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Reading Aloud and First Language Development: A Systematic Review

Federico Batini[1], Benedetta D'Autilia[1], Eleonora Pera[1], Lucia Lucchetti[1], Giulia Toti[1]

[1]University of Perugia/Department of Philosophy, Social Science, Human and Education Sciences, Perugia, Italy.

Correspondence: Federico Batini, Department of Philosophy, Social Science, Human and Education Sciences, University of Perugia, P.zza Università - 06123, Italy.

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Abstract

Reading aloud appears to be an important lever for improving language acquisition and development in early childhood, and later in life it strengthens many sub-dimensions of language. However, the availability of numerous variations on reading training, shaped by different methodologies and different lengths of exposure make it difficult to determine the best approaches to follow. The aim of this review is to identify the available literature contributions that examine the association between mediated reading training, first language development and the acquisition of new vocabulary, including other components that could be improved by these interventions, such as cognitive function, emergent literacy and adult-child verbal interactions. The purpose is to compare research highlighting their fundamental characteristics, tools, duration and methodologies used in order to point out the effects that the practice of reading aloud produces on the acquisition and the enhancement of language, particularly in the age of language development. The analysis of the 51 articles included aims to identify the most effective reading strategies in terms of practices, timing and methods, able to produce the most significant gains in the language area.

Keywords: reading aloud, early childhood vocabulary development, early childhood language acquisition, emergent literacy, receptive-expressive language, lexicon

1. Introduction

Language in oral or written form is an important tool through which we can improve our understanding of the world and others (McCauley & Christiansen, 2019). The number of words that each individual is able to understand and use constitutes, in extreme synthesis, a valid and reliable predictor of the subject's ability to act in relational contexts. Research has highlighted the role that reading plays in expanding personal vocabulary and in promoting the transition from the *receptive* vocabulary to the *productive* vocabulary. That is, the transition from understanding words to their practical use (Bartolucci & Batini, 2020).

The benefits of exposure to reading aloud can be found, on the linguistic level, across the lifetime of the subject, but they have a greater relevance in early childhood (Cabell et al., 2019), as children have the capacity to learn new words with an extraordinary speed, adding up to 3000 terms per year into their vocabulary (Nagy & Anderson, 1984).
According to Batini, Cacchione, Giusti and Sposetti (2020), only a small part of these words – a maximum of 200-300 words – can be attributed to explicit vocabulary instruction, with the majority of words being learned through the exposure to reading aloud or individual reading. New word acquisition allows children to increase their own skills and the sense of self-efficacy in relating with their surrounding reality, especially when trying to give it a meaning. Therefore, although children are exposed to a considerable amount of stimuli every day, the role of reading aloud turns out to be very important.

Exposure to reading aloud has a significant influence on the number of known words: Anderson, Wilson and Fielding (1988), studying students' out-of-school reading habits, observed that, on average, a child reads about 650,000 words a year, while the so-called *strong readers* read up to 5,850,000 words a year, with significant effects on their vocabulary. Logan, Justice, Yumus and Chaparro-Moreno (2019) observed that children exposed to reading sessions from birth started primary school with 1.4 million more words in comparison to children who were not exposed to such reading practices (they encountered between 4000 and 5000 words). This number increases for children exposed to reading aloud - even when it occurs only once or twice a week (for whom an exposure to 63,000 words is estimated).

Further research (Lonigan & Whitetrust, 1998; Ronfani et al., 2006; Toffol et al., 2011) analyzed the relationship between

reading aloud performed by a significant adult (parent or teacher) and the children and young people's vocabulary and lexicon development. In children who were frequently exposed to reading, the linguistic improvements were significant and the number of words used increased. Moreover, there was a greater understanding of new terms and a greater propensity to use different words from those of one's own common language (Feitelson, Kita & Goldstein, 1986; Oueini, Bahous & Nabhani, 2008). Reading exposure therefore reduces the risk of developing poor vocabulary and encountering difficulties in school; indeed, the breadth of a child's vocabulary affects the ability to understand, re-elaborate and express what he or she learnt in the scholastic environment (Farrant & Zubrik, 2012; Massaro, 2017). Moreover, the way the reading activity is conducted can determine different effects on language acquisitions, for example a parent's lack of pleasure in reading can negatively impact the child's lexical skills and their interest in literary activities (Bus, Van Ijzendoorn & Pellegrini, 1995).

As pointed out by several authors (Lam, Chow-Yeung, Wong, Lau & Tse, 2013; Logan et al. 2019), adult-child interactions and conversations have a significant influence on children's linguistic background, but do not replace the reading experience. Indeed, written texts allow children to use a greater variety of terms, a more precise language and more complex words compared to those generally encountered in conversation with their parents. Furthermore, parents or other significant persons have the opportunity to interact with children on themes encountered during reading, thus also fostering a greater understanding and reworking of the contents read, with the chance of adding lexical elements on occasion. From this point of view, repeated reading of stories presents a valid exercise of progressive deepening of understanding in regards to the text contents (Lam et al., 2013; Logan et al. 2019).

During shared reading, the adult is the mediator who assists and regulates the relationship between the child and the book, creating a more complex interaction in which the adult reads, the child looks and listens, the book is the object which allows such activity and promotes the relationship (Bus & Van Ijzendoorn, 1988; Soffiato, 2010). Children thus learn to recognize forms, letters and numbers, to discriminate words and objects and to understand the relationship between symbols and sounds; moreover, the interaction with the book increases attention, curiosity and imagination; it enriches linguistic skills, promotes the early internalization of a narrative scheme and the early construction of a narrative competence (Barachetti & Lavelli, 2007; Cardarello, 1995). Research based on intensive reading sessions, conducted over the last two decades, has revealed an increase in functionality in some brain areas related to the development of language skills (Hutton et al., 2015). Among these, areas related to prodromal reading comprehension and skills, memory and cognitive skills are those on which a focus has been placed.

Moreover, reading is one of the most useful tools to promote lexical development from early childhood (Isbell, Sobol, Lindauer & Lowrance, 2004), producing significant reinforcements on the "active" and "passive" vocabulary, both on all the terms we use daily, and on all those words whose meaning we know and that we could then use correctly in a sentence (Duursma, Augustyn & Zuckerman, 2008).

On the basis of the literature just mentioned, it is clear that reading aloud is able to promote the development of many language-related skills. Our review is part of this field of research, along with studies already present in the literature that have underlined some of the possible skills that reading (both aloud and individually) is able to promote (Bus et al., 1995, McCormick, 1983; Mol & Bus, 2011). Our work differs by focusing primarily on reading aloud, trying to highlight all the skills supported and enhanced by this practice.

The articles included in our review investigated the effects of shared book reading on linguistic development. However, they differ from each other in terms of methodologies, frequency and length of sessions, highlighting different results in terms of skills learned. The quantity and heterogeneity of approaches among these studies have made their synthesis useful. In this perspective, our review provides a general overview of the studies published in the last ten years and gathered on the database ERIC that have deepened the role of reading aloud on the development of language, since early childhood.

2. Material Studied

The aim of this review is to identify the available literature contributions that examine the association between reading aloud and first language development. The main topic of our work, specifically, is the relationship between reading aloud and lexicon, intended as individual vocabulary improvement. A particular attention is paid to early childhood, without excluding other age groups. The purpose is to compare different studies and highlight their fundamental characteristics, the tools and the methodologies used. The ultimate goal is to point out the effects that the practice of reading aloud produces on the acquisition and enhancement of language skills, particularly in the age of language development, identifying the most effective reading strategies in terms of practices, timing and methods.

3. Method

3.1 Research and Definition of Inclusion-Exclusion Criteria

After identifying the topic of the analysis, a selection of the contributions to be included was made. The following steps

were: choice of the database; selection of inclusion/exclusion criteria; first analysis and skimming based on title and abstract; storage of the selected studies; identification of the characteristics of each study; extraction of results and comparison.

The research took place in the Spring of 2020. At the beginning the search involved two databases: ERIC and PsychINFO. An initial screening of the results showed that the studies on PsychINFO were analyzed from a mainly psychological point of view. We therefore decided to focus only on ERIC results, since our main interest was to collect research conducted in the educational field, in order to explore the importance of reading aloud in such contexts. In fact, ERIC (Educational Research Information Center) is regarded as one of the major databases for international educational research in English (Taylor, Dempster & Donnelly, 2003). Furthermore, a key component of ERIC is its collection of gray literature in education. The underlying rationale for adding the grey literature to this systematic review study is an attempt to reduce the impact of publication bias (McAuley, Tugwell & Moher, 2000).

Details on the search strategy and selection of studies are included in Fig. 1.

After screening for duplicates, we proceeded to a first identification of articles by reading titles and abstracts, in order to include only the relevant research with the outlined features: evidence based, experimental or quasi-experimental design, no theoretical studies. We decided to proceed with a complete analysis of the articles in order to identify the ones that used a specific methodology, such as reading training or at least an experimental phase in which reading aloud was a determining factor. We considered as eligible articles that included a description of the tools used and the presence of a control group. We additionally excluded articles related to second language learning, since they appeared in small numbers, and studies in which the methodology involved the use of e-books or other electronic devices, and in which there was no direct comparison study between e-books/devices and reading aloud. Following this selection, a total of 67 articles were obtained, 16 of which did not correspond to the established criteria. The final articles (51) that have been analyzed are presented and discussed in the results.

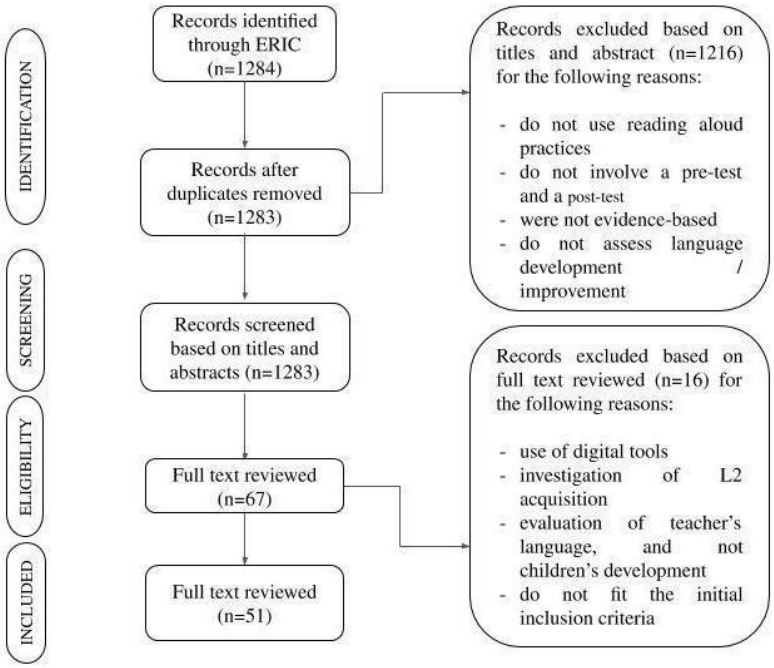

Figure 1. Flowchart Showing the Selection Procedure of Articles

4. Components Description

With regards to the area related to *language*, the primary interest of the review, the aspects analyzed were: the "receptive vocabulary", measured in clear-cut prevalence through the Peabody Vocabulary Test (PVT), and the "expressive vocabulary", related both to the knowledge of general vocabulary, and to the target words included in the readings, which had to be explicitly learnt. In many studies, reference is also made to the two components of vocabulary commonly called vocabulary breadth and vocabulary depth. By "vocabulary breadth", included in the broader "lexicon", we refer to the number of words known, while "vocabulary depth" refers to the richness, variety of words possessed and to the ability to use them differently according to the context. The "lexicon" component refers to all the studies that analyze target word acquisition and vocabulary breadth and its growth. The "narrative production", a further highlighted component well examined in the intensive training devoted to reading aloud, includes the ability to tell a story immediately after hearing it

(an aspect more related to listening comprehension), but also the competence to produce a coherent and cohesive oral narrative, developed around a precise plot. Some of the studies pointed out specific linguistic and thematic learning, such as to justify the introduction of an independent category related to the "scientific and mathematical language". We have also identified a *language* component linked with the relational field, called "verbal interactions and participation", which reading aloud stimulates and enriches. Indeed, many studies have analyzed language not only in terms of learning, but also as a result of different relationship modes and communication styles. Some studies, in fact, have highlighted how, for example, teachers' communication methods produce different types of learning, based on the content conveyed or the linguistic form used.

Regarding *emerging literacy,* we identified six independent components in the analysis: comprehension (ability to extrapolate the meaning of what is read), print knowledge (that reflects the emerging knowledge of the form and functions of printed text), print awareness (that refers to the understanding of the nature and uses of print and is closely associated with the ability to recognize words as distinct elements of oral and written communication), letter knowledge (knowledge of the alphabet and the association between a letter and its name, and between a letter and its sound), phonological awareness (the ability to manipulate and mix phonemes in phonological processes) and orthographic awareness (that includes knowledge of written coding rules, specific to each language). These emerging skills consist of abilities and knowledge that act as precursors of reading and writing. They therefore include skills aimed at learning the subsequent and more complex ability to decode words and give them a meaning.

Finally, "verbal memory" (the ability to keep memory processes active in reading and to remember what has been listened to), "attention" (the ability to direct one's cognitive functions on some available environmental stimuli and to ignore the others) and "intelligence" (the set of individual cognitive faculties) are the most studied cognitive components, highlighted in the included articles.

The components analyzed and evaluated in the selected studies are listed in the Appendix.

5. Results

5.1 Descriptive Results

The 51 studies analyzed have a rather wide age range of participants: from nursery children (1.96%) to university students (1.96%), with a clear prevalence of mediated reading training carried out in kindergarten (64.7%), in primary school (13.72%), and in the family context (17.65%). As for the duration and frequency of reading interventions, 6 studies (11.76%) provided for a single activity session, 2 studies (3.92%) provided two activity sessions and 7 studies (13.72%) did not specify the duration, frequency and number of sessions. The remaining 36 studies (70.58%) included intensive mediated reading training that lasted at least two weeks. Regarding research design, analysis of the studies showed that 4 were qualitative (7.84%), one work was a preliminary study, 6 were longitudinal studies (11.76%) and the remaining 41 were quantitative studies (80.39%). Furthermore, 6 studies included a follow-up (11.76%). Descriptive information for the 51 studies is presented in the Appendix.

5.2 Language Components Results

Splitting the language area into some sub-categories, we reconstructed the wide spectrum of components evaluated in the studies and outlined the different results that have been obtained for each component.

5.2.1 Reading Aloud and Receptive Vocabulary

Receptive vocabulary has been analyzed in 33 studies (64.70%).

In most of the articles analyzed, children in the experimental group scored significantly higher than the control group in terms of receptive vocabulary after an intensive training based on reading aloud (33.33%). Some studies, in addition to reading aloud, included specific interventions on vocabulary, reporting significant learning in the general receptive vocabulary (Loftus-Rattan, Mitchell & Coyne, 2016; Nielsen, Friesen & Fink, 2012; Silverman, Crandell & Carlis, 2013; Zipoli, Coyne & McCoach, 2011) and in the receptive vocabulary of specific target words (Janssen, Segers, McQueen & Verhoeven, 2019). Obviously not all the training had the same effectiveness: with regard to the receptive vocabulary related to specific target words, a *read-only* session produced the same results as an associated *reading with play* session. However, the latter training seems to not have had particular benefits on general receptive vocabulary, in contrast to the first (Dickinson et al., 2019). Another research found that the implementation of *reading with play* produced significant results in word recognition from images, but not in understanding the meaning of the words themselves (Lenhart, Roskos, Brueck & Liang, 2019). Furthermore, an intervention that involved the use of scientific or narrative texts confirmed improvements in the area of receptive vocabulary, as in the other language components, but only using narrative texts (Nevo & Vaknin-Nusbaum, 2018). In some studies an improvement in receptive vocabulary was found in the experimental group, with a particularly relevant increase in the scores of children with low socio-economic background (Barnes & Dickinson, 2017; Hindman, Wasik & Erhart, 2012) and for children with low initial vocabulary scores

(Silverman et al., 2013). An enhancement in receptive language has also been observed in studies that present non-intensive training of 2-3 reading sessions (Cabell et al., 2019; Lenhart, Lenhard, Vaahtoranta & Suggate, 2018). In addition session of mediated reading, associated or not to vocabulary training or play activities, other factors have been identified as contributing to the receptive vocabulary enhancement, such as the inclusion of extra textual conversations during reading sessions (Barnes, Dickinson & Grifenhagen, 2017; Cabell et al., 2019; Zucker, Cabell, Justice, Pentimonti, & Kaderavek, 2013), reading on paper compared to reading on digital devices (Kozminsky & Asher-Sadon, 2013) and class organization (Cabell et al., 2019).

Some articles did not provide for an actual reading intervention but focused on analyzing the correlations between habits and ways of reading, at home or at school, and the child's receptive language. Through a recording of shared reading with *eye tracking* equipment, it has been found that children can enhance their receptive vocabulary through repeatedly listening to stories, without adult commentary or explanation of the meanings of single words (Evans & Saint-Aubin, 2013). Longitudinal research by Liu (2014) showed that the lexical and acoustic characteristics of maternal utterances, when reading illustrated books to infants between 6 and 12 months, can influence the receptive language skills of the same children at the age of 5. Studies investigating reading habits at home (number of books at home, frequency of shared reading with family members, frequency of songs sung by parents) showed that those factors are able to predict receptive vocabulary in preschool children (Kim, Im & Kwon, 2015), indirectly influencing their vocabulary and their decoding ability. The frequency of questions and inferential statements from mothers during reading promotes the growth of children's receptive vocabulary over six months (Tompkins, Bengochea, Nicol & Justice, 2017). Other factors detected in the home environment and related to the enhancement of receptive vocabulary were: reading frequency, number of books at home/knowledge of books by parents, and knowledge of books by children (Zhang et al., 2018). In the Suggate, Lenhard, Neudecker and Schneider (2013) study an improvement in receptive vocabulary was not assessed, but this measure, obtained in the pre-test, was positively correlated to an improvement in oral language (as for both the reading aloud condition and the storytelling condition), rather than in written language. The pre-test receptive vocabulary scores were also found to be predictors of the learning of target words after training (Loftus-Rattan et al., 2016) and of general post-test vocabulary scores (Hadley & Dickinson, 2019).

The receptive component of language, compared to expressive vocabulary, is more susceptible to memory retention two months after the end of a reading session (Lenhart et al., 2018). An article, among those analyzed, does not show specific results in the area of receptive vocabulary but only in other components of language (Moore, Moore, Hammond & Fetherston, 2014).

5.2.2 Reading Aloud and Expressive Vocabulary

Expressive vocabulary was measured in 17 studies (33.33%). Similarly to previous studies, in most of the works analyzed children in the experimental group scored significantly higher than the control group in expressive vocabulary. In addition, all the papers that examined this dimension also investigated the learning of receptive vocabulary, supporting the interdependence of these two competences. Three studies were conducted in family contexts (17.65%), the other fourteen being carried out at school (82.35%).

In the home environment, lexical and acoustic characteristics in reading picture books are associated with children's language skills (expressive language) at the age of five years, suggesting that how mothers read books to their children can affect this domain. In this perspective, lexical and acoustic inputs in reading show long-term associations with language development in early childhood (Liu, 2014). Continuing with a longitudinal perspective, reading habits at home from the age of two can influence the decoding and expression skills of pre-school children (Kim et al., 2015). In Zhang and colleagues' (2018) work, on the other hand, the dimension investigated and called "knowledge of books" is correlated in a significant way with children's receptive and expressive vocabulary scores.

Within school contexts, on the other hand, mediated reading training has produced increases in children's results, in both receptive and expressive language (Kim, 2017; Pollard-Durodola et al., 2011), in the learning of target words (Dickinson et al., 2019), new words and vocabulary in general (Zipoli et al., 2011). In the work of Cabell and collaborators (2019), a significant interaction was found between class organization and extra-text discourses on expressive vocabulary results, highlighting the importance of considering the contextual and environmental dimensions in which the practice of reading aloud is inserted. The work of Nielsen and colleagues (2012) has identified an increase in semantic and oral production skills, between over the testing period, following an intensive 12-week training of reading aloud. Loftus-Rattan (2016), instead, compared different models of reading aloud, highlighting how the emphasis on the "extension" of reading, in comparison to more standardized modalities, brings significant benefits in both receptive and expressive vocabulary. In other studies, the use of specific reading methodologies, such as ISB, has also shown significant effectiveness in stimulating expressive vocabulary development. In fact, children in the ISB session group showed a faster growth of expressive vocabulary during the school year than children in the control group, bridging further gap between them,

supporting the hypothesis that the ISB session is effective in stimulating the expressive vocabulary development over time (Van Druten-Frietman, Strating, Denessen, & Verhoeven, 2016). Similarly, the work of Okyay and Kandir (2017) showed a significant difference for the experimental group in the follow-up test, following the implementation of an interactive reading programme, both in expressive and receptive vocabulary. The practice of reading aloud also seems to produce an increase in children's vocabulary in classrooms where teachers comment more while reading books, in comparison to peers in classes where fewer comments were made (Barnes et al., 2017). In general, the results of the work of Nevo and Vaknin-Nusbaum (2018) showed that both experimental groups (science or fiction) improved their specific vocabulary, showing in particular a significant learning of scientific vocabulary between pre and post test. Finally, Lenhart and colleagues (2019) confirmed the benefits of intentional and direct instruction in learning new words and in recognizing words from images. In the review, only one study (Moore et al., 2014) showed no significant differences in general vocabulary measurements (PPVT and EVT) and between experimental and control groups in the pre-test and post-test.

5.2.3 Reading Aloud and Lexicon

The *lexicon* was measured in 37 of the 51 studies included in the review (72.55%). Although this dimension may seem analogous to the component of expressive and receptive vocabulary, we prefer to analyze it separately in order to highlight what emerged in the studies that investigated the acquisition or enhancement of both general and specific target words.

In most of the articles examined, the children in the experimental group scored significantly higher than the control group in the general lexicon component after intensive mediated reading training (24.32%), but also after single or double reading sessions (8.11%). Vocabulary improvements have also been obtained in students at risk of learning disabilities and/or language difficulties (Baker et al., 2013).

In some studies, the vocabulary component was measured by evaluating the ability to learn specific target words included in the reading, and to compare these words with others chosen as control words. In some studies, it was found that reading aloud is effective for learning target words (24.32%). This learning of target words was detected in some studies through the administration of questionnaires to educators and teachers who confirm that they have heard children using specified words more often than usual, and in the context of different activities (Blamey, Beauchat & Sweetman, 2012; Holmes & Thompson, 2014; Makumbila & Rowland, 2016).

In studies that compare types of training, different results were found depending on the methodology implemented: Puhalla (2011) compared an *intensive reading training + vocabulary enhancement* with a *non-intensive reading training + vocabulary enhancement*, showing learning of target words only in the experimental group that received the first type of intervention. Kozminsky and Asher-Sadon (2013) compared a training implemented by reading *paper books* with one via reading *e-books*, finding an increase in general vocabulary only in the group reading on paper. In contrast, Zhou and Yadav (2017) detected a strengthening of vocabulary in preschool children thanks to a reading training on digital devices which, according to what emerged, also increased the concentration and involvement of the children. Suggate and colleagues (2013) compared *reading aloud* with *individual reading* in second and fourth grade of primary school and found that even fourth grade children with good reading skills learned more vocabulary and more target words by listening to a story rather than reading it independently; the same was found in university students by Rumbaugh and Landau (2017). Wright and Dunsmuir (2019) compared a *story-reading intervention* with a *storytelling training*, finding higher scores in vocabulary in the group undergoing the first intervention, even three months after the end of the training.

Factors that promote lexical improvement have also been investigated: reading habits in the family have been linked to the development of vocabulary such that a low frequency of shared reading during early childhood is two and a half times more likely to result in poor vocabulary development (Farrant & Zubrick, 2013; Zhang et al., 2018), as well as knowledge of children's books in parents (Hipfner-Boucher et al., 2014; Zhang et al., 2018). Fathers' speech is also related to vocabulary: the more they are articulated while reading books, the more their children gain in general vocabulary (Salo, Rowe, Leech & Cabrera, 2016).

A correlation has been found between vocabulary and phonological awareness (Hipfner-Boucher et al., 2014) and between the organization of the class and the children's lexicon (Cabell et al., 2019); it has also been found that direct and clear instructions can help children to learn new vocabulary (Lenhart et al., 2019).
In one study such an improvement (although not significant) in vocabulary was found: the results confirmed that the intervention was effective in promoting recognizing and defining new words, since students of the experimental group made progress between pre and post-test, even though this result was not significant (Moore et al., 2014).

Hadley, Dickinson, Hirsh-Pasek, Golinkoff & Nesbitt (2015)'s article focused on specific learning of three types of words: explicitly taught target words, words present in the texts but not explained and control words not used in the session. An increase in the knowledge of all types of words was found, specifically concrete nouns and verbs were learned significantly better than abstract nouns and adjectives; synonyms and context information was learned well for all types of words, while functional information was better learned for concrete nouns. A qualitative study (Cohen, Kramer-Vida &

Frye, 2012) verified the improvement of general vocabulary and knowledge of words in both English children, bilingual and Spanish children, finding that the language in which the text was read did not influence the students' outcome. However, the quantity of words learned was greater in monolingual English children.

5.2.4 Reading Aloud and Narrative Production

The *narrative production* appears in 6 studies (11.76%) and concerns the ability to repeat a previously heard story or to spontaneously produce a story respecting narrative sequences.

Following intensive mediated reading training, improvements in narrative skills (Nielsen et al., 2012) and increased mastery in the use of oral language (Makumbila & Rowland, 2016) were found. Listening to stories with the introduction of associated visual, auditive, tactile and motor cues would also seem to favor the ability to tell narrative sequences in chronological order (Ionescu & Ilie, 2018). Reading aloud seems to promote oral repetition skills, even for children at risk of learning disorders, language difficulties or both (Baker et al., 2013). Comparing a *reading aloud session* with a *storytelling training*, the latter seems to bring greater benefits in oral repetition, with significantly longer production and the use of a wider vocabulary, even after the end of the session (Wright & Dunsmuir, 2019). In the study by Hipfner-Boucher and colleagues (2014) a correlation between coherence of oral narrative structure and phonological awareness in children between 4 and 6 years of age, was also observed.

5.2.5 Reading Aloud and Vocabulary Depth

Vocabulary depth was measured in 4 studies (7.84%). The first study (Damhuis, Segers & Verhoeven, 2015) analyzed the depth of vocabulary following intensive training in different experimental conditions, showing how repeated reading of short stories combined with the use of post-reading feedback produces more evident results. The study emphasizes how listening to stories repeatedly can stimulate both the breadth and depth of children's vocabulary, highlighting how in the experimental conditions, students were able to repeat more characteristics and words than the children in the control group. The results of the study by Van Druten-Frietman and colleagues (2016) indicate that a specific intensive intervention in reading aloud (ISB) is able to produce a faster and deeper growth of vocabulary during the school year, promoting the expressive vocabulary development over time. This result highlights the chance of reducing an initial gap between children. Although an increase was found in both conditions, Hadley, Dickinson, Hirsh-Pasek & Golinkoff (2018) showed how a training focused on learning the taxonomic characteristics of words (more focused on the depth of learning) produced superior learning compared to thematically focused reading. Similarly, the fourth study (Janssen et al., 2019) showed that learning focused on the form of words produced a deeper learning of vocabulary than a method focused on meaning.

5.2.6 Reading Aloud and Verbal Interactions

Verbal interactions between parents and children or between children and teachers were evaluated in 10 studies (19.6%), in which it was shown that the communicative and relational component plays an important role in learning vocabulary, in the quality and quantity of children's statements and in the degree of involvement in reading.

Half of the studies examined the family context (50%), and the others the school context (50%). In some studies, specific indications were given to adults on the type of language to be used with children (30%). In others, no indications were given and the language naturally used by adults with children and their subsequent linguistic development was observed (60%). The study by Lenhart and colleagues (2018) showed no significant effects related to this dimension. With regard to the studies in which directions were given on the type of language to be used, one study (Brannon & Dauksas, 2012) found that family members, who received training in dialogic reading, used questions, yes/no questions, labeled images, provided feedback much more often; parents also had significantly more numerous and more prolonged verbal interactions with their children. Similarly, children in families trained in dialogic reading had much longer conversations, with a three-times-greater degree of participation in conversations than the control group. The results of Wasik and Hindman's work (2014) showed that more frequent references to thematic vocabulary made by teachers (trained through a specific educational program) were linked to a stronger vocabulary development in children. Finally, the work of Barnes and Dickinson (2017) highlighted how frequent use of lexical elements by teachers empowers students to get higher scores by the end of the year, in comparison to pupils who listen less frequently to these lexical elements.

In Kozminsky and Asher-Sadon's work (2013), based on a comparison between reading aloud through book or e-book, it was found that children gained more linguistic advantages from reading on paper, reinforcing the role of the relational component in literacy processes. With regard to the role of parents, it has been found that having regular conversations with children allows them to have longer and more complex conversations, with positive effects on learning in specific thematic areas (Hojnoski, Columba & Polignano, 2014). In addition, it has been shown that children of parents who speak frequently, who use a more diversified vocabulary and ask more questions have, in turn, a broader and more coherent vocabulary, both in activities related to reading aloud and in play activities (Salo et al., 2016). Parents' education does not affect vocabulary, sentence complexity and average sentence length (MLU), but it is an important predictor of the

frequency of shared book readings, suggesting that more highly educated parents spend more time with their children reading stories (Marjanovic-Umek, Fekonja-Peklaj & Sočan, 2017). Tompkins and colleagues (2017) found that during shared book reading, mothers' questions and statements enabled growth of children's receptive vocabulary over a six-month period, and that the children's responses corresponded to the same level of abstraction as mothers.

In the school context, it has been observed that asking questions, at the beginning, during and at the end of each mediated reading activity, helps students in turn to ask questions about the story and to illustrate the story's main concepts. During the observations, most students found the activities proposed interesting and enjoyable (Makumbila & Rowland, 2016).

5.2.7 Reading Aloud and Scientific and Mathematical Language

Three of the studies examined have investigated learning in scientific and mathematical language (5.88%).

In the preliminary study by Hojnoski and colleagues (2014), mathematical language was promoted in six parent-child dyads. Analysis of the results revealed that mathematical vocabulary increased after training for 3 of the dyads. The general aim of this study was to examine the effect of training for parents on mathematical contents and concepts when reading a book with their children. It was found that the average frequency of mathematical statements and their proportion in the total speech increased as a result of the training. The results of the study by Neuman, Kaefer and Pinkham (2016) showed statistically significant effects on children's vocabulary, concepts and contents knowledge, compared to the control group. Positive effects on the growth of children's vocabulary and conceptual knowledge were reported, compared to their counterparts who had continued the standard educational program. In addition, the children in the treatment group were able to better apply their learned knowledge, better identify the purposes of reading an informative text, as well as identify labels in the text and describe how the images supported the content of the scientific text. After the treatment, therefore, significant differences emerged with regard to scientific vocabulary and conceptual knowledge measures. The third study (Nevo & Vaknin-Nusbaum, 2018) showed that both groups improved specific vocabulary (science and narrative). Although the change in specific vocabulary was lower in the "science" group than in the "narrative" group, the change in scientific vocabulary in said group was found to be significant across the testing period, while it was not significant in the narrative group.

6. Discussion

As found in the literature (e.g. Hutton et al., 2015; Isbell et al., 2004; Mol, Bus & De Jong, 2009) the findings of this review demonstrated that it is possible to gain benefits in the whole area of language with the practice of shared book reading, mediated by the adult. The studies analyzed have confirmed, as found previously in some meta-analyses (Mol & Bus, 2011; Mol et al., 2009), that reading exposure in early childhood, but also at later ages, is commonly associated with language acquisition and many related sub-dimensions.

Among the language components most affected by mediated reading exposure emerged skills closely related to language, skills related to cognitive functions (memory, attention and intelligence) and emerging literacy (comprehension, print knowledge, print awareness, letter knowledge, phonological and orthographic awareness). Our analysis focused primarily on language acquisition, highlighting how the skills that benefit most from reading aloud are receptive vocabulary (e.g. Chao, Mattocks, Birden & Manarino-Leggett, 2015; Kotaman, 2013), expressive vocabulary (e.g Gonzalez et al., 2010; Zhang et al., 2017), lexicon (e.g. Ionescu & Llie, 2018; Wright & Dunsmuir, 2019), narrative production (e.g. Baker et al., 2013; Nielsen et al., 2012), vocabulary depth (e.g. Damhuis et al., 2015; Van Druten-Frietman et al., 2016), mathematical and scientific language (e.g. Hojnoski et al., 2014; Nevo & Vaknin-Nusbaum, 2018) and adult-child verbal and communicative interactions (e.g. Brannon & Dauksas, 2012; Kozminsky & Revital, 2013). The set of studies and research therefore shows a significant impact of exposure to reading aloud on a complex set of dimensions and abilities related to language. In regards to the educational contexts, kindergarten is the most investigated one, among the studies included in the review.

With regard to the duration of mediated reading activities, the analysis of the studies validates the idea that intensive, repeated and frequent training produces results confirming the importance of investing in the quality and quantity of the time dedicated to this activity. Although some studies (e.g. Hipfner-Boucher et al., 2014; Salo et al., 2016) have shown positive results even after a limited number of reading sessions, continuous and repeated practice has been found to bring more significant improvements in children's language development.

Investigations into the importance of other activities (e.g. guided play or vocabulary interventions)) together with reading aloud by an adult on language development have provided mixed results. For instance, Biemiller (2010) and Sénéchal (2010) found that incidental exposure in reading is the most effective way of introducing children to new words. Scott, Miller and Flinspach (2012) instead demonstrated that language improvement is likely to be maximized if repeated story-book reading is supported by activities with explicit vocabulary instructions (e.g. promoting discussions about the meaning of the words or analyzing word choice). In regards to intensive reading exposure only, Oueini and colleagues

(2008), as already stated, found that children showed significant linguistic improvements, such as a greater number of words used, together with a greater understanding of new terms.

The analysis of the studies examined in this review has therefore shown that shared book reading is effective and useful on vocabulary development, whether or not combined with activities aimed at promoting the improvement of language. As already found in the literature (Logan et al., 2019; Neuman, Newman & Dwyer, 2011; Wilson, Dickinson & Rowe, 2013), reading books seems to be the key element in educational interventions that have beneficial effects on language.

Moreover, the analysis of the contexts has highlighted how reading is a cross-cutting activity, easily practicable with students of all levels within the school context, and within the family environment, in which it also promotes a stimulating communicative exchange among all actors involved.

Regarding the family context, a relationship emerges between the hours that parents spend reading to their children and the consequent ability of their children to read, to use complex sentences, to understand literal and inferential meanings (Matthiessen, 2013). This skills set is of fundamental importance in the school experience, as it enables the child to understand the meaning of what he hears and what surrounds him. As a matter of fact, it is important to promote this activity in the context of children's life in school, since existing data indicates that poor practice increases the risk of weak vocabulary in early schooling (Batini, Bartolucci & Timpone, 2019).

6.1 Limits

The first limitation is the use of a single database (ERIC). Secondly, the difficulty of identifying the training (intensive/non-intensive), its duration and its frequency in some contributions. However, since the central theme was consistent with the topic of our analysis, we decided to include these studies.

7. Conclusion

In conclusion, this study shows that training, both intensive and non-intensive, via shared books reading focused on the acquisition and enhancement of vocabulary, is actually effective in improving the language as a whole, as well as concept and content knowledge. In light of this, it is important to recognize and affirm the crucial role played by teachers, parents and experts in promoting and supporting children's language development, through the practice of reading aloud.

The results of this analysis highlight the need to continue to investigate the function of the practice of mediated reading in educational and family contexts and its role in individual psycho-social development, with particular reference to the first years of life, in order to use reading as a democratic instrument of educational equality. Future studies could also explore the protective role of reading aloud and intensive educational practices in disadvantaged socio-economic contexts, which can produce long-term effects in people's lives, exacerbating individual differences (Makumbila & Rowland, 2016; Van Druten-Frietman et al., 2016; Barnes et al., 2017). Future research should also focus on whether and how mediated reading activities could be designed to meet the needs of language learners at different levels of advancement, supporting their early development of language. Likewise, further work could analyze the level of children's involvement in reading texts and books and the relationship between this and their ability to learn language and concepts.

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Appendix

Descriptive information for included studies

Study Information	Sample Characteristics	Training / Components	Design
Gonzalez et al., 2010 Journal: Journal of Research on Educational Effectiveness Peer Review: Y Impact Factor: 3.375	Country: United States Sample size: 96 (INTV), 52 (CTRL) Mean age: 4.56 (0.30) y.o. (INTV, CTRL - NR) CC Type: Kindergarten	Training: INT Timespan of training: 18 weeks Components analyzed: RV, EV, L	Design: Quantitative Follow-up: N
Pollard-Durodola et al., 2011 Journal: Exceptional Children Peer Review: Y Impact Factor: 3.255	Country: United States Sample size: 69 (INTV1), 56 (INTV2) Mean age: NS (age range 4-5.3 months) CC Type: Kindergarten	Training: INT Timespan of training: 12 weeks (20 min every day, 5 days per week) Components analyzed: RV, EV, L	Design: Quantitative Follow-up: N
Puhalla, 2011 Journal: Remedial and Special Education Peer Review: Y Impact Factor: 2.817	Country: United States Sample size: 22 (INTV1), 22 (INTV2), 22 (CTRL) Mean age: 80.23 (4.89) months (INTV1), 78.59 (5.48) months (INTV2), 80.82 (5.78) months (CTRL) CC Type: Primary School	Training: INT (two types of training: booster and no booster, both with exercises) Timespan of training: 6 weeks Components analyzed: L, PK, PA	Design: Quantitative Follow-up: N
Zipoli et al., 2011 Journal: Remedial and Special Education Peer Review: Y Impact Factor: 2.817	Country: United States Sample size: 23 (INTV1), 35 (INTV2), 22 (INTV3) Mean age: 5.5 years (INTV1), 5.6 years (INTV2), 5.6 years (INTV3) CC Type: Kindergarten	Training: INT (reading stories; reading stories with terms explanation; reading stories with terms explanation + strengthening activities) Timespan of training: 18 weeks Components analyzed: RV, EV	Design: Quantitative (with-in subject design) Follow-up: N
Blamey et al., 2012 Journal: NHSA Dialog Peer Review: Y Impact Factor: NS	Country: United States Sample size: NS (4 nursery sections) Mean age: NS CC Type: Nursery	Training: INT (Training on educators) Timespan of training: 4 months Components analyzed: L	Design: Qualitative Follow-up: N
Brannon & Dauksas, 2012 Journal: Srate Journal Peer Review: Y Impact Factor: NS	Country: United States Sample size: 20 families (INTV1), 18 families (INTV2) Mean age: NS (3-5 years old) CC Type: Home environment	Training: INT Timespan of training: 10 weeks Components analyzed: L, VIP	Design: Quantitative Follow-up: N
Cohen et al., 2012 Journal: NHSA Dialog Peer Review: Y Impact Factor: NS	Country: United States Sample size: 72 (INTV, CTRL - NS) Mean age: NS (3-5 y.o.) CC Type: Kindergarten	Training: NS (readings were first read to the whole group, then read with dialogic reading modality in smaller groups) Timespan of training: NS Components analyzed: L	Design: Qualitative Follow-up: N
Hindman et al., 2012 Journal: Early Education and Development Peer Review: Y Impact Factor: 1.504	Country: United States Sample size: 153 (INTV, CTRL - NS) Mean age: NS (3-4 y.o.) CC Type: Kindergarten	Training: INT Timespan of training: 9 months Components analyzed: RV	Design: Quantitative Follow-up: N
Nielsen et al., 2012 Journal: Journal of Education Peer Review: Y Impact Factor: NS	Country: United States Sample size: 22 (INTV, CTRL - NS) Mean age: NS CC Type: Kindergarten	Training: INT (Intensive reading + vocabulary training) Timespan of training: 12 weeks (30 min a day) Components analyzed: RV, EV, L, N	Design: Quantitative Follow-up: N
Zucker et al., 2013 Journal: Developmental psychology	Country: United States Sample size: 178 (INTV) Mean age: 52 (4.55) months (INTV) CC Type: Kindergarten	Training: INT Timespan of training: 30 weeks Components analyzed: RV, L, C, PA	Design: Longitudinal Follow-up: Y

Study Information	Sample Characteristics	Training / Components	Design
Peer Review: Y Impact Factor: 3.063			
Baker et al., 2013 Journal: The Elementary School Journal Peer Review: Y Impact Factor: 1.140	Country: United States Sample size: 122 (INTV), 103 (CTRL) Mean age: NS CC Type: Primary School	Training: INT Timespan of training: 19 weeks (at least 30 min for 4 days a week) Components analyzed: L, N	Design: Quantitative Follow-up: N
Evans & Saint-Aubin, 2013 Journal: Journal of Educational Psychology Peer Review: Y Impact Factor: 5.028	Country: France Sample size: 36 (INTV, CTRL - NS) Mean age: 56 months (INTV, CTRL - NS) CC Type: Kindergarten	Training: NS Timespan of training: NS Components analyzed: RV, L, LK	Design: Quantitative Follow-up: N
Farrant & Zubrick, 2013 Journal: First Language Peer Review: Y Impact Factor: 0.887	Country: Australia Sample size: 2369 (INTV, CTRL - NS) Mean age: 9.3 (2.5) months (INTV, CTRL - NS) CC Type: Home environment	Training: NS Timespan of training: NS Components analyzed: L, A	Design: Longitudinal Follow-up: N
Kotaman, 2013 Journal: Reading Improvement Peer Review: Y Impact Factor: NS	Country: Turkey Sample size: 40 (INTV, CTRL - NS) Mean age: 3.9 (1.2) y.o. (INTV, CTRL - NS) CC Type: Home environment	Training: INT Timespan of training: 7 weeks Components analyzed: RV	Design: Quantitative Follow-up: N
Kozminsky & Asher-Sadon, 2013 Journal: Interdisciplinary Journal of E-Learning and Learning Objects Peer Review: Y Impact Factor: NS	Country: Israel Sample size: 25 (INTV1), 25 (INTV2) Mean age: 5.49 (0.38) y.o. (INTV, CTRL - NS) CC Type: Kindergarten	Training: INT (e-book vs reading aloud) Timespan of training: 8 weeks (bi-weekly sessions - 30 min each) Components analyzed: RV, L, VIP, C, PK, PA, PRA, O	Design: Quantitative Follow-up: N
Silverman et al., 2013 Journal: Early Education and Development Peer Review: Y Impact Factor: 1.504	Country: United States Sample size: 91 (INTV1), 85 (INTV2) Mean age: 4.35 (0.59) y.o. (INTV1), 4.52 (0.58) y.o. (INTV2) CC Type: Kindergarten	Training: INT Timespan of training: 12 weeks Components analyzed: RV, L	Design: Quantitative Follow-up: N
Suggate et al., 2013 Journal: First Language Peer Review: Y Impact Factor: 0.887	Country: Germany Sample size: 20 (INTV1), 17 (INTV2) Mean age: 8,3 (4,64 months) y.o (INTV1), 10.2 (3,62 months) y.o (INTV2) CC Type: Primary School	Training: NON-INT (single session) Timespan of training: one session (reading aloud, storytelling and individual reading in silence) Components analyzed: RV, L, C	Design: Quantitative Follow-up: N
Damhuis et al., 2015 Journal: School Effectiveness and School Improvement Peer Review: Y Impact Factor: 1.367	Country: Netherlands Sample size: 33 (INTV1), 31 (INTV2), 30 (INTV3), 31 (CTRL) Mean age: 58.08 (3.50) months (INTV, CTRL - NS) CC Type: Kindergarten	Training: INT Timespan of training: 3 weeks Components analyzed: L, VD, VM	Design: Quantitative Follow-up: N
Hipfner-Boucher et al., 2014 Journal: First Language Peer Review: Y Impact Factor: 0.887	Country: United States Sample size: 89 (INTV, CTRL - NS) Mean age: 57.83 (6.52) months (INTV, CTRL - NS) CC Type: Kindergarten	Training: NON-INT (double session) Timespan of training: two sessions (30 min) Components analyzed: L, N, PA, VM, I	Design: Quantitative Follow-up: N
Hojnoski et al., 2014	Country: United States Sample size: 6 parent-child dyads	Training: INT Timespan of training: 10 weeks	Design: Pilot Study

Study Information	Sample Characteristics	Training / Components	Design
Journal: Early Education and Development Peer Review: Y Impact Factor: 1.504	(INTV) Mean age: 51.5 (12.2) months CC Type: Home environment	(train of mathematical language) Components analyzed: VIP, M	Follow-up: N
Holmes & Thompson, 2014 Journal: The Clearing House: A Journal of Educational Strategies, Issues and Ideas Peer Review: Y Impact Factor: NS	Country: United States Sample size: 60 (INTV, CTRL - NS) Mean age: NS (8-12 y.o.) CC Type: Primary School	Training: INT Timespan of training: 12 weeks (3 times a week for 60 min) Components analyzed: L	Design: Qualitative Follow-up: N
Liu, 2014 Journal: Early Education and Development Peer Review: Y Impact Factor: 1.504	Country: China Sample size: 22 (INTV) Mean age: 9.2 (1.9) months (T0), 5.25 (0.18) y.o. (T1) CC Type: Home environment	Training: NON-INT (double reading session) Timespan of training: two sessions Components analyzed: RV, EV	Design: Longitudinal Follow-up: N
Moore et al., 2014 Journal: Australian Journal of Learning Difficulties Peer Review: Y Impact Factor: 0.68	Country: Australia Sample size: 127 (INTV, CTRL - NS) Mean age: 73 months (68-82 months) (INTV, CTRL - NS) CC Type: Primary School	Training: INT Timespan of training: 18 weeks Components analyzed: RV, EV, L	Design: Quantitative Follow-up: N
Wasik & Hindman, 2014 Journal: Early Education and Development Peer Review: Y Impact Factor: 1.504	Country: United States Sample size: 268 (INTV), 187 (CTRL) Mean age: NS (4 y.o.) CC Type: Kindergarten	Training: INT Timespan of training: the whole school year Components analyzed: RV, VIP	Design: Quantitative Follow-up: N
Chao et al., 2015 Journal: Early Childhood Education Journal Peer Review: Y Impact Factor: 1.135	Country: United States Sample size: 56 (INTV1), 48 (INTV2) Mean age: NS (4-5 y.o.) CC Type: Kindergarten	Training: INT Timespan of training: 12 weeks Components analyzed: RV	Design: Quantitative Follow-up: N
Hadley et al., 2015 Journal: Reading Research Quarterly Peer Review: Y Impact Factor: 3.543	Country: United States Sample size: 240 (INTV, CTRL - NS) Mean age: NS (4-5 y.o.) CC Type: Kindergarten	Training: INT Timespan of training: 2 months Components analyzed: L	Design: Quantitative Follow-up: N
Kim et al., 2015 Journal: Child & Youth Care Forum Peer Review: Y Impact Factor: 1.355	Country: United States Sample size: 6050 (INTV) Mean age: 24.3 (1.1) months (T0), 52.3 (4.0) months (T1) CC Type: Kindergarten	Training: NS Timespan of training: NS Components analyzed: RV, EV, PK, PRA, LK, PA	Design: Longitudinal Follow-up: N
Salo et al., 2016 Journal: Journal of child language Peer Review: Y Impact Factor: 1.62	Country: United States Sample size: 69 dyads father-child (INTV) Mean age: 2.4 (0.25) y.o. CC Type: Home environment	Training: NON-INT (single session) Timespan of training: one session (reading aloud vs play) Components analyzed: L, VIP	Design: Quantitative Follow-up: N
Loftus-Rattan, 2016 Journal: The Elementary School Journal Peer Review: Y Impact Factor: 1.140	Country: United States Sample size: 25 (INTV, CTRL - NS) Mean age: NS (4-5.6 y.o) (INTV, CTRL - NS) CC Type: Kindergarten	Training: INT Timespan of training: 6 weeks (three different reading conditions: extended, embedded and incidental) Components analyzed: RV, EV, L	Design: Quantitative Follow-up: N
Makumbila & Rowland, 2016	Country: South Africa Sample size: 34 (INTV1), 38	Training: INT Timespan of training: 8 months	Design: Qualitative

Study Information	Sample Characteristics	Training / Components	Design
Journal: South African Journal of Childhood Education Peer Review: Y Impact Factor: NS	(INTV2), 40 (INTV3), 40 (INTV4) Mean age: NS (3rd grade children) CC Type: Primary School	Components analyzed: L, N, VIP, C	Follow-up: N
Marjanovic-Umek et al., 2017 Journal: Journal of child language Peer Review: Y Impact Factor: 1.62	Country: Slovenia Sample size: 51 (INTV) Mean age: 1.4 y.o. (T0), 2.7 (T1) CC Type: Home environment	Training: INT Timespan of training: 15 months Components analyzed: L, VIP	Design: Longitudinal Follow-up: N
Neuman et al., 2016 Journal: The Elementary School Journal Peer Review: Y Impact Factor: 1.140	Country: United States Sample size: 134 (INTV) 134 (CTRL) Mean age: 55.7 months (INTV), 56.31 months (CTRL) CC Type: Kindergarten	Training: INT Timespan of training: 12 weeks Components analyzed: RV, L, M	Design: Quantitative Follow-up: N
Van Druten-Frietman et al., 2016 Journal: Journal of Early Intervention Peer Review: Y Impact Factor: 0.932	Country: Netherlands Sample size: 324 (INTV), 359 (CTRL) Mean age: 4.8 (0.6) y.o. (INTV, CTRL - NS) CC Type: Kindergarten	Training: INT (training with aloud reading + activities) Timespan of training: 16 weeks Components analyzed: RV, EV, L, VD, PA	Design: Quantitative/ Longitudinal Follow-up: N
Barnes et al., 2017 Journal: The Journal of Educational Research Peer Review: Y Impact Factor: 1.400	Country: United States Sample size: 489 (INTV, CTRL - NS) Mean age: 4.6 y.o (INTV, CTRL - NS) CC Type: Kindergarten	Training: INT Timespan of training: the whole school year Components analyzed: RV, EV, I	Design: Quantitative Follow-up: N
Barnes & Dickinson, 2017 Journal: Early Education and Development Peer Review: Y Impact Factor: 1.504	Country: United States Sample size: 489 (INTV, CTRL - NS) Mean age: 4.6 y.o (4.0-5.2 y.o) (INTV, CTRL - NS) CC Type: Kindergarten	Training: INT Timespan of training: the whole school year Components analyzed: RV, EV, I	Design: Quantitative Follow-up: N
Kim, 2017 Journal: The Asia-Pacific Education Researcher Peer Review: Y Impact Factor: 1.121	Country: South korea Sample size: 25 (INTV1), 24 (INTV2), 23 (CTRL) Mean age: 75 months (INTV1), 74 months (INTV2), 75 months (CTRL) CC Type: Kindergarten	Training: INT Timespan of training: 7 weeks (15 activity sessions) Components analyzed: RV, EV	Design: Quantitative Follow-up: N
Okyay & Kandir, 2017 Journal: European Journal of Educational Research Peer Review: Y Impact Factor: NS	Country: Turkey Sample size: 26 (INTV), 26 (CTRL) Mean age: NS (48-72 months) CC Type: Kindergarten	Training: INT Timespan of training: 8 weeks Components analyzed: RV, EV	Design: Quantitative Follow-up: Y
Rumbaugh & Landau, 2017 Journal: Reading Psychology Peer Review: Y Impact Factor: 1.04	Country: United States Sample size: 57 (INTV) (24 completed the recognition memory test, 33 completed the recall memory test) Mean Age: NS (18-22 y.o.) CC Type: University	Training: NON-INT (single session) Timespan of training: one session Components analyzed: L, VM	Design: Quantitative Follow-up: N
Tompkins et al., 2017 Journal: Reading Research Quarterly Peer Review: Y	Country: United States Sample size: 49 (INTV) Mean age: 4.47 (0.48) y.o. CC Type: Home environment	Training: NON-INT Timespan of training: NS (occasional mother-child readings) Components analyzed: RV, VIP	Design: Quantitative Follow-up: N

Study Information	Sample Characteristics	Training / Components	Design
Impact Factor: 3.543			
Zhang et al., 2018 Journal: Reading Research Quarterly Peer Review: Y Impact Factor: 3.543	Country: China Sample size: 147 (INTV, CTRL - NS) Mean age: 72.18 (3.91) months (INTV, CTRL - NS) CC Type: Home environment	Training: NON-INT (double reading session) Timespan of training: 2 weeks Components analyzed: RV, EV, L, I	Design: Quantitative Follow-up: N
Zhou & Yadav, 2017 Journal: Educational Technology Research and Development Peer Review: Y Impact Factor: 2.303	Country: United States Sample size: 72 (INTV1, INTV2, INTV3, INTV4 - NS) Mean age: 4.4 (0.43) y.o. (INTV1, INTV2, INTV3, INTV4 - NS) CC Type: Kindergarten	Training: NON-INT (double reading session) Timespan of training: 2 weeks Components analyzed: L, C	Design: Quantitative Follow-up: N
Hadley et al., 2018 Journal: Reading Research Quarterly Peer Review: Y Impact Factor: 3.543	Country: United States Sample size: 30 (INTV) Mean age: 59.6 (3.1) months CC Type: Kindergarten	Training: INT (reading + play training) Timespan of training: NS Components analyzed: L, VD	Design: Quantitative (within subject design) Follow-up: N
Ionescu & Ilie, 2018 Journal: Early Child Development and Care Peer Review: Y Impact Factor: 0.968	Country: Romania Sample size: 14 (INTV1), 11(INTV2) Mean age: 4.9 y.o. (4.5-5.4 y.o.) (INTV1), 4.9 y.o. (4.5-5.4 y.o.) (INTV2) CC Type: Kindergarten	Training: NON-INT (single reading session) Timespan of training: one session Components analyzed: L, N	Design: Quantitative Follow-up: N
Lenhart et al., 2018 (first - second study) Journal: Educational Psychology Peer Review: Y Impact Factor: 1.586	Country: Germany Sample size: 83 (INTV) Mean age: 57.11 months CC Type: Kindergarten	Training: NON-INT (Single read aloud vs. storytelling) Timespan of training: one session Components analyzed: RV, L, VIP, C, VM, A	Design: Quantitative Follow-up: Y
	Country: Germany Sample size: 24 (INTV1), 24 (INTV2) Mean age: 46.33 (4.04) months (INTV1), 72.83 (4.79) months (INTV2) CC Type: Kindergarten	Training: NON-INT (Single read aloud vs. storytelling) Timespan of training: one session Components analyzed: RV, L, VIP, C, VM, A	Design: Quantitative Follow-up: Y
Nevo & Vaknin-Nusbaum, 2018 Journal: Reading Psychology Peer Review: Y Impact Factor: 1.04	Country: Israel Sample size: 34 (INTV1), 34 (INTV2) Mean age: 5.47 (0.67) y.o. (INTV1, INTV2 - NS) CC Type: Kindergarten	Training: INT (reading aloud training) Timespan of training: 4 months Components analyzed: RV, EV, M, C, PK, PA	Design: Quantitative Follow-up: N
Cabell et al., 2019 Journal: Early Education and Development Peer Review: Y Impact Factor: 1.504	Country: United States Sample size: 417 (INTV) Mean age: 4.25 (0.45) years CC Type: Kindergarten	Training: NON-INT (single reading session) Timespan of training: one session Components analyzed: RV, EV, L, PK, PA	Design: Quantitative Follow-up: N
Dickinson et al., 2019 Journal: Journal of Cognition and Development Peer Review: Y	Country: United States Sample size: 129 (INTV1), 81 (INTV2) Mean age: 4.4 years (pre-test), 4.9 years (post-test)	Training: INT (reading aloud+play vs reading aloud only) Timespan of training: 12 weeks Components analyzed: RV, EV, L	Design: Quantitative Follow-up: Y

Study Information	Sample Characteristics	Training / Components	Design
Impact Factor: 1.869	CC Type: Kindergarten		
Hadley & Dickinson, 2019 Journal: Journal of child language Peer Review: Y Impact Factor: 1.62	Country: United States Sample size: 30 (INTV) Mean age: 4.11 (3.1) months CC Type: Kindergarten	Training: INT (intensive reading + structured play activities) Timespan of training: 2 months, 4 times a week Components analyzed: RV	Design: Quantitative Follow-up: N
Janssen et al., 2019 Journal: Early Education and Development Peer Review: Y Impact Factor: 1.504	Country: Netherlands Sample size: 41 (INTV1), 44 (INTV2) Mean age: 58 (7,12) months (INTV1), 59 (6,33) months (INTV2) CC Type: Kindergarten	Training: INT Timespan of training: 4 weeks (September- November) Components analyzed: RV, L, VD, LK, PA	Design: Quantitative Follow-up: N
Lenhart et al., 2019 Journal: Journal of Research in Childhood Education Peer Review: Y Impact Factor: 0.73	Country: United States Sample size: 18 (INTV, CTRL - NS) Mean age: 52.7 months (INTV, CTRL - NS) CC Type: Kindergarten	Training: INT Timespan of training: 8 weeks Components analyzed: RV, EV, L	Design: Quantitative (Within subject) Follow-up: Y
Wright & Dunsmuir, 2019 Journal: Reading & Writing Quarterly Peer Review: Y Impact Factor: 0.838	Country: UK Sample size: 62 (INTV1), 79 (INTV2), 53 (CTRL) Mean Age: NS (6-7 y.o.) CC Type: Primary school	Training: INT (reading books vs storytelling) Timespan of training: 10 weeks (4 days a week) Components analyzed: N, L	Design: Quantitative Follow-up: Y

Note. A= Attention, C= Comprehension, EV= Expressive vocabulary, I= Intelligence, L= Lexicon, LK= Letter knowledge, M= Mathematical and scientific language, N= Narrative production, O= Orthographic awareness PA= Phonological awareness, PK= Print knowledge, PRA= Print awareness, RV= Receptive vocabulary, VD= Vocabulary depth, VIP= Verbal interaction and participation, VM= Verbal memory. NS= Not specified, INTV= Intervention Group, CTRL= Control/Comparison Group, Y= Yes, N= No, INT= Intensive, NON-INT= Non intensive