ) between home literacy environment subscales, age, and ABAS score.

	Age	ABAS ^a	AK	Child interest	Interactions	Reading
ABAS score	-0.66**	-				
Alphabet Knowledge (AK)	-0.10	0.30*	-			
Child interest	0.08	0.24	0.65**	-		
Interactions	-0.06	0.14	0.63**	0.57**	-	
Reading total	0.08	0.26	0.84**	0.80**	0.60**	-
Writing total	0.24	-0.02	0.64**	0.64**	0.50**	0.72**

^a $n = 45$.

* $p < .05$; ** $p < .01$.

TABLE 3 Group (speaking vs. non-speaking children) difference in home literacy subscales.

	Speaking children ($n = 40$) (median)	Non-speaking children ($n = 22$) (median)	U (p)	Effect size (d)
Alphabet knowledge	14.50	5.00	136.00 (<.001)	1.38
Child interest	15.50	12.00	278.50 (.02)	0.63
Child interactions	13.00	9.00	169.50 (<.001)	1.17
Reading total	13.00	4.50	139.00 (<.001)	1.36
Writing total	7.00	3.00	224.50 (<.001)	0.88

one), and that their child owned at least 20 children's books, suggesting that most parents considered reading to be important. Approximately one third of the parents (35%) indicated they read often/very often to their child at the time of completing the survey. This percentage is relatively low compared to studies with autistic preschoolers (Dydia et al., 2014; Lanter et al., 2012; Westerveld & van Bysterveldt, 2017), where approximately 70% of the parents indicated they read books with their autistic preschooler often or very often (Westerveld & van Bysterveldt, 2017). Although not a research question we expected this percentage to be higher, in line with Lucas and Norbury (2018), who reported that 55% of parents of a younger group of children (aged 7–13 years) indicated reading on a daily basis with their autistic children who demonstrated co-occurring language disorders. Consistent with our follow-up analysis showing that frequency of shared book reading in the home decreases with child age, possible explanations for the differences in findings between our study and previous investigations (Lucas & Norbury, 2018; Westerveld & van Bysterveldt, 2017) may relate to the children's age, with parents sharing books less frequently in the home as children get older. Another possible explanation is the difficulty parents of autistic children with high support needs may have in engaging their children in literacy-related activities in the home, as observed by Walker et al. (2022) when interviewing parents of autistic children with moderate–severe intellectual disabilities.

As hypothesised, higher child interest was associated with better parent-reported (emergent) reading and writing skills and more frequent interactions around print in the home. These results are consistent with studies of autistic preschoolers (Dydia et al., 2014). Of note, however, is previous research showing lower child interest in autistic children compared to other groups, including non-autistic children (Lanter et al., 2013; Simpson et al., 2020) or children with disabilities (Westerveld & van Bysterveldt, 2017). Thus, while no causal conclusions can be drawn due to the correlational nature of this study, combined with findings from previous studies (Walker et al., 2022), results indicate the potential value of finding ways to foster child interest in print-related activities. This is a promising avenue for further research, particularly considering previous exploratory research with autistic preschoolers has indicated that child interest and/or engagement in book-related activities is amenable to change via parent-mediated (e.g., Westerveld et al., 2021) or teacher-mediated interventions (Fleury et al., 2014).

Age was not significantly related to parent-reported reading and writing skills, in contrast to our hypothesis. This may be due to age being confounded with adaptive behaviours; however, adaptive behaviour was also not significantly related to these skills, ruling out this explanation. Our finding regarding the non-significant associations between adaptive behaviour and parent-reported (emergent) literacy skills or interactions around print contrast with previous research by Arciuli et al. (2013), who observed that higher levels of adaptive behaviour were significantly related to stronger reading performance in 6- to 11-year-old autistic children. Differences may be explained through the use of differing measures between these studies (i.e., use of the ABAS in the current study vs. the use of the

VABS-II by Arciuli et al.). Further, differences in child participant characteristics may play a role with only two children (~10%) in the study by Arciuli et al. obtaining a diagnosis of intellectual disability. It may well be that because we included only children with high support needs, most of whom showed abilities in the range of an intellectual disability, we had a restricted range of adaptive behaviours constricting correlations that may be found. Finally, we found no significant associations between children's adaptive functioning and their interactions around print, nor their parent-reported reading or writing skills. The only significant, positive, but moderate association was between adaptive functioning and alphabet knowledge, which was in line with predictions.

We found that compared to parents of non-speaking children, parents of children using spoken words reported higher child performance on alphabet knowledge, (emergent) reading, and writing skills, in line with the limited research investigating (emergent) literacy related skills in non-speaking children (Dahlgren Sandberg, 2001). Moreover, parents of speaking children reported higher interactions around print in the home, consistent with research investigating the home literacy environment of non-speaking preschoolers (Light & Kelford Smith, 1993). The finding that there were no group differences in parent-reported child interest in literacy related activities is consistent with findings from Barton-Hulsey et al. (2022), who found that preschool children's speech production abilities were not significantly correlated with the amount of shared reading time, the frequency of books read, or children's interest in books. There was a significant correlation, however, between children's expressive language skills and the shared reading opportunities made available to them. Taken together, our findings highlight the importance of providing children with access to expressive modalities (e.g., AAC device) to support their language and literacy development.

4.1 | Limitations and future directions

There are several limitations of this study. First, we relied on parent-reported child interest only, as this group of autistic children with high support needs may be limited in ability to self-report due to co-occurring language and cognitive difficulties. As such, developing methodologies that yield insights into their experiences through complementary methods such as behavioural measures of interest and engagement (e.g., activity diaries, app-based tracking of activities/monitoring, direct observation of interest/behavioural coding) would be of value (see Simpson et al., 2024). Second, due to the correlational nature of the study, we cannot draw causal conclusions. It is therefore not clear whether children's limited and/or restricted interest in print-related activities/shared storybook reading might predict how likely a parent is to persist with it as an activity given limited resources (time) or capacity. Future research could investigate more diverse ways of engaging these children in print, for example through the use of technology (e.g., Aspiranti et al., 2020; Hedges et al., 2018), including digital books and literacy-related apps, or in the context of authentic tasks aimed at promoting

independence in the community, such as ordering take-aways from the menu.

Although we found group differences between speaking and non-speaking children, the range of 'speaking' in this group is diverse, including children who only used a few spoken words to others who used spoken language as their primary mode of communication. Future research may investigate if/to what degree the level of spoken language impairment and/or children's access to an AAC system impacts children's interest in, and engagement with literacy-related activities in the home. We found no correlations between children's adaptive functioning and any of the home literacy related skills and activities we investigated. As stated, this may reflect the limited range in adaptive behaviour scores observed in our participants, possibly exacerbated by the fact that some parents of older children declined to participate because of their children's very low level of functioning. Future studies should consider incorporating interviews to obtain qualitative feedback, particularly with parents of older children with high support needs to explore in greater depth their experiences. Finally, these data were collected in 2019 before the COVID-19 pandemic. The COVID-19 pandemic caused significant changes in education and learning environments worldwide, with many children experiencing disruptions in traditional schooling and increased reliance on remote and home-based learning. While the ongoing validity of our results remains uncertain, it is important to acknowledge that the children attending this autism-specific school were not subjected to lockdown measures.

4.2 | Clinical implications and conclusions

Consistent with the findings from Walker et al. (2022), it is clear that families value literacy experiences in the home, demonstrated by parents' willingness to complete the survey, but also given the number of children's books in the home and parents' reported attempts of literacy-related activities with their children at home, such as writing activities. Interactions around literacy-related activities in the home provide an ideal opportunity to foster (emergent) reading and writing skills, including for autistic children with high support needs. Given the non-significant associations between age and the parent-reported reading and writing skills of their children, these home literacy activities may potentially benefit from adjustments to optimise these learning opportunities, for example by incorporating knowledge of autistic thinking and reasoning styles and strengths, incorporating evidence-based practices such as visual supports, or the use of technology.

The parent-reported differences between speaking and non-speaking children in literacy-related skills and interactions are of concern, particularly considering there were no group differences in 'child interest'. These findings highlight the importance of finding ways to teach this group of non-speaking children the ability to read, write, and spell words (i.e., conventional literacy skills) to provide a pathway to independence. A thorough understanding of children's individual literacy profiles including areas of strength and needs, with input from

all stakeholders involved in literacy-learning opportunities, is clearly needed to inform classroom instruction and targeted supports (see Clendon et al., 2021).

The finding that only 35% of parents frequently shared books with their child may reflect the difficulty engaging autistic children with high support needs in this activity (Walker et al., 2022), coupled with relatively low child interest observed in previous studies (Simpson et al., 2020). Simply encouraging parents to engage their child in reading-related activities more often or advising parents and teachers to work within the child's specific interests when choosing books may not be a straightforward solution (see also Walker et al., 2022). Considering the high importance of fostering child interest to achieve literacy gains (Huang et al., 2022), we agree with Walker et al. (2022) that parents and teachers should work together to identify ways to enhance autistic children's engagement in literacy-related activities, listening to and learning from each other's experiences and expertise, and to show what is possible within each environment. For example, involving parents in planning of literacy-learning activities in the classroom may educate both parents and teachers on which strategies work best for which child to harness children's interests and strengths to promote literacy learning across home and school-environments (see also Walker et al., 2023).

AUTHOR CONTRIBUTIONS

Marleen Westerveld conceptualised the study and its design and drafted the manuscript. Stephanie Malone conducted the data analysis and drafted the results section. Sally Clendon contributed to the conceptualisation of the study and its design. Rachel Bowen contributed to the conceptualisation of the study and coordinated the data collection. Georgia Hayley contributed to the data analysis and helped draft the results section. Jessica Paynter contributed to the conceptualisation of the study and its design. All authors contributed to the interpretation of the results and approved the final version of the manuscript.

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The fourth author is employed by the school that was the focus of data collection. Other authors declare no conflicts of interest with respect to the research, authorship and/or publication of this article.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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APPENDIX A: HOME LITERACY QUESTIONNAIRE QUESTIONS

	Description	Construct
ELQ_35	At what age did you begin reading to your child?	Demographics
ELQ_36	How many books does your child own?	Demographics
ELQ_2	How often do you read to your child?	Demographics
ELQ_20	Does your child name letters of the alphabet?	Alphabet knowledge
ELQ_21	Does your child attempt to make sounds for alphabet letters?	Alphabet knowledge
ELQ_22	Can your child identify some letters of the alphabet?	Alphabet knowledge
ELQ_23	Can your child point to all the letters of the alphabet (upper and lower case) when you ask him/her to?	Alphabet knowledge
ELQ_1	Does your child ask you to read to him/her?	Child interest
ELQ_9	In comparison to other activities, how would you rate your child's interest in books?	Child interest
ELQ_13	Does your child show interest in adult reading materials (i.e., newspaper, V, magazine, etc) in the environment?	Child interest
ELQ_14	Does your child ask for help in reading words such as signs on the street or words on food packages?	Child interest
ELQ_26	Does your child ask for help with writing words?	Child interest
ELQ_28	In comparison to other activities, how would you rate your child's interest in scribbling/writing?	Child interest
ELQ_31	Does your child show interest in adults writing in the environment?	Child interest
ELQ_3	Does your child independently point to or talk about pictures when you read stories?	Interactions
ELQ_4	Does your child ask questions about characters or events during story readings?	Interactions
ELQ_5	Does your child pretend to read the story in the book?	Interactions
ELQ_6	Does your child make up stories and tell them?	Interactions
ELQ_7	Does your child fill in the words or lines from a story when reading with you?	Interactions
ELQ_10	When you look at and point to a picture in a book, will your child look at it?	Interactions
ELQ_15	Does your child identify words in the environment (such as food packaging, signs in stores and restaurants, etc) in your environment by him- or herself?	Reading
ELQ_16	Does your child recognise his/her own written name?	Reading
ELQ_17	Does your child read any words by sight (or common words they have memorised and can identify, such as mum, cat, etc)?	Reading
ELQ_18	Can your child read new words (i.e., words they have not seen before)?	Reading
ELQ_24	Is your child able to correctly write his/her name (without copying from an example)?	Writing
ELQ_25	Does your child write other words (without copying from an example)?	Writing
ELQ_32	Does your child scribble/write for different purposes?	Writing