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Oral Language Intervention in Norwegian Schools Serving Young Language-Minority

Learners: A Randomized Trial

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Abstract

In this randomized trial study, the authors examined the efficacy of a practitioner partnership language intervention addressing oral language learning (expressive and receptive) in young language-minority learners from multiple-language groups in Norway. Resource teachers in 16 elementary schools implemented the intervention in the first and second grades, delivering a total of 64 thirty-minute sessions over eight consecutive weeks. With a mean age of 6 years 3.34 months, 137 students were randomly allocated to an intervention group or a waiting-list control group, with the latter group receiving the intervention after posttest 1. Five assessments of oral language skills were conducted before the intervention, immediately following it, and four months later. The intervention group showed significant improvements in various oral language skills compared with the waiting-list control group. There were no significant differences between the groups at the four-month follow-up when the waiting-list control group received the intervention. The program was successful in enhancing oral language skills in young language-minority learners.

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In today's multicultural society, a growing number of children entering elementary school receive instruction in their second language (L2). Some of these children have not yet developed their L2 skills to the level needed for academic learning in school. As oral language skills are a necessity for gaining knowledge, these learners are faced with the challenging task of acquiring proficiency in their L2 while simultaneously accessing the curriculum. Accordingly, instructional support for young L2 learners' school-relevant language skills has recently become a topic of research interest (Murphy & Evangelou, 2016; National Academies of Sciences, Engineering, and Medicine, 2017). Issues concerning both the curriculum and instruction for these learners have not yet been addressed to the level needed to inform educational practice (Dixon et al., 2012), which is highlighted by the limited number of interventions targeting L2 learning (for reviews, see August, McCardle, & Shanahan, 2014; Buysse, Peisner-Feinberg, Pérez, Hammer, & Knowles, 2014).

We designed the present study to examine the effects of instruction to support oral language learning through a practitioner partnership intervention program addressing L2 skills in the early years of elementary school. The program's purpose was to teach school-relevant vocabulary and basic sentence production in addition to supporting extended talk, that is, talk that extends the immediate here and now. The intervention reported in this article builds on a social interactionist theoretical approach to language-based school learning and draws on three domains of prior research: research on language learning embedded in instructional contexts, efficient strategies to foster oral language learning, and the role of practitioner partnerships in constructing oral language interventions.

Theoretical Framework

Based on studies of L2 acquisition, Cummins (1984, 2001) suggested that language proficiency can be conceptualized as two registers: a basic interpersonal communicative skills

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register and a cognitive academic language proficiency register. The latter register may require years of exposure to language typically found in school contexts (Cummins, 2001). As pointed out by Halliday (1993), mastering the academic register supports language-mediated content learning in schools. L2 learners face the additional challenge of simultaneously acquiring the academic register of their new language and the language-mediated content taught in schools (Halliday, 2007). Cummins' distinction between basic interpersonal communicative skills and cognitive academic language proficiency combined with Halliday's theoretical account of learning taking place through language has previously provided a framework for understanding school-relevant language and its underlying skills (Snow & Uccelli, 2009). More recent educationally informed developments of this social interactionist theoretical position have paid attention to the skills required in the process of acquiring school-relevant language, such as skills in mastering a diverse vocabulary, comprehending complex sentences, and participating in school-based discourse, and have addressed the instruction that would support these skills (Aarts, Demir-Vegter, Kurvers, & Henrichs, 2016; Grøver, Uccelli, Rowe, & Lieven, in press; Uccelli, Phillips Galloway, Barr, Meneses, & Dobbs, 2015). Research within the domain of language acquisition has robustly documented the pivotal role of exposure to a considerable amount of talk in first-language (L1: Hoff, 2006; Rowe, 2012) and L2 learners (Bowers & Vasilyeva, 2011; Rydland, Grøver, & Lawrence, 2014), to extended talk in pragmatically supportive environments for L1 (Dickinson & Porche, 2011; Rowe, 2012; Snow, Porche, Tabors, & Harris, 2007) and L2 learners (Rydland et al., 2014; Snow, 2014), and to the role of repeated exposure to words in meaningful settings crucial for developing conceptual knowledge (Nagy & Scott, 2000; Stahl & Fairbanks, 1986; Stahl & Nagy, 2006). Furthermore, learning these skills is key for literacy and academic achievement (August, Carlo, Dressler, & Snow, 2005; August & Shanahan, 2006; Lesaux, 2012; Uccelli & Páez, 2007).

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Building on this framework in the present study, we examined the effects of an L2 intervention program offering multiple opportunities for language exposure and use embedded in interactions with peers and teachers.

Language Learning Embedded in Instructional Contexts

When young language-minority students enter school, the rapid learning of the basic content words (i.e., everyday nouns, verbs, and adjectives that provide meaning in a sentence) that are already acquired by their monolingual classroom peers before school entry is important. Content words are crucial in developing a knowledge-based foundation to access oral and written language in school. Thus, teaching words that underlie the curriculum within and across school subjects becomes highly relevant in the initial phases of L2 instruction and in developing reading skills.

In recent years, curricular approaches have become an important part of language interventions, from prekindergarten to elementary school (August, Artzi, & Barr, 2016; August, Artzi, Barr, & Francis, 2018; Fantuzzo, Gadsen, & McDermott, 2011; Weiland & Yoshikawa, 2013; Wilson, Dickinson, & Rowe, 2013). These curriculum-aligned approaches are usually characterized by language-learning strategies combined with school-relevant topics and instruction, which are adaptable to students' needs. An intervention program targeting instruction in curriculum-related topics and offering developmentally appropriate support enhanced children's basic prekindergarten skills in language, literacy, and mathematics (Weiland & Yoshikawa, 2013). Moreover, the use of educative curricular materials in prekindergarten has been found to support both the quality of teacher talk and children's vocabulary skills (Neuman, Pinkham, & Kaefer, 2015), and an integrated curriculum for prekindergarten and elementary classrooms improved students' mathematic, language, and literacy skills (Fantuzzo et al., 2011). Furthermore, studies of the effects of

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instruction on academic vocabulary in curricular contexts reported that both extended (explicit, rich, and depth descriptions) and embedded instruction (incorporated descriptions of words after being presented in textbooks) were beneficial for language-minority learners, with the former being the most efficient (August et al., 2016; August et al., 2018). Moreover, teaching words that frequently appeared across subject areas to students in grades 6-8 enhanced their language growth immediately following the intervention (Snow, Lawrence, & White, 2009), a result that was maintained in two follow-up assessments (Lawrence, Capotosto, Branum-Martin, White, & Snow, 2012). Given these outcomes, effective language instruction that embeds words crucial to understanding textbooks and classroom talk may provide opportunities to gain knowledge and increase young language-minority learners' language proficiency.

Efficient Strategies to Foster Oral Language Learning

Studies of the efficacy of language interventions provide important knowledge regarding how to promote oral language learning in childhood education. We briefly review approaches to word selection and oral language learning before turning to specific strategies viewed as important for L2 learning.

Which words to choose and how to teach them have been a topic of concern. On the one hand, Biemiller (2005) emphasized teaching words that children are likely to encounter in their daily environments but of which they have only partial knowledge. These are words that 30-70% of their peers will know the meaning of (i.e., *solution* for first graders and *appetite* for second graders; Biemiller, 2005). Beck and McKeown (2007), on the other hand, focused on abstract words that children typically do not learn unless they are being read to, also known as tier 2 words. According to this approach, a tier 2 word is related to an everyday concept that the student already knows but represents a more advanced term. The word *confer* is an

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example of a more abstract word based on the concept of talk in kindergarten and first grade. Both approaches to word selection and word instruction have resulted in improvements in students' word knowledge (Beck & McKeown, 2007; Biemiller, 2005; Biemiller & Boote, 2006). Furthermore, word selection should be based on frequency, familiarity, and meaningful use related to the text or curriculum (Nagy & Hiebert, 2011). Taken together, these aspects provide systematic insights into word selection.

Explicit instruction in vocabulary and storybook reading are viewed as effective components for fostering language skills in prekindergarten and kindergarten (Bowyer-Crane et al., 2008; Collins, 2010; Fricke, Bowyer-Crane, Haley, Hulme, & Snowling, 2013; Fricke et al., 2017; Hagen, Melby-Lervåg, & Lervåg, 2017; Justice, Meier, & Walpole, 2005; Marulis & Neuman, 2010; Pollard-Durodola et al., 2011; Roberts & Neal, 2004; Zucker, Cabell, Justice, Pentimonti, & Kaderavek, 2013). In school-age children, vocabulary interventions that emphasize training in language comprehension skills have been found to be effective (Apthorp et al., 2012; Carlo et al., 2004; Elleman, Lindo, Morphy, & Compton, 2009; Proctor, Silverman, Haring, & Montecillo, 2012). However, few of these researcher-developed studies have found effects on distal language measures (see Bowyer-Crane et al., 2008; Fricke et al., 2013; Hagen et al., 2017; Rogde, Melby-Lervåg, & Lervåg, 2016), and there have been contradictory findings in relation to who benefits the most from oral language interventions. Whereas Marulis and Neuman (2010), in their meta-analysis, found that students with the highest levels of language skills were those who benefited the most from vocabulary instruction, other studies on diverse samples did not find interaction effects (Pollard-Durodola et al., 2011; Rogde et al., 2016; Zucker et al., 2013) or found that the students in need of the most support also benefited the most (Justice et al., 2005).

Recent interventions in prekindergarten and kindergarten have proven effective in enhancing young language-minority learners' oral language skills. Rogde et al. (2016)

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examined the efficacy of improving L2 learners' oral language skills in kindergarten. The intervention included components focused on word and concept learning, listening comprehension, storybook reading, and grammar and was offered in small groups, combined with individual sessions, over 18 weeks. Effects on both taught vocabulary and standardized tests of expressive skills were found, but no effects on standardized measures of receptive skills were revealed. Neuman, Newman, and Dwyer (2011) conducted a cluster randomized trial with a sample mainly composed of language-minority learners and assessed whether taxonomic instruction (sorting words in hierarchical order) would enhance prekindergarten children's L2 word knowledge and conceptual development. The main components of this yearlong intervention consisted of categorization related to specific topics. The study found effects on custom measures but not on distal vocabulary tests. Based on successful effects with monolingual students (Bowyer-Crane et al., 2008; Fricke et al., 2013), Fricke and Millard (2016) adapted an oral language intervention and conducted a randomized controlled trial with language-minority learners in nursery school. This version targeted active listening, vocabulary, narrative skills, and independent speaking in small groups over a 15-week period. The intervention had an effect on taught vocabulary but not on other measures. In addition to these findings, the use of reinforcement (i.e., several word encounters through multiple activities after the first exposure) and repetition (i.e., recycling words) has been reported to be effective with language-minority learners (August et al., 2018; Carlo et al., 2004; Roberts & Neal, 2004; Silverman, 2007). Although these results are promising, experimentally based evidence on how to support a broad scope of L2 oral skills in language-minority-only samples is sparse.

A Practitioner Partnership Oral Language Intervention

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Bridging educational research and practice is important to improve student learning (Bevan, Penuel, Bell, & Buffington, 2018; Coburn, Penuel, & Geil, 2013; Donovan & Snow, 2018; Donovan, Snow, & Daro, 2013; Tseng, Fleischman, & Quintero, 2018). Collaboration and partnerships between researchers and practitioners provide an opportunity to address the multidimensional features of educational challenges more fully (i.e., efficient instructional practice, useful curricular materials). These specific partnerships are defined as “long-term, mutualistic collaborations between practitioners and researchers that are intentionally organized to investigate problems of practice and solutions for improving district outcomes” (Coburn et al., 2013, p. 2). Therefore, developing interventions based on practitioner partnership within a school district (i.e., school district superintendent, department of education, school psychology service, schools) may provide valuable information about the addressed problem through the needs of practice. These features align with elements viewed as necessary for the success of the implementation of interventions in school (Foorman, Dombek, & Smith, 2016) and for the significance of learning by doing within partnerships (Donovan et al., 2013).

Word Generation, a middle school vocabulary program (Snow et al., 2009), is one example of a language intervention emerging from such a partnership. By collaborating with educators and practitioners in defining the problem at hand and through cycles of feedback and observations in practice, changes were made to incorporate significant features into the program from a practitioner perspective that otherwise might have been undetected (Donovan & Snow, 2018). Word Generation resulted in significant language growth in participating students (grades 6-8), with language-minority students having greater growth than their monolingual peers (Snow et al., 2009).

The practitioner partnership in the current study was developed by practitioners with different types of expertise in L2 learning (teachers, school psychologists, and the department

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of education) who collaborated in developing the L2 intervention. From 2014 to 2015, this collaboration was managed in face-to-face meetings during each semester (in a smaller group that was represented by each of the practitioner groups) in addition to observations followed by discussions with teachers and principals across the schools within the municipality. School psychologists designed the initial version of the intervention, which was based on an iterative process in which principals and teachers provided feedback for improvements both during and after the implementation of the pilot versions. Based on the information and knowledge gained in these meetings, followed by observations and discussions in local schools, valuable insights led to important program improvements.

Developing language interventions through these partnerships may have several advantages over a researcher-developed intervention. It involves a different approach to identifying the needs of practice by collaborating with practitioners working in the field in all of the project phases and merging this knowledge with previous findings from research. Additionally, developing a program within this context offers an opportunity for discussing the applicability of the instructions and activities embedded in the intervention to an everyday learning environment in school, as well as whether these components align with the curricula being taught and the materials needed for the activities. Therefore, these partnerships may provide a new lens for generating knowledge for educational improvement.

The Norwegian Educational Context

Schools in Norway serve an increasingly diverse student population. On a national level, 16.3% of the population are immigrants. Oslo has the largest number of immigrants, representing 40% of the total population and a large diversity in regard to the languages spoken in children's homes (Thorud et al., 2017). The Norwegian educational system is based on the principle of an inclusive and unified school that focuses on equality and adaptive education for all

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students in a country characterized by high employment and small socioeconomic differences (Norwegian Directorate for Education and Training, 2016). However, the results from national tests in 2016 showed that immigrants and children born in Norway with immigrant parents had lower scores than their peers in Norwegian and math (Statistics Norway, 2017). The National Curriculum for Knowledge Promotion in Primary and Secondary Education and Training provides standards related to the general learning goals for all subjects being taught in school, in addition to learning goals in L2 support. These goals can be adapted at different levels within a municipality (Norwegian Directorate for Education and Training, 2016). In first and second-grade teaching, Norwegian and math account for approximately 70% of the total number of hours of instruction offered to students per week. The remaining hours are allotted to science, social studies, religion, art, and physical education. A center-based organization of instruction in which students rotate among five or six different stations (approximately 12 minutes each), with only one station being teacher led, has become a highly used method in teaching Norwegian and math from first to fourth grade. The remaining theoretical subjects are taught in teacher-led lessons combined with small assignments supervised by the teacher.

L2 support in Norwegian elementary schools is offered primarily in small groups during short lessons or by an assistant providing support to students when needed in the classroom. Thus, each school chooses its organizational framework. This is also the case for the schools participating in our project. There are, however, no regulations regarding which textbooks to use and their corresponding starting levels, although schools within a municipality typically use the same textbooks. To be eligible for L2 support, students are assessed with different measures of literacy skills. According to the Norwegian Education Act of 1998, students have a right to receive adapted education in Norwegian (instruction focused entirely on the language) until they are sufficiently proficient in Norwegian to follow the

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regular instruction offered. In the 2015-2016 school year, 49% of students in primary and lower secondary schools who were immigrants or born in Norway with immigrant parents received adapted education in the Norwegian language (Thorud et al., 2017).

The question of whether a center-based organization of literacy and math instruction in grades 1-4 is beneficial for young language-minority learners with low L2 levels has been debated in recent years based on schools' test scores. The main argument against the model has been that students are left alone (with peers) with minimal support in the four or five lessons that are not teacher led, and it is unclear how this practice affects their learning outcomes compared with more traditional teacher talk lessons.

The Present Study

Extending previous studies, we used a randomized controlled trial waiting-list design to examine the effect of a Norwegian practitioner partnership intervention targeting L2 learning in the early elementary years. In this study, we particularly focused on efficient strategies for enhancing oral language learning while considering the needs of practice by incorporating both perspectives into the framework and features of the program. We hypothesized that oral language skills might be fostered (a) through explicit, intensive, and structured instruction targeting semantic categories (e.g., body, home, traveling, activities, feelings) and their semantically related words (e.g., *knee, apartment, suitcase, ticket, skiing, happy*), which are part of the curriculum and which schools typically do not teach (i.e., words within categories that are not explicitly taught and that will help students unlock access to the curriculum); (b) through basic sentence production; and (c) through invitations to extended talk. Furthermore, we hypothesized that an intervention developed within a practitioner partnership could lead to new insights into enhancing young language-minority learners' language learning. We asked whether receiving the practitioner partnership intervention resulted in increased language

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skills for the young language-minority participants immediately following the intervention. In addition, we hypothesized that potential group differences would not be present after the waiting-list control group received the intervention. Additionally, we wanted to examine whether the effects of the intervention varied as a function of initial language status because of the previous contradictory findings across oral language studies.

Method

Participants

Twenty elementary schools within the city of Oslo were invited to participate in the study. We screened all language-minority learners in these schools (first and second graders) with a standardized test in Norwegian, *Norsk Som Læringspråk* (Norwegian as a Language for Learning; NSL; Frøyen, Ahmadiania, Heller, & Skjåk, 2011), to identify the students most in need of language support. The NSL is a standardized curriculum-based language test for students in grades 1-4. To be included in the study, both of the student's parents had to speak a language different from the language of instruction in school (L2; Norwegian). Students who scored 1.5 standard deviations below the mean were invited to participate in the study, and 16 out of 20 schools had students who qualified for participation. A total of 40% of the students in this municipality (elementary through high school) have an L1 other than Norwegian, and one third of these students are eligible for L2 support (Norwegian Education Agency, 2016). On average, 68.85% of the student population in the participating schools was eligible for L2 support (Norwegian Education Agency, 2016).

The total sample consisted of 137 students (54% girls, mean age = 6 years 3.34 months, $SD=6.20$ months) recruited from 41 different classrooms within these 16 schools. The sample had a mean average of 2.56 classrooms per school and 3.34 students from each classroom. To reduce potential socioeconomic differences between the treatment and control

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groups, we performed randomization at the school level, with one treatment and one control group at each school (four to six students in each group). Students with parental consent were randomly allocated to an intervention group ($n = 71$) or a waiting-list control group (i.e., business as usual, $n = 66$). The waiting-list control group received no additional teaching between test points 1 and 2. However, they received the intervention before the four-month follow-up posttest. An overview of the flow of participants following the Consolidated Standards of Reporting Trials (CONSORT) guidelines (Schultz, Altman, Moher, & the CONSORT Group, 2010) is presented in Figure 1.

Students in the intervention spoke 31 different languages. Urdu, Arabic, Somali, Kurdish, Turkish, and Tamil were the most frequently spoken, accounting for 67.9% of all students. Across the intervention, students demonstrated variability in their exposure to L2 (i.e., born in Norway and attended kindergarten, language use at home). There were no significant differences in language use among language groups for mother to child, child to mother, and child to father, but there were for father to child, Kruskal - Wallis $H(6) = 16.040$, asymptotic $p = .014$. Pairwise comparisons showed that Somali fathers used more Norwegian than fathers in the other language groups did (Somali vs. Kurdish, Mann-Whitney $U = 28.500$, asymptotic $p = .003$; Somali vs. Tamil, Mann-Whitney $U = 27.000$, asymptotic $p = .005$; Somali vs. Arabic, Mann-Whitney $U = 70.000$, asymptotic $p = .011$; Somali vs Urdu, Mann-Whitney $U = 85.500$, asymptotic $p = .019$; Somali vs. Other, Mann-Whitney $U = 170.500$, asymptotic $p = .027$), except for Turkish fathers (Mann-Whitney $U = 38.500$, asymptotic $p = .742$). No other pairwise comparisons showed significant differences (see Appendix A for additional information). Students' participation was based on consent from their parents, who also contributed questionnaire-based information about early childhood care, family language use, and parental education. The sociodemographic background variables are displayed in Table 1,

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and there were no significant differences between the intervention group and the waiting-list control group regarding these variables.

The business-as-usual group (the control group) was characterized by teaching within the classroom, usually ranging from 20 to 25 students with their classroom teacher and an assistant. Because the Norwegian school system emphasizes instructional flexibility in teaching, differences between schools may occur. However, initial literacy instruction in the participating schools was based on the phonetics tradition. The main content in these lessons targeted reading (phonological awareness, letter knowledge, and letter-sound relations) and writing with minimal emphasis on vocabulary. Math instruction primarily focused on number comprehension and counting skills. All of the participating schools organized their teaching in Norwegian and math in a center-based way. The students cycled among five or six stations (approximately 12 minutes each), and only one of these was teacher led. The remaining stations were self-instructed with activities such as writing (words or numbers), computer tasks, drawing/construction building, and book reading/counting. Additional theoretical subjects were organized as teacher talk (reading a text to the students and talking about the content) combined with students solving one-on-one assignments (writing single words and short sentences related to the text and drawing pictures related to the text). Students participating in the intervention were pulled out of the classroom and missed out on two or three of the cycles of the center-based instruction in addition to parts of the instruction in science, social studies, or religion, with these three subjects depending on the variety of schedules across schools (i.e., Norwegian and math are typically taught before lunch, with the remaining theoretical and practical subjects being taught after lunch). However, the intervention group also still received the regular L2 support provided within each school, as the intervention was supplemental to this instruction.

[Figure 1 approximately here.]

[Table 1 approximately here.]

The Intervention Program

In 2013, motivated by the increasing number of young language-minority learners entering school, the school district superintendent in Oslo assigned a group of school psychologists to develop a small-group language intervention given by school resource teachers for L2 instruction from first to fourth grade. Specific guidelines regarding the organization of the intervention were developed (i.e., the number of sessions, their duration). The first author was part of the team of school psychologists who developed the intervention. Based on classroom observations, individual assessments of students, and discussions with their parents and teachers, we decided to use words that underlie the curriculum as core elements in the intervention, accompanied by basic sentence production and invitations to extended talk. Thus, the intention was to offer students multiple exposures to language-rich environments that included the oral language skills needed for understanding textbooks and classroom instruction. Each program component invited both expressive and receptive use of language. Another crucial point was to provide teachers with a complete set of materials to reduce the preparation time.

The pilot version of the program was tested in spring 2014 in four schools and included observations of the sessions, supervision, and evaluation meetings with principals and the resource teachers implementing the program. The program was improved twice, once immediately after feedback from the pilot and then after an additional 10 schools implemented the program during the fall semester. Feedback from the schools (two-level feedback from principals and resource teachers) resulted in the following program revisions: changing the order of tasks, adding more instructions and examples in the manual, creating a wordlist overview for parents, editing some of the pictures in specific categories (traveling,

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emotions, professions, activities, and hospital), and conducting evaluation meetings with every school that implemented the program. After these revisions, the final version of the program was released in January 2015 (Heller & Pettersen, 2014). The intervention has currently been implemented in 67 schools within this municipality, which reflects its usability.

Selection of vocabulary words. The categories and words taught were selected based on the National Curriculum for Knowledge Promotion in Primary and Secondary Education and Training learning goals within the subject areas of Norwegian language, science, math, religion, and social studies. Because classroom instruction assumed that students knew these words, it was important to choose words that are used in covering these curricular topics (i.e., providing students with a baseline of words for accessing the curriculum). To identify words relevant for instruction, the database developed as part of the construction of the NSL language screening test was used (Frøyen et al., 2011). This database consists of 9000 word types from the textbooks in the subject areas of language (Norwegian), science, math, religion, and social studies. The words were first analyzed based on their level of frequency across subjects in each grade. Teachers' assessments of word ratings regarding the relevance of these words for teacher instruction, listening, and reading comprehension were then added to the analyses. Based on frequency analyses of the word types from first-grade textbooks combined with teacher ratings in these subject areas, a baseline of categories and words assessed by the teachers and the database as being highly frequent and crucial for comprehension was developed. Words were then selected based on visualization criteria. The final list consisted of approximately 300 words. The most frequent categories were selected based on these words, and a total of 19 categories (see Appendix B), each including an average of 13 words (total = 257 words), were constructed. The selected words primarily included nouns, with basic pronouns and question words being emphasized in the teachers' instruction. Furthermore,

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words regarding amount, color, and shape and verbs were continuously used across levels throughout the intervention.

Intervention components.

Visual support. In addition to providing students with multiple exposures to oral language skills, the use of visual material was another key component. Adapting vocabulary programs for monolingual students to support the needs of language-minority learners is typically characterized by using visual aids (August et al., 2018; Silverman; 2007). In addition, the teachers participating in the pilot expressed the need for visual support materials that they could use to help students develop oral language skills and that allowed pointing as a participatory strategy for students who did not yet have the language skills to participate verbally. Every word, category, song, and game that was used was therefore visualized to support student comprehension and learning.

Extended talk with rich vocabulary. During the program, students were given multiple exposures to words and basic sentence production and they participated in dialogs using extended talk with rich vocabularies, all of which are essential for language learning (Phillips Galloway & Lesaux, 2017). A narrative component was added to the program in which the teacher encouraged students to elaborate on their personal experiences related to a word or category. We hypothesized that adding this component would help students use the language by encouraging talk referring to their experiences combined with the new words. Using a small-group setting could also offer a place for students to practice their language skills, compared with talking in class with upwards of 20-25 peers.

Grammar focus. A grammar component consisting of basic sentence production was incorporated into the program to encourage students to use the target words in multiple ways. This instruction primarily focused on subject-verb-object sentences and used picture cards for support. A typical sentence structure would be “I see a home” or “It is a book.” We

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hypothesized that modeling and structuring basic sentences in this manner would help students in using the target words and comprehending more complex sentences during the program.

Play-based learning. Learning language based on the addition of play components is an approach that has been promoted in prekindergarten language interventions (Hassinger-Das et al., 2016). Therefore, in addition to category-related songs, Lotto and Bingo were embedded in the program. Lotto is a matching game, in which the student pulls a card from the table, trying to match a section on his or her board (3 rows of 3 pictures). In this study, each card was also named by the student and repeated by the teacher. Bingo is a more advanced memory game, in which the teacher names words one by one and the students need to determine whether they have the words on their board. An additional feature was added in the study, with the teacher providing a visual prompt if the word was not recognized by the students. Using these components may add an informal way of learning language and give students an activity that is not part of their usual learning instruction, which can motivate language usage in a different way.

Exposure to vocabulary outside the classroom. We wanted to ensure that students were able to use the words taught outside of the group room context. Therefore, other contexts within the school environment were used for identifying and offering opportunities to generalize words and categories. For example, when teaching the clothes category, the teacher took the students out to the wardrobe area so that they could identify the taught words; similarly, going outdoors was used to explore the street category.

Lesson sequence and duration. Parts of the intervention were scripted (introductory sentences for each activity). In the manual, teachers were given information on the lessons, such as guidelines for instruction and the ordering of tasks. The program consisted of four levels (A-D), each with a two-week duration. All levels had the same structure and framework,

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which were purposefully chosen to teach basic oral language skills. With the exception of the introduction, which was consistent throughout the intervention (see Appendix A), the content in each session alternated every third lesson. Each category was provided in approximately three teaching lessons (see Appendix C). In addition, each level consisted of two repetition lessons, in which the categories and words were reviewed using picture cards with a repetition workbook. During the first two weeks (level A), students were presented with words that they most likely knew in their L1 to support their comprehension. We expected that teaching a basic framework that was repeated every school day for eight weeks would provide more focus and emphasis on the targeted words and thus result in time being spent on deeper word learning and understanding. Therefore, the only changes made throughout the intervention were the categories and words being taught and the level of difficulty, with the latter gradually increasing as students were exposed to categories that included some abstract words. Visualization using a variety of picture cards was the main approach utilized for introducing categories and semantically related words. Tangible objects within the room or outdoors were used when available to support comprehension.

The activities used for teaching included naming and understanding words by using picture cards and concept maps, learning topic-related songs, exploring the environment for objects being named, playing games, composing basic sentences, and encouraging student-initiated talk (for additional information, see Appendix C). The materials consisted of four binders, five workbooks, and a manual. Each binder included picture cards, concept maps, Lotto, Bingo, songs, evaluation forms, logs, and a diploma. Most materials were provided as pop-outs to reduce teachers' preparation time.

Students allocated to the intervention group received eight weeks of intervention delivered to groups of four to six students (from different classrooms in each school) eight times per week in 30-minute sessions (a total of 64 sessions). Five of the lessons were taught

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every morning during the week, and the remaining three were taught after lunch (each school decided which days the after-lunch lessons would be taught).

Teacher training and support. The program was delivered by the resource teachers (87.5% female) working in the students' schools and attended a mandatory six-hour implementation course. The resource teachers in our study were responsible for both L2 support and adaptive education in these schools. To become a resource teacher, a four-year teacher education is required (a college or university degree). It was important to provide a course that offered opportunities for professional development but, at the same time, lowered the barrier to beginning the program and that was cost-effective for the schools. The implementation course was taught by school psychologists. The course presented a review of the rationale and components of the intervention, in addition to a workshop. In the workshop, every activity and instruction in the program was modeled by the instructors, and the resource teachers were placed in groups of five or six to practice each activity under supervision by the instructors. The resource teachers were told to adapt their instruction based on students' progress during the intervention (i.e., extend their language use and level of abstraction), and examples were provided in the manual. Additional coaching was given by telephone or email during the intervention. None of the participating resource teachers were the students' classroom teachers.

Assessment Measures and Procedures

Assessing distal language skills. Assessments were conducted before the intervention (time 1), immediately following the intervention (time 2), and four months after the intervention (time 3) during the 2016/2017 school year. All students were tested individually at their schools, with the testing duration ranging from 30 to 45 minutes. Each test point consisted of the same battery of instruments, all assessing distal language skills. The first

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author administered the tests in a fixed order: British Picture Vocabulary Scale (BPVS-II; Dunn, Dunn, Whetton, & Burley, 1997; Lyster, Horn, & Rygvold, 2010), Clinical Evaluation of Language Fundamentals (CELF-4; Semel, Wiig, & Secord, 2003), Wechsler Preschool and Primary Scale of Intelligence (WPPSI-IV; Wechsler, 2012)/Wechsler Intelligence Scale for Children (WISC-IV; Wechsler, 2003), Test for Reception of Grammar (TROG-2; Bishop, 2003; Lyster & Horn, 2009), and Bus Story (Renfrew, 1991). All tests were Norwegian versions, with the BPVS-II, CELF-4, WPPSI-IV/WISC-IV, and TROG-2 being translated, adapted, validated, and standardized for Norwegian conditions. The Bus Story was translated into Norwegian and validated by the Department of Special Needs Education at the University of Oslo for research purposes. The correlations for all the measures of distal language at times 1-3 are shown in Table 2. The reliability measures of each instrument are displayed in Table 3.

Receptive vocabulary skills were assessed using the BPVS-II (Dunn et al., 1997; Lyster et al., 2010). This instrument is a multiple-choice test in which words are read aloud one by one, and the student has to point to one out of four pictures that correspond to the spoken words. In addition, receptive grammatical skills were assessed using the TROG-2 (Bishop, 2003; Lyster & Horn, 2009). Different types of sentences are read aloud one by one, and the student's task is to identify the corresponding picture from one out of four alternatives.

We used the CELF-4 "Expressive Vocabulary" subtest (Semel et al., 2003) was used to measure expressive vocabulary. In this test, students name the pictures presented to them one at a time. We excluded one item that was taught in the intervention. In addition, we used a selection of words from the vocabulary subtests of the WPPSI-IV (Wechsler, 2012) and the WISC-IV (Wechsler, 2003) to assess word definitions (in total, 30 items presented in order of increasing difficulty). Students are orally presented with a word by the examiner and then told to explain the word. This selection was based on the students' age and expected level of Norwegian proficiency and the overlapping age level in the WPPSI-IV and the WISC-IV.

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This combination has been used in language studies conducted in Norway (Hagen et al., 2017; Rogde et al., 2016). Interrater reliability was assessed with 20% of the material being rated by the first author and a research assistant. The inter-rater agreement was 98.7%.

Narrative skills were measured using the Bus Story test (Renfrew, 1991), which measures a student's ability to retell a story after listening to it. The story is told by using a total of 12 pictures that support students' listening comprehension before retelling the story themselves. The students' stories were transcribed verbatim and scored according to key words and story structure. A total of 20% of the materials were assessed for interrater reliability, with an agreement of 97.4%.

We chose instruments to assess the main components in the intervention. Additionally, we needed instruments to match the participating students' levels of L2 skills while also being comparable to the research measures used in language interventions at an international level. Thus, we chose instruments targeting receptive (BPVS-II) and expressive vocabulary (CELF-4 + WPPSI/WISC-IV) based on the vocabulary component in the intervention and targeting grammar (TROG-2) because of the intervention's focus on basic sentence production, as well as an instrument addressing narrative skills (Bus Story), which were expected to result from students being encouraged to talk about their experiences during sessions. Standard instructions, stop rules, and scoring manuals were used for each instrument.

Fidelity

To assess whether the program was implemented as intended, the teachers were asked to audio record specific teaching sessions during the intervention (i.e., two categories each in weeks 2 and 7 of the program, six sessions in total). They also kept a log of students' attendance and individual progress over the course of the intervention. The first author examined all recorded sessions. We received complete recordings for 87.5% of the sessions;

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for the remaining 12.5%, we received incomplete or no recordings. A total of 20% of the material was then randomly selected and independently coded by the first author and a research assistant. The lesson content plans (see Appendix C) functioned as a checklist for coding (i.e., words used, teachers' use of instructions, order of activities). Audio recordings were then listened to and compared against the checklist to determine whether the lessons had been delivered as prescribed in the program. Disagreements were resolved through consensus, and the inter-rater agreement was 98.2%. The implementation rate ranged from 84.21% to 100% ($M = 94.5%$, $SD = 5.56%$). For this specific assessment of fidelity, student-initiated talk during the sessions was excluded. On average, students attended 59.45 sessions ($SD=4.90$ sessions), with a range from 44 to 64.

Analytic Approach

To estimate the program's impacts on oral language skills, we used regression models in which we controlled for the initial status to estimate the effect of every observed variable. In addition, we used structural equation modeling to estimate the effects of a general latent language factor, which was constructed by estimating the common variance of all five observed language measures (BPVS-II, CELF-4, WPSSI-IV/WISC-IV, TROG-2, and Bus Story). Here, we also tested for measurement invariance across time in a hierarchical manner: metric invariance first and, if metric, then scalar invariance; subsequently, if full invariance was not met, then we tested for partial invariance. Raw scores were used in all analyses, which were conducted in *Mplus* version 8 (L.K. Muthén & Muthén, 2017). The effect sizes were calculated from the y -standardized coefficients for the dummy-coded group variable. These coefficients can be interpreted as equivalent to Cohen's d (Brown, 2015).

Further, we examined the need for corrections for dependencies because of the multilevel structure of the data (students, classes and schools) by using the intraclass

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correlation and the average number of participants within clusters to calculate the design effects. The design effect quantifies the effect of violating the statistical independence that is caused by clustering and can affect standard error estimates. It estimates the multiplier that needs to be applied to standard errors to correct for the negative bias that results from nested data (see Peugh, 2010). Simulation studies (B.O. Muthén, 1991, 1994; B.O. Muthén & Satorra, 1989) suggested that design effects above 2 indicate a need for either the correction of standard errors or multilevel modeling. Our largest design effect (1.259) was below the value that these simulation studies suggest indicates a need for the correction of standard errors, but as a conservative approach, we still applied the corrections by using robust standard errors (Huber-White) at the classroom level. We found no significant variation at the school level in any of the measures. Complete sets of data on the five measurements conducted at pretest and posttest 1 were retrieved for all students. At posttest 2, eight students had relocated, resulting in 6% of missing data. Information on parental education and language use at home was missing for 17.5% and 9.5% of students, respectively. Because of the large proportion of students who were first graders (78.8%), we dropped grade as a variable in the following analysis.

Results

The mean, standard deviation, reliability, and effect size (controlling for baseline skills) for each distal language skills at times 2 and 3 are shown in Table 3. Despite randomization, baseline differences appeared between the groups, with the control group demonstrating significantly better results on the distal measures word definitions (WPPSI-IV/WISC-IV), $t(135) = 2.383, p = .019$, and Bus Story, $t(135) = 2.751, p = .007$. We found floor effects were found in the CELF-4 Expressive Vocabulary subtest, with students having few items correct

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at pretest. Regarding the intervention, we found significant small effect sizes ($d = .24-.31$) for expressive vocabulary and grammar.

[Table 3 approximately here.]

Because this study targeted distal language measures, we were interested in the overall effect of the intervention. In line with Fricke et al. (2017) and Hagen et al. (2017), to assess this aspect, we estimated two structural equation models, one for each posttest measurement. The latent construct language proficiency was loaded onto five distal language variables at each timepoint.

At the immediate posttest (see Figure 2), we found significant effects of the intervention on language $d = 0.35$, 95% CI [.058-.639]. The model fit was good $\chi^2(45, N = 137) = 67.882, p < .0153$, CFI = 0.968, TLI = 0.961, SRMS = 0.073, and RMSEA = 0.061, 90% CI [.027-.089]. Moreover, there was full scalar invariance: $\Delta\chi^2(8) = 10.668, p = .221$. Students with high scores at t1 also had the highest scores at t2.

Furthermore, the four-month follow-up posttest, after the waiting-list control group also received the intervention (see Figure 3), showed no significant effect sizes, $d = .10$ (nonsignificant), 95% CI [.694, 1.145]. Thus, there were no longer significant differences between the groups. This model fit the data well, $\chi^2(44, N = 137) = 65.267, p < .0203$, CFI = 0.968, TLI = 0.960, SRMR = 0.063, RMSEA = 0.059, 90% CI [.024, .088]. In this model, we found full metric invariance, $\Delta\chi^2(4) = 8.525, p = .074$, and partial scalar invariance across time, $\Delta\chi^2(7) = 11.503, p = .118$ (the CELF-4 Expressive Vocabulary intercept was allowed to vary).

There were no interaction effects in the immediate posttest model ($d = -.010, p = .841$) or the four-month follow-up model ($d = -.027, p = .683$), indicating that students

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benefited equally from the intervention regardless of their initial language skills. Moreover, gender ($d = -.064, p = .442$, and $d = -.059, p = .526$, respectively), parental education ($d = -.064, p = .168$, and $d = -.026, p = .827$, respectively), and language use at home ($d = .016, p = .855$, and $d = .075, p = .462$, respectively) did not moderate the effectiveness of the intervention.

Comparing our sample's mean scores on the BPVS-II, CELF-4, and TROG-2 at baseline against the mean score of the monolingual norm group used for standardization showed that the language-minority group was 2–3 standard deviations behind on their L2 oral language skills. These results, of course, must be interpreted with caution for several reasons. First, none of the Norwegian versions of these tests were standardized on a language-minority population, only monolinguals. Second, we did not have translated versions of these tests available for each of the 31 languages represented in this study. Thus, data regarding students' L1 backgrounds were not collected.

[Figure 2 approximately here.]

[Figure 3 approximately here.]

Discussion

This study revealed that a practitioner partnership based intervention framed within a social interactionist theoretical approach to language learning had an effect on the oral language skills ($d = .35$) of young L2 learners. We developed an intervention in partnership with practitioners who, in cycles of feedback, offered valuable information on multifaceted aspects of practice, such as efficient instruction and useful curricular materials. These features may otherwise not have been included without this partnership. We combined instructional strategies identified in previous research with instructional features considered important to the teachers (e.g., visual material, tasks, preparation time). The effects of the intervention on the students' L2 skills thus add to the literature, suggesting that partnerships may help

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generate new knowledge for educational improvement (Bevan et al., 2018; Coburn et al., 2013; Donovan et al., 2013; Donovan & Snow, 2018; Tseng et al., 2018).

The reported findings on distal language measures, which differ from those of previous studies, such as Elleman et al. (2009) and Marulis and Neuman (2010), where the interventions were less effective on distal language measures, are encouraging. To the best of our knowledge, only a limited number of studies have found such effects in young language-minority (Rogde et al., 2016) and monolingual learners (Bowyer-Crane et al., 2008; Fricke et al., 2013; Hagen et al., 2017). As expected, the four-month follow-up findings were not significant. Because the waiting-list control group received the intervention before the final assessment was conducted, this finding is not surprising. The results showed that the groups did not perform differently after the control group received the intervention.

First, an explanation for this overall effect may result from the intervention's intensity, with 64 thirty-minute sessions over eight weeks. In the literature, few language interventions have had a similar intensity and duration. Students in the present intervention were exposed to words and their related categories continuously and on a daily basis, in addition to encountering these words in settings outside the group room (i.e., small excursions within the school area). This level of exposure aligns with previous research that highlighted repeated exposure and reinforcement as key aspects of L2 instruction (August et al., 2018; Carlo et al., 2004; Roberts & Neal, 2004; Silverman, 2007). Moreover, we kept the structure constant throughout the intervention, thus changing only the categories and their semantically related topics. Furthermore, the average student attendance rate was high (92.89%). Previous studies have suggested that attendance rate significantly affects the intervention outcomes (Bleses et al., 2018; Justice, Mashburn, Pence, & Wiggins, 2008). The opportunity to use language in small groups of one teacher and four to six students on a daily basis for a period of eight weeks afforded more opportunities to talk and use language than those offered to students in

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large group contexts. Finally, the consistent instructional framework, which is easily recognizable and familiar to the students, may have helped them focus on the words being taught.

Second, several approaches to word selection have been empirically evaluated as having positive effects (Beck & McKeown, 2007; Biemiller, 2005; Biemiller & Boote, 2006), such as selecting tier 2 words (Beck & McKeown, 2007) or words that students know partially and will encounter in their environment (Biemiller, 2005; Biemiller & Boote, 2006). This intervention presented the selected words in line with Biemiller's (2005) approach, although instruction during the first two weeks (level A) consisted of highly frequent, everyday words. Furthermore, the selection approach was based on a combination of word frequency in the textbooks, teacher ratings, and learning goals in the National Curriculum for Knowledge Promotion in Primary and Secondary Education and Training (Norwegian Directorate for Education and Training, 2016). This approach resulted in a baseline of words that typically are not targeted in Norwegian elementary classroom instruction and an approach that differs from other language interventions in the field (i.e., those with mainly tier 2 words). Thus, the target words may also support students' acquisition of reading skills because of multiple encounters in different instructional settings and texts across subjects throughout the school year. Additionally, the strategy of teaching semantically related words within a category aligns with the taxonomic instruction used by Neuman et al. (2011). Presenting and organizing words hierarchically may help students create strategies for sorting and categorizing new words. Accordingly, the practitioner-based approach for teaching categories with semantically related words may be beneficial in enhancing language proficiency in learners with low levels of L2 proficiency.

Third, a high proportion of oral language studies have been conducted on monolinguals or samples combining both monolinguals and L2 learners. Strategies that have

been found effective for monolinguals in previous studies have been adapted with visualizations for use with language-minority learners to support comprehension (August et al., 2018; Silverman, 2007). In our study, visual materials such as picture cards, concept maps, games, and songs were continuously used as support.

Fourth, there were no significant interaction effects in either of our models. Previous research on diverse samples has revealed contradictory findings (Justice et al., 2005; Marulis & Neuman, 2010; Pollard-Durodola et al., 2011; Rogde et al., 2016; Zucker et al., 2013). Given the diverse findings in previous studies, the conclusion regarding no significant interaction effects in the present study might reflect the homogeneity of the sample (all students were L2 speakers and scored 1.5 standard deviations or more below the mean on a standardized test).

Finally, although our intervention was successful, additional research is needed to elaborate and identify whether it was the broad scope of activities as a whole or singular elements that contributed most to the obtained effect.

Practical and Theoretical Implications

Our study provides important theoretical and practical implications for L2 learning. Within the current educational policy in Norway, there is a high demand for school achievement but a lack of research regarding how to support young language-minority students in reaching L2 proficiency. Lacking proficiency in the language of instruction in school is a risk factor for poor academic achievement. From a practical perspective, our study may have both policy and pedagogical implications. For example, it provides insight into L2 instruction for students who need additional support. One way to promote such instruction may be to focus on a systematic and structured framework, in which the identification of core words in the textbooks combined with basic sentence production and invitations to extended talk is the

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baseline. Second, this intervention was offered by resource teachers, which underlines its relevance in school settings in terms of cost-effective approaches with low demands on teacher preparation (i.e., a six-hour training course, fixed lesson plans with pop-out materials, and few changes in instruction and activities, resulting in less preparation time on the part of the resource teachers and easy adoption of the program in the organizational structures within schools). These last factors are crucial to whether an intervention will persist when implemented across municipalities and within different practice fields. Finally, the iterative process within the partnership may have helped in developing a program that was adaptable to the school setting, thus supporting both its usability and its ecological validity.

Theoretically, our focus on promoting oral language skills in L2 learners through language-rich environments with opportunities to participate in talk was framed within a social interactionist approach to language learning. L2 learners face the challenging task of acquiring the qualities of language that typically are required in schools, while simultaneously learning the school content (Halliday, 2007). According to Cummins (2001), developing proficiency in school-relevant language might take as much as five to seven years, so it is important to consider ways of supporting this development instructionally. Based on a social interactionist framework that builds on the contributions of Cummins and Halliday, we developed a structured intervention with the core components of teaching content words from the students' textbooks combined with invitations to basic sentence production and extended talk. Although we did not assess content learning per se, we believe this theoretical framework may be useful in generating instructional strategies that support not only language learning but also language-mediated learning by unlocking access to the curriculum for young L2 learners. Curriculum-aligned instruction to support oral language learning and language-mediated content learning is in agreement with previous research that found effects when applying curriculum-related topics with adequate support (Weiland & Yoshikawa, 2013), the

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use of an educative curriculum (Fantuzzo et al., 2011; Neuman et al., 2015), the teaching of highly frequent words relevant across subjects (Lawrence et al., 2012; Snow et al., 2009), and the use of embedded and extended instruction (August et al., 2016, 2018). This emphasis is also in line with recent research that viewed classroom talk as a cornerstone approach for providing language support for L2 learners (Phillips Galloway & Lesaux, 2017). The current method of approaching L2 instruction might help inform educational improvement for young language-minority learners in their initial phases of L2 learning.

Limitations

Because the waiting-list control group received the intervention before our four-month follow-up, we do not know what the potential long-term effects of the intervention could be. However, because this program was already implemented in all participating schools on a regular basis, not offering the intervention to the waiting list control group would have been unethical. Second, our sample is representative of students scoring 1.5 standard deviations below the mean on a standardized test. We do not know whether language-minority learners with more developed L2 skills would have benefited from the intervention. Third, due to limited resources, we were not able to undertake language assessments in a way that was fully blinded to the treatment conditions. Finally, due to the heterogeneity of the sample, which included students with 31 different L1s, we were not able to use students' L1 as a resource in the intervention because L1 versions for each language represented were not available (i.e., translated, adapted, and normed versions of these tests in each of the languages).

Conclusion

This study addressed the efficacy of implementing a practitioner partnership approach to enhance young language-minority learners' L2 skills. The present findings extend previous research by demonstrating the success of a structured intervention that combined core

textbook words with basic sentence production and invitations to extended talk for young learners in need of L2 support. These findings have implications for L2 instruction, specifically regarding the development of proficiency in the vocabulary needed to comprehend oral and written texts in school.

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Notes

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Table 1

Sociodemographic Characteristics of Intervention and Control Children

	Intervention group (n= 71)	Control group (n=66)	Total sample (n=137)
Average age in months	75.11	75.59	75.34
Grade in percent			
- first grade	78.9	78.8	78.8
- second grade	21.1	21.2	21.2
Female in percent	58	50	54
Born in Norway in percent	74.6	77.3	75.9
Attended kindergarten in percent	87.3	89.4	88.3
Months of kindergarten attendance	27.28	27.47	27.37
Languages in percent			
- Urdu	15.5	19.7	17.6
- Arabic	15.5	13.6	14.6
- Somali	9.9	13.6	11.7
- Kurdish	9.9	10.6	10.2
- Tamil	7.0	7.6	7.3
- Turkish	7.0	6.1	6.6
- Other	35.2	28.8	32.0
Mother to child language use (1–3)	1.52 (n=66)	1.53 (n=58)	1.52 (n=124)
Father to child language use (1–3)	1.46 (n=61)	1.50 (n=58)	1.48 (n=119)
Child to mother language use (1–3)	1.64 (n=66)	1.60 (n=58)	1.62 (n=124)
Child to father language use (1–3)	1.60 (n=63)	1.55 (n=58)	1.58 (n=121)
Maternal education in percent			
- High school or less	78.7 (n=48)	78.2 (n=43)	78.4 (n=91)
- More than high school	21.3 (n=13)	21.8 (n=12)	21.6 (n=25)
Paternal education in percent			
- High school or less	62.5 (n=35)	70.2 (n=40)	66.4 (n=75)
- More than high school	37.5 (n=21)	29.8 (n=17)	33.6 (n=38)

Note. Parent and child language use: 1= mostly L1, 2= combination of L1 and L2, 3= mostly L2.

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Table 2

Correlations for all measures of distal language

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Receptive skills (BPVS-II) t1	1														
Expressive skills (CELF-4) t1	.557	1													
Word definitions (WPPSI-IV/WISC-IV) t1	.541	.487	1												
Grammar (TROG-2) t1	.643	.372	.535	1											
Narrative skills (Bus Story) t1	.494	.522	.563	.457	1										
Receptive skills (BPVS-II) t2	.658	.530	.483	.595	.419	1									
Expressive skills (CELF-4) t2	.457	.777	.374	.367	.395	.525	1								
Word definitions (WPPSI-IV/WISC-IV) t2	.542	.487	.601	.536	.458	.614	.434	1							
Grammar (TROG-2) t2	.530	.362	.369	.716	.418	.662	.406	.491	1						
Narrative skills (Bus Story) t2	.501	.535	.459	.415	.561	.583	.435	.535	.547	1					
Receptive skills (BPVS-II) t3	.631	.470	.470	.545	.395	.769	.418	.541	.547	.499	1				
Expressive skills (CELF-4) t3	.503	.716	.364	.287	.391	.591	.619	.460	.411	.576	.549	1			
Word definitions (WPPSI-IV/WISC-IV) t3	.528	.464	.541	.522	.467	.611	.345	.657	.511	.578	.591	.498	1		
Grammar (TROG-2) t3	.490	.313	.340	.643	.354	.617	.356	.493	.791	.420	.556	.364	.571	1	
Narrative skills (Bus Story) t3	.461	.463	.315	.389	.504	.527	.385	.490	.551	.696	.437	.487	.603	.540	1

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Table 3

Means, standard deviations, reliabilities and effect sizes of distal language measures

	Mean (SD)		Cronbach's ^a alpha	Cohen's d ^b	P
	Intervention group (n=71)	Control group (n=66)			
Receptive skills (BPVS-II)					
Pretest	33.77 (13.46)	37.35 (13.19)	.94		
Post-test 1	44.48 (15.51)	44.89 (13.30)	.95	.150	.245
Post-test 2	52.23 (14.66)	55.20 (12.56)	.94	-.008	.955
Expressive skills (CELF-4)					
Pretest	1.92 (1.98)	2.09 (1.78)	.74		
Post-test 1	2.66 (1.97)	2.35 (1.80)	.69	.240	.028
Post-test 2	3.26 (2.50)	3.78 (2.74)	.78	-.106	.358
Word definitions (WPPSI/WISC)					
Pretest	7.63 (5.57)	9.88 (5.44)	.83		
Post-test 1	10.63 (5.90)	12.45 (5.34)	.79	-.093	.544
Post-test 2	14.06 (5.24)	15.78 (4.80)	.75	-.110	.393
Grammar (TROG-2)					
Pretest	24.72 (13.45)	27.95 (13.11)	.95		
Post-test 1	37.46 (16.37)	35.42 (14.90)	.96	.310	.005
Post-test 2	44.99 (16.41)	45.30 (14.55)	.96	.134	.378
Narrative skills (BUS STORY)					
Pretest	5.58 (4.84)	7.92 (5.15)	.74		
Post-test 1	9.28 (5.26)	9.61 (5.79)	.72	.211	.150
Post-test 2	14.32 (6.29)	14.95 (7.01)	.75	.149	.345

Note. Cronbach's alpha^a= the reliability for each measure based on the total sample. Effect size^b= the standard deviation difference between the intervention and the business-as-usual control group, controlling for the pretest using robust standard errors (Huber-White)

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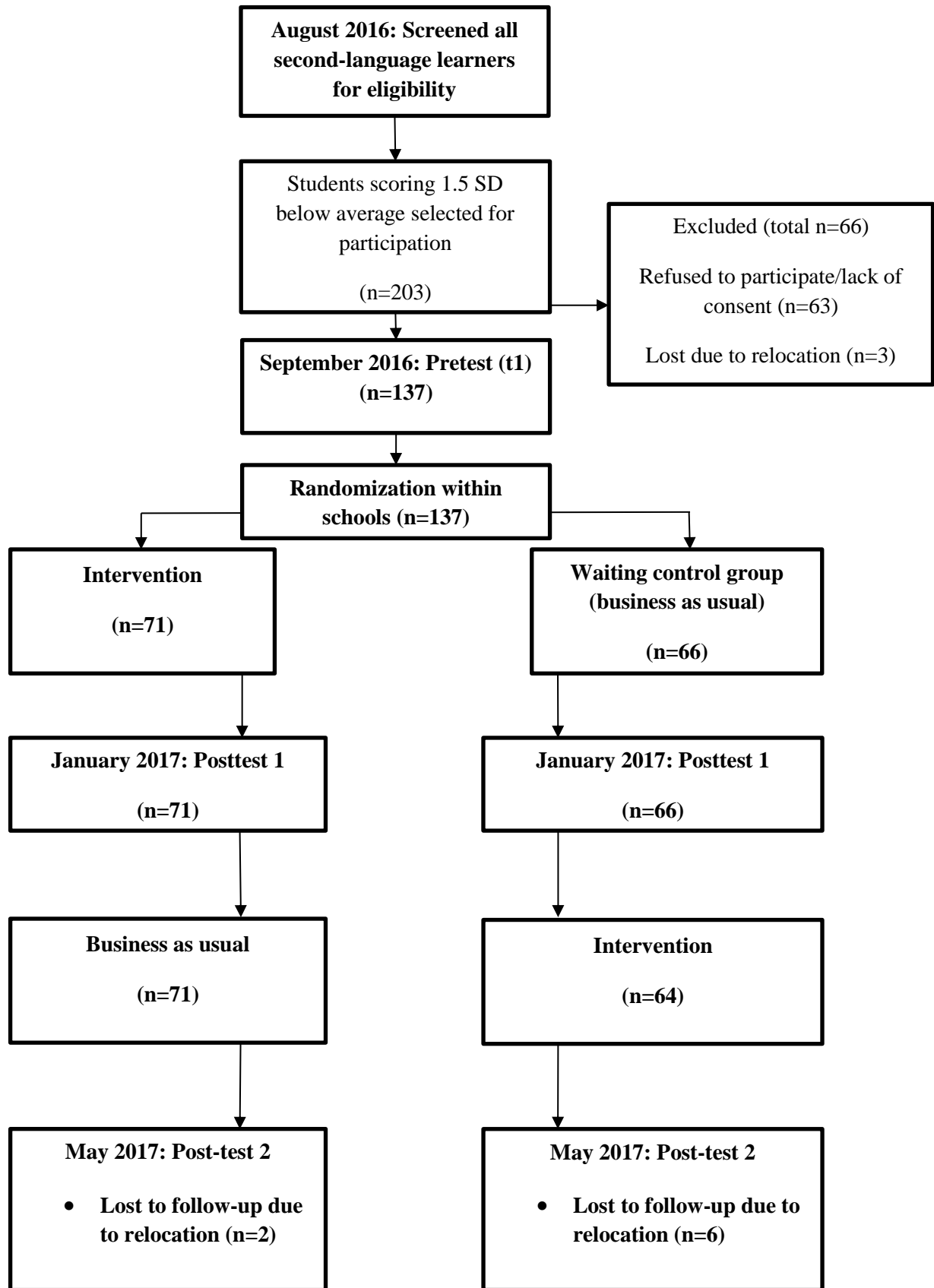


Figure 1. Consolidated Standards of Reporting Trials Diagram Showing the Flow of Participants Throughout the Study

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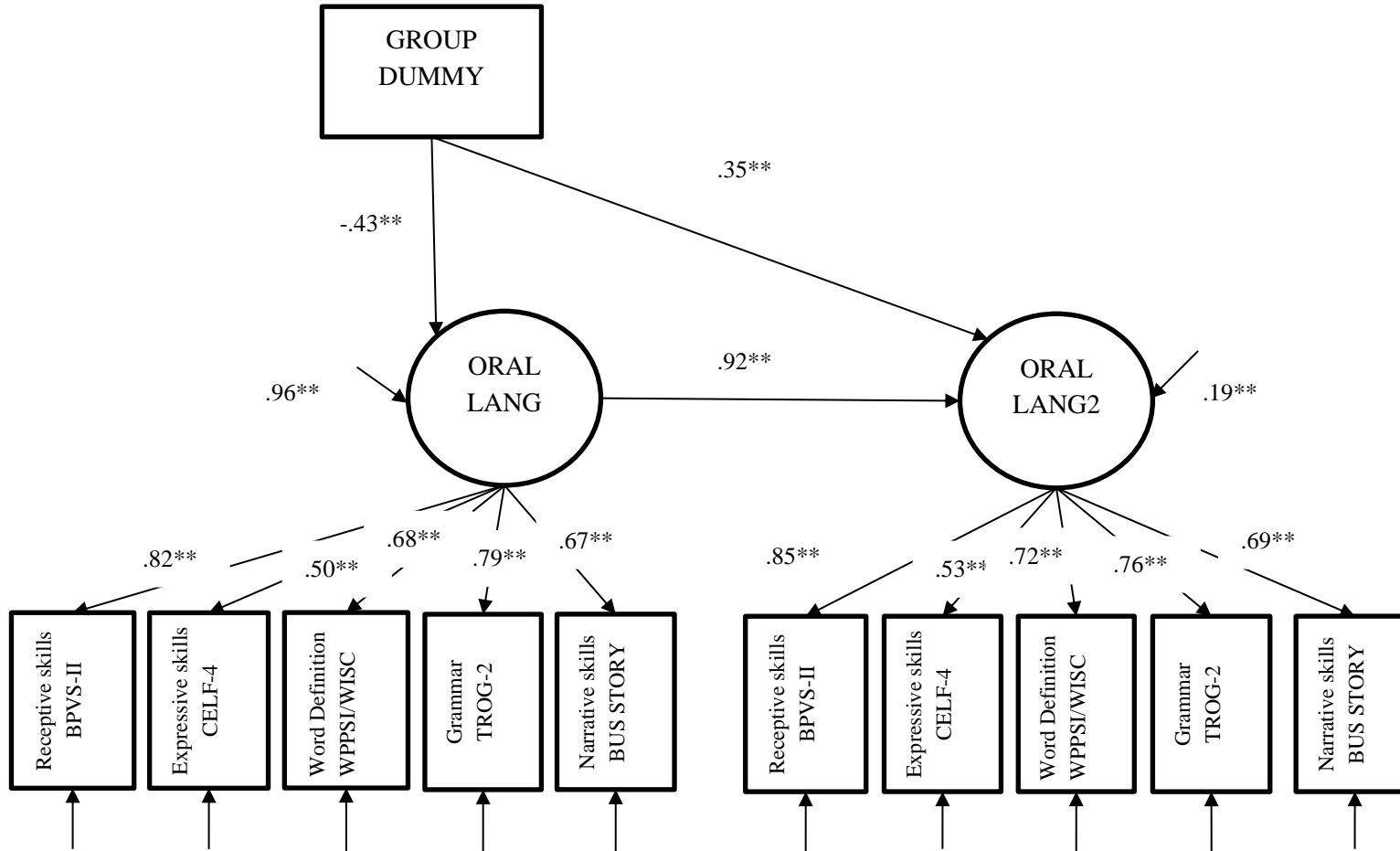


Figure 2. Model Showing the Effects of the Intervention on Language Skills, at the Immediate Posttest (Time 2)

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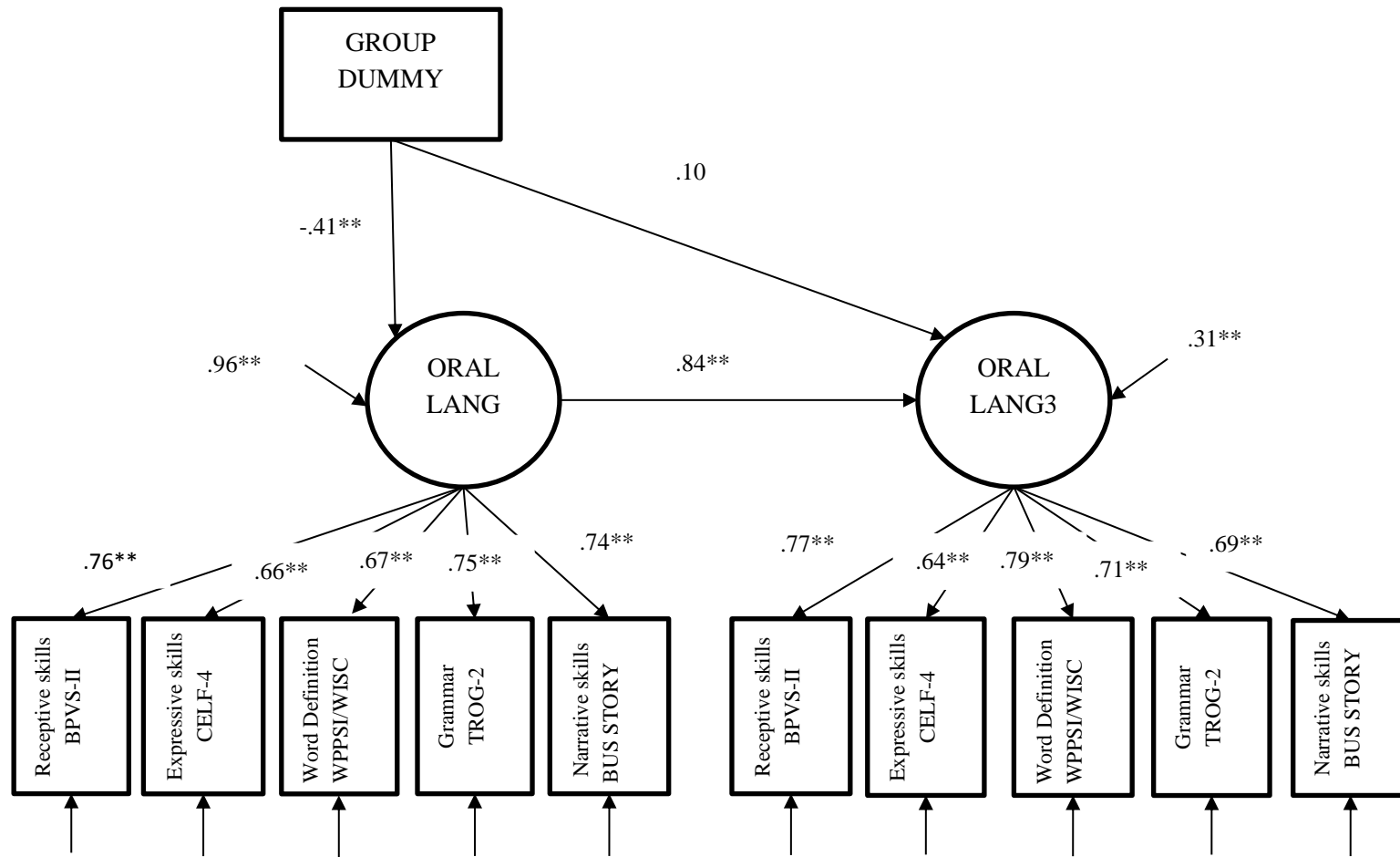


Figure 3. Model Showing the Effects After the Waiting-List Control Group Received the Intervention, at Four-Month Follow-Up Post-Test (Time 3)

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APPENDIX A

Example of lesson plan (in three sessions) for the category “Body”

Session	Content	Time	Target words	Material
1	<p>Introduction to the category:</p> <ul style="list-style-type: none"> - Teacher introduces the category using a picture card that illustrates a body. Talk around the category and use gestures and illustrations. Depending on proficiency, additional talk can be embedded by the teacher. - The children will repeat each word after it is named by the teacher. 	3–4 min	Eye, Nose, Ear, Mouth, Hand, Face, Shoulder, Foot	- Picture card (A4 template) for the category cards
	<p>Semantically related words (naming and understanding):</p> <ul style="list-style-type: none"> - Teacher introduces each of the semantically related words to the category separately. Each of the children will first name the pictures one by one, taking turns. - Depending on proficiency, additional talk can be embedded by the teacher. - Every picture card is then placed on the table, and the teacher instructs the children to point to a picture when named by the teacher (taking turns). - The teacher will then rotate the order of the cards on the table and ask each child to give them a card (“Can you give me face?”) and then place the picture card back on the table. 	8 min		- Picture cards for each words
	<p>Draw:</p> <ul style="list-style-type: none"> - Drawing by using concept maps to illustrate the semantic connection between words. 	8 min		- Workbook for drawing

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	<p>Song:</p> <ul style="list-style-type: none"> - The song “head, shoulders, knees, and toes” follows. Teacher introduces the song by using picture card on which the lyric of the song is visualized and explaining each of the words and motions related to the song. The song is then repeated several times. 	8 min		- Binder for song template
	<p>Choir:</p> <p>The session ends with repetition of each word in choir. The teacher will model the choiring and then repeat it several times with the children.</p>	3 min		- Picture cards for each word
2	<p>Introduction to the category:</p> <ul style="list-style-type: none"> - Teacher introduces the category by using a picture card that illustrates a body. Talk around the category and use gestures and illustrations. Depending on proficiency, additional talk can be embedded by the teacher. - The children will repeat each word after it is named by the teacher. 	3–4 min	Knee, Toe, Leg, Arm, Stomach, Back, Tooth	- Picture card (A4 template) for the category cards
	<p>Semantically related words (naming and understanding):</p> <ul style="list-style-type: none"> - Teacher introduces each of the semantically related words to the category separately. Each of the children will first name the pictures one by one, taking turns. - Depending on proficiency, additional talk can be embedded by the teacher. - Every picture card is then placed on the table, and the teacher instructs the children to point to a picture when named by the teacher (taking turns). - The teacher will then rotate the order of the cards on the table and ask each child to give them a card (“Can you give me face?”) and then place the picture card back on the table. 	8 min		- Picture cards for each words
	<p>Matching pairs:</p>	5 min		- Workbook for drawing

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	<ul style="list-style-type: none"> - “Draw a line”; children are naming pictures in two rows. The teacher then models how to identify and match a pair of pictures (one picture from each row match the other row). 			
	<p>Concept map</p> <ul style="list-style-type: none"> - Template illustrating hierarchical order of the semantic category is presented to the children. By using picture cards, the teacher models and instructs how the children can sort words. 	7 min		<ul style="list-style-type: none"> - Binder for concept map template - Picture cards for each word
	<p>Lotto:</p> <ul style="list-style-type: none"> - Ordinary rules are followed in this game. The teacher will also have the students repeat the words and encourage them to use sentences in describing each of the pictures they pull from the table. 	8 min		<ul style="list-style-type: none"> - Binder for Lotto templates - Picture cards for each word
3	<p>Introduction to the category:</p> <ul style="list-style-type: none"> - Teacher introduces the category by using a picture card that illustrates a body. Talk around the category and use gestures and illustrations. Depending on proficiency, additional talk can be embedded by the teacher. - The children will repeat each word after it is named by the teacher. 	2–3 min	Eye, Nose, Ear, Mouth, Hand, Face, Shoulder, Foot, Knee, Toe, Leg, Arm, Stomach,	<ul style="list-style-type: none"> - Picture card (A4 template) for the category cards
	<p>Semantically related words (naming and understanding):</p> <ul style="list-style-type: none"> - Teacher repeats each of the semantically related words from the previous lessons on the category separately. Each of the children will first name the pictures one by one, taking turns. - Depending on proficiency, additional talk can be embedded by the teacher. - Every picture card is then placed on the table, and the teacher instructs the children to point to a picture when named by the teacher (taking turns). 	8 min	Back, Tooth	<ul style="list-style-type: none"> - Picture cards for each words

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- The teacher will then rotate the order of the cards on the table and ask each child to give them a card (“Can you give me face?”) and then place the picture card back on the table.

 - Drawing:** 8 min
 - Draw your own body

 - Syntax:** 5 min
 - “I have ...,” “I see ...,” “It is...” sentences related to the semantically related words within the category.

 - Bingo:** 6–7 min
 - Basic rules are followed. Picture cards are used as support. The teacher will name the word first (without showing the picture) to see if the children remember the word and then provide additional support by showing the picture.
- Workbook for drawing

 - Picture cards for support

 - Binder for templates
 - Pen for ticking out words on the template/
 - Picture cards for each word

Note: Time is approximate. Invitations to extended talk are encouraged within each activity.

APPENDIX B

List of the categories included in the program

LEVEL	CATEGORY	WEEK	LESSONS
A	Body	1	3
	Family	1	2
	Home	1	3
	Clothes	2	3
	School	2	3
B	Food	3	2
	Street	3	3
	Traveling	3	3
	Kitchen	4	3
	Garden	4	3
C	Shopping/money	5	3
	Bedroom	5	3
	Bathroom	5 and 6 (overlapping)	3
	Animals	6	2
	Activities	6	3
D	Hospital	7	3
	Professions	7	3
	Antonyms	7 and 8 (overlapping)	4
	Feelings	8	3

Note: Amount, color, shape, pronouns, and action verbs were used throughout the program, both within instructions and during activities. However, they were not part of the main targeted categories in the program. Each level ends with two lessons, in which words are repeated using an additional repetition workbook and the picture cards.

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Table S1

Language use among language groups I

	Kruskall-Wallis H	df	Asymp. P
Mother to child language use	2.833	6	.830
Father to child language use	16.040	6	.014
Child to mother language use	5.521	6	.479
Child to father language use	7.820	6	.252

Table S2

Language use among language groups II

	Intervention group	Control group	Total sample
Mother to child language use			
- Urdu	1.64 (n=11)	1.55 (n=11)	1.59 (n=22)
- Arabic	1.55 (n=11)	1.38 (n=8)	1.47 (n=19)
- Somali	1.57 (n=7)	1.63 (n=8)	1.60 (n=15)
- Kurdish	1.57(n=7)	1.40 (n=5)	1.50 (n=12)
- Tamil	1.20 (n=5)	1.40 (n=5)	1.30 (n=10)
- Turkish	1.25 (n=4)	1.67 (n=3)	1.43 (n=7)
- Other	1.52 (n=21)	1.61 (n=18)	1.56 (n=39)
Father to child language use			
- Urdu	1.60 (n=10)	1.27 (n=11)	1.43 (n=21)
- Arabic	1.45 (n=11)	1.25 (n=8)	1.37 (n=19)
- Somali	1.67 (n=6)	2.13 (n=8)	1.93 (n=14)
- Kurdish	1.17 (n=6)	1.20 (n=5)	1.18 (n=11)
- Tamil	1.20 (n=5)	1.20 (n=5)	1.20 (n=10)
- Turkish	1.67 (n=3)	2.00 (n=3)	1.83 (n=6)
- Other	1.45 (n=20)	1.56 (n=18)	1.50 (n=39)
Child to mother language use			
- Urdu	1.91 (n=11)	1.64 (n=11)	1.77 (n=22)
- Arabic	1.55 (n=11)	1.25 (n=8)	1.63 (n=19)
- Somali	1.43 (n=7)	1.63 (n=8)	1.53 (n=15)
- Kurdish	1.57 (n=7)	1.20 (n=5)	1.42 (n=12)
- Tamil	1.20 (n=5)	1.60 (n=5)	1.40 (n=10)
- Turkish	1.50 (n=4)	1.33 (n=3)	1.43 (n=7)
- Other	1.76 (n=21)	1.67 (n=18)	1.72 (n=39)
Child to father language use			
- Urdu	1.73 (n=11)	1.55 (n=11)	1.64 (n=22)
- Arabic	1.64 (n=11)	1.38 (n=8)	1.53 (n=19)
- Somali	1.71 (n=7)	1.88 (n=8)	1.80 (n=15)
- Kurdish	1.50 (n=6)	1.20 (n=5)	1.36 (n=11)
- Tamil	1.20 (n=5)	1.20 (n=5)	1.20 (n=10)
- Turkish	2.00 (n=3)	1.67 (n=3)	1.83 (n=6)
- Other	1.55 (n=20)	1.67 (n=18)	1.61 (n=39)

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Note. Parent and child language use: 1= mostly L1, 2= combination of L1 and L2, 3 = mostly L2.