

SHARED READING MEDIATED BY AUGMENTATIVE AND ALTERNATIVE COMMUNICATION FOR CHILDREN WITH COMPLEX COMMUNICATION NEEDS

Leitura compartilhada mediada por comunicação aumentativa e alternativa para crianças com necessidades complexas de comunicação

Lectura compartida mediada por comunicación aumentativa y alternativa para niños con necesidades complejas de comunicación

Miryam Bonadiu Pelosi

<http://orcid.org/0000-0002-6109-4296>

Universidade Federal do Rio de Janeiro, Departamento de Terapia Ocupacional, Rio de Janeiro, RJ, Brasil.

Célia Maria Adão de Oliveira Aguiar de Sousa

<http://orcid.org/0000-0002-5113-9323>

ESECS/CRID@/CICS.NOVA.IPLeiria/Instituto Politécnico de Leiria, Leiria, Portugal.

Abstract: Introduction: This study presents an integrative literature review on the use of shared reading mediated by Augmentative and Alternative Communication (AAC) for children with Complex Communication Needs (CCN). **Objective:** To identify and synthesize the strategies used, the resources employed, and the effects of this approach on children's linguistic and communicative development. **Methodology:** It comprised a systematic search in scientific databases, with defined inclusion and exclusion criteria, resulting in the analysis of 18 studies that addressed the use of adapted physical books, interactive e-books, and communication boards. **Results:** The main findings indicated that strategies such as modeling, repetition, and scaffolding, combined with vocabulary personalization, promote active participation and the expansion of communicative skills. **Discussion:** The studies showed that shared reading combined with AAC represents an effective strategy for enhancing the communicative skills of children with CCN. Its impact is enhanced when mediators receive appropriate training and resources are adapted to individual needs, ensuring accessibility and engagement. **Conclusion:** Despite its potential, investing in the training of professionals and family members, as well as adapting resources to individual needs, is essential to maximize the benefits of this practice and to ensure an inclusive and effective experience for children with CCN.

Keywords: Occupational Therapy. Augmentative and Alternative Communication. Accessible Communication. Children's Literature. Inclusive Education.

Resumo: Introdução: Este estudo apresenta uma revisão integrativa da literatura sobre o uso da leitura compartilhada mediada por Comunicação Aumentativa e Alternativa (CAA) para crianças com Necessidades Complexas de Comunicação (NCC). **Objetivo:** Identificar e sintetizar as estratégias utilizadas, os recursos empregados e os efeitos dessa abordagem no desenvolvimento linguístico e comunicativo das crianças. **Metodologia:** Compreendeu uma busca sistemática em bases de dados científicas, com critérios de inclusão e exclusão definidos, resultando na análise de 18 estudos que abordaram o uso de livros físicos adaptados, e-books interativos e pranchas de comunicação. **Resultados:** Os principais achados indicaram que estratégias como modelagem, repetição e *scaffolding*, aliadas à personalização do vocabulário, favorecem a participação ativa e a ampliação das habilidades comunicativas. **Discussão:** Os estudos mostraram que a leitura compartilhada aliada à CAA representa uma estratégia eficaz para ampliar as habilidades comunicativas de crianças com NCC. Seu impacto é potencializado quando os mediadores recebem capacitação adequada e os recursos são adaptados às necessidades individuais, garantindo acessibilidade e engajamento. **Conclusão:** Apesar de seu potencial, investir na capacitação de profissionais e familiares, bem como na adaptação dos recursos às necessidades individuais, é essencial para potencializar os benefícios dessa prática e garantir uma experiência inclusiva e eficaz para as crianças com NCC.

Palavras-chave: Terapia Ocupacional. Comunicação Alternativa. Acessibilidade Comunicacional. Literatura infantil. Educação Inclusiva.

Resumen: Introducción: Este estudio presenta una revisión integradora de la literatura sobre el uso de la lectura compartida mediada por Comunicación Aumentativa y Alternativa (CAA) para niños con Necesidades Complejas de Comunicación (NCC). **Objetivo:** Identificar y sintetizar las estrategias utilizadas, los recursos empleados y los efectos de este enfoque en el desarrollo lingüístico y comunicativo de los niños. **Metodología:** Se realizó una búsqueda sistemática en bases de datos científicas, con criterios de inclusión y exclusión definidos, lo que resultó en el análisis de 18 estudios que abordaron el uso de libros físicos adaptados, libros electrónicos interactivos y tableros de comunicación. **Resultados:** Los principales hallazgos indicaron que estrategias como el modelado, la repetición y el andamiaje, combinadas con la personalización del vocabulario, favorecen la participación activa y la ampliación de las habilidades comunicativas. **Discusión:** Los estudios mostraron que la lectura compartida junto con la CAA representa una estrategia eficaz para mejorar las habilidades comunicativas de los niños con NCC. Su impacto se maximiza cuando los mediadores reciben una formación adecuada y los recursos se adaptan a las necesidades individuales, garantizando accesibilidad y compromiso. **Conclusión:** Apesar de su potencial, invertir en la formación de profesionales y familias, así como en la adaptación de los recursos a las necesidades individuales, es esencial para potenciar los beneficios de esta práctica y garantizar una experiencia inclusiva y eficaz para los niños con NCC.

Palabras-clave: Terapia Ocupacional. Comunicación Aumentativa y Alternativa. Comunicación Accesible. Literatura Infantil. Educación Inclusiva.

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Introduction

A shared reading approach is widely used in educational and therapeutic contexts to stimulate language development and support emergent literacy, especially in children with Complex Communication Needs (CCN). This approach involves active interaction between the child and the mediator (such as parents, teachers, or therapists) during book exploration, providing opportunities for dialogic learning, vocabulary expansion, and the development of narrative skills (Murphy *et al.*, 2022).

Children with CCN often face challenges in verbal communication, which may restrict their participation in social interactions and limit their learning opportunities. It is within this context that Augmentative and Alternative Communication (AAC) stands out, by offering resources and strategies — such as communication boards/charts, speech-generating devices, and visual symbol systems — to expand possibilities for expression and comprehension during shared reading (Da Fonte *et al.*, 2010; Patenaude *et al.*, 2024).

The concept of mediation plays a central role in this scenario. Inspired by Vygotsky's sociocultural theory (1978), the mediator acts as a learning facilitator, adjusting the level of support so that the child can actively participate, even when their communicative abilities are limited. In shared reading practices, the mediator may model the use of graphic symbols, expand the child's responses (linguistic expansion), and ask open-ended questions to stimulate active engagement (Pentimonti & Justice, 2009). Appropriate mediation is especially relevant in AAC contexts, as children with CCN may benefit from visual and auditory supports to understand and participate in narratives (D'Agostino *et al.*, 2018).

Studies indicate that the combination of shared reading and AAC can promote significant benefits, such as increased verbal production, improved story comprehension, and greater initiation of social interactions in children with communication difficulties (D'Agostino *et al.*, 2018). However, challenges remain regarding the practical implementation of these interventions, including the need for material personalization and the training of mediators to adapt vocabulary and symbols to the individual needs of each child (Abendroth *et al.*, 2021; Waller, 2019).

Thus, understanding the most effective and evidence-based approaches to the use of AAC during shared reading is essential to support educational and therapeutic practices, as well as to guide future research and inclusion policies.

In this sense, the present study aimed to identify and synthesize the strategies used in the application of accessible literature supported by AAC for children with CCN. In addition, the study sought to compile evidence-based recommendations to guide inclusive practices.

Methods

This study is an integrative literature review. The search was conducted on the Online Knowledge Library platform (b-on), which centralizes access to multiple scientific databases, including Academic Search

Complete, ScienceDirect, Wiley Online Library, SpringerLink, Web of Science, PubMed/MEDLINE, ERIC, SciELO, DOAJ, IEEE Xplore, and JSTOR.

Description of keywords and search strategy

Descriptors in English and Portuguese related to shared reading, alternative communication, and accessible literature were used. The keywords included synonyms and common terminological variations in the field. In English: Augmentative and Alternative Communication (AAC); Book Sharing; Accessible Children's Literature; Inclusive Children's Books; Emergent Literacy; Storybook Reading; Complex Communication Needs (CCN). In Portuguese: Comunicação Aumentativa e Alternativa; Comunicação Suplementar e Alternativa; Comunicação Alternativa e Ampliada; Livro infantil acessível; Livro infantil inclusivo; Leitura compartilhada; Alfabetização emergente; Necessidades Complexas de Comunicação.

Searches were conducted using Boolean combinations, such as: ("Augmentative and Alternative Communication" OR "AAC") AND ("Book Sharing" OR "Storybook Reading"); ("Accessible Children's Literature" OR "Inclusive Children's Books") AND ("Complex Communication Needs" OR "CCN"); ("Comunicação Aumentativa e Alternativa" OR "CAA") AND ("Leitura Compartilhada" OR "Livro Infantil Acessível").

Inclusion criteria

Empirical studies published between 2004 and 2024, in English or Portuguese, were considered, including studies that investigated interventions with children and adolescents using AAC in shared reading activities; studies that discussed the use of children's literature as a tool to promote communication and participation of children with disabilities, even when AAC was not explicitly detailed; and articles available in full text in peer-reviewed journals.

Exclusion criteria

Studies were excluded if they: (a) addressed exclusively children's books without adaptations for children with CCN; (b) addressed AAC without relation to shared reading; (c) focused solely on the use of AAC for formal literacy without integrating shared reading; (d) consisted of literature reviews, meta-analyses, or conceptual/instructional articles on implementation strategies; or (e) were not fully available on the b-on platform.

Systematic review process

The searches conducted on b-on yielded 661 articles related to the descriptors used. After initial screening, 22 articles were excluded due to duplication. The next stage involved screening based on titles and abstracts, resulting in the selection of 57 articles. Of these references, five did not have the full text identified. In the final stage, 52 full texts were read, and 34 articles were excluded for being tutorials and systematic literature reviews and meta-analyses (n = 12); AAC articles whose objective was language development using AAC (n = 5); articles that used shared reading but did not involve AAC (n = 5); and articles on emergent literacy unrelated to shared reading (n = 12). The total number of

studies included in the integrative review was 18 articles. Figure 1 presents the flowchart based on the PRISMA model.

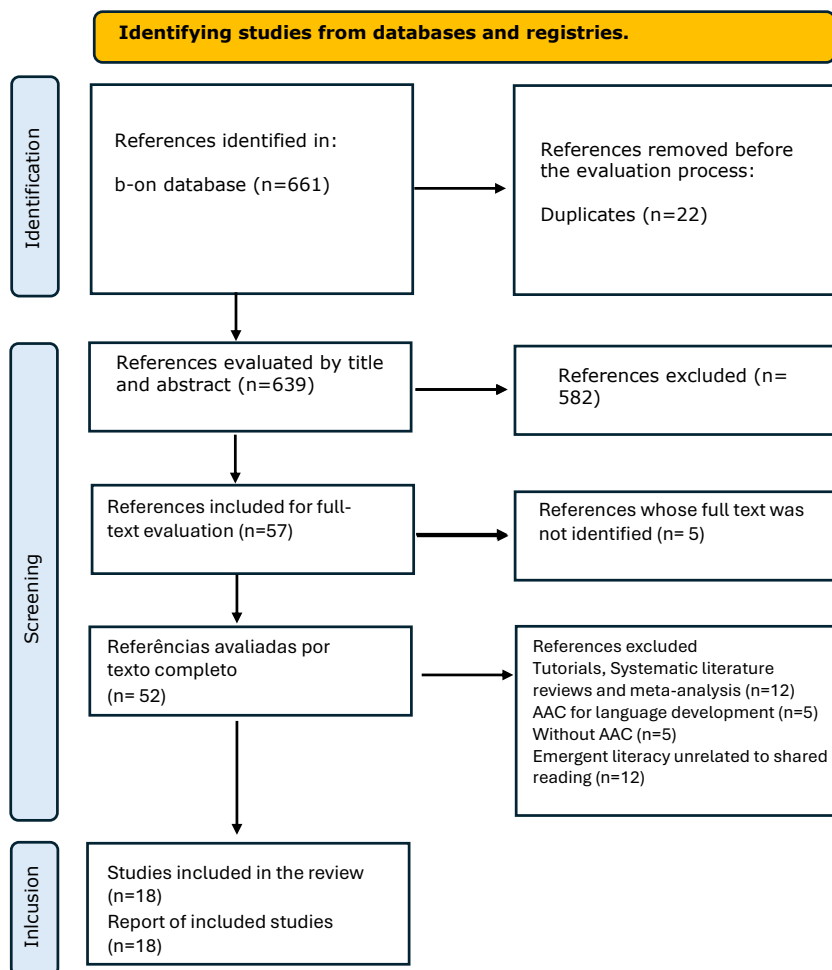


Figure 1 – Flowchart

Source: Flowchart based on the Prisma model

Data analysis

The data were organized in an Excel spreadsheet with categories extracted from the studies and analyzed according to Bardin’s (2011) content analysis. This procedure allowed the material to be examined systematically, identifying patterns and thematic categories.

The process followed three main stages: (a) pre-analysis, involving the selection and organization of the material; (b) material exploration, which involved categorization and coding of information into units of meaning; and (c) treatment of the results, with synthesis and interpretation of the findings.

The analysis resulted in the following categories: 1) resources used (handmade, technological, applications, and software); 2) stories (use of commercial or personalized stories); 3) vocabulary (support words, number of symbols, and their allocation on the same page or in a separate AAC resource); 4) book format (e-books or printed books); 5) intervention strategies (frequency, duration, individual or group activities, setting, modeling, and training of individuals); 6) educational and activity applications (materials, objectives, and settings of application); 7) professionals involved (area of

practice of the researchers and other participants, in addition to the children); 8) successful experiences; and 9) recommendations.

Results

The integrative review included 18 articles published between 2004 and 2024 in peer-reviewed journals (Table 1), encompassing 73 participants: 52 children and young people and 21 adults. The age of the children and young people ranged from 3 to 20 years. The most represented clinical conditions were: 19 with cerebral palsy, nine with complex communication needs (CCN), seven with language delay, six with autism spectrum disorder, four with Down syndrome, two with severe language disorders, and one child with typical development, who acted as a partner in one of the studies. Information about the adult participants was included in the body of the results analysis, ensuring an integrated description of the interventions.

Table 1: Articles Used in the Review – N = 18

Authors	Article title	Journal	Publication year
Bayldon, H., Clendon, S., & Doell, E.	Shared storybook intervention for children with complex physical, cognitive and sensory needs who use partner-assisted scanning	International Journal of Disability, Development and Education	2023
Bhana, N., McNaughton, D., Raulston, T., & Ousley, C.	Supporting communication and participation in shared storybook reading using visual scene displays.	Teaching Exceptional Children	2020
Caron, J., Light, J., & McNaughton, D.	Effects of an AAC app with transition to literacy features on single-word reading of individuals with complex communication needs.	Research and Practice for Persons with Severe Disabilities	2020
Chapin, S. E., McNaughton, D., Light, J., McCoy, A., Caron, J., & Lee, D. L.	The effects of AAC video visual scene display technology on the communicative turns of preschoolers with autism spectrum disorder.	Assistive Technology	2021
Drager, K. D. R., Light, J., Currall, J., Muttiah, N., Smith, V., Kreis, D., Nilam-Hall, A., Parratt, D., Schuessler, K., Shermetta, K., & Wiscount, J.	AAC technologies with visual scene displays and “just in time” programming and symbolic communication turns expressed by students with severe disability	Journal of Intellectual & Developmental Disability	2017
Johnston, S. S., O’Keeffe, B. V., & Stokes, K.	Early literacy and students with physical disabilities and complex communication needs.	Teaching Exceptional Children	2018

Authors	Article title	Journal	Publication year
Laubscher, E., Light, J., & McNaughton, D.	Effect of an application with video visual scene displays on communication during play: Pilot study of a child with autism spectrum disorder and a peer	Augmentative and Alternative Communication	2019
Liboiron, N., & Soto, G.	Shared storybook reading with a student who uses alternative and augmentative communication: A description of scaffolding practices	Child Language Teaching and Therapy	2006
Manoharan, A., Jose, J., & Saji, S.	Teaching Alphabet Recognition and Letter Sound Correspondence Using 4 Blocks of Literacy Model for Children with Complex Communication Needs (CCN): Illustrated with a Single Case Study	International Journal of Health Sciences and Research	2022
Milburn, T. F., Girolametto, L., Weitzman, E.	Enhancing preschool educators' ability to facilitate conversations during shared book reading	Journal of Early Childhood Literacy	2013
Morwane, R. E., Dada, S., & Bornman, J.	Shared storybook reading interactions between children with complex communication needs and their caregivers	South African Journal of Education	2019
Pufpaff, L. A.	Barriers to participation in kindergarten literacy instruction for a student with augmentative and alternative communication needs	Psychology in the Schools	2008
Queiroz, L. R., Guevara, V. L. S., Souza, C. B. A., & Flores, E. P.	Dialogic reading: Effects on independent vocal responses, vocal and non-vocal initiations, and engagement of children with autism spectrum disorder.	International Journal of Psychology and Psychological Therapy	2020
Rosa-Lugo, L. I., & Kent-Walsh, J.	Effects of parent instruction on communicative turns of Latino children using augmentative and alternative communication during storybook reading	Communication Disorders Quarterly	2008
Sennott, S. C., & Mason, L.H.	AAC modeling with the iPad during shared storybook reading: Pilot study.	Communication Disorders Quarterly	2015
Soto, G., & Dukhovny, E.	The effect of shared book reading on the acquisition of expressive vocabulary of a 7-year-old who uses AAC	Seminars in Speech and Language	2008

Authors	Article title	Journal	Publication year
Wence, B., Lorio, C., & Yacucci, A.	Shared book reading experiences for young children who use augmentative and alternative communication systems	Perspectives of the ASHA Special Interest Groups	2024
Yorke, A. M., Light, J. C., Gosnell Caron, J., McNaughton, D. B., & Drager, K. D. R.	The effects of explicit instruction in academic vocabulary during shared book reading on the receptive vocabulary of children with complex communication needs.	Augmentative and Alternative Communication	2018

Source: Elaborated by the authors

The set of studies evidenced different shared reading approaches supported by AAC, including interventions using interactive displays, digital and technological resources, as well as mediator training strategies. These initiatives showed a positive impact on communicative engagement, receptive and expressive vocabulary, and children's active participation during activities. The synthesis of the findings was organized into ten categories of analysis, presented below.

1. Resources used

The analyzed studies indicated the use of different resources to support shared reading with children with CCN, distributed into three groups: technological resources; physical books combined with software and devices; and exclusively physical materials.

Among the technological resources, personalized e-books stand out, used by Bhana *et al.* (2020) to promote participation during reading. Several studies described the use of Visual Scene Displays (VSDs), screens with contextualized visual scenes that can be integrated into AAC applications such as GoTalk and GoVisual Scene and allow the programming of interactive hotspots (clickable interactive areas associated with voice output or messages to promote communication), employed in Laubscher *et al.* (2019), Bhana *et al.* (2020), and Chapin *et al.* (2021). Another technological solution was the NOVA Chat 12 with the Transition to Literacy (T2L) feature, an AAC application that combines dynamic text and voice output to support reading, described in Caron *et al.* (2020).

The combined use of physical books with support software was also reported. Sennott and Mason (2015) used the Biscuit series together with the Proloquo2Go application, programmed with specific vocabulary for each narrative. Soto and Dukhovny (2008) used the Vantage II device (Prentke Romich Co.), with 45-symbol boards and a keyguard, an acrylic grid placed over the screen to facilitate access, while Rosa-Lugo and Kent-Walsh (2008) integrated books such as *Dora the Explorer* and *Curious George* with semantic-syntactic grids on the DynaMyte device.

On the other hand, some studies employed only physical and handmade materials. Pufpaff (2008) reported adapted books with page dividers and stimulus cards, while Johnston *et al.* (2018) used low-technology communication boards with printed symbols. In Morwane *et al.* (2019) and Queiroz *et al.* (2020), the interventions took place using traditional books, without adaptations.

PowerPoint was also adopted in different contexts: Bhana *et al.* (2020) used it to create personalized e-books, organized into slides with the inclusion of audio, videos, and enlarged text; Caron *et al.* (2020), in turn, explored the software to adapt printed books, structuring pages with target and distractor words in order to support reading for children with CCN.

2. About the stories

The analyzed studies presented different approaches regarding the use of stories during shared reading interventions with children with CCN.

Commercial stories without adaptation

Some studies used commercial books without specific AAC adaptations, prioritizing accessible and repetitive narratives characterized by short sentences, high-frequency vocabulary, and predictable structures that favor children's active participation and anticipation of content during shared reading. Yorke *et al.* (2018) explored the *National Geographic Little Kids First Big Book* series; Sennott and Mason (2015) used the *Biscuit* series; and Milburn *et al.* (2013) applied titles such as *Little Yellow Dog Gets a Shock* and *Don't Forget to Come Back*. Queiroz *et al.* (2020) reported the use of 20 commercial books without adaptations, while Morwane *et al.* (2019) mentioned stories selected by caregivers, also without personalization.

Commercial stories with adaptation

Other studies chose to adapt commercial books to facilitate access for children with CCN. Johnston *et al.* (2018) personalized materials with graphic symbols, enlarged images, and additional visual resources. Rosa-Lugo and Kent-Walsh (2008) modified *Dora the Explorer* and *Curious George*, integrating semantic-syntactic grids into the DynaMyte device. Bayldon, Clendon, and Doell (2023) carried out linguistic and cultural adaptations, selecting commercial stories in order to ensure familiarity and engagement.

Personalized stories

The use of personalized stories was recurrent, especially to promote greater child engagement and to target specific vocabularies. Bhana *et al.* (2020) developed e-books with interactive hotspots; Caron *et al.* (2020) created materials in PowerPoint, incorporating target and distractor words adapted to each child; Drager *et al.* (2017) produced printed books with simple images and short sentences; Chapin *et al.* (2021) developed personalized videos with pausable scenes (Video Visual Scene Displays); and Laubscher *et al.* (2019) used images and videos based on individual interests, such as themed toys and favorite characters.

3. Vocabulary

The analyzed studies demonstrated different approaches regarding vocabulary use during shared reading interventions with children with CCN.

Suggested support vocabulary

Most studies emphasized the selection of contextualized and functional vocabulary in order to promote comprehension and active participation. Murphy *et al.* (2022) highlighted key words related to the

storyline; Bhana *et al.* (2020) and Drager *et al.* (2017) described personalized vocabularies adjusted to the children's profiles and interests; Caron *et al.* (2020) selected target words to promote the learning of new concepts.

Number of symbols used

The number of symbols varied widely across studies. Caron *et al.* (2020) reported approximately 10 target words per story; Johnston *et al.* (2018) used 10 to 15 symbols per page; and Rosa-Lugo and Kent-Walsh (2008) reported up to 25 symbols in semantic-syntactic frames.

Symbol allocation

The mode of presentation varied between integration into the book itself and the use of external resources. Bhana *et al.* (2020) and Drager *et al.* (2017) used Visual Scene Displays with hotspots, allowing simultaneous access to vocabulary and content; Sennott and Mason (2015) also applied this strategy in AAC software. In contrast, Pufpaff (2008) and Rosa-Lugo and Kent-Walsh (2008) used external communication boards, with up to 25 symbols per page. Johnston *et al.* (2018) combined both formats, alternating between page-integrated symbols and external boards according to the children's abilities.

4. Format and presentation of the books used

In shared reading interventions, materials were presented in both physical and digital formats, with different levels of adaptation to promote the participation of children with CCN.

Physical books with accessibility adaptations

Some studies used modified printed books to facilitate handling and comprehension, including laminated pages, tactile page separators, and integrated graphic symbols. These strategies, described by Johnston *et al.* (2018), Bayldon *et al.* (2023), and Drager *et al.* (2017), aimed to promote independent access to the narrative.

Digital books and interactive e-books

Digital resources were widely used, especially when associated with Visual Scene Displays and AAC applications, allowing the creation of interactive hotspots. Bhana *et al.* (2020) reported the use of personalized e-books that integrated text, images, and audio in multimodal interfaces.

Commercial books without adaptation

Other studies relied on conventional books, without visual or tactile modifications. In these interventions, the focus was on shared reading itself, as observed in Murphy *et al.* (2022), Queiroz *et al.* (2020), and Rosa-Lugo and Kent-Walsh (2008).

5. Strategies used

The results regarding the strategies employed were organized into four dimensions: frequency and duration of sessions, activity format, intervention setting, and specific mediation strategies.

Frequency and duration of sessions

The frequency and length of shared reading varied widely across studies. Most described regular interventions, two to three times per week, lasting 15 to 30 minutes per session (Johnston *et al.*, 2018; Yorke *et al.*, 2018; Queiroz *et al.*, 2020; Sennott & Mason, 2015).

Activity format

Individual interventions predominated, with a focus on direct interaction between mediator and child, aiming to develop specific communicative skills (Caron *et al.*, 2020; Johnston *et al.*, 2018; Soto & Dukhovny, 2008; Dennis *et al.*, 2023).

Intervention settings

Most studies were conducted in school environments, including regular classrooms and resource rooms, favoring inclusion (Johnston *et al.*, 2018; Queiroz *et al.*, 2020; Bayldon *et al.*, 2023). Some interventions took place in libraries (Murphy *et al.*, 2022) or in rooms adjacent to classrooms, in order to provide a more controlled and calm environment (Dennis *et al.*, 2023; Chapin *et al.*, 2021). When the focus was caregiver training, the home environment was adopted as the intervention setting, with direct mediation by parents or family members (Rosa-Lugo & Kent-Walsh, 2008; Wence *et al.*, 2024).

Intervention strategies used

Among the highlighted strategies were scaffolding techniques, which are characterized as structured and graduated support focused on the progressive development of more complex skills, based on the central idea of scaffolds that sustain learning until the child achieves independence in communication (Liboiron & Soto, 2006). These included open-ended questions, response modeling, and continuous feedback to stimulate communication and engagement. Some studies organized activities into successive phases, such as baseline, intervention, and maintenance. Other approaches prioritized the development of phonetic skills and the recognition of visual symbols (Manoharan *et al.*, 2022; Caron *et al.*, 2020). Personalized practices using Visual Scene Displays and interactive materials aimed at active child engagement were also reported (Drager *et al.*, 2017; Bhana *et al.*, 2020).

6. Educational applications and activities

The interventions encompassed different reading and literacy strategies, with emphasis on shared reading activities, support materials, pedagogical objectives, and intervention settings.

Activities

A large proportion of the studies prioritized shared reading strategies, using questions before, during, and after reading to stimulate comprehension and interaction (Murphy *et al.*, 2022; Queiroz *et al.*, 2020). Some interventions addressed letter–sound correspondences, supported by graphic symbols to reinforce learning (Manoharan *et al.*, 2022; Johnston *et al.*, 2018). Specific strategies were also reported, such as the *Strive for Five* model, which encourages at least five communicative turns between mediator and child, promoting vocabulary learning and print concepts (Milburn *et al.*, 2013). Other approaches included dialogic reading and guided questions after reading, promoting retelling and active vocabulary use (Soto & Dukhovny, 2008; Dennis *et al.*, 2023).

Materials used

The materials employed ranged from technological resources to physical materials. Among AAC software and interactive applications, Proloquo2Go (Sennott & Mason, 2015), NOVA Chat 12 with the Transition to Literacy (T2L) feature (Caron *et al.*, 2020), and EasyVSD (Chapin *et al.*, 2021) stand out. Other studies prioritized adapted printed books, incorporating graphic symbols, enlarged images, and letter and picture cards to support phonetic instruction (Johnston *et al.*, 2018; Manoharan *et al.*, 2022; Rosa-Lugo & Kent-Walsh, 2008). The use of AAC devices with Visual Scene Displays and interactive hotspots was also frequent, as in the GoVisual and EasyVSD applications, enabling direct interaction with images and programmed vocabulary (Drager *et al.*, 2017; Laubscher *et al.*, 2019).

Objectives and intervention settings

The objectives included: development of expressive and receptive vocabulary (Yorke *et al.*, 2018; Soto & Dukhovny, 2008); promotion of communicative turns and social interactions (Drager *et al.*, 2017; Bhana *et al.*, 2020); strengthening phonological skills and associations between symbols and words (Manoharan *et al.*, 2022; Caron *et al.*, 2020); and improvement in comprehension and participation during reading (Murphy *et al.*, 2022; Queiroz *et al.*, 2020).

Most interventions took place in school environments, especially inclusive classrooms (Johnston *et al.*, 2018; Milburn *et al.*, 2013). Some were conducted at home, with active family participation (Rosa-Lugo & Kent-Walsh, 2008; Wence *et al.*, 2024), while others were carried out in therapeutic clinics and early childhood education centers, under the supervision of specialized professionals (Chapin *et al.*, 2021; Bayldon *et al.*, 2023).

7. Professionals involved in the intervention

Researchers' areas of training

Most studies were conducted by professionals in speech-language pathology, special education, and AAC specialists, as well as researchers with experience in child development and assistive technology (Murphy *et al.*, 2022; Bhana *et al.*, 2020; Caron *et al.*, 2020; Yorke *et al.*, 2018). Some studies specifically highlighted the work of professionals with expertise in AAC and emergent literacy (Johnston *et al.*, 2018; Sennott & Mason, 2015), while others emphasized the contribution of assistive technology specialists (Soto & Dukhovny, 2008; Drager *et al.*, 2017).

Assistive Technology specialists

In the analyzed studies, assistive technology specialists were mostly speech-language pathologists and specialized educators with experience in the use of AAC resources and other technologies aimed at supporting communication and learning in children with CCN. These professionals played central roles, ranging from the selection and adaptation of resources — such as software, applications, and devices (including tablets with Proloquo2Go, PODD systems, and Visual Scene Displays) — to the configuration of personalized vocabulary on communication devices and the adaptation of graphic boards. They were also responsible for training and capacitating teachers, classroom assistants, and family members, ensuring consistent use of resources during shared reading activities. In addition, they actively participated in the interventions, modeling the use of AAC devices during sessions and supporting children's communicative interaction. Finally, they provided technical support and ongoing monitoring,

ensuring appropriate device use and promoting necessary adjustments throughout the intervention process.

Professionals directly involved in the intervention

Several studies involved multidisciplinary teams. Speech-language pathologists played a central role, conducting interventions and providing training to other professionals and family members (Johnston *et al.*, 2018; Yorke *et al.*, 2018; Bayldon *et al.*, 2023). Special education teachers actively participated in implementing reading strategies and providing support during sessions (Murphy *et al.*, 2022; Bhana *et al.*, 2020; Manoharan *et al.*, 2022). In some interventions, classroom assistants provided technical and behavioral support (Dennis *et al.*, 2023; Chapin *et al.*, 2021), while trained graduate students and interns assisted with data collection and activity monitoring (Caron *et al.*, 2020; Manoharan *et al.*, 2022).

Participation of family members and caregivers

The participation of family members, especially parents and caregivers, was widely documented, with the aim of promoting the generalization of skills learned at home. Rosa-Lugo and Kent-Walsh (2008) and Wence *et al.* (2024) reported interventions conducted directly by parents after receiving instructions from the researchers. Morwane *et al.* (2019) highlighted the active involvement of parents and caregivers in the home environment, while Johnston *et al.* (2018) and Pufpaff (2008) emphasized collaboration among family members, therapists, and educators to ensure continuity of practices outside the school context.

Strategies used and training of individuals

Modeling was one of the most recurrent strategies across studies, used to demonstrate the use of AAC devices and to encourage communication. Bhana *et al.* (2020) and Caron *et al.* (2020) explored this technique in the context of Visual Scene Displays and AAC devices, while Johnston *et al.* (2018) applied it directly to guide the use of symbols during shared reading. Similarly, Manoharan *et al.* (2022) and Sennott and Mason (2015) emphasized the combination of modeling with prompts, verbal, visual, or physical cues or suggestions that assist the child in communicating or responding appropriately in a given situation, and hierarchies of assistance, fostering improvements in interaction.

The use of open-ended questions was also frequent as a way to stimulate children's active participation (Liboiron & Soto, 2006; Murphy *et al.*, 2022). Another technique described was expansion, in which the adult expanded the child's response to enrich vocabulary, as reported by Liboiron and Soto (2006) and Johnston *et al.* (2018).

Training of caregivers, teachers, and assistants played an essential role in ensuring continuity of practices outside formal settings. Murphy *et al.* (2022) and Johnston *et al.* (2018) reported training focused on the use of AAC devices and shared reading. Dennis *et al.* (2023) used the Practice-Based Coaching approach to train a classroom assistant, while Rosa-Lugo and Kent-Walsh (2008) developed an eight-step structured program to teach parents how to manage AAC systems.

Overall, the studies indicate consistency in the use of modeling as a central tool in AAC instruction, while training of individuals was more common in educational and family contexts, varying in degree of formality and systematization.

8. Successful experiences

The successful experiences reported in the analyzed studies demonstrate important advances in communication and participation of children with CCN during shared reading interventions with AAC.

Several studies reported substantial increases in children's participation and engagement. Bhana *et al.* (2020) described significant gains in story comprehension and communication, while Morwane *et al.* (2019) observed a higher frequency of verbal and nonverbal attempts, such as pointing or vocalizing. Similar results were described by Bayldon *et al.* (2023), in which the use of AAC systems increased interaction time and message complexity.

Vocabulary development was also notable. Caron *et al.* (2020) recorded an increase from 47% to 66% in reading of target words, with generalization to textual frames without graphic symbols. Yorke *et al.* (2018) reported that three children acquired and maintained 100% of the target words taught, generalizing them to new representations. Johnston *et al.* (2018) and Soto and Dukhovny (2008) highlighted advances in communicative turns and linguistic complexity, with production of longer sentences, while Drager *et al.* (2017) documented an increase in the average number of symbolic communicative turns from 4 to 30 per session after the intervention.

In contexts that included training of professionals and family members, results were also expressive. Dennis *et al.* (2023) showed that a classroom assistant implemented the strategies with high fidelity after training, resulting in gains of up to 94% in children's receptive comprehension. Similarly, Rosa-Lugo and Kent-Walsh (2008) reported that parents, after structured training, applied AAC with high accuracy, promoting increased communicative turns in their children.

Overall, these findings indicate that the combination of AAC use with modeling strategies and training of professionals and family members promotes significant gains in engagement, vocabulary, and communicative skills in children with complex communication needs.

9. Recommendations

The recommendations extracted from the reviewed studies encompass practical strategies to strengthen shared reading interventions with AAC, involving educators, therapists, family members, and researchers. One of the most consistent points was the emphasis on the use of modeling to demonstrate the functioning of AAC resources during sessions, combined with exemplary videos and instructions directed at caregivers, facilitating practice across different contexts (Murphy *et al.*, 2022). Complementary strategies, such as scaffolding, open-ended questions, and response expansion, were also shown to be effective in stimulating comprehension and engagement (Liboiron & Soto, 2006; Johnston *et al.*, 2018).

The involvement of caregivers and educational assistants was widely highlighted, underscoring the importance of their training in shared reading and in the use of AAC devices to ensure continuity of practices at home and at school. In this regard, structured training and approaches based on coaching and direct feedback, such as the MODELER model, proved effective in promoting appropriate use of AAC tools (Sennott & Mason, 2015; Rosa-Lugo & Kent-Walsh, 2008; Dennis *et al.*, 2023).

Regarding resources, the studies suggested expanding the use of Visual Scene Displays and personalization of materials, including the creation of communication boards and the selection of functional vocabulary adapted to each child's needs (Bhana *et al.*, 2020; Caron *et al.*, 2020). Adaptation of commercial books was also recommended, incorporating symbols directly into the material or using software such as PowerPoint and specialized applications (Drager *et al.*, 2017). The potential of technological tools, such as Proloquo2Go, NOVA Chat 12, and dynamic text-to-speech systems, was emphasized in several studies (Sennott & Mason, 2015; Caron *et al.*, 2020), although the need to consider access to these resources and adequate preparation for their use was highlighted.

Interdisciplinary collaboration emerged as an essential factor, involving speech-language pathologists, educators, occupational therapists, and other professionals to support the implementation of interventions in inclusive environments, such as regular classrooms, in coordination with multidisciplinary teams (Johnston *et al.*, 2018; Pufpaff, 2008).

Finally, the studies identified gaps indicating the need for future research. It is suggested to expand investigations on interactive e-books, dynamic Visual Scene Displays, and hotspot-based applications, as well as to explore how acquired skills can be maintained and generalized in natural contexts, such as family interactions and school routines (Laubscher *et al.*, 2019; Chapin *et al.*, 2021; Bayldon *et al.*, 2023; Wence *et al.*, 2024).

Discussion

The findings of this review indicate that accessible physical books, often accompanied by communication boards, can promote the participation of children with CCN during shared reading, although they present limitations when symbols are not integrated into the text (Johnston *et al.*, 2018; Pufpaff, 2008). In this context, digital resources such as interactive e-books that incorporate Visual Scene Displays and hotspots proved to be more effective by integrating symbols, audio, and images into multimodal interfaces, expanding opportunities for communicative engagement (Laubscher *et al.*, 2019; Bhana *et al.*, 2020; Chapin *et al.*, 2021).

Another central aspect concerns vocabulary. The personalization of key words and symbols, adjusted to the narrative context and the child's daily life, was identified as decisive for the effectiveness of interventions, promoting greater participation and linguistic gains (Sennott & Mason, 2015; Yorke *et al.*, 2018). Evidence such as that from Rosa-Lugo and Kent-Walsh (2008) reinforces that the inclusion of functional vocabulary directly related to the stories favors more frequent and complex communicative responses.

Similarly, Soto and Dukhovny (2008) showed that the inclusion of symbols related to characters and actions promotes greater engagement and the production of more complex utterances during reading. In contrast, approaches based on generic vocabulary showed less effective results, as described by Morwane *et al.* (2019), reinforcing the need to adapt materials to the story context and the child's level of comprehension. The relevance of this personalization was also highlighted by Sennott and Mason (2015), whose review of multiple interventions indicated consistent gains in participation and verbal production when vocabulary was adjusted to the narrative theme. Thus, the literature converges in

indicating that careful selection of key words, directly linked to the narrative and the child's repertoire, constitutes a central element for maximizing the benefits of shared reading mediated by AAC.

Regarding barriers to the implementation of shared reading with AAC, not only lack of material personalization but also insufficient training of mediators and difficulties in accessing technological resources stand out. The literature reinforces that the effectiveness of interventions strongly depends on the active role of parents, teachers, and therapists, whose adequate training is an essential condition for success (Laubscher *et al.*, 2019; Bhana *et al.*, 2020). Recent evidence demonstrates that structured training programs promote consistent gains in engagement and vocabulary use during reading, whereas the absence of ongoing training compromises adherence to proposed strategies and reduces positive effects (Dennis *et al.*, 2023).

Limited access to high-technology resources, such as tablets and AAC software with voice output, constitutes a recurrent barrier to the implementation of shared reading. The absence of inclusive policies and adequate institutional support reduces opportunities for multimodal communication, compromising children's active participation and restricting vocabulary diversity (Bhana *et al.*, 2020). These findings are corroborated by Light and McNaughton (2019), who, in a meta-analysis, identified material personalization and mediator training as determining factors for intervention success, whereas the absence of these elements resulted in smaller gains in communication and participation. Advancing this field requires combined efforts on three fronts: training programs that prepare educators for effective AAC use; development of resources adapted to individual needs; and institutional policies that ensure infrastructure and support for inclusion.

With regard to mediation strategies, the review showed that modeling, repetition, and scaffolding have stood out as consistent practices to promote engagement. Modeling, in particular, proved effective when the mediator demonstrates the use of communication boards or AAC devices while narrating the story, promoting comprehension and participation. Studies such as those by Bhana *et al.* (2020) and Caron *et al.* (2020) reported increases in communicative responses with the use of interactive devices, while Rodrigues *et al.* (2016) reinforced that modeling was more effective when associated with emphasis on key vocabulary from the narrative.

Another widely used strategy is repetition, employed to reinforce concepts and vocabulary, facilitating the retention of new words. Yorke *et al.* (2018) described an increase of up to 100% in the retention of target words in children with CCN when symbols were repeated during shared reading. Similar results were found by Caron *et al.* (2020), who observed significant improvements when the repetition of key words was accompanied by visual and auditory reinforcements in interactive e-books.

The scaffolding technique also proved to be central, consisting of the gradual support provided by the mediator, which is reduced as the child gains greater communicative independence. Pentimonti *et al.* (2009) and Milburn *et al.* (2013) pointed out that the use of verbal and visual cues — such as open-ended questions and corrective feedback — resulted in an increase in communicative turns and more elaborate responses from the children.

Overall, the review evidenced that the combined use of strategies such as repetition, modeling, and scaffolding in shared reading supported by AAC promotes consistent impacts on vocabulary development,

communication skills, and social engagement of children with CCN. Studies such as those by Caron *et al.* (2020) and Yorke *et al.* (2018) reinforce this finding, highlighting gains of up to 66% in the retention of target words and the generalization of learned vocabulary to new symbolic representations.

In a controlled study, Milburn *et al.* (2013) demonstrated that the repetition of key words during reading, combined with the use of personalized communication boards, resulted in a significant increase in the ability to identify and functionally use vocabulary by children on the autism spectrum. Positive impacts were also observed in communicative skills, with a greater number of speech turns and more complex responses. Similarly, Drager *et al.* (2017) reported that, after the intervention with Visual Scene Displays, the number of symbolic communicative turns per session increased from 4 to 30 in children with CCN. Bhana *et al.* (2020) reinforced these findings by showing that the use of multimodal systems, such as interactive e-books, promoted active participation, increasing both vocalization and independent pointing to symbols.

The benefits of AAC interventions were also consistent in specific populations. In children with cerebral palsy, Rosa-Lugo and Kent-Walsh (2008) observed a 94% improvement in receptive comprehension when personalized communication boards were used during shared reading activities. In children on the autism spectrum, Queiroz *et al.* (2020) reported that combining physical books with printed communication boards promoted greater engagement, with a significant increase in independent verbal responses during reading.

The reviewed findings reinforce the effectiveness of shared reading mediated by AAC in promoting language and social skills, especially when vocabulary is personalized to align symbols with the child's repertoire and experiences, multiple modalities are used, and mediators are consistently trained in implementing the strategies.

Conclusion

Shared reading combined with Augmentative and Alternative Communication has proven to be an effective strategy to expand vocabulary, strengthen communicative skills, and encourage social engagement in children with Complex Communication Needs.

The evidence analyzed highlights that strategies such as modeling, repetition, and scaffolding are fundamental to maximize benefits, especially when vocabulary is personalized and contextualized. The integration of multimodal resources, such as interactive e-books and boards with Visual Scene Displays, proved promising by combining symbols, audio, and visual feedback, expanding possibilities for active participation.

On the other hand, relevant barriers were identified, including the lack of adequate mediator training and limited access to appropriate assistive technology resources, factors that may compromise intervention outcomes. Thus, investing in the continuous training of professionals and families, ensuring the personalization of materials, and expanding access to diverse technological resources are essential measures to consolidate more inclusive and effective practices. When integrated, these elements have the potential to significantly expand communication and learning opportunities for children with CCN.

Study Limitations

Despite the positive findings of this review, some limitations need to be considered. Most of the evidence analyzed was derived from studies with small samples and heterogeneous methodological designs, which limits the generalization of results to all children with Complex Communication Needs. The diversity of approaches, including different forms of AAC (low and high technology) and varying levels of material personalization, also complicates direct comparisons between studies.

Another relevant limitation concerns the predominance of short-term interventions, without analyses exploring the long-term effects of AAC-mediated shared reading on communicative development. Furthermore, there is a scarcity of research considering the impact of these practices in different cultural and socioeconomic contexts, an essential aspect for promoting equity in access and implementation of evidence-based strategies.

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