



## **E-books for toddlers and preschoolers with communication disorders: attitude, belief, and practice of speech-language pathologists in India**

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### **Abstract**

Electronic books are a part of the ever-expanding culture and assist children to become a member of a highly digitalized society. While e-books are similar to printed books, they have interactive elements, noises, and other engaging features. E-books are an effective means to engage and entertain young kids and foster the development of language and emergent literacy. Improving the shared reading experience using e-books requires deep comprehension and acceptance of e-books. Nevertheless, there needs to be more research available on shared reading using e-books among toddlers and preschoolers. The present study aimed to assess and analyze the attitude, belief, and practice of Speech-Language Pathologists toward e-books among toddlers and preschoolers with communication disorders. A self-administered online questionnaire with 20 questions was developed and sent to 118 practicing SLPs in India through e-mail and WhatsApp. The attitude and belief scores of most SLPs in the study population regarding e-books were positive, indicating their knowledge about using e-books to support language and literacy skills. However, no association was found between attitude and belief and the working experience or educational qualification of SLPs or their age range of caseload. Only a few SLPs (42.7%) reported using e-books in their intervention sessions. The limited usage of e-books by SLPs during the intervention may be attributed to two factors: firstly, their insufficient knowledge of e-books in general, and secondly, their lack of understanding of the advantages of integrating e-books with language scaffolding. Encouraging SLPs to select the appropriate ones and implementing shared reading would pave the way for many opportunities for an effective, shared reading experience.

**Keywords:** E-books, Shared reading, Emergent literacy skills, language development, Speech-Language Pathologist

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## **1. Introduction**

Shared book reading significantly benefits young children's communicative and cognitive development. Interactive and scaffolded reading experience with young children develops an effective bond between children and parents (Bus et al., 1997), which in turn support their socio-emotional learning (Doyle & Bramwell, 2006) and vocabulary development (Hoffman et al., 2013). Shared reading with an adult promotes early language and literacy development (Karrass & Braungart-Rieker, 2005; Khurana & Rao, 2011; Niklas et al., 2016; Vrinda et al., 2022). Furthermore, it fosters children's emergent literacy skills, such as the concept of print, phonological awareness, alphabet knowledge, and word recognition (Justice et al., 2010). Early childhood experiences with books, which are complex cultural objects with various modes of representation, including objects, text, pictures, and functions such as opening a book, turning pages, and closing books, are essential. This would develop conventional reading and writing abilities (Cárdenas et al., 2020). Consequently, children who receive a book-oriented home environment receive three years more schooling than children who are not (Evans et al., 2010). Various studies have shown the significance of shared storybook reading for the language and literacy development of children (Niklas et al., 2016; Justice et al., 2010; Doyle & Bramwell, 2006; Kaderavek & Justice, 2002; Evans et al., 2010). Some evidence suggests that to prevent potential risks associated with the shared reading approach, it should be done with caution.

### *1.1. Electronic books (e-books)*

Technology impacts every part of our lives, including the books being read to young children. Tablets or iPads, which use portable touchscreen technologies, provide stories in e-books, often called story apps, picture book apps, or digital books. An e-book resembles a conventional storybook in several ways. It contains elements like a table of contents, sections, and pages and is organized around a subject or theme for communication functions (Jong & Bus, 2003). However, e-books usually have unique features like live animation with background sounds and music that help dramatize the text. Moreover, it incorporates additional decoding support, comprehension support, entertaining features, or interactive components such as animation that children can activate with technological operations like clicking and swiping the screen. Even though e-books can include a wide range of digital features, a more consistent format must be available across various storybook apps (Jong & Bus, 2003; Zucker et al., 2009; Bus et al., 2015).

### *1.2. Shared reading using e-books*

A recent joint position statement of the National Association for the Education of Young Children and the Fred Rogers Center for Early Learning and Children's Media at Saint Vincent College (2012) supports that educational activities, such as shared reading using technology and interactive media (including e-books) serve as a highly engaging and



entertaining learning experience between the children and adults, and it should be developmentally appropriate. Therefore, allowing kids to explore and engage in these new and significant skills or tasks lacking in non-interactive media would improve their learning. The interactive features of e-books may aid in vocabulary/word learning, print awareness, word decoding, and reading fluency scaffolding (Paciga & Hoffman, 2015; Smeets & Bus, 2014). In contrast to traditional book reading, e-books offer technological advancements that increase the reading and listening experience while providing a qualitative reading experience (Bus et al., 2015).

Evidence suggests that the quality of the shared reading experience using e-books is essential for language comprehension and expression. Even though there are more interactive or technological enhancements in e-books, effective parent-child interaction is still necessary, just as it is in the conventional approach (Robb, 2010). E-books typically consist of high-quality and lower-quality interactive features. Inconsiderate features such as distracting animations and sounds unrelated to the narrative appear in lower-quality e-story books. These incongruent features could make it difficult to understand stories and achieve adequate vocabulary. At the same time, high-quality interactive digital storybooks include considerate features that are essential components of the story, which promote vocabulary acquisition, engagement, and comprehension of the story (Labbo & Kuhn, 2000; Zucker et al., 2009; Chiong et al., 2012; Bus et al., 2015; Etta & Kirkorian, 2019). Thus, the selection of e-books is a crucial skill.

### *1.3. Language development with e-books*

Effective e-books allow kindergarten children to understand stories by engaging in independent reading before they can read traditional printed books independently (Jong & Bus, 2004). Chiong et al. (2012) and Reich et al. (2019) have found that children are more vocalized when listening to a story read by an adult with an e-book. Children are motivated to infer word meanings while reading e-books containing animations related to target words, and their vocabulary development is facilitated (Higgins & Cocks, 1999). Additionally, students acquire vocabulary from e-books more effectively when an adult gives synonyms for target words and asks questions that assist children in correlating between new and previously learned concepts (Norman & Laura, 1999). Moreover, children discover that e-books offer a platform to connect the stories to their real-life experiences that printed books do not, making them more engaging and exhibiting more socially desirable behaviors.

### *1.4. Emergent Literacy Development with E-book*

E-books play a vital role in engaging and entertaining toddlers and preschoolers while supporting emergent literacy skills such as phonological awareness, print awareness, Alphabet knowledge, and word recognition. Enhanced emergent literacy development requires the child to receive access to a developmentally appropriate e-book, parental involvement, and an assessment of any distracting or inconsiderate content (Moody, 2010). The

unique digital features of e-books, such as oral text, visually representing pictures and texts, and hotspots along with other interactive elements (e.g., Animations, word pronunciations, dictionaries), are beneficial to emergent literacy development (de Jong & Bus, 2003). Studies show that using animated multimedia for the reading experience improves general phonological awareness, understanding of letter sounds, and word onset (Chera & Wood, 2003). A robust, high-performing analytic tool is needed for a better qualitative e-book design to support emergent literacy learning cognitively and affectively. Different analytic tools disclose different design components and patterns, which should be more systematic, specific, and accurate, which is crucial for emerging readers (Roskos et al., 2009). Despite the increasing popularity of e-books, there is still a lack of evidence-based literature to explain how it might help toddlers and preschoolers develop their literacy skills. Also, no evidence is available on the attitude, belief, and practice of Speech-Language Pathologists toward e-books, especially from India.

This study aimed to assess and analyze the attitude, belief, and practice of Speech-Language Pathologists (SLPs) toward e-books among toddlers and preschoolers with communication disorders. The objectives were to understand the attitudes and beliefs of SLPs towards e-books, to understand how SLPs utilize e-books in their practice, and to understand the association between attitudes and beliefs with years of experience, education, and the age range of the children they work with.

## **2. Methodology**

An online survey was conducted to understand the attitudes, beliefs, and practices of SLPs on e-books. The study was conducted in three phases: development of the questionnaire, administration of the questionnaire, and the analysis of the responses.

### *2.1. Development of the questionnaire*

After a thorough literature search, questions were prepared. The prepared questions were given to six experienced speech and language pathologists for content validation. The questionnaire was modified according to the suggestions received. The final survey question consists of a total of 20 questions. 13 questions related to attitude and belief and seven questions related to practice. A pilot study was done on 16 participants. Internal consistency reliability was calculated using split-half reliability ( $r = 0.995$ ) and Cronbach's Alpha ( $\alpha = 0.722$ ), indicating good reliability. Test-retest reliability was obtained by administering the questionnaire to the same participants for ten days, which showed good reliability ( $\alpha = 0.738$ ).

### *2.2. Administration of the questionnaire*

The developed questionnaire was transformed into a Google Form. The Google Form was sent to speech-language pathologists through mail and WhatsApp. Informed consent was obtained from all the participants. 118 Speech-



Language Pathologists practicing in India and dealing with childhood communication disorders participated in the study.

*2.3. Response analysis*

The obtained responses were collated, and the data was statistically analyzed using SPSS software version 20.0. Categorical and numerical variables were expressed as frequency (percentage) and mean ± SD, respectively. The Chi-square test was carried out to determine the association between the categorical variables.  $p < 0.05$  was considered the threshold for statistical significance for all statistical interpretations.

**3. Findings**

The results obtained from the questionnaire were analyzed to determine the attitudes, beliefs, and practices of SLPs toward e-books among toddlers and preschoolers with communication disorders. The demographic profile of all the SLPs who participated in the study is shown in Table 1.

Table 1  
*Demographic profile of the Speech-Language Pathologists*

	Demographic profile	Number	Percentage
Gender	21-25	53	44.9
	26-30	47	39.8
	31-35	18	15.3
Highest Educational Qualification	Bachelors	55	46.6
	Masters	61	51.7
	Doctorate	2	1.7
Years of working experience	<1 year	48	40.7
	2-5 years	50	42.4
	6-10 years	13	11
	>10 years	7	5.9
Clinical settings	Hospital	23	19.5
	Institute	34	28.8
	Clinical practice	49	41.5
	School	9	7.6
	Others	3	2.5
The age range of the Caseload	0-5 years	60	50.8
	0-10 years	26	22
	0-18 years	5	4.2
	> 18 years	6	5.1

Both pediatric and adult population	8	6.8
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A total of 118 SLPs participated in this study. As depicted in Table 1, among the 118 SLPs, the majority (51.7%; n=61) had a postgraduate degree. All of the participants worked in different settings in India, including hospitals (19.5 %), institutes (28.8%), clinical practice (41.5 %), schools (7.6%), and other setups (2.5 %). The majority of the participants, 50.8% (n=60), were exclusively dealing with childhood communication disorders, and around 7% (n=8) were dealing with both the adult and pediatric populations.

*3.1. Attitude and belief of SLPs towards e-books*

The majority (59.3%) of the SLPs have a good attitude and belief toward shared reading using e-books. Table 2 indicates the attitudes and beliefs of SLPs towards e-books. It is evident from the table that most of the participants believe that shared reading through E-books supports the child's oral language and listening comprehension (72.9%) and literacy development (76.3%). However, 83.9 % believe or strongly believe that even though e-books contain a wide range of interactive features, verbal elaboration by adults during e-books is necessary for language development, and 91.5% of participants (40.7% agree and 50.8% strongly agree) understand that the quality of adult-child interaction primarily determines the benefits of shared reading. 55.9% of participants believed that e-books were not preferable for children under the age of 2 years. Many (68.7%) reported that shared reading using e-books provides a highly engaging and entertaining learning experience for children and adults. 48.3% believed that e-books encourage reluctant readers to read, while 35.6% of participants were neutral towards the statement. Most SLPs believe that adults should know what types of e-books to choose (93.2%) and how to share e-books for an effective shared reading experience (91.6%). 45.4% of participants believed that using e-book technology could not be a substitute for adult interaction during shared reading for children with communication difficulties.

Table 2  
*Responses to the question regarding the attitude and beliefs of SLPs toward e-book*

	Strongly disagreed	Disagree	Neutral	Agree	Strongly agree
Shared reading through E-books helps in oral language and listening comprehension development	0 (0)	4 (3.4)	28 (23.7)	55 (46.6)	31 (26.3)
Shared reading using E-books helps in improving early literacy skills	1 (0.8)	3 (2.5)	24 (20.3)	63 (53.4)	27 (22.9)
Verbal elaboration by adults during e-book reading is very crucial for language development	0 (0)	5 (4.2)	14 (11.9)	38 (32.2)	61 (51.7)



The benefits of shared reading are primarily determined by the quality of adult-child interaction	0 (0)	3 (2.5)	7 (5.9)	48 (40.7)	60 (50.8)
E-books are not preferable to children below the age of 2 years	2 (1.7)	22 (18.6)	28 (23.7)	31 (26.3)	35 (29.7)
E-books are easily accessible to everyone as it is affordable and cost-effective	2 (1.7)	16 (13.6)	24 (20.3)	40 (33.9)	36 (30.5)
For both adults and children, shared reading using e-books can be a highly engaging and entertaining learning experience	1 (0.8)	3 (2.5)	33 (28)	50 (42.4)	31 (26.3)
E-books encourage reluctant readers to read.	0 (0)	19 (16.1)	42 (35.6)	43 (36.4)	14 (11.9)
Adults should know what types of e-books to choose for an effective shared reading experience	0 (0)	0 (0)	8 (6.8)	45 (38.1)	65 (55.1)
Adults should know how to share e-books for an effective shared reading experience	0 (0)	1 (0.8)	9 (7.6)	52 (44.1)	56 (47.5)
For children with communication problems, the use of e-book technology can be a substitute for adult interaction during shared reading	20 (16.9)	34 (28.8)	32 (27.1)	25 (21.2)	7 (5.9)
E-books allow children to access technology tools for exploration and experimentation	0 (0)	8 (6.8)	30 (25.4)	65 (55.1)	15 (12.7)
E-books help children to be a part of a highly digitized society	1 (0.8)	9 (7.6)	28 (23.7)	66 (55.9)	14 (11.9)

### 3.2. Practice of SLPs towards e-books

Among the 118 SLPs, 82 participants (69.5%) practice shared reading in their speech and language intervention sessions. Among these participants, 35 (42.7%) were using both printed books and e-books, and only one participant (1.2%) was using an e-book alone. The other participants (56.1%) preferred printed books over e-books. Table 3 shows the practice of SLPs with e-books. Approximately 45.5% preferred e-books frequently over printed books, and 58.3 % had the impression that sometimes their children have to be controlled during their session because they are being distracted by animations and sounds that are irrelevant to the story. During their intervention sessions, about 69.4 % frequently demonstrated shared reading using e-books to parents. 74.9% frequently counseled the importance of shared reading, and 61.1% often recommended it to parents regarding shared reading using e-books. In addition, no association was found between attitude

and belief and the working experience or educational qualification of speech-language pathologists (Table 4).

Table 3  
*Responses to the question regarding the practice of SLPs with e-books*

	Never	Sometim es	Often	Very often	Always
E-books are frequently preferred over printed books in your intervention sessions	3 (8.3)	17 (47.2)	10 (27.8)	5 (13.9)	1 (2.8)
Frequently, the children are to be controlled during your session as they get distracted by animations and sounds unrelated to the story	0 (0)	21 (58.3)	12 (33.3)	3 (8.3)	0 (0)
Shared reading using e-books was demonstrated to parents during your intervention sessions	0 (0)	11 (30.6)	12 (33.3)	5 (13.9)	8 (22.2)
Parents of children with communication disorders were counseled on the importance of shared reading using e-books in your intervention session	0 (0)	9 (25)	12 (33.3)	8 (22.2)	7 (19.4)
E-books are often recommended to parents in your intervention sessions	0 (0)	14 (38.9)	10 (27.8)	9 (25)	3 (8.3)

Table 4  
*Association of Attitude & Belief with Selected Variables*

	X <sup>2</sup>	p
Highest educational qualification	Bachelors Masters/Doctorate	0.37 0.541
Years of working experience	<1 year 2 - 5 years >5 years	0.39 0.822

#### 4. Discussion

The present study focuses on understanding the perspectives on e-books and their usage in the intervention sessions by SLPs dealing with communication disorders in India.





#### 4.1. *Attitude and belief of SLPs towards e-books*

The attitude and belief scores of most SLPs in the study population regarding e-books were positive, indicating their knowledge about using e-books to support language and literacy skills. In the present study, most SLPs seemed aware of the benefits of e-books. They agreed that shared reading through e-books supports the child's language, listening comprehension, and literacy development. Studies have established the use of shared reading using e-books to support language and literacy development (Higgins & Cocks, 1999; Norman & Laura, 1999; Chera & Wood, 2003; de Jong & Bus, 2003; Roskos et al., 2009; Moody, 2010; Bus et al., 2015, Etta & Kirkorian, 2019, Reich et al., 2019) and children who read regularly in the early years learn the language faster, enter school with a more extensive vocabulary, and become more successful readers in school (Bus et al., 1995). The quality of parent-child interaction and the verbal elaboration used by the adults while sharing e-books have a prominent role in developing language and emergent literacy skills, which most participants agree with. This result agrees with the study conducted by Robb (2010), where they found that despite the interactive and technological enhancements of e-books, effective parent-child interaction is still crucial, just as it is in the conventional approach. Adults should scaffold e-book reading experiences through language interactions that include comprehensible input, prompts for output, connections to real-life experiences, and repetition (Hoffman et al., 2013). It can provide a stimulating and enjoyable learning experience for children and adults (Chiong et al., 2012) as long as they are suitable for their developmental stage.

Many SLPs in the present study believed that e-books were not suitable for children below two years and did not recommend e-books for children under the age of two. The reason could be the awareness of the guidelines on screen time by various agencies like the World Health Organisation (WHO) (2019), the American Academy of Paediatrics (AAP) (2016) and the Indian Academy of Paediatrics (IAP) (2021). These agencies recommend that children under two should not be exposed to any screen. The use of e-books is considered as screen time by many SLPs, and many studies have shown that increased screen time can lead to delayed language development (Byeon & Hong, 2015; Karani et al., 2022). This would be one of the reasons why participants in this study preferred printed books over e-books for shared reading. Previous studies have focused on the risks associated with passive screen media use in children (Hancox et al., 2004; Duch et al., 2013; Radesky & Christakis, 2016; Madigan et al., 2019). Since e-books are becoming very popular and share many benefits with traditional printed books, parent-mediated interactive e-book reading could be encouraged for young children, too. Vrinda et al. (2021) opined that screen time guidelines need to be revised to include suggestions for parents of young children to choose age-appropriate quality content, as well as to encourage co-viewing in order to improve parent-child interaction. Recent findings suggest that parent-mediated interactive screen time can support language development, highlighting the importance

of parent-child interaction during media use. The quality and quantity of parent-child interactions while using e-books may decrease if proper instructions are not provided (Hoffman & Paciga, 2013; Hadders-Algra, 2020; Radesky et al., 2015). SLPs should be familiarized with the strategies while using e-books so that parents can be trained to use e-books with their children. For children younger than three years, parent-child book sharing is directly connected to language development and parent-child attachment quality (Munzer et al., 2019).

Less than 50% of participants believed that using e-book technology could not substitute for adult interaction during shared reading for children with communication difficulties. Human-to-human communication has a significant impact on a child's language development in terms of both speech production and perception (Kuhl, 2004). Non-interactive passive screen time will limit parent-child interaction and will have a substantial impact on a child's language development (Tanimura et al., 2007; R Vrinda et al., 2021). This indicates the need to raise awareness among professionals on the importance of adult-mediated shared e-book reading. Approximately 90% of the participants agreed that adults should be familiar with the different types and uses of e-books to have a successful shared reading experience. This aligns with previous studies (Hoffman & Paciga, 2013 & López-Escribano et al., 2021), which have shown that having adequate knowledge, making appropriate selections, and using e-books wisely can support young children's language and literacy development as well as if not better than, print books.

#### *4.2. The practice of SLPs towards e-books*

In India, shared book reading is not a common cultural practice (Buvanewari & Padakannaya, 2017; Kalia & Vagh, 2008; Khurana & Rao, 2011), and oral narration of stories has been a long-standing tradition. The frequency of shared reading practice is low in India (Vrinda et al., 2021). However, there has been a growing interest in shared reading as an effective strategy for early language intervention in India. With the rise of telepractice during the Covid-19 pandemic, the use of e-books for shared reading is likely to have increased.

Even though 70% of the participants practiced shared reading, only a minority utilized e-books during their therapy sessions. This preference for print books may be attributed to the perception of e-books as screen time, as previously mentioned. Other factors influencing this preference include emotional attachment to printed books, perceived value for money, comfort, and convenience (Saleh et al., 2015; Kucirkova & Littleton, 2016). Consequently, although most SLPs hold positive attitudes and beliefs regarding the significance of e-books, only approximately one-fourth of the SLPs in the current study consistently integrated e-books into their intervention sessions.

Another significant finding was that several participants felt that sometimes it is necessary to maintain control over children during the session, as they are easily distracted by animations and sounds that are unrelated to



the story. According to Bus et al (2015), the use of animated pictures in storybook apps can minimize the amount of time and effort that is required to connect the nonverbal information with story language which can easily offer a new opportunity to promote story and text comprehension. Alternatively, stories enhanced with hypermedia interactive features like games and “hotspots” can diminish children’s performance in understanding the story and language, potentially leading to cognitive overload (Bus et al., 2015; Chiong et al., 2012). Studies also report show that the use of animated multimedia for the reading experience supports emergent literacy skills such as phonological awareness, print awareness, alphabet knowledge, and word recognition (Chera & Wood, 2003).

#### *4.3. Association between attitudes and beliefs with years of experience, education, and age range of caseload*

Most of the SLPs included in the study exhibited a favorable attitude and belief towards e-books. However, no significant association was found between SLPs attitude and belief and their working experience or educational qualification or age range of caseload. It is likely that the diverse perspectives among SLPs regarding e-books stem from a lack of awareness about e-books and their advantages. Many would consider the use of e-books as excessive screen time, leading to misconceptions that need to be addressed. By increasing awareness and understanding, e-books can be effectively integrated alongside traditional print books. When e-books are used appropriately, children can gain language and early literacy skills and be prepared to live in a society that is heavily reliant on technology.

## **5. Conclusion**

Despite holding a favorable disposition and conviction towards e-books, the integration of e-books into intervention sessions by SLPs remains limited. This may be attributed to a dearth of understanding regarding e-books and their significance. Providing proper training to SLPs regarding what types of e-books to choose and how to share e-books would facilitate a diverse array of opportunities for an effective shared reading experience. Identifying the factors that impact shared reading with e-books is crucial for improving treatment outcomes. Further studies are essential in this area for better generalization of the findings.

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