

A LITERATURE REVIEW ON THE BENEFITS OF WORDLESS PICTURE BOOKS FOR CHILDREN'S DEVELOPMENT

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Abstract

Wordless picture books contain no printed text, a narrative is conveyed solely through illustrations. Professionals are not always convinced of the usefulness of wordless picture books, and an overview of the benefits or disadvantages of these books is also lacking. The aims of this review study were to 1) investigate the benefits and/or disadvantages of wordless picture books for children's development, and 2) provide an overview of the characteristics of research on using wordless picture books with children. A systematic search yielded 35 peer-reviewed articles on the use of wordless picture books with children (aged 0 to 12). These articles show that wordless books may benefit children's speech and language development and their psychosocial development. Wordless books may also have a positive impact on children's environment, which may in turn benefit child development. For example, adults seem to interact with wordless picture books in such a way that they provide the right preconditions for children's language development. Research on wordless picture books is characterised by small-scale studies with young English-speaking children. Studies with larger and other participant groups are needed. Nevertheless, this study provides evidence that wordless picture books are a promising tool for benefiting children's development.

Keywords: Wordless picture books, child development, literature review, childhood literacy, oral language development

1. INTRODUCTION

It is well known that shared reading of picture books at home or at school has a tremendous positive impact on children's language development as well as on the development of their cognitive and social-emotional skills (Dowdall et al., 2020; Flack et al., 2018; Noble et al., 2018). In a recent review and meta-analysis, Dowdall et al. (2020), for example, showed that shared book reading at home with children between 1 and 6 years old significantly improves children's receptive and expressive language skills, regardless of the educational level of the caregiver. Another review study (Head Zauche et al., 2018) validates that reading picture books gives caregivers and children the opportunity to engage in conversation and turn taking, which benefits children's cognitive processes and language development. Furthermore, child-parent dyadic reading improves children's psychosocial development (Xie et al., 2018).

Previous research has, however, largely focused on picture books with printed text, and much less on 'wordless' or 'silent' picture books. The main characteristic of this special type of picture books is that they consist of consecutive illustrations (nearly) without printed text. They can either focus on telling a known, reconstructed or original story, on depicting daily familiar scenes, complex panoramic landscapes with multiple and/or improbable storylines, or scenes that explain concepts (Bosch, 2018). These books thus can have many forms. Connecting with the view of other scholars (Beckett, 2011; Chaparro-Moreno et al., 2017; Serafini, 2014) that wordless picture books contain a narrative, and pointing books, search books, or landscape books are thus another type of books, we adopt the definition of Petrie et al. (2021, p6) that wordless picture books are "books that convey a narrative almost solely through illustrations, minimising the role of print, and so readers need to co-construct meaning from visual images rather than relying on text".

Given the unique feature of wordless picture books—that they are without written stories –, the findings of research on picture book reading cannot simply be generalised from picture books with text to picture books without text. Moreover, professionals in daycare and primary school seem to be reluctant to include wordless picture books in their daily practice (Arizpe, 2013; Jongstra et al., in prep), possibly because they do not have knowledge on wordless picture books or how to use them (Arizpe, 2013). Professionals also seem to be afraid that wordless picture books are less enriching than picture books with text (Knudsen-Lindauer, 1998), and do not stimulate children's reading development (Graham, 1998).

1.1 Wordless picture books and child development

Child development is a complex process that takes place in interaction with the child's environment and results in progression of different developmental domains (Prado et al., 2019; Sameroff, 2009), including 1) speech and language development, including for example vocabulary development, 2) cognitive development, which

includes the development of memory, thinking, phantasy and creativity, 3) psychosocial development, which entails the development in relation to the social environment, including for example the development of theory of mind and moral development, or the development of determining good from wrong, and 4) physical and motor development, like physical growth and control of the body. Whereas for books with text research has shown that shared book reading benefits the progress that children show in different developmental domains, the question is if and what wordless picture books contribute to children's development, and if these contributions are similar to those of books with text or rather unique. Several researchers argue, for example, that wordless picture books offer no language barriers because they lack printed text, and this would have multiple advantages (Arizpe, 2021; Lysaker, 2019; Serafini, 2014), such as providing opportunities for language learning and development of narrative skills already before children learn to decode writing systems (e.g., Chaparro-Moreno et al., 2017). In addition, wordless picture books may facilitate exchanges with respect to (awareness of ethnic) diversity: Caregivers and teachers can make use of the international inventory of wordless picture books because they are not restricted to the languages they can read in, and thus provide children with a rich variety of stories (Lysaker, 2019). At the same time, other studies have shown that reading books with text may have benefits over reading books without text. Smadja et al. (2019) showed that preschool teachers' talk was more challenging during reading a book with text than when reading a book without text.

Although the scientific interest in wordless picture books is increasing since the last decade (see for example Arizpe, 2021; Martínez-Carratalá, 2021), it is still far more limited than scientific research on picture books with text. Given this relatively limited amount of research it is unclear what characterises these studies in terms of study design, participant groups, languages, and countries, and the books that were used, and thus on what types of studies evidence on the effects of wordless picture books is based. Arizpe and Styles (2015) state that, in general, studies focusing on reading picture books (with or without text) are aimed at either 1) the understanding of meaning-making during the reading process, or 2) at the methods of research on (eliciting) reader reactions, or 3) at how reactions contribute to development. The focus of this review is on the third type of studies, since unlike for picture books with printed text, an overview of research on wordless picture books is lacking. As such, it remains unclear what the benefits and/or disadvantages of this type of books for children's development are and if and how parents, teachers, and other professionals like speech therapists may make use of these books to stimulate children's development. It especially remains unclear what the possible benefits and/or disadvantages of books without text are compared to books with text. Insight in the unique contributions of both type of books to child development is thus lacking. It should be noted that the aim of this study is to provide an overview of possible benefits and disadvantages of wordless picture books, even though sometimes only 'benefits' are mentioned because of word limits and readability.

1.2 *The current study*

To bridge the gaps in the literature, we conducted a literature review of which the aim is twofold: Our first goal is to provide an overview of the characteristics of the studies investigating the use of wordless picture books with children, and our second and most important goal is to provide insight in possible benefits and disadvantages of exposing children 0-12 years to wordless picture books in school, home, or clinical situations.

The results of this study add to the scientific literature about the benefits or disadvantages of reading for children's development, extending the already existing evidence on picture books with text to picture books without text. This study may be of relevance to parents, teachers, and other professionals that are involved in stimulating children's development, as it may provide them with knowledge about if and how these books may be of use in daily practice.

2. METHOD AND MATERIALS

2.1 *Inclusion and exclusion criteria*

The focus of this study was on the use of wordless picture books with children aged between 0 and 12, and the relation between this type of books and children's development. The focus was on this age group because this is approximately the age of children attending pre-school and primary school. The following inclusion criteria were formulated: articles should 1) describe empirical research in which 2) the focus was on the use of wordless picture books with 3) child participants who were not older than 12, and 4) explicitly describe the benefits (and/or disadvantages, if existing) of using wordless picture books. Only peer-reviewed articles written in English and published in the last 25 years (1998-2022) were included, to ensure a complete but still relevant and recent overview of the publication results.

Reasons to exclude articles were if 1) the article contained no empirical data, as is the case for a book review, for example, 2) the article was in another language than English, and 3) the focus of the article was not on wordless picture books: wordless picture books were only used as a means and the article contained no clear conclusion on the benefits or disadvantages of wordless picture books. An example of an article that fell into this latter category was that of Choi et al. (2020), in which wordless picture books were used to elicit speech from stuttering children. The discussion and conclusion of the article focuses on between-group differences and types of words that elicit stuttering, and wordless picture books are not mentioned.

2.2 *Search strategy*

WorldCat, PsychInfo, Eric, JSTOR, and Scopus were searched for academic literature in a systematic manner. Search terms were varieties of terms for wordless picture

books. Search terms had to appear in either the title, abstract, keywords, or subject of peer-reviewed articles in academic journals, and the publication period of articles was limited to a time span of 25 years (1998-2022). The search terms were tested and revised multiple times to ensure all relevant search terms were captured and the systematic search was as complete as possible. Final search terms were: “wordless picture book*” OR “silent picture book*” OR “wordless narrative book*” OR “wordless book*” OR “silent book*” OR “wordless picturebook*” OR “silent picture-book”, and were limited to appearance in the title, abstract, keywords, or subject of articles. No search terms related to age of the participants or to the type of the article (e.g. ‘experimental’ or ‘research study’) were included because such search terms do not often appear in the title, abstract, keywords or subject, and we wanted to capture as many relevant articles as possible. At the same time, that meant that we had to exclude a large number of articles that appeared to be irrelevant. After relevant articles were selected from the systematic search, we used the ‘snowballing’ technique to find additional articles from the reference lists of articles already included in the review study.

2.3 Determination of relevant articles

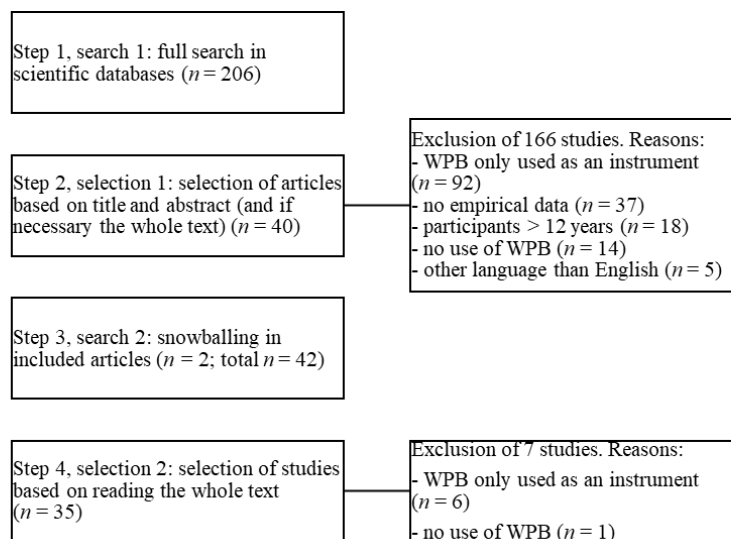
The search resulted in 297 academic papers. After removing articles that appeared double in the search, 206 unique papers remained (step 1; see Figure 1). The first author scanned the titles and abstracts of these papers to determine whether papers met the inclusion criteria. In case this was unclear, the first and third author decided on the paper together (this was done for 22 papers), and read the whole paper if necessary. Of the 206 papers, 166 papers were excluded (step 2) because wordless picture books were only used as an instrument ($n = 92$), articles did not contain empirical data ($n = 37$), participants were older than 12 ($n = 18$), articles were not about wordless picture books ($n = 14$), or the main text was written in another language than English ($n = 5$). Forty articles were deemed suitable for inclusion. By means of the snowballing technique two additional papers were included (step 3). These papers did not appear in the initial search because none of the search terms was used in the title, abstract, keywords, or subject ($n = 2$). After reading the whole text of these 42 papers, another 7 papers were excluded (step 4) because they either contained no data on wordless picture books ($n = 1$) or wordless picture books were only used as an instrument ($n = 6$). The final sample contained 35 papers.

2.4 Method of analysis

To investigate the characteristics of studies reporting on the use of wordless picture books with children and the benefits and disadvantages of wordless picture books on children’s development, the third author extracted the following information from the included articles: 1) aim of the study and/or research question, 2) number of participants (children and—if included—adults), age(s) of child participants, and

the language(s) spoken, 3) research design and data collection measures, 4) country in which the study was conducted, 5) which wordless picture book(s) was/were used (see Table 1 for 1 to 5), and 6) the reported benefits and/or disadvantages of using wordless picture books with children (see Tables 3 and 4). For 6), sentences explicitly describing benefits or disadvantages of using wordless picture books were extracted from the abstracts and/or discussion section of the included articles. This made it possible to investigate the effects described in both quantitative and qualitative studies. An example of such a sentence is “The results suggest that using a wordless picture book during shared reading influences positively children’s number of words, sentences and lexical diversity.” (Chaparro-Moreno, et al., 2017). Usually, multiple sentences were selected from one article as most articles made more than one claim. Child development is an interactive process between the child and its environment, resulting in progression of different developmental domains (Sameroff, 2009). Therefore, the claims described in the extracted sentences were categorised as benefits directly concerning children’s development in different domains or as benefits affecting environmental interactions that provide preconditions for children’s development, such as increased instructional support from teachers.

Figure 1. Flowchart of the search procedure and determination of relevant articles



In the case of benefits or disadvantages directly concerning children’s development, findings were further divided into four domains, based on previous research (see for example Prado et al., 2019): 1) speech and language development, 2) cognitive development, 3) psychosocial development, and 4) physical and motor development,

like physical growth and control of the body. Findings were further divided into sub-categories of each of these domains (if applicable) in an inductive way, meaning that these sub-categories were constructed depending on what was reported in the articles.

In case of interactional or environmental preconditional benefits or disadvantages, findings were divided into different categories according to the main actor that experienced the results. Four types of actors were reported on: 1) the child (like increased reading motivation, which could in turn lead to more reading, thus benefiting language development), 2) the teachers (such as teachers using a more diverse lexicon when reading picture books, which could in turn boost children's language development), 3) the parents (parents' engagement in joint storytelling with their child, for example, which could in turn positively influence children's development in various domains), and 4) assessors (like language therapists using wordless picture books to elicit language production in English language learners as a basis for adapting reading activities to learners' level of English, which could in turn benefit children's English language development). In summary, four categories were thus created in an inductive way, based on the actors that experienced the results. For both direct and interactional benefits, the first author divided findings into categories, thereby making a division between benefits and disadvantages of wordless picture books. The second author checked this division. In case of a mismatch between the two authors final consensus was reached through a discussion.

We were particularly interested in studies that compared the use of wordless picture books with books with text, as such a comparison may provide insight into possible benefits of using wordless picture books over picture books with text. Unfortunately, only five articles compared the two types of picture books. Therefore, we will describe these studies separately to provide insight in the effects that were reported in these studies.

3. RESULTS

In the section below, first the characteristics of studies investigating the use of wordless picture books with children are presented. Specific attention is paid to studies directly comparing the use of books without text with another type of activity (like the use of books with text). Then, the findings on direct benefits and disadvantages of wordless picture books for child development are presented, followed by the interactional benefits and disadvantages. The results are also presented in Table 1 to 4.

3.1 Characteristics of studies investigating the use of wordless picture books with children

As the academic literature on wordless picture books is relatively limited (especially compared to the academic literature on picture books with printed text), the

question is what characterises the studies done on using wordless picture books with children. Our first aim therefore was to provide an overview of the characteristics of the academic studies investigating the use of wordless picture books with children, in terms of the number of participants, their ages, and their languages, the research design of studies, the setting in which studies were conducted, who was the subject of investigation, and which wordless picture books were used. An overview of the characteristics is provided in Table 1.

Most of the articles describe qualitative studies ($n = 18$). These mostly concern single or multiple case studies, although some studies are another type of qualitative studies (like ethnographic studies). One study has a mixed-methods design involving both qualitative and quantitative analyses, though the quantitative analyses are only descriptive ones. Sixteen studies have a quantitative design, of which one is descriptive in nature, six are correlational, and nine are experimental. Quantitative studies do not always contain large participant groups: four studies include only up to 30 participants. Only in six out of the 35 articles, a comparison is made between using wordless picture books and another type of intervention. Since we are especially interested in the unique benefits of wordless picture books, we will describe these six articles in more detail in the next section.

There is a huge difference between the number of children reported on in the different articles, ranging from 1 ($n = 5$) to 500 ($n = 2$). These last two articles are based on the same dataset (Smadja et al., 2019; 2021). The articles of Lysaker and colleagues (2006; 2015; 2016; 2017) are also based on the same data but the number of children involved in the studies is different. One article does not specify the number of children involved. Of the 34 articles of which it is known how many children are involved, eleven concern 1-10 children involved, eight between 11 and 30 children, eight between 41 and 80 children, and seven more than 100 children. Eleven studies also involve adults, and the number of adults involved ranges from 1 to 100.

The majority of the articles involve studies that focus on young children up to 7 years old ($n = 25$), though there are also studies that focus on younger and older children at the same time ($n = 3$), or on older children only ($n = 5$).

More than two thirds of the articles focus on one language (25 articles) and less than one third on two languages (10 articles). Twenty-seven articles include speakers of English (sometimes along another language). Other languages are: Spanish ($n = 8$), Hebrew ($n = 3$), Chinese ($n = 2$), German ($n = 1$), Italian ($n = 1$), Bahasa Malayu ($n = 1$) and South African ($n = 1$). If participants spoke more than one language, then this was always a combination of English with another language.

Studies were carried out in the environment of the primary school ($n = 16$), the preschool ($n = 5$), or the home ($n = 8$). Six studies were conducted in another environment, such as a laboratory (e.g. Escobar et al., 2017), or did not specify where the study was conducted.

In most of the 35 articles, child utterances are the object of investigation. Articles that focus on dyads are less common. The object of study mostly only concerns the child ($n = 22$), much less articles focus on the child and caregiver (mostly parent, but

could also be the grandmother; $n = 5$), the professional (mostly teacher) and child ($n = 6$), the caregiver only ($n = 1$), or on the child, caregiver, and the book ($n = 1$).

The majority ($n = 34$) of the scholars revealed what books they have used. Some books are used in multiple studies by different authors: *Frog where are you* (M. Mayer, 1969; $n = 4$), *Good dog, Carl* (A. Day, 1985; $n = 2$), *Carl's afternoon in the park* (A. Day, 1991; $n = 2$) and *Bird and his ring* (L. Miller, 2000; $n = 2$). Other books are also used in different studies but these studies include the same authors. The book *I had measles* (Wright Group, 1987), for example, is used four times but these all concern articles of Lysaker and colleagues (2013; 2015; 2016; 2017).

3.2 Intervention studies wordless versus print books

In six articles, reading textless picture books is compared with another intervention, such as books with text ($n = 5$; $n = 1$ other intervention). These six articles all describe studies with children up to the age of 6, of which two were conducted in the home environment (Nielsen, 2012; Petrie et al., 2021) and four in the school environment (Chaparro-Moreno et al., 2017; Fiestas & Peña, 2004; Schick et al., 2021; Smadja et al., 2019).

In both studies conducted in the home environment, parental responsiveness was investigated during book-sharing between parents and young (2-6 years-old) children. Nielsen (2012) investigated maternal responsiveness during book-sharing reading sessions of 56 mother-child dyads using two books: one without text (*Carl's afternoon in the park* by A. Day) and one with text (*The very hungry caterpillar* by E. Carle). It was found that mean maternal responsivity in the wordless book sharing context was significantly higher than in the printed book sharing context. Mothers followed the child's lead and responded to what the children saw, letting the child instead of the text be the guide. Mothers' use of directives in both book-sharing contexts did not differ. Children talked more in the wordless book context than when reading a book with text, as the total number of words children used was significantly higher in the former context than in the latter. The researchers also explored the relationship between maternal responsiveness, their use of imitations, expansions and directives, and children's language productivity. They found that maternal responsiveness positively related to children's mean length of utterance, their total number of words, and the number of different words they used in both contexts, but only in wordless book contexts their responsiveness was positively related to the total number of words.

Petrie et al. (2021) focused on interactions and used strategies of 36 parent-child dyads at home in relation to the book format (wordless versus with text). Parents read two versions of the book *The Lion and the Mouse* (the wordless one by J. Pinkney, 2009; the version with text by M. Kelly, 2016). Like Nielsen (2012), the researchers found that children contributed significantly more during wordless book reading than during reading a book with text. Furthermore, there were significantly more interactions between parents and children, more responsive feedback from

parents and a higher rate of parental prompts in the wordless book condition than in the condition with text. No differences regarding the level of cognitive demands in prompts were found. In conclusion, both the Nielsen study and the Petrie et al. study suggest that wordless picture books are useful to guide parents' reading towards more responsive and dialogic ways of reading, and for children to have a more active role in the reading process.

With respect to studies that were conducted in the school environment, Chaparro-Moreno et al. (2017) investigated teachers' instructional support and children's language production during reading sessions with wordless picture books and books with text in a within-subjects study with 13 teachers and 52 pupils aged between 3 and 4. In the wordless book context, teachers showed significantly higher levels of instructional support and significantly more lexical diversity than when reading a book with text. Pupils also showed significantly more lexical diversity when teachers read a wordless picture book than when they read a book with text. Furthermore, pupils used significantly more words and sentences in the wordless book context than in the context of a book with text. The authors conclude that shared reading with wordless picture books boosts preschoolers' language production as well as the language input and instructional support of the teacher.

Schick et al. (2021) investigated how 12 teachers of 300 English-Spanish bilingual pupils (aged 3 to 5) read a wordless picture book and compared that to teachers' reading of a bilingual book. The researchers noted that teachers' reading of the wordless picture book could be classified as being more co-constructive, compared to reading the book with text: teachers asked more questions, and prompted children to predict and analyse the story. By doing so, teachers thus supported children's participation in story sharing. In addition, the pre-reading and post-reading conversations lasted significantly longer for wordless picture books than for the text-based books. It was also found, however, that teachers used more cognitively challenging talk when reading books with text

Smadja et al. (2019) investigated preschool teachers' book-sharing practices in three contexts: while sharing a wordless picture book without any reference text, while sharing a wordless picture book after having read an accompanying text especially written for the wordless book, and while sharing a wordless picture book while literally reading the accompanying text. It was found that when reading the book without any reference text, teachers used a more co-constructive style than in the other two contexts. In contrast, in the condition in which a text was provided, teachers used more challenging talk than in the context in which they had no text available.

Fiestas and Peña (2004), finally, compared bilingual children's narrative construction on the basis of wordless picture books and when using a static picture. In this small-scale study, 12 Spanish-English bilingual kindergartners (4;0 – 6;11 years old) produced a total of four narratives: one for each language (English or Spanish) and each task (book or picture). It was found that despite the fact that complexity of the narratives and children's production did not differ significantly between the two task

types, children used more Spanish-influenced utterances when performing the book task than when performing the picture task in English. The authors conclude that the results have implications for clinicians, who should wisely choose the type of assessment when investigating bilingual children's oral narrative skills.

In summary, the studies of Chaparro-Moreno et al. (2017), Schick et al. (2021), Smadja et al. (2019), and Fiestas and Peña (2004), in the school context, largely confirm the findings of the studies in the home context, showing that the adult reader (either the parent or the teacher) elicit greater child participation when reading a wordless picture book than when reading a book with text. Children thus have a more active role in reading wordless picture books than in sharing books without text.

Table 1. Overview of the characteristics of scientific studies on wordless picture books

	Design*	Data collection measure**	n children	Age children	n adults	Languages	Setting	Subject of investigation	Books used
Iordanaki, 2021	Qual	A, T	16	11	-	English, Greek	Primary school	Child	Caperucita roja
Lysaker, 2006	Qual	V, T	1	6	-	English	Not reported	Child	I had measles
Lysaker & Arvelo Alicea, 2017	Qual	A, T	18	5 to 6	-	English	Primary school	Child	We got a puppy
Lysaker & Miller, 2013	Qual	V, T	1	6	-	English	Primary school	Child	I had measles
Lysaker & Hopper, 2015	Qual	A, T	1	7	-	English	Primary school	Child	I had measles
Lysaker, Shaw, & Arvelo Alicia, 2016	Qual	V, T, AT	Phase one: 22; phase two: 6	5 to 6	-	English	Primary school	Child	I had measles
Mantei & Kervin, 2015	Qual	LO, F, I	16	9 to 10	-	English	Primary school	Child	Mirror
Marciano, Rackley & Vaughn, 2017	Qual	LO	200+	7 to 16	5	Italian, English	Primary school, High school	Child, Professional (teacher-candidates, professor)	Where's walrus?
Martinez-Roldan & Newcomer, 2011	Qual	A, V, AT	2	10 to 11	-	English, Spanish	primary school	Child	The arrival
Nielsen, 2012	Quan (c)	V, T	56	2 to 3	56	English	Home environment	Child, Care-giver	Carl's afternoon in the park

Pantaleo, 2007	Qual	A, AT	58	10	-	English	Primary school	Child	Zoom, Re-zoom
Paulick, Quinn, Kibler, Palacios & Hill, 2020	Qual	LO, Q	2	6 or 9	1	Spanish, English	Home environment	Child, Care-giver	Chica chica bum bum, Oso pardo oso pardo que ves ahi, La primera luna llena de gatita, A to Z, Panda bear panda bear where are you, Harold and the purple crayon
Pearce, 2003	Quan (c)	AT, A, T	16	5	-	English	not reported	Child	Frog where are you?
Peña, Gillam, Malek, Ruiz-Felter, Resendiz, Fiestas, & Sabel, 2006	Quan (e)	A, T	58 + 71	6 to 7	-	English	Primary school	Child	Two friends, Bird and his ring
Petrie, Mayr, Aho & Montanari, 2021	Quan (e)	A, Q, T	36	3 to 6	36	English	Home environment	Child, Care-giver	The lion and the mouse
Schick, 2015	Quan (c)	A, V, Q, AT	118	3 to 5	12	Spanish, English	Preschool	Child, Professional (teacher)	A boy, a dog and a friend
Schick, Carola, Niño, & Melzi, 2021	Quan (c)	T	300+	3 to 5	12	English, Spanish	Preschool	Child, Professional (teacher)	A boy, a dog and a friend, Moon rope
Smadja, Ziv, & Aram, 2021	Quan (e)	Q, AT, V, T	500	4 to 5	10	Hebrew	Preschool	Child, Professional (teacher)	Summer riddles, What could be nicer, Here and there
Smadja, Aram & Ziv, 2019	Quan (c)	Q, V, T	500	4 to 5	10	Hebrew	Preschool	Child, Professional (teacher)	Summer riddles, What could be nicer, Here and there
Walsh, Cranitch, & Maras, 2012	Qual	A, V, F	-	10 to 11	-	English	Primary school	Child	Flotsam
Zevenbergen, Angell, Battaglia, & Kaicher, 2021	Mixed	V, I, T	22	4	22	English	Home environment	Child, Care-giver	Wave
Ziv, Smadja, & Aram, 2013	Quan (e)	V, T	72	4 to 6	-	Hebrew	Home environment	Caregiver	- no information in paper -

* *c* = correlational, *d* = descriptive, *e* = experimental;

** *A* = audio recording, *AT* = assessment/test, *F* = field notes, *I* = interview, *LO* = live observation, *T* = transcription, *Q* = questionnaire, *V* = video observation.

3.3 Results of using wordless picture books with children

Our second and most important aim was to investigate the benefits (or disadvantages) of using wordless picture books for children's development. As mentioned in the Analysis section, we made a division between direct benefits for child development, and interactional benefits that may indirectly influence development. Of all included articles, 16 make claims about direct benefits for child development, and 30 make claims about interactional benefits and/or disadvantages regarding four actors. Most claims concern *benefits* of using wordless picture books, although a few disadvantages are mentioned, too. See Table 2 for an overview of the number of claims made in the different domains. In the sections below the direct benefits and disadvantages for children's development are described first, followed by the interactional benefits and disadvantages. These benefits and disadvantages are preconditional for children's development: they may indirectly influence children's development (see Tables 3 and 4 for an overview of the results).

Table 2. Reported advantages and disadvantages with child development, and regarding preconditions within the context of the child, teachers, parents, or assessment

Direct benefits	N articles that make claims
<i>Speech and language development</i>	
Literacy development	6
Vocabulary development	5
Narrative development	4
Sentence development	2
Biliteracy/L2 learning	1
<i>Psychosocial development</i>	
Open-mindedness & awareness with respect to diversity	3
Mental state development	1
Social imagination	1
Moral development	1
<i>Cognitive development</i>	
	0
<i>Physical and motor development</i>	
	0
Preconditional benefits and disadvantages	
<i>Child</i>	
Advantages	14
<i>Teacher</i>	
Advantages	3
Disadvantages	3
<i>Parent (or caregiver)</i>	
Advantages	6
Disadvantages	1

<i>Assessment context</i>	
Advantages	10
Disadvantages	1

3.3.1 *Direct benefits and disadvantages*

All studies that made claims about the direct benefits of using wordless picture books for children's development only claimed benefits, no disadvantages (see Table 3 for an overview). Most of the claims concerned benefits for children's language development ($n = 11$ articles). Six out of these articles focused, sometimes alongside a focus on other domains, on children's literacy development. It is for example argued that wordless picture books provide the right environment for building reading comprehension strategies that are important to print reading, for example by providing opportunities to talk about the story and recontextualising one's personal experience into it (Lysaker & Hopper, 2015; Lysaker et al., 2016). Five articles made claims about benefits for vocabulary development. Children would use more words (Chaparro-Moreno et al., 2017; Hu & Commeyras, 2008; Nielsen, 2012), and both vocabulary breadth and depth would increase (Grolig et al., 2020; Hu et al., 2018) when reading wordless picture books. Studies also relatively often investigated the benefits for children's narrative development ($n = 4$), describing for instance how children's storytelling skills benefited from wordless picture book reading (Schick, 2015), or how wordless picture books evoke children's awareness of narrative structure (Hu et al., 2018). Furthermore, studies claimed that the reading of wordless picture books fosters sentence development (including sentence length, complexity and number of sentences; see Chaparro-Moreno et al., 2017, and Hu & Commeyras, 2008), and the development of both languages in bilingual children (Hu & Commeyras, 2008; Paulick et al., 2020).

Six studies made claims about the benefits of wordless picture books for children's psychosocial development. Reading wordless picture books would promote children's open-mindedness and openness to diversity ($n = 3$). This can relate to openness towards other cultures (Mantein & Kervin, 2015), to students in distant places with another culture than the readers themselves (Marciano et al., 2017), or towards gender diversity (Iordanaki, 2021). Other studies claim that wordless picture books benefit children's social imagination, such as attributing feelings to characters ($n = 1$; Lysaker & Miller, 2013), challenge them to expand on mental states ($n = 1$; Smadja et al., 2021), and exercise their moral development (Lysaker & Miller, 2013).

No studies investigated the effects of wordless picture books on children's cognitive development. There were also no studies on the relation between wordless books and children's physical and motor development.

Haese, Costandius, & Oostendorp, 2018					
Hu & Commeyras, 2008	✓	✓	✓	✓	
Hu, Liu & Zheng, 2018	✓	✓			
Iordanaki, 2021					✓
Lysaker, 2006				✓	
Lysaker & Arvelo Alicea, 2017					
Lysaker & Miller, 2013					✓
Lysaker & Hopper, 2015	✓				
Lysaker, Shaw, & Arvelo Alicia, 2016	✓				
Mantei & Kervin, 2015					✓
Marciano, Rackley & Vaughn, 2017					✓
Martinez-Roldan & Newcomer, 2011	✓				
Nielsen, 2012		✓			
Pantaleo, 2007	✓				
Paulick, Quinn, Kibler, Palacios & Hill, 2020	✓				
Pearce, 2003					
Peña, Gillam, Malek, Ruiz-Felter, Resendiz, Fiestas, & Sabel, 2006					
Petrie, Mayr, Aho & Montanari, 2021					
Schick, 2015	✓		✓		
Schick, Carola, Niño, & Melzi, 2021					
Smadja, Ziv, & Aram, 2021					✓
Smadja, Aram & Ziv, 2019					
Walsh, Cranitch, & Maras, 2012					
Zevenbergen, Angell, Battaglia, & Kaicher, 2021					
Ziv, Smadja, & Aram, 2013					

Six studies made claims about interactional benefits regarding parents. Studies focusing on parents claimed that wordless picture books challenged parents to elaborate more on the story and/or to be more responsive ($n = 4$), and to engage in co-constructing the story with their child ($n = 2$). Furthermore, one study mentioned that wordless picture books can be used regardless of parents' literacy level (Escobar et al., 2015). Only one study mentioned disadvantages of wordless picture books (in addition to advantages), showing that parents used more complex language when reading books with text compared to books without text (Petrie et al., 2021).

Three studies made claims with respect to interactional benefits regarding teachers. These benefits related to 1) didactical factors, with teachers showing higher levels of instructional support and a more co-constructive style when reading a wordless picture book, and 2) language use of teachers, as teachers showed a more diverse lexicon when reading wordless picture books and doing a larger number of

Mantei & Kervin, 2015	✓					
Marciano, Rackley & Vaughn, 2017						
Martinez-Roldan & Newcomer, 2011	✓					
Nielsen, 2012					✓	
Pantaleo, 2007	✓					
Paulick, Quinn, Kibler, Palacios & Hill, 2020	✓					
Pearce, 2003						✓
Peña, Gillam, Malek, Ruiz-Felter, Resendiz, Fiestas, & Sabel, 2006						✓
Petrie, Mayr, Aho & Montanari, 2021					✓	✓
Schick, 2015	✓					
Schick, Carola, Niño, & Melzi, 2021		✓		✓		
Smadja, Ziv, & Aram, 2021	✓					✓
Smadja, Aram & Ziv, 2019			✓	✓		
Walsh, Crantich, & Maras, 2012						✓
Zevenbergen, Angell, Battaglia, & Kaicher, 2021						✓
Ziv, Smadja, & Aram, 2013					✓	

*A = advantages, D = disadvantages, LD = language development

4. DISCUSSION

Wordless picture books are a special kind of picture books, since these books do not contain text and the story unfolds by having the reader use the visual images to construct meaning. This review study shows that reading wordless picture books with children is mainly beneficial to their development.

One aim of this review was providing an overview of the research on using wordless picture books with children, and of the characteristics of this research. Most of

the studies included in this review were done with small-scale participant groups ($n < 100$), or were (multiple) case studies. Only a handful of studies included larger participant groups with more than 200 participants. Most studies were done with English-speaking participants, and most participants were between four and eight years old. Hardly any studies focused on children between nine and twelve years old. Since small-scale effects are hard to detect with small participant groups future studies should include more and older participants to shed light on benefits of wordless picture books that may remain unexposed at the moment, to replicate current findings and to be able to generalise findings to a broader population.

The other aim was investigating the reported benefits or disadvantages of reading wordless picture books on child development. We provided a fine-grained overview of the direct benefits reported for language development, psychosocial development, cognitive development, and physical and motor development. Academic studies mainly report benefits of the use of wordless picture books for children's language development, and especially their vocabulary, narrative and literacy development. In addition, research has claimed benefits for children's psychosocial development, showing that wordless picture books may foster children's openness towards others as well as their open-minded reading strategies. Children may, for example, show more openness towards other cultures than their own, and connect with other pupils by using wordless picture books (Mantei & Kervin, 2015). Wordless picture books may also promote children's moral development (Lysaker & Miller, 2013).

No benefits or disadvantages for cognitive or physical and motor development have been reported. This does however not mean that such benefits do not exist. It may rather be the case that researchers did not yet look into the relation between reading wordless picture books and the development of these domains. Given the linguistic nature of books and the well-documented benefits of reading books with text for children's language development (see for example Dowdall et al., 2019; Flack et al., 2018; Noble et al., 2019), it may be no surprise that most research on wordless picture books also focused on the advantages that these kind of books may have in the language domain of children's development. Nevertheless, reading wordless picture books may potentially also benefit other developmental domains. It has for example been shown that reading books with text benefits children's cognitive development (Head Zauche et al., 2016), and it is quite possible that wordless picture books may have similar benefits for children's development. Future research should therefore also investigate the benefits of reading wordless picture books for domains of child development other than the language and psychosocial domain.

Besides the abovementioned direct effects of wordless picture books for children's development, research also made claims about interactional benefits for preconditions for positive child development. These relate to four actors: the child, teachers, parents, and assessors. With respect to interactional benefits regarding the child, research seems to provide evidence that wordless picture books may provide the right circumstances for children to thrive. Readers of a variety of readings levels

are able to transact with these books (Epstein & Philips, 2009), and readers can take into account their own background or view on the world even when this does not account with the mainstream culture (Arif & Hashim, 2008; Martinez, 2011). It may therefore not be surprising that it is reported that wordless picture books increase children's motivation towards reading (Guichot-Muñoz et al., 2020) as well as children's self-confidence in reading (Hu et al., 2018) or reading engagement (Lysaker & Arvelo Alicea, 2017). These factors may in turn again enhance children's development as children engage in meaningful reading activities.

Regarding teachers and parents (or more general: adult readers), research suggests that adult readers handle wordless picture books in a way resulting in benefits for preconditions supporting children's development. Studies showed that teachers and parents read wordless picture books in a co-constructive way and that adults are responsive to children when they read these kinds of books together. As this gives children the opportunity to actively engage in narrative construction, this may in turn benefit children's development.

Regarding assessors, finally, several studies demonstrated the benefits of using wordless picture books as assessment tool, especially in the domain of language development. It has for example been documented that wordless picture books may be used to get insight into children's understanding of literacy-related activities (Arif & Hashim, 2008; Crawford & Hade, 2000). The results of these assessments may in turn be used to adapt interventions, resulting in better developmental outcomes for children.

We were especially interested in studies that compared the use of picture books with text with those without text. Unfortunately, we only found five such studies, and one study that compared the use of wordless picture books with the use of static pictures (Fiestas & Peña, 2004). The results of these studies nevertheless looked promising, showing that teachers and parents interact more with children, and use different language when reading wordless picture books than with books with text. This thus shows that wordless picture books do not only benefit children's development but also have an impact on the way adult readers interact with picture books. Compared to picture books with text, adults also provide a linguistically richer environment, thereby optimising the preconditions for child language development. Chaparro-Moreno et al. (2017), for example, found that when reading wordless picture books, teachers used a more diverse lexicon. This in turn was related to children's number of words and lexical diversity. At the same time, these six studies do not only show benefits but also disadvantages of wordless picture books: picture books with text seem to elicit more challenging talk and longer sentences from adult readers than wordless picture books. This suggests that the unique features of both books have different benefits for young readers. It is, however, hard to draw conclusions on the basis of just six studies. Moreover, these studies have been conducted with young children up to age six only, and participant groups were relatively small with 68 children at most. Exceptions were the Schick et al. (2021) study and the Smadja et al., (2019) study, containing over 300 and 500 child participants,

respectively. Given the lack of research, it may as well be that there are advantages and disadvantages of wordless picture books that have not been determined yet. It may be the case that books with text promote word decoding development, which may not be the case with wordless picture books. Future studies should therefore make more comparisons between wordless picture books and picture books with text, also including older participants, to investigate whether wordless picture books indeed have unique benefits over picture books with printed text and vice versa, and whether these also hold when reading these kinds of books with children older than six.

4.1 Limitations

Despite the fact that we carefully selected the focus of this systematic research study, we recognise some limitations to our study. This systematic review study focused on academic research with participants who were not older than 12. This was a deliberate choice, as most research on wordless picture books actually focuses on young children. The limitation of this narrow scope, however, is that our findings cannot necessarily be generalised to older children. Arizpe and Ryan (2018) state that wordless picture books are also suitable to use with secondary students. Indeed, Marciano et al. (2017), for example, focus on younger as well as older children (up to age 16). The results of their study show that wordless picture books have the power to foster cross-cultural interactions, and to connect students in distant places. This study thus demonstrates that wordless picture books may be a promising tool for use with older students as well. Future research should therefore also include children older than 12, to investigate whether the findings reported here also hold for them.

We also only focused on academic articles that were written in English. The strength of wordless picture books is that these books are not bounded by language, and are thus readable by a wide audience. Despite the fact that most articles published in peer-reviewed academic journals are written in English, we may have missed relevant studies written in another language, especially given the wordless nature of the books covered in this research study.

Moreover, the studies that were included in this systematic review used a variety of methods to investigate the benefits of wordless picture books, including various wordless picture books. Whereas some studies used one book, others used multiple books. Not all studies were transparent about which books were used. As a consequence, results may be study-specific, depending on the specific intervention and assessment methods that were used.

4.2 Implications

Although the lack of large-scale experimental studies hinders the drawing of firm conclusions, this review study suggests that wordless picture books have multiple

benefits for child development, especially in the language and psychosocial domain. Our research thereby adds to the already existing knowledge about the benefits of reading picture books in general (Dowdall et al., 2019; Flack et al., 2018; Noble et al., 2019; Xie et al., 2018). It shows that the benefits that have already been documented for picture books with text also hold for picture books without text. Moreover, wordless picture books and picture books with text seem both to have their own unique benefits for children's development. This review study therefore also extends the existing knowledge about the benefits of reading picture books with children.

These results have practical implications for parents and professionals working with children. Our analysis of existing research on wordless picture books strongly suggests that reading these kinds of books is often characterised by co-constructive reading, in which children are active constructors of a narrative. This benefits children's development directly as well as indirectly. Limited evidence suggests that wordless picture books may also be used as assessment tools by clinical practitioners, showing benefits over more traditional assessment tools. Parents, teachers, and all other professionals aiming at improving children's development should be made aware of the benefits of wordless picture books, and be encouraged to use these books in daily practice.

5. CONCLUSION

In conclusion, this systematic research study suggests that wordless picture books have numerous benefits and few disadvantages for children's development. Disadvantages seem to be limited to the fact that adults (teachers, caregivers) use less complex language when reading wordless picture books when compared to books with text. This is disadvantageous since rich and complex language input is necessary for children to develop their language skills (Rowe & Snow, 2020). The reported benefits are either directly related to children's development, for example by stimulating children's narrative skills, or more indirect because wordless picture books create the right context for children's development. This may be the case when speech and language therapist may more accurately assess children's language skills when using wordless picture books, or because parents and teachers read these books in a different way compared to traditional picture books, leaving more room for the child to actively participate in shared reading. This makes wordless picture books a must to include in all environments that put child development at the centre stage.

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