Theory and Practice of Second Language Acquisition
vol. 11 (2), 2025, pp. 1/24
https://doi.org/10.31261/TAPSLA.18499

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Intervention and Transfer Effects in Reading Interventions for Second Language Students: A Systematic Scoping Review

Abstract

This review presents findings from reading intervention studies of L2 students, with a particular focus on: students learning a second language other than English, students learning English who have first languages other than Spanish, and intervention studies which address the issue of transfer of gains made in one language to outcomes in another. Twenty-two studies conducted between 2008 and 2023 with learners of school age were identified using the PICOS and PRISMA Flow Diagram procedures. A clear implication from this review is that intervention studies concerning learning to read in a second language remain a relatively under-researched area which is dominated by studies on learning to read in English. The studies identified in this review suggest that, regardless of the learners' L1, additional small-group or in-class programs targeting phonological awareness, letter-sound correspondence, and word decoding can produce accelerated and sustained gains in L2 reading, in comparison to "treatment as usual." Relatively little evidence is available about interventions for older students learning to read in different first languages or about interventions to improve comprehension. Mixed evidence was found concerning the transfer of training effects from one language to another, with typically higher effects for phonological awareness, and letter-sound knowledge compared to comprehension. The finding that reading skills, especially phonological awareness, and letter-sound knowledge, can transfer from one language to another has important implications for policy and practice. We discuss the challenges of attempting to synthesize studies in this area and identify practical implications.

Keywords: word decoding, reading comprehension, second language, transfer, intervention

Reading Interventions in a Second Language

This review concerns the question of how to best teach students who are learning to read in a second language at school and has a focus on intervention studies which seek to measure the effectiveness of different methods. The literature on students with Spanish as a first language who are learning English in school is extensive and will be summarized later, but less is known about those who have other first and second language combinations. Therefore, this scoping review looks to see what evidence is emerging regarding interventions for learning to read with different first and second language combinations and considers, in particular, the issue of cross-language transfer effects.

Although there are issues in data collection, there is an accepted view that between 50% and 70% of the world's population are bilingual, defined as those who use two or more languages in their everyday lives (Grosjean, 2021). In the USA, 23% of the population are thought to speak another language at home as well as to be proficient in English (ACS, 2018; Grosjean, 2021) and figures given by Eurostat for 2016 show that 24,8% of the working population in Europe know a second language to a proficient level. Finding effective methods for L2 reading teaching has become important in many countries because of recent new arrivals (including refugees and asylum-seekers) and because of the greater number of children born to families where the home language is different from the language used in the school.

The focus of our review is on interventions to improve reading; we are not concerned with second language learning in general, although there is an overlap and some reading interventions look at outcomes in spoken as well as written language skills. A second language (L2) is defined here as one that differs from the main language spoken at home (L1), and in this review, we are concerned with situations where that second language is also the language of instruction in school, as is the situation for newly-arrived students. Frequently used terms for these learners are Language Minority (LM), second language learners, additional language learners, emergent bilingual or dual language learners. Studies which look at foreign language learning as a subject in school are not included in this review. It must be acknowledged that there are issues in determining L1 and L2 status. For example, some children grow up with parents who have different first languages both of which may be used at home; and a third language may be used in school and with their peer group. Similarly, if children are exposed to bilingual education in schools and two languages at home, it can be difficult to determine which is their L1 and which is their L2. Our practice in this review is to follow the definitions used by the authors and in most cases use the term L2 learners.

Reading According to 'The Simple View of Reading'

The Simple View of Reading (SVR) was first described by Gough and Tunmer (1986) and Hoover and Gough (1990) and has remained an influential and useful framework in studies of reading with both first and second language learners (Garcia & Cain, 2014; Duke & Cartwright, 2021; Nation, 2019; Verhoeven & van Leeuwe, 2012). The SVR sees reading comprehension as being determined by two components: decoding and linguistic comprehension which combine in a multiplicative way. This means that if either factor is zero, then the product, that is, the overall reading comprehension will be zero. Decoding refers to the identification of words through letter-to-sound conversion or sight recognition, while linguistic comprehension encompasses understanding the meaning of the words, sentences, and the overall text. Extensions to the SVR have been proposed reflecting the need to consider additional factors such as topic interest, reading strategy use, and working memory (Castles, Rastle, & Nation, 2018; Duke & Cartwright, 2021). Duke and Cartwright (2021) describe an Active View of Reading model where word decoding and reading comprehension overlap in what they term bridging processes that include morphological awareness and print concepts. Research within the context of the SVR has supported the view that decoding skills are the more limiting factor in the early stages of reading development, but that later development of reading comprehension depends more on language comprehension skills (Hoover & Gough, 1990; Lervåg, Hulme, & Melby-Lervåg, 2018; Lonigan, Burgess, & Schatschneider, 2018).

The term decoding in the SVR refers to both recoding from a print-based form to a sound-based form and recoding from a print form to a meaning-based form. These two alternatives are sometimes referred to as letter-sound decoding and sight-word recognition and form the basis of the well-known dual-route model of (single word) reading and variations on this (e.g., Castles & Coltheart, 2004). Models of the development of single word reading skills in English propose that learners move through phases where their relative reliance on sight-word recognition and letter-to-sound decoding processes varies (Ehri, 1991). Likewise, the reliance on these two kinds of processes varies in different languages with letter-sound decoding processes playing a more prominent role in alphabetic languages. The Orthographic Depth Hypothesis (Katz & Frost, 1992) proposes that, in an alphabetic script, it is easier to read in a shallower, or more transparent orthography, where the relationship between printed letters and sounds is more consistent, compared to a deeper one. Thus, for alphabetic scripts, the ease of learning to read is affected by both the transparency and the structure of the language (Seymour, Aro, & Erskine, 2003; Devonshire, Morris, & Fluck, 2013). English is considered to be a language with deep orthography, and many words have to be learned "by sight." Spanish, like Italian and Finnish,

has a more transparent script and a more regular syllabic structure, and Swedish is intermediate (Seymour et al., 2003).

Cross-Language Influence in Reading

Gottardo, Chen, and Huo (2021) have reviewed evidence on cross-language influence in reading and language development. This is often interpreted in terms of the Developmental Interdependence Hypothesis (Cummins, 1979) which proposes that language proficiency in L1 can support the development of L2 and vice versa. The formulations of this hypothesis have been reworked and updated over the years, but the theory remains relevant (Cummins, 2021). The Linguistic Interdependent Hypothesis (Cummins, 1981; 2021) proposes that experience with one language leads to the development of Common Underlying Linguistic Proficiencies which can be applied to a second language once proficiency in the first language has reached a certain level. Thus, L2 students have additional influences on their learning related to their proficiency in their first language (August & Shanahan, 2006), and these influences can also be reciprocal. Koda (2008) proposed that cross-language facilitation occurs because of the development of metalinguistic awareness, especially in terms of phonology and morphology. In line with this, the potential for cross-language influences is likely to vary depending on the similarity between languages in terms the script, orthographic depth, and syllabic structure (Chung, Chen, & Geva, 2019; Katz & Frost, 1992; Koda, 2008; Melby-Lervåg & Lervåg, 2011).

As well as possible differences due to the nature of the language being learned, there are likely to be differences depending on the learners' existing knowledge and skills in both spoken and written language. Thus, older students with well-established first language vocabulary or well-established L1 reading skills may show different transfer effects in comparison to younger learners whose first language skills are continuing to develop, perhaps only slightly ahead of their second language skills. Cummins proposed that relatively well-developed L1 knowledge is necessary for there to be transfer effects, but there is a possibility of transfer (and interactive effects) for younger learners, as a number of cross-language correlational studies have shown (see Melby-Lervåg & Lervåg, 2011). Furthermore, Goodrich and Lonigan (2017) have shown in a cross-language analysis that code-based skills such as phonological awareness and print knowledge tended to be language-independent, whereas other linguistic skills related to vocabulary and comprehension tended to be language-specific and thus not transferable. Lipka et al. (2005) point out that even if the writing systems are the same, the opportunities for transfer may vary. For example, if a student has experience with a more transparent orthography with predictable grapheme-phoneme correspondences in the first language, this

may give opportunities for positive transfer to a language with a more opaque orthography such as English.

Reading Interventions for L2 Students

The evidence base concerning reading interventions in an L2 is more limited than that for L1 students, but evidence of effective practice has been developing, and a number of meta-analyses and best-practice reviews have been published in recent years. These, however, are almost exclusively concerned with those learning English who have Spanish as their first language. The main findings from these reviews will be presented below to provide context for later comparison and to identify potential research gaps.

On the whole, there is good evidence for the effectiveness of interventions focusing on foundation skills and less consistent evidence concerning outcomes in reading and listening comprehension. For example, Ludwig, Guo, and Georgiou (2019) presented findings from 26 intervention studies and found large effects on reading accuracy outcomes, large effects on reading fluency outcomes, and moderate effects on reading comprehension outcomes. In a recent meta-analysis, Murphy Odo (2021) looked at studies that targeted either word reading or pseudoword (nonword) reading in English as L2. Overall, phonological awareness and phonics instruction had a moderate effect on L2 word reading and a large effect on pseudo-word reading, and effect sizes were generally similar for participants with alphabetic and logographic L1 writing systems.

A number of reviews have looked in particular at the evidence for the effectiveness of reading interventions for English language learners who have been identified as having or being at risk of having reading difficulties. Solari et al. (2022) looked at the effects of reading interventions in grades K-5 and found moderate effect sizes for a range of outcomes. In line with this, Roberts et al. (2022) found moderate effect sizes for foundation skills for interventions given to students in grades K-3. Similar conclusions were drawn by Richards-Tutor, Baker, Gersten, Baker, and Smith (2016) who found moderate-to-large effect sizes for interventions targeting beginning reading skills or reading comprehension.

The issues of differences due to the types of interventions and the age of the learners have been addressed in a number of reviews. Graham, Silva, and Restrepo (2022) found small effects on reading outcomes across all grades from preschool to grade 12, however, there was variability in effects associated with type and duration of the interventions. Hall, Steinle, and Vaughn (2019) presented findings from four research syntheses including interventions in Grades 1 to 8 (August & Siegel, 2006; Klinger et al., 2006; Rivera et al., 2009; Richards-Tutor et al., 2016). They found consistent evidence for the effectiveness

of multiple-component interventions, which included phonological awareness and phonics instruction. However, again, studies varied considerably in terms of the research designs and populations studied which made generalization challenging. The authors concluded that there is a need for future research which provides more detail about the participants, and which considers how interventions target students' individual needs in multitiered systems of support. They also called for more studies of interventions to improve reading comprehension. Rivera, Moughamian, Lesaux, and Francis (2009) also recommend that interventions for students in Grades K to 12 should address multiple components of reading including phonological awareness, phonics, reading fluency, academic vocabulary, and comprehension. Cheung and Slavin (2012) looked at the effects of different interventions for Spanish-dominant English language learners in Elementary schools and found positive effects in favor of students who were taught reading in bilingual classes compared to English immersion classes, although the effect size was modest when comparing to monolingual programs.

Consistent with Hall et al. (2019), Ludwig et al. (2019) highlight the problem of heterogeneity of participants and intervention components when attempting to synthesize studies. In addition, Hall et al. (2019) recommended that future studies should focus on the role of transfer from one language to another and focus on participants learning a second language other than English, or those learning English with a first language other than Spanish. Gottardo et al. (2021) also call for more research on transfer with different L1 and L2 combinations.

Aim and Research Questions

In this review, the aim is to explore some of the abovementioned research gaps and focus in particular on what is known about learning to read with different combinations of first and second languages, and what is known about the effects of interventions in one language on outcomes in another language. The study uses a scoping review methodology to address the following main questions:

RQ 1: What is the evidence concerning reading interventions for L2 students at school age in different second languages, and what evidence is available about the relevance of different first languages?

RQ2: What evidence may be found about the transfer of gains made in one language to improved outcomes in another?

Method

This review is a scoping review rather than a meta-analysis. A scoping review aims to identify and synthesize evidence and knowledge systematically

and summarize results with the main aim of giving an overview of what has been published in a topic area or in a field. The scoping review also aims to map concepts, types of evidence, and gaps in research through a systematic search, selection, and synthesis of existing knowledge (Lookwood & Tricco, 2020). A scoping review can include studies with various designs and make use of search protocols in an iterative fashion (Gough, Oliver, & Thomas, 2017).

For the current review, a systematic search was done using the PRISMA flow chart method (PRISMA, 2020) for the identification, screening, and selection of articles (see Figure 1). Three well-known and reliable databases were chosen because of their access to research in the fields of education, psychology, second language acquisition, and related disciplines. The databases were ERIC (Educational Resource Information Center), LLBA (Linguistics & Language Behavior Abstracts), and the American Psychological Association's Psych Info (covering behavioral science and mental health).

The search process was developed over a number of iterations and updated in response to feedback from the first draft of this paper. Two main searches were done, beginning with one on the 22nd of May 2022 and supplemented by an updated search which looked at more recent studies (up to September 30th, 2023), and which broadened the criteria to include interventions that addressed any aspect of reading. Finally, this broader search was used to look again at earlier publications but was limited to those done after 2008. This final search was conducted separately for each of the three databases utilizing the thesaurus (keyword) and filter functions specific to each database.

The search string was developed from three clusters of concepts. One cluster was associated with interventions using search words "intervention," OR "instruction," OR "enhance," OR "develop," OR "teaching," OR "training." A second cluster concerned reading processes with search words "decoding," OR "word decoding," OR "word recognition," OR "reading accuracy," OR "orthography," OR "phonics," OR "letter/sound," OR "phoneme/grapheme" OR "reading comprehension," OR "vocabulary," OR "morphology." The third concerned second language learning: "second language," OR "L2," OR "second language acquisition," OR "multilanguage." Conjugations and plural forms of the search words were also included when possible. The searches were limited to articles written in English.

Screening

The searches retrieved 6538 records, as shown in the PRISMA flow chart (PRISMA, 2020) (see Figure 1). From this stage, the online resource Rayyan (2023) was used to facilitate the screening process. Rayyan helps to find duplicates and to collaborate between researchers, to organize and mark the

articles in a systematic manner independent of each other. 901 of the articles were found to be duplicates, which left a total of 5637 articles. Ten additional studies that met the inclusion criteria were identified when reading the articles retrieved through the searches and nine additional intervention studies which met our PICOS inclusion criteria were discovered in the reference lists of two previous reviews (Hall et al., 2019; Ludwig et al., 2019).

Inclusion and Exclusion Criteria

As a tool for the selection of the articles in the review, the PICOS (Population, Intervention, Control, Outcome, and Study Design) was used (see Table 1). The selected population (Criteria P) was students up to 18 years old, and students with any L1 and L2 languages were included. Studies with Spanish L1 and English L2 were identified but not included in the final selection unless they explicitly addressed the question of cross-language effects. There was no explicit focus on 'at risk' students or students not making the expected progress in reading, although, since there was a focus on intervention studies, it can be expected that many of the participants had been included in the interventions because they were not making the expected progress. In terms of the nature of the intervention (Criteria I) the focus of the review was on studies targeting word decoding or reading comprehension, or both, in a second language. In terms of comparisons and study designs (Criteria C & S) RCT studies, quasi-experimental studies, with or without control or comparison groups, and single-subject studies were included. Study designs excluded were longitudinal, prediction studies or cross-sectional studies, and follow-up studies. Outcomes (Criteria O) related to any aspect of reading were considered. We kept the criteria for reading as broad as possible at this stage due to the complexity of reading outcomes in the studies and then filtered the studies by hand. We excluded studies that did not have an outcome related to reading for example handwriting, pronunciation, or attention. The context was limited to school contexts, other contexts were excluded (e.g., training at home with parents).

Our review only looked at studies where the student's home language was different from the school language, and where the school language was the main or one of the languages in the country where the school was situated. This was summarized as "learning to read in L2 in an L2 context," but it must be acknowledged that in many countries the context is multilingual and that many learners use more than one language at home. Studies of those learning a "foreign language" as a school subject were not included in this review.

Following abstract screening, 429 articles appeared to meet the PICOS criteria (see Table 1), and after full text reading a final set of 22 articles was judged to meet the criteria for inclusion. The main reasons for exclusion at this

final stage included: (a) the wrong population or context (e.g., intervention studies with those learning a second language as a foreign language); (b) the wrong outcome (e.g., measures of oral language not reading); (c) limited time or scope of the intervention (e.g., training over just one week, or just use of text-enhancement or support).

Methods of Analysis

The selected intervention studies were examined using a thematic analysis (Braun & Clarke, 2006). The final selection of studies was reviewed a second time and the data was extracted and coded under 18 headlines: Author, Year, Title, Aim, Theory, Hypothesis, Type of study, Group conditions, Participants, Comparison/control group, Age, Country, L1 and L2. The initial coding of data was done by the first author of this article, and the second author checked the data during the analysis and writing process. The methods for assessing outcomes and the terms for defining the types of interventions were developed as part of the analysis process.

Results

An overview of the 22 articles is presented in Table 2, which lists the authors, participants' age, the country, first and second languages, main findings, and an indication of the themes under which the studies are presented in the following sections of this review.

Themes

Presentation of the results from the current study was grouped around three main themes, based on the needs and research gaps identified from previous reviews.

1. Participants learning a second language other than English.
2. Participants learning English with a first language other than Spanish.
3. Interventions which address the issue of transfer of gains made in one language to improve outcomes in another.

The main themes are indicated in a column of Table 2.

Overview of Identified Studies

Twelve different countries were represented and most studies (17) involved students in kindergarten to third grade. Relatively few interventions (5) focused on older students (grade 6 and above) and those studies often involved learners who had been identified as dyslexic or as experiencing severe difficulties in learning to read. A finding to note already is the relative scarcity of intervention studies with older second language students.

Ten studies involved participants learning to read in a second language other than English. We identified 20 studies where participants were learning English as L2 but did not have Spanish as their first language. Nine studies explicitly addressed the question of transfer.

Theme 1—Participants Learning a Second Language Other than English

Five of the studies in this section involved students learning to read in German as a second language, Norwegian was the second language in one study, and French in another. In three further studies, participants were learning to read English as L2 in addition to another language: one study had German and English as L2, one study had French and English as L2, and one study had Kiswahili and English as L2. This finding answers our research question which asks whether there is a body of evidence concerning reading interventions for learning languages other than English. The answer is that, according to our research, a very limited amount of evidence can be found. The main features of the interventions and the main findings from those studies that were identified are presented in Table 2.

In most of the studies with students learning German as L2, the students had a variety of first languages. Bar-Kochva and Hasselhorn (2017) studied students in 5th and 6th grade who were newly arrived in Germany from 12 different countries; Seifert, Schwab, and Gasteiger-Klicpera (2014) studied a similarly mixed, but younger group of students amongst whom there were 25 different first languages. In the study by Schwab, Seifert, and Gasteiger-Klicpera (2014) 18 different languages were spoken amongst the second language students. Sperling, Barwasser, and Grünke (2019) used a multiple baseline methodology to study the progress of three students learning German who had Romanian (2) or Persian (1) as their L1s. In the single study where Norwegian was the second language (Bratlie, Gustafsson, & Torkildsen, 2021), many different home languages were recorded, although 69% of these L2 students were noted to use Norwegian regularly at home, and 72% of parents reported that their child was equally or more proficient in Norwegian compared to their minority language. Pfenninger (2015) studied students whose first language was Swiss German, who were learning German as L2 and English as L3. A final study in this

section looked at the effects of an interactive reading intervention in kindergarten classes in French-speaking Belgium for language minority students (Thomas, Colin, & Leybaert, 2020).

Table 2 presents the main findings from studies within this first theme: students learning to read in a second language other than English. There are broadly positive results from the interventions which ranged from app-based learning, and interactive reading, to multi-component language and reading interventions. Only the Seifert et al. (2014) study failed to show intervention effects at the word level in comprehension and in nonword reading. Where comparisons were made (Schwab et al., 2014; Bratlie et al., 2021), differences between those learning in a second or first language were not seen.

Theme 2—Participants Learning English with a First Language Other than Spanish

Turning to our second research question, we identified 20 studies where participants were learning English as L2 but did not have Spanish as their first language. As was the case in theme 1, the majority of these studies (13) involved students with a range of first languages including four studies where there were over 20 different first languages. There were two studies where the first language was Kiswahili, and one study for: Chinese, Arabic, Malay, Vietnamese, Korean, Hindi, and Zulu. Given this wide variation, it is not possible to attempt a synthesis or further analysis, but we shall highlight some key findings. The main features of the studies and their findings are shown in Table 2.

Lipka and Siegel (2010) examined the development of literacy skills, using a Response to Intervention (RTI) model with 530 L1 and 92 L2 English language students in which over 33 different first languages were represented (Cantonese, Mandarin, Korean, Farsi, and Spanish the most frequent). An interesting finding in this study was that dual language students had some advantages which mitigated risks of reading difficulties in the longer term, highlighting the important point that dual language status itself should not be seen as a risk factor. Lovett et al. (2008) looked at struggling readers who were either learning English as their first language or their second language (there were nine different first languages). The intervention group outperformed the control group in reading outcomes, and in the rate of growth, and, as in Lipka and Siegel's (2020) study, no differences in response were found between the L1 and L2 groups. Interestingly, oral language predicted the outcomes as well as the rate of reading growth during the intervention, with greater growth being made by those with greater language impairment. In contrast, in Vadasy and Sanders' (2011) study better response to intervention was associated with better initial levels of vocabulary and word reading in the L2 group. Likewise in the study by Vadasy,

Sanders, and Nelson (2015) better progress was made by those students with better vocabulary at the outset.

Dussling (2018) reported findings from a preliminary single-subject design study using a systematic phonological awareness and phonics-based instruction with five participants who had different first languages. All students showed improvements over the 32 intervention sessions in word reading and phoneme segmentation. It was concluded that the key components of reading recommended by the National Literacy Panel (2006) can be effective with non-Spanish speaking English language learners. Jamaludin, Alias, Mohd Khir, DeWitt, and Kenayathula (2016) conducted an intervention with students with Malay as their first language who were learning English in a bilingual (English/Malay) school context, and a second study with Malay-English bilingual readers was reported by Zhang (2016). Significant effects of the interventions were seen in both cases.

In summary, the studies in this group provide positive evidence that the same kinds of interventions that have been shown to be effective for English Language students with Spanish as a first language are also effective for those with other first languages. Where comparisons were made between L2 and L1 students receiving the same interventions, generally similar results were found. An exception to this was the Vadasy and Sanders (2011) study where L1 students tended to make greater gains, although the L2 students showed more progress in phonological awareness but less progress in passage reading fluency compared to the L1 students.

Theme 3—Interventions which Address the Issue of Transfer of Gains Made in One Language to Improved Outcomes in Another

We turn next to studies that focus on the effects of training in one language on outcomes in another. In total, nine of the studies identified in our search have addressed this question.

Kim and Piper (2019) report on a randomized controlled study of students in Grades 1–2 in Kenya spoke a range of different first languages. In Kenya, children are expected to learn the two official languages, Kiswahili and English, as well as their first language, of which there are many. In addition to showing the positive effects of the intervention, the study found that students who had received explicit reading instruction in Kiswahili showed transfer to outcome measures in English. Wawire and Kim (2018) also found evidence of transfer in a randomized control study involving 322 first-grade multilingual students in Kenya, although their results were less consistent. Piper, Bulat, and Johnston (2015) reported transfer effects from an intervention in English to outcomes in Kishwali. Finally, in this section, Pfenninger (2015) found significant gains in both L2 German and L3 English from

an intervention delivered in English, showing that training in one language (L3 in this case) can have benefits for another language (here L2).

Turning back to L1 Spanish speakers learning L2 English, it is interesting to look at the study by Vaughn et al. (2006) where students took part in an intervention in either English or Spanish, and outcomes were measured in both languages (see Table 2). Transfer effects were seen for students in the Spanish intervention group who outperformed students in the comparison group on English as well as Spanish outcome measures. This pattern was not, however, seen in the English study where the intervention and comparison groups differed on English but not Spanish outcome measures. A study by Gonzalez and Hughs (2021) used a phonics-based intervention delivered in Spanish and examined its effects on both Spanish and English outcomes. This was a small-scale study, but transfer effects were detected, with significant increases in both Spanish phonics (letter-sound decoding) and English phonics. Gains in comprehension were not significant, though there was improvement, especially on the Spanish measures.

Abu-Rabia, Shakkour and Siegel (2013) discussed a different kind of transfer which they termed Cognitive Retroactive Transfer in which gains from instruction in L2 translate back to gains in L1. Their paper includes multiple comparisons with no significance level correction and no direct testing of differential gains. Nevertheless, the main finding, based on an overall score for English language skills, shows a clear advantage for the intervention group (as expected) but also a significant gain on an overall measure of Arabic language skills, whereas no such gain (in Arabic) is seen in the comparison group. A later study by Feder and Abu-Raiba (2020) extended the Abu-Raiba et al. (2013) study, using a similar intervention program for L1 Hebrew students learning L2 English. Significant gains were made by the intervention group in both English and Hebrew language skills, despite the intervention being only in English.

Chung et al. (2021) examined the impact of a reading program in Chinese and English in Hong Kong with 99 Chinese L1 kindergarten students (third year) learning English as L2. The intervention group outperformed the comparison group on measures of Chinese phonological awareness and morphological awareness, and also on measures of English phonological awareness, vocabulary knowledge, and English word reading. This is a similar finding to that obtained by Zhang (2016) where despite the intervention being in English, there were also significant treatment effects on two of the three measures of morphological awareness in Malay and on word reading in Malay.

In summary, the studies identified under this theme show that training in one language can influence development in another, although outcomes are mixed. Effects were seen particularly on outcomes measuring phonological awareness and letter-sound knowledge. There is evidence to suggest that

transfer may occur more easily from a language with a more transparent orthography to a language with a less transparent orthography (Vaughn et al., 2006).

Discussion

The objective of this review was to identify reading intervention studies of L2 students, from kindergarten to the end of compulsory school, and to describe and summarize their findings. We had a particular interest in identifying studies that concerned interventions in a second language other than Spanish as L1 and English as L2, studies that looked at possible influences of different first languages, and studies which addressed the issue of transfer of gains made in one language to outcomes in another.

Interventions in Other Languages than Spanish as L1 and English as L2

The present review showed that there is an emerging body of evidence from studies of learning German as an L2 but, as yet, no conclusions can be drawn about differences compared to English. The results from these studies are not entirely consistent, with some evidence for the benefits of morphological awareness training and weak evidence about training in comprehension. We also found an emerging body of evidence about interventions for those learning English who had a range of first languages, it was not possible to group these studies in any way; the largest number of studies included L2 student groups in which very many first languages were represented. We found very limited evidence about students with Chinese L1 learning English in an English language environment although we excluded many studies of Chinese students (also of Arabic students) who were learning English as a foreign language, for example, as a school subject. There is scope for a further review of these studies which may provide indications of specific factors that are relevant for non-alphabetic languages for example.

Intervention in one Language and Outcomes in Another

In accordance with the Linguistic Interdependence Hypothesis (Cummins, 1979; 2021), our review strengthens the conclusion that training in reading skills in one language, whether it is L1 or L2, can be transferred to other languages, although the evidence here is not strong. It appears that gains in phonological

awareness and letter-sound knowledge were more readily transferred from one language to another and that training in a language with a more transparent orthography (e.g., Spanish) may transfer more readily to a language with less transparent orthography (English) than vice-versa (Vaughn et al., 2006). Evidence for transfer effects from training in reading comprehension is more uncertain. The mixed results regarding the transfer of reading comprehension could be explained by the Common Underlying Proficiency theory (Cummins, 1981; 2021) and the notion that transfer occurs most readily when exposure to a second language is sufficient. It could also be the case that comprehension is more language-specific and therefore less subject to transfer, as suggested by Goodrich and Lonnigan (2018). Furthermore, it seems to be the case that comprehension may be generally more difficult to improve through interventions. In a previous comprehensive review, Hall et al. (2019) concluded that there was evidence for clear benefits from interventions with phonological awareness, phonics instruction, and word decoding instruction, but evidence for the effectiveness of interventions targeting reading comprehension and vocabulary was more limited. The studies in the present review are in line with these conclusions, even though different combinations of first and second languages were involved. In the present review, we have found more evidence of effective interventions that target vocabulary and, especially, morphology. One likely reason for this is that morphological awareness is more important in languages such as German, Malay, and Norwegian when compared to English, and therefore, reading interventions for both first and second language students are more likely to include a focus on this.

Details about Language Levels for L2 Students and Intervention Matched to Individual Needs

Previous reviews have called for studies to provide more details about the language levels of participants and to describe how interventions target the individual needs of participants (Richards-Tutor et al., 2016). Rivera et al. (2009) and Hall et al. (2019) also emphasized the importance of assessment and monitoring, for example, through Response to Intervention (RTI). In the present review, we see more evidence of studies taking a more individualized approach through, for example, the RTI Model, and an encouraging finding is that early intervention reduces the likelihood of longer-term reading problems for both first and second language students.

Design of Future Intervention Studies and the Importance of Defining Selection Criteria

In previous reviews of L1 Spanish students learning to read L2 English, differences in average effect sizes have been reported. Ludwig et al.'s (2019) meta-analysis showed large effect sizes for reading accuracy and reading fluency, and moderate effect sizes for reading comprehension, and, in general, stronger intervention effects were obtained compared to those reported by Richards-Tutor et al. (2016). Ludwig et al. hypothesized that differences might relate to different study-selection criteria and to differing definitions of risk/difficulty status. Roberts et al. (2022) found generally lower effect sizes and commented that the nature of the comparison group (counterfactual) is one important factor with more rigorous studies involving random allocation and active controls generally showing smaller effect sizes than quasi-experimental studies and those with passive controls. Since our paper is a scoping review, we have not attempted to interpret effect sizes over different studies, but we note that, when reported, these were typically in line with those in studies of Spanish as L1 and English as L2.

Definition of L1 and L2

In a scoping review, it is important to limit the field, but at the same time not to exclude important sources of information. We had, initially, been more open to studies of second language learning in a first language context, but we took the decision to exclude those to keep the review manageable and because our initial interest in this area came from looking at the needs of newly arrived immigrants. However, it must be acknowledged that defining the language learning context is not straightforward. So, for example, we retained studies in Kenya where the official language, and often the school language, is English, whereas studies done in Hong Kong were excluded where, even though English is widely used, Chinese is the main language of communication for most students. Consequently, the definition of L1 and L2 can vary from time to time, depending on the criteria used (Skutnabb-Kangas, 1981); for example, it could be that an L1 is the first learned language, the best mastered language, or the language that a student identifies with the most strongly. English could be seen as a second language, and not a foreign language, for students in many countries today because of widespread internet use.

Research Gaps and Need for Future Studies

In line with previous reviews, most of the studies we found involved students in kindergarten or primary school, with few studies looking at older students whether beginners or more advanced. Although it is important to give early support in reading to avoid later school failure (Fawcett & Lynch, 2000), there is also a need to understand what is effective for older students. This is particularly important when considering the needs of older L2 students who begin school when literacy teaching may no longer be part of the standard curriculum, as may be the case with many newly arrived immigrants or refugees. Although theoretical models of both reading instruction and second language learning emphasize the importance of developmental factors, there is still little research that looks at the effectiveness of different methods depending on the level of L1 reading skills when L2 reading instruction begins. However, it is interesting to note that in two studies identified in our review, better progress in reading was made by those with better initial levels of vocabulary knowledge (Vadasy & Sanders, 1011; Vadasy et al., 2015). An explanation could be that word decoding and vocabulary overlap, and vocabulary knowledge contributes to word recognition as well as language comprehension (Duke & Cartwright, 2021).

A further research gap that we identify is that very few studies address the need to modify or create new elements of interventions to address specific factors associated with different first-second language pairings. Similarly, when looking at transfer effects from training, there are no studies that address language-specific factors and/or challenges of specific L1–L2 pairings. There is, however, some evidence that interventions for languages other than English place more emphasis on morphological awareness compared to the typical interventions for English language learners.

Most of the studies identified in this scoping review used experimental group designs, where the average performance of the participants is reported, and therefore there is a risk that individual differences will be masked. That said, differential effects were shown in the study by Vadasy and Sanders (2011) where better response to intervention in the L2 group was associated with better initial levels of vocabulary and word reading. These individual differences-by-treatment interactions, which are hard to detect, risk making a false conclusion that groups respond equally well. Given the number of factors that would need to be addressed, we argue that a single subject design could be of use to meet the challenge of comparing outcomes according to different student-, intervention-, and language-characteristics (cf., Cakiroglu, 2012). According to Horner et al. (2005), single-subject research is especially relevant for defining educational practices at the level of individual students.

Conclusion and Pedagogical Implications

A clear implication from this review is that the field of intervention studies concerning learning to read in a second language remains a relatively under-researched area which is dominated by studies on learning to read in English. However, there is a growing evidence base that can be applied in practice and built upon through both experience and further research. In particular, there is good evidence from additional small-group or in-class programs. Delivered in kindergarten and first grade, targeting beginning reading skills such as phonological awareness, letter-sound correspondence, and word decoding, can produce accelerated and sustained gains in comparison to "treatment as usual."

The finding from the present study that reading skills (especially phonological awareness, and letter-sound knowledge) can transfer from one language to another has important implications for policy and practice in terms of the importance of maintaining and developing first language skills as well as second language skills. Evidence for the transfer of reading comprehension is less strong (cf. Bimmel, Van Den Bergh, & Oostdam, 2001; Cheung & Slavin, 2012), and, in general, effect sizes for interventions targeting reading comprehension are weaker compared to those targeting decoding skills (Ludwig et al, 2019). Nevertheless, an implication for practice, supported by this review, is that training in students' first language reading skills can also be beneficial for their second language reading skills. Slavin and Cheung (2012) also argued for bilingual approaches and the opportunity for students to read in both L1 and L2 at different times each day, and Cummins (2021) has argued that instruction should be provided in both L1 and L2 when possible. The present review suggests that "foundation skills" training may be best done in L1, but more research is needed on the benefits of L1 versus L2 training of comprehension skills, and more evidence is needed on the role of specific reading training versus language training in general. We also note that practical recommendations may depend on the L1–L2 pairing since there appears to be greater evidence for transfer from transparent to opaque writing systems.

Limitations

One potential limitation of this scoping review is that only studies written in English were included. This selection criterion could have contributed to the limited number of studies identified which looked at reading interventions for learning languages other than English as L2. It is also a potential problem that studies relevant to our review may have been missed if titles, abstracts, or keywords did not match our search words. To mitigate this risk, we took a broad approach in our searches. A second major exclusion criterion in our review

was to exclude studies that focused on oral language development and did not assess reading outcomes. Many of these "vocabulary learning" interventions involved short-term training methods and supplemental materials, but others were more integrated into teaching practice. A consequence of this exclusion could be that evidence of studies that address skills relevant to comprehension is under-represented since they did not include direct tests of reading.

Figure 1

PRISMA Flow diagram

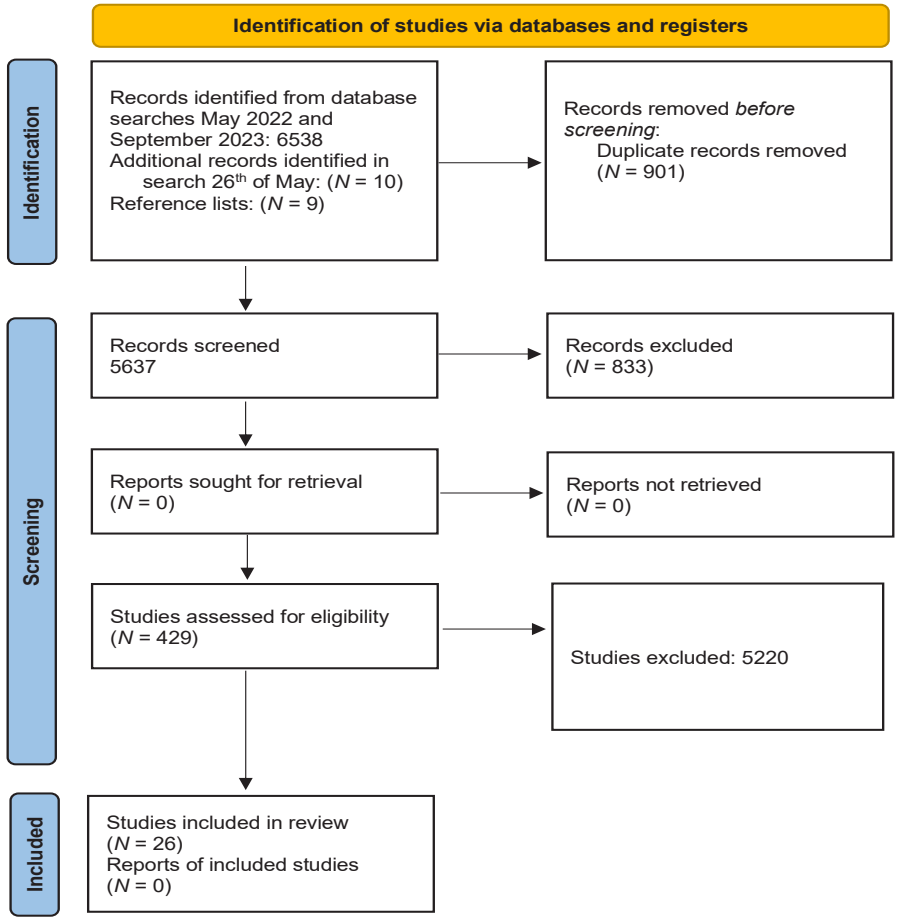

Table 1

Sampling According to PICOS Inclusive Criteria

Population (P)	Intervention (I)	Control (C)	Outcome (O)	Study design (S)
L2 students up to 18 years old. L1 other than Spanish and all L2 languages.	Word decoding, and reading comprehension in a second language	With or without control/comparison group	Reading in general	RCT, quasi-experimental studies, follow-up-studies, single-subject design studies

References

American Community Survey. (2023). *About the American Community Survey*. Retrieved from https://www.census.gov/programs-surveys/acs/about.html

Abu-Rabia, S., Shakkour, W., & Siegel, L. (2013). Cognitive retroactive transfer (CRT) of language skills among bilingual Arabic-English readers. *Bilingual Research Journal, 36*(1), 61–81. https://doi.org/10.1080/15235882.2013.775975

August, D. L., & Siegel, L. S. (2006). Literacy instruction for language-minority children in special education settings. In D. L. August & T. Shanahan (Eds.), *Developing literacy in a second language: Report of the National Literacy Panel on language-minority children and youth* (pp. 463–494). Lawrence Erlbaum.

August, D., & Shanahan, T. (2006). Introduction and methodology. In D. August & T. Shanahan (Eds.), *Developing literacy in second-language learners: A report of the national literacy panel on language minority children and youth* (pp. 1–42). Erlbaum.

Bar-Kochva, I., & Hasselhorn, M. (2017). The training of morphological decomposition in word processing and its effects on literacy skills. *Frontiers in Psychology, 8*, 1583. https://doi.org/10.3389/fpsyg.2017.01583

Bimmel, P. E., van den Bergh, H., & Oostdam, R. J. (2001). Effects of strategy training on reading comprehension in first and foreign language. *European Journal of Psychology of Education, 16*(4), 509–529.

Bratlie, S. S., Gustafsson, J. E., & Torkildsen, J. V. K. (2022). Effectiveness of a classroom-implemented, app-based morphology program for language-minority students: Examining latent language-literacy profiles and contextual factors as moderators. *Reading Research Quarterly, 57*(3), 805–829. https://doi.org/10.1002/rrq.447

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3*(2), 77–101. https://doi.org/10.1191/1478088706qp063oa

Cakiroglu, O. (2012). Single subject research: Applications to special education. *British Journal of Special Education, 39*(1), 21–29. https://doi.org/10.1111/j.1467-8578.2012.00530.x

Castles, A., & Coltheart, M. (2004). Is there a causal link from phonological awareness to success in learning to read? *Cognition, 91*(1), 77–111. https://doi.org/10.1016/S0010-0277(03)00164-1

Castles, A., Rastle, K., & Nation, K. (2018). Ending the reading wars: Reading acquisition from novice to expert. *Psychological Science in the Public Interest, 19*(1), 5–51. https://doi.org/10.1177/1529100618772271

Cheung, A. C., & Slavin, R. E. (2012). Effective reading programs for Spanish-dominant English language learners (ELLs) in the elementary grades: A synthesis of research. *Review of Educational Research, 82*(4), 351–395. https://doi.org/10.3102/0034654312465472

Chung, S. C., Chen, X., & Geva, E. (2019). Deconstructing and reconstructing cross-language transfer in bilingual reading development: An interactive framework. *Journal of Neurolinguistics, 50*, 149–161. https://doi.org/10.1016/j.jneuroling.2018.01.003

Chung, K. K. H., Li, X., Lam, C. Y., Lam, C. B., Fung, W. K., & Lai, P. Y. (2021). The effects of bilingual reading program on Chinese children from low socioeconomic status families. *Early Education and Development, 33*(2), 204–218. https://doi.org/10.1080/10409289.2021.1891803

Cummins, J. (1979). Linguistic interdependence and the educational development of bilingual children. *Review of Educational Research, 49*(2), 222–251. https://doi.org/10.3102/00346543049002222

Cummins, J. (1981). Empirical and theoretical underpinnings of bilingual education. *Journal of Education, 163*(1), 16–29. https://doi.org/10.1177/002205748116300104

Cummins, J. (2021). *Rethinking the education of multilingual learners: A critical analysis of theoretical concepts*. Multilingual Matters.

Devonshire, V., Morris, P., & Fluck, M. (2013). Spelling and reading development: The effect of teaching children multiple levels of representation in their orthography. *Learning and Instruction, 25*, 85–94. https://doi.org/10.1016/j.learninstruc.2012.11.007

Duke, N. K., & Cartwright, K. B. (2021). The science of reading progresses: Communicating advances beyond the simple view of reading. *Reading Research Quarterly, 56*(S1), 25–44. https://doi.org/10.1002/rrq.411

Dussling, T. M. (2018). Examining the effectiveness of a supplemental reading intervention on the early literacy skills of English language learners. *Literacy Research and Instruction, 57*(3), 276–284. https://doi.org/10.1080/19388071.2018.1453898

Fawcett, A. J., & Lynch, L. (2000). Systematic identification and intervention for reading difficulty: Case studies of children with EAL. *Dyslexia, 6*(1), 57–71. https://doi.org/10.1002/(SICI)1099-0909(200001/03)6:1%3C57::AID-DYS163%3E3.0.CO;2-W

Feder, L., & Abu-Rabia, S. (2020). An examination of differences in linguistic and metalinguistic skills in English (FL) and Hebrew (L1): English intervention program for dyslexic, poor and normal readers. *The Journal of Educational Research, 113*(3), 226–243. https://doi.org/10.1080/00220671.2020.1782812

Goodrich, J. M., & Lonigan, C. J. (2017). Language-independent and language-specific aspects of early literacy: An evaluation of the common underlying proficiency model. *Journal of Educational Psychology, 109*(6), 782–793. https://psycnet.apa.org/doi/10.1037/edu0000179

Gonzales, W., & Tejero Hughes, M. (2021). Leveraging a Spanish literacy intervention to support outcomes of English learners. *Reading Psychology, 42*(4), 411–434. https://doi.org/10.1080/02702711.2021.1888352

Gottardo, A., Chen, X., & Huo, M. R. Y. (2021). Understanding within- and cross-language relations among language, preliteracy skills, and word reading in bilingual learners: Evidence from the science of reading. *Reading Research Quarterly, 56*(S1), 371–390. https://doi.org/10.1002/rrq.410

Gough, D., Oliver, S., & Thomas, J. (Eds.). (2017). *An introduction to systematic reviews*. SAGE Publications.

Gough, P. B., & Tunmer, W. E. (1986). Decoding, reading, and reading disability. *Remedial and Special Education, 7*(1), 6–10. https://doi.org/10.1177%2F074193258600700104

Graham, S., Silva, M., & Restrepo, M. A. (2022). Reading intervention research with emergent bilingual students: a meta-analysis. *Reading and Writing, 36*, 1–32. https://doi.org/10.1007/s11145-022-10399-8

Grosjean, F (2021). The Extent of Bilingualism. In Grosjean F. & Pavlenko, A. (Eds.). *Life as a bilingual: Knowing and using two or more languages*. Cambridge University Press.

Hall, C., Steinle, P. K., & Vaughn, S. (2019). Reading instruction for English learners with learning disabilities: What do we already know, and what do we still need to learn? *New Directions for Child and Adolescent Development, 166*, 145–189. https://doi.org/10.1002/cad.20302

Hoover, W. A., & Gough, P. B. (1990). The simple view of reading. *Reading and Writing, 2*, 127–160. https://link.springer.com/article/10.1007/BF00401799

Horner, R. H., Carr, E. G., Halle, J., McGee, G., Odom, S., & Wolery, M. (2005). The use of single-subject research to identify evidence-based practice in special education. *Exceptional Children, 71*(2), 165–179. https://doi.org/10.1177/001440290507100203

Jamaludin, K. A., Alias, N., Mohd Khir, R. J., DeWitt, D., & Kenayathula, H. B. (2016). The effectiveness of synthetic phonics in the development of early reading skills among struggling young ESL readers. *School Effectiveness and School Improvement, 27*(3), 455–470. https://doi.org/10.1080/09243453.2015.1069749

Katz, L., & Frost, R. (1992). The reading process is different for different orthographies: The orthographic depth hypothesis. *Advances in Psychology, 94*, 67–84. https://doi.org/10.1016/S0166-4115(08)62789-2

Kim, Y. S. G., & Piper, B. (2019). Cross-language transfer of reading skills: An empirical investigation of bidirectionality and the influence of instructional environments. *Reading and Writing, 32*(4), 839–871. https://doi.org/10.1007/s11145-018-9889-7

Koda, K. (2008). Impacts of prior literacy experience on second language learning to read. In *Learning to read across languages* (1 ed.). (pp. 68–96). Routledge. https://doi.org/10.4324/9780203935668-11

Lervåg, A., Hulme, C., & Melby-Lervåg, M. (2018). Unpicking the developmental relationship between oral language skills and reading comprehension: It's simple, but complex. *Child Development, 89*(5), 1821–1838. https://doi.org/10.1111/cdev.12861

Lipka, O., & Siegel, L. S. (2010). The improvement of reading skills of L1 and ESL children using a response to intervention (RtI) model. *Psicothema, 22*(4), 963–969. https://www.psicothema.com/pdf/3827.pdf

Lockwood, C., & Tricco, A. C. (2020). Preparing scoping reviews for publication using methodological guides and reporting standards. *Nursing & Health Sciences, 22*(1), 1–4. https://doi.org/10.1111/nhs.12673

Lonigan, C. J., Burgess, S. R., & Schatschneider, C. (2018). Examining the simple view of reading with elementary school children: Still simple after all these years. *Remedial and Special Education, 39*(5), 260–273. https://doi.org/10.1177/0741932518764833

Lovett, M. W., De Palma, M., Frijters, J., Steinbach, K., Temple, M., Benson, N., & Lacerenza, L. (2008). Interventions for reading difficulties: A comparison of response to intervention by ELL and EFL struggling readers. *Journal of Learning Disabilities, 41*(4), 333–352. https://psycnet.apa.org/doi/10.1177/0022219408323980

Ludwig, C., Guo, K., & Georgiou, G. K. (2019). Are reading interventions for English language learners effective? A meta-analysis. *Journal of Learning Disabilities, 52*(3), 220–231. https://doi.org/10.1177/0022219419825855

Melby-Lervåg, M., & Lervåg, A. (2011). Cross-linguistic transfer of oral language, decoding, phonological awareness and reading comprehension: A meta-analysis of the

correlational evidence. *Journal of Research in Reading, 34*(1), 114–135. https://doi.org/10.1111/j.1467-9817.2010.01477.x

Murphy Odo, D. (2021). A meta-analysis of the effect of phonological awareness and/or phonics instruction on word and pseudo-word reading of English as an L2. *SAGE Open, 11*(4), 21582440211059168. https://doi.org/10.1177/21582440211059168

Nation, K. (2019). Children's reading difficulties, language, and reflections on the simple view of reading. *Australian Journal of Learning Difficulties, 24*(1), 47–73. https://doi.org/10.1080/19404158.2019.1609272

Pfenninger, S. E. (2015). MSL in the digital ages: Effects and effectiveness of computer-mediated intervention for FL learners with dyslexia. *Studies in Second Language Learning and Teaching, 5*(1), 109–133. https://doi.org/10.14746/ssllt.2015.5.1.6

Piper, B., Bulat, J., & Johnston, A. (2015). Reading skill transfer across languages: Outcomes from longitudinal bilingual randomized control trials in Kenya and Haiti. *Society for Research on Educational Effectiveness*. https://eric.ed.gov/?id=ED562423

Pretorius, E. J. (2014). Supporting transition or playing catch-up in grade 4? Implications for standards in education and training. *Perspectives in Education, 32*(1), 47–72. https://journals.co.za/doi/epdf/10.10520/EJC151359

PRISMA. (2020). *Preferred Reporting Items for Systematic reviews and Meta-Analyses*. http://www.prisma-statement.org/

Rayyan. (2023). *Faster systematic reviews*. https://www.rayyan.ai/

Richards-Tutor, C., Baker, D. L., Gersten, R., Baker, S. K., & Smith, J. M. (2016). The effectiveness of reading interventions for English learners: A research synthesis. *Exceptional Children, 82*(2), 144–169. https://doi.org/10.1177/0014402915585483

Rivera, M. O., Moughamian, A. C., Lesaux, N. K., & Francis, D. J. (2009). *Language and reading interventions for English language learners and English language learners with disabilities*. Center on Instruction. https://eric.ed.gov/?id=ED521569

Roberts, G., Hall, C., Cho, E., Cote, B., Lee, J., Qi, B., & Ooyik, J. (2022). The state of current reading interventions research for English learners in grades K-2: A best evidence synthesis. *Educational Psychology Review, 34*, 335–361. https://doi.org/10.1007/s10648-021-09629-2

Schwab, S., Seifert, S., & Gasteiger-Klicpera, B. (2014). Improving reading in children with German as a first or second language. *International Journal of Early Years Education, 22*(2), 210–222. https://doi.org/10.1080/09669760.2014.909308

Seifert, S., Schwab, S., & Gasteiger-Klicpera, B. (2014). Effects of a whole class reading program designed for different reading levels and the learning needs of L1 and L2 children. *Reading & Writing Quarterly: Overcoming Learning Difficulties, 32*(6), 499–526. https://doi.org/10.1080/10573569.2015.1029176

Seymour, P. H. K., Aro, M. & Erskine, J. M. (2003). Foundation literacy acquisition in European orthographies. *The British Journal of Psychology, 94*(2), 143–74. https://doi.org/10.1348/000712603321661859

Skutnabb-Kangas, T. (1981). *Tvåspråkighet*. [Bilingualism] (1 ed.). LiberLäromedel.

Slavin, R. E., & Cheung, A. C. (2005). A synthesis of research on language of reading instruction for English language learners. *Review of Educational Research, 75*(2), 247–284. https://doi.org/10.3102/00346543075002247

Solari, E. J., Kehoe, K. F., Cho, E., Hall, C., Vargas, I., Dahl-Leonard, K., Cassidi, L. R., Henry, A. R., Cook, L., Hayes, L., & Conner, C. (2022). Effectiveness of interventions for English learners with word reading difficulties: A research synthesis. Learning Disabilities *Research & Practice, 37*(3), 158–174. https://doi.org/10.1111/ldrp.12286

Sperling, M., Barwasser, A., & Grünke, M. (2019). The effects of a reading racetrack intervention on the sight word fluency of learning-disabled elementary school students with

German as a second language. *Insights into Learning Disabilities, 16*(1), 79–90. https://files.eric.ed.gov/fulltext/EJ1218553.pdf

Swedish National Agency for Education. (2022). *Curriculum for the compulsory school, preschool class and school-age educare (revised 2018)*. Retrieved from https://www.skolverket.se/publikationsserier/styrdokument/2018/curriculum-for-the-compulsory-school-preschool-class-and-school-age-educare-revised-2018

Swedish National Agency for Education. (2023). *Search statistics*. Retrieved from https://www.skolverket.se/skolutveckling/statistik

Thomas, N., Colin, C., & Leybaert, J. (2020). Interactive reading to improve language and emergent literacy skills of preschool children from low socioeconomic and language-minority backgrounds. *Early Childhood Education Journal, 48*, 549–560. https://doi.org/10.1007/s10643-020-01022-y

United Nations Educational, Scientific and Cultural Organization. (2019). *UNESCO strategy for youth and adult literacy (2020–2025)*. General Conference 40th Session, Paris 2019. Programme and meeting document. Retrieved from https://unesdoc.unesco.org/ark:/48223/pf0000371411?posInSet=2&queryId=fab6406f-989c-4049-b36b-a2fb1c00bda3

Vadasy, P. F., & Sanders, E. A. (2011). Efficacy of supplemental phonics-based instruction for low-skilled first graders: How language minority status and pretest characteristics moderate treatment response. *Scientific Studies of Reading, 15*(6), 471–497. https://doi.org/10.1080/10888438.2010.501091

Vadasy, P. F., Sanders, E. A., & Nelson, J. R. (2015). Effectiveness of supplemental kindergarten vocabulary instruction for English learners: A randomized study of immediate and longer-term effects of two approaches. *Journal of Research on Educational Effectiveness, 8*(4), 490–529. https://doi.org/10.1080/19345747.2015.1033120

Vaughn, S., Cirino, P. T., Linan-Thompson, S., Mathes, P. G., Carlson, C. D., Cardenas-Hagan, E., Pollard-Durodola, S. D., Fletcher, J. M., & Francis, D. J. (2006). Effectiveness of a Spanish intervention and an English intervention for English language learners at risk for reading problems. *American Educational Research Journal, 43*, 449–488. https://doi.org/10.3102%2F00028312043003449

Verhoeven, L., & van Leeuwe, J. (2012). The simple view of second language reading throughout the primary grades. *Reading and Writing: An Interdisciplinary Journal, 25*(8), 1805–1818. https://doi.org/10.1007/s11145-011-9346-3

Wawire, B. A., & Kim, Y. S. G. (2018). Cross-language transfer of phonological awareness and letter knowledge: Causal evidence and nature of transfer. *Scientific Studies of Reading, 22*(6), 443–461. https://doi.org/10.1080/10888438.2018.1474882

Zhang, D. (2016). Morphology in Malay–English biliteracy acquisition: An intervention study. *International Journal of Bilingual Education and Bilingualism, 19*(5), 546–562. https://doi.org/10.1080/13670050.2015.1026873