





# Shared Book Reading in Preschool Supports Bilingual Children's Second-Language Learning: A Cluster-Randomized Trial

Vibeke Grøver  and Veslemøy Rydland   
*University of Oslo*

Jan-Eric Gustafsson   
*University of Gothenburg*

Catherine E. Snow   
*Harvard Graduate School of Education*

This cluster-randomized controlled study examined dual language learners (DLLs) in Norway who received a book-based language intervention program. About 464 DLLs aged 3–5 years in 123 early childhood classrooms participated in the study. The children were acquiring Norwegian as their second language in preschool and spoke a variety of first languages at home. They received a researcher-developed intervention that was organized around loosely scripted, content-rich shared reading in school and at home. Receiving the intervention had significant impacts on the children's second-language skills (effect sizes of  $d = .25-.66$ ). In addition to supporting second-language vocabulary and grammar, the program with its focus on perspective taking during shared reading resulted in impacts on children's ability to shift perspectives and understand others' emotional states.

A growing number of children in early education settings in Europe and the United States speak a language at home different from the language they use and learn in preschool (National Academies of Sciences, Engineering and Medicine [NASEM], 2017; OECD, 2018). Young dual language learners (DLLs) around the world are linguistically and demographically heterogeneous, and attend preschools with a wide variety of language-learning policies and practices. They are also at higher risk than monolingual peers of being considered unprepared for formal schooling (NASEM, 2017; OECD, 2018), leading to urgency about identifying approaches that can be implemented in preschool

settings to improve their control over the societal language and school-readiness skills. The present article reports on an intervention implemented with a diverse group of DLLs attending preschools in Norway.

The design of the intervention reported here draws on two domains of prior research. First, it builds on the well demonstrated potential of shared book reading to support language development and thus promote long-term academic achievement. Second, we draw upon evidence from studies of shared reading suggesting that supporting DLLs' first language skills can contribute to their successful acquisition of a second language. In order to provide support for familial languages not spoken by adults in the early childhood settings, we review studies that have explored opportunities for promoting dual language learning through shared book reading at home in the familial language and in school in the second language.

---

We thank Paul Leseman, Francisco Pons and Joshua Lawrence for their valuable input in the planning phase of the project. We would like to thank all the research assistants and students who participated in data collection. In particular, we pay our regards to Nataliya Honcharova, Eva Svihus Borgersen, Kerstin Schmitz, Mari Hustad Sandøy and Svitlana Kucherenko for support in data collection and administration. Oslo Public Library (Deichman) gave advice on the selection of children's books used in the project. We thank the advisory board of experienced preschool leaders and teachers who gave important input in the planning of the intervention. Finally, we would like to express our appreciation to all the teachers, parents, and children who participated; this project would not have been possible without their support and interest. The project was financed by the Norwegian Research Council (grant number 218280).

Correspondence concerning this article should be addressed to Vibeke Grøver, Department of Education, University of Oslo, Box 1092, Blindern, 0317 Oslo, Norway. Electronic mail may be sent to [vibeke.grover@iped.uio.no](mailto:vibeke.grover@iped.uio.no).

© 2020 The Authors

Child Development published by Wiley Periodicals, Inc. on behalf of Society for Research in Child Development

This is an open access article under the terms of the Creative Commons Attribution-NonCommercial License, which permits use, distribution and reproduction in any medium, provided the original work is properly cited and is not used for commercial purposes.

All rights reserved. 0009-3920/2020/9106-0022

DOI: 10.1111/cdev.13348

### *Shared Reading and Language-Learning Outcomes*

Evidence has accumulated that children benefit from shared book reading, both at home and in classroom contexts, and that certain features of the book-reading interactions facilitate the positive effects on children's first (for reviews, see Dowdall et al., 2019; Mol, Bus, De Jong, & Smeets, 2008) and second-language learning (Fitton, McIlraith, & Wood, 2018). Specifically, highly interactive book reading, in which children hear open-ended questions that invite them to reason, draw inferences and transcend the here-and-now, support children's language learning, in both short- (Wasik, Bond, & Hindman, 2006) and long term (Dickinson & Smith, 1994). Furthermore, teachers who invite children to draw connections between reading and other classroom activities (Wasik et al., 2006) or extend the story or book theme through play (Nicolopoulou, Cortina, Ilgaz, Cates, & de Sa, 2015) facilitate children's oral language learning. Book reading is a particularly valuable activity because it elicits more cognitively challenging teacher questions than other classroom contexts (Massey, Pence, Justice, & Bowles, 2008) and provides an opportunity for reflection on the book characters' internal states and perspectives (Dowdall et al., 2019). In spite of the importance ascribed to book reading, it occurs relatively rarely in many classrooms, both in the United States (Connor, Morrison, & Slominski, 2006) and in Norway (Hagen, 2018). Interestingly, Hindman, Wasik, and Erhart (2012) and Gjems (2011) examined, in U.S. and Norwegian classrooms respectively, the extent to which preschool teachers made connections between book themes and other activities; they found that, in spite of huge variability in the teachers' ways of talking on other dimensions, they were all equally unlikely to make such connections.

The domain for which the impact of book reading has been most robustly studied is vocabulary. Children learn words encountered in semantically rich contexts in conversations about text (for reviews, see Grøver, 2017; Wasik, Hindman, & Snell, 2016) and by being exposed to words that are thematically related to one another (Wasik & Hindman, 2014) and to other ongoing activities. Shared reading studies report on medium to large effect sizes on vocabulary words targeted in the intervention, while effects on general, nontargeted vocabulary is less commonly reported (Dowdall et al., 2019; Wasik et al., 2016). Though vocabulary has been the focus of most evaluations of book-reading interventions, the synergistic effect of thematically related activities strongly suggests that vocabulary

outcomes are also a proxy for the accumulation of knowledge about otherwise unfamiliar topics and knowledge domains (Snow, 2017).

Aspects of grammatical development may benefit from the exposure through shared book reading to more syntactically complex utterances than occur in everyday conversations (Noble, Cameron-Faulkner, & Lieven, 2018). Parent-child reading frequency uniquely predicted children's later comprehension of syntactically complex sentences (Sénéchal, Pagan, Lever, & Quelette, 2008). Children exposed to shared reading improved their sentence complexity (a measure that included the Mean Length of Utterance, MLU) more than children who were exposed to storytelling (Isbell, Sobol, Lindauer, & Lowrance, 2004). Similarly, preschool teachers who participated in a shared book-reading intervention demonstrated more inferential questions and an interactive strategy that had a small, but significant effect on children's MLU measured in morphemes (Rezzonico et al., 2015). These studies all addressed monolingual children. It is worth noting that Aarts, Demir-Vegter, Kurvers, and Henrichs (2016) reported that preschool teachers had less syntactically complex talk when sharing books and interacting with DLLs than with monolinguals.

Children's narrative skills may be promoted during shared reading, though evidence is still limited (for a recent review, see Sénéchal, 2017). In an ethnically diverse sample, mothers' open-ended questions predicted 3- to 4-year-old children's narrative structure (the narrative organization into elements such as setting, problem, and resolution) and inclusion of more story components a year later (Kuchirko, Tamis-LeMonda, Luo, and Liang, 2016). Similarly, Lever and Sénéchal (2011) found that children who received a shared reading intervention had a more developed narrative structure and included more story components than the alternative treatment children. In contrast, Sénéchal et al. (2008) found that frequency of shared reading at home was not related to any measure of children's narrative skills, assessed as skills in telling stories from a book (narrative structure and inclusion of story components). Active participation by the child during shared reading appears to enhance children's narrative skills, whether the book sharing occurs at home (Kang, Kim, & Pan, 2009) or in the classroom (Schick, 2015). Teachers' extratextual talk during shared reading predicted narrative production in Spanish-English DLLs attending transitional bilingual kindergarten programs (Gámez, González, & Urbin, 2016).

Shared reading is also an opportunity for "reflections on the meaning of events and their causes,

and the characters' intentions and perspectives," as pointed out by Dowdall et al. in their systematic review of shared book-reading interventions and child language development (2019, p. 1). Shared reading may challenge the development of perspective taking through multiple opportunities to discuss characters' emotions and internal states (e.g., Beazidou, Botsoglou, & Vlachou, 2013; LaForge, Perron, Roy-Charland, Roy, & Carignan, 2018; Martucci, 2016). Internal state discourse in parent-child book reading supports young children's perspective taking and attention to sociocognitive themes (Adrian, Clemente, Villanueva, & Rieffe, 2005; Aram, Fine, & Ziv, 2013; Howe & Rinaldi, 2004; Ruffman, Slade, & Crowe, 2002), and children who received a shared reading intervention in preschool were more likely to pay attention to characters' internal states (Zevenbergen, Whitehurst, & Zevenbergen, 2003). We have not been able to identify shared reading interventions that included attention to young DLLs' perspective-taking skills outcomes.

In summary, shared book reading offers rich opportunities for children to learn vocabulary and associated topic knowledge, to acquire complex syntactic structures, to be exposed to multiple narrative forms, and to achieve insights into others' internal states, emotions, and perspectives. These latter dimensions of the book-reading impact are less commonly studied, but they tap into sociocognitive developments that prepare children for school-relevant language use (Grøver, Uccelli, Rowe, & Lieven, 2019) and that are relevant to long-term academic outcomes (Kim, Hsin, & Snow, 2018), and they were central to the intervention tested in this study and thus to the assessments administered to the participating children.

#### *Supporting DLLs' First Language in Shared Reading Partnerships With Parents*

We have been able to identify three studies that specifically examined first and second-language learning in young DLLs during shared reading. Roberts (2008) found equal effectiveness of home storybook reading in either the first or second language on second-language vocabulary learning. Lugo-Neris, Jackson, and Goldstein (2010) compared the effects of English-only book reading with bilingual preschoolers to English instruction enhanced with Spanish words; the Spanish word support resulted in English vocabulary gains. Similarly, Hermanns (2010) found that Spanish-speaking preschoolers learned more English vocabulary from a single exposure to an English book after having

heard it read in Spanish than from two English-language readings. These studies thus found that combined first- and second-language shared reading was equally or more effective for second-language vocabulary learning than the similar amount of shared reading limited to second-language exposure.

To support dual language learning in shared reading interventions in the highly diverse preschool classrooms in Norway with multiple familial languages spoken (Statistics Norway, 2018), an approach for preschools may be to recruit families to introduce the children to classroom activities by providing books that are simultaneously shared at home in the family's preferred language and in school in the majority language. Though this approach is less intensive than classroom-based bilingual programs, it is a mechanism to support bilingual learning in demographically and linguistically diverse contexts (Castro, Espinosa, & Paez, 2011; Hancock, 2002). Families can promote oral language when home and school activities are aligned (Koskinen et al., 2000; Lonigan & Whitehurst, 1998; Paez, Bock, & Pizzo, 2011; Whitehurst et al., 1994). We included parent-mediated support as one component of our intervention because it was the only feasible mechanism for introducing home-language skills related to the books read in the preschool.

#### *The Present Study*

The present study was designed to assess the effects of receiving a shared reading intervention, the Extend program, developed to support a broad set of skills hypothesized to result from book sharing: grammar, narrative skill, and perspective taking in addition to vocabulary. We designed the Extend program as a loosely scripted intervention to support alignment with early childhood education in Norway and its commitment to child-initiated activities and free play, as outlined in the national Framework plan (Norwegian Directorate for Education and Training, 2017). Core ingredients in the book-based program were teacher invitations to reason, explore ideas, shift perspectives, acquire associated topic knowledge, and extend the book theme through play and other activities.

Furthermore, according to the national Framework plan, preschool staff are required to promote Norwegian language skills while simultaneously encouraging multilingual children to use their mother tongue. There is, however, no curriculum or systematic efforts to promote mother tongue

development in Norwegian preschools. Bilingual support, if available at all, is typically offered by an ambulant bilingual assistant who serves many preschools and visits each only a few hours per month. Dual language learning was supported in the Extend program through elements of partnership with parents who, in the familial language, shared with their children some of the books that were used for classroom shared reading.

We estimated the impacts of the Extend program using a cluster-randomized controlled design with classrooms as the unit of randomization and individual DLLs as the unit of language outcome analyses. Classrooms were randomly allocated to one of two conditions: the intervention condition that received the Extend program in preschool and at home and the control condition that continued work as usual. The intervention was delivered in four units, each of 4 weeks duration, through one preschool year. We assessed individual children's second-language vocabulary, grammar, narrative skill, and perspective taking as well as their first-language vocabulary skills at the beginning and end of the intervention school year, leaving 7–8 months between assessments.

The empirical study investigates the following research questions:

RQ 1: Did children in the Extend intervention classrooms develop their second-language vocabulary, grammar, narrative skills and perspective taking faster than their control-group enrolled counterparts?

RQ 2: Did the home component of the intervention show effects on children's first-language vocabulary skills?

## Method

### *Participants*

Participants in the study included 464 children (49.6% girls) who attended 123 classrooms in 60 preschools in the larger Oslo area. In Norway, preschool classrooms are age-heterogeneous, each classroom serving children ranging in age from 3 to 5 years. Children's mean age in months at pretest was 52.60 ( $SD = 9.63$ ) and at posttest 60.03 ( $SD = 9.67$ ); 40.7% of the sample (5-year-olds at pretest) were in their last year of eligibility for preschool, 36.4% were 4-year-olds who could anticipate two more years of preschool attendance, while 22.8% were 3-year-olds who were eligible for three more years of attendance before exiting to elementary

school. The mean number of participating children per class was 3.77. The children spoke a variety of first languages, and for 11 of these languages we were able to assess first-language vocabulary. These languages were spoken by the following percentages of the total sample: Albanian 5.2%, Arabic 9.3%, Bosnian 3.0%, Sorani Kurdish 4.7%, Polish 9.7%, Russian 1.5%, Somalian 14.0%, Tamil 7.5%, Turkish 6.0%, Urdu 20.3%, and Vietnamese 4.5%, while 14.2% of the sample reported other first languages.

Parental education varied widely; 24.9% of the mothers and 24.1% of the fathers had middle school or less as their highest educational level, 42.5% of the mothers and 41.8% of the fathers had completed high school, and 32.7% of the mothers and 34.0% of the fathers had completed a university degree. A majority of the mothers ( $M = 0.63$ ,  $SD = 0.48$ ) and fathers ( $M = 0.79$ ,  $SD = 0.41$ ) had full- or part-time work or studies outside home (no work/school outside home = 0, work/school outside home = 1). Most parents were born outside Norway (for mothers  $M = 0.08$ ,  $SD = 0.27$ , for fathers  $M = 0.08$ ,  $SD = 0.27$ ; born outside Norway = 0, born in Norway = 1) and had immigrated to Norway as young adults (age in years of immigration to Norway for mothers;  $M = 21.92$ ,  $SD = 8.46$ ; for fathers;  $M = 24.39$ ,  $SD = 8.25$ ).

Most mothers ( $M = 1.39$ ,  $SD = 0.65$ ) and fathers ( $M = 1.37$ ,  $SD = 0.66$ ) reported that they used their first language in communication with the child and that the child mostly used a combination of the first language and Norwegian or mostly Norwegian in communication with them (child with mother  $M = 2.08$ ,  $SD = 0.87$ , child with father  $M = 1.95$ ,  $SD = 0.88$ ; mostly first language = 1, about equal use of first and second language = 2, mostly second language = 3). Half of the children had entered preschool before the age of two and the large majority before age three (age in months at preschool entrance:  $M = 26.11$ ,  $SD = 10.72$ ).

Most lead teachers had a degree in early childhood education ( $M = 0.78$ ,  $SD = 0.41$ , lead teacher had no early childhood education degree = 0, lead teacher had an early childhood education degree = 1). The other lead teachers were in a process of acquiring an early childhood degree or had other backgrounds. The lead teachers were experienced; more than half (52.1%) had 6 or more years of experience as leaders. The classrooms demonstrated high language diversity. Out of 18 children in the average classroom ( $M = 18.17$ ,  $SD = 3.37$ ), close to 12 ( $M = 11.91$ ,  $SD = 4.83$ ) came from families in which both parents had a first language different from Norwegian.

We recruited classrooms and children by inviting preschool teachers to volunteer for the study. The teachers all worked in city districts with a high percentage of immigrant families. They distributed project information and consent forms to parents of DLLs in their classrooms. For a classroom to be included in the study a minimum of two families with children identified as bilingual by their parents and with parents speaking a non-Scandinavian language had to agree to participate. Recruitment was completed before the classrooms were randomized into intervention and control condition. We applied a two-step randomization procedure selected to optimize similarity in socioeconomic backgrounds between treatment and control classrooms (for details on the randomization procedures, see Supporting Information). An independent samples *t*-test accounting for cluster effects was conducted to compare demographics in the intervention and control conditions at pretest. There was a significant difference in mean age in months between the intervention and control group, the intervention group ( $M = 53.84$ ,  $SD = 9.51$ ) being older than the control group ( $M = 51.19$ ,  $SD = 9.60$ );  $t(464) = 2.09$ ,  $p = .039$ ,  $d = .28$ . However, no other differences between the conditions were found (statistics not shown here). There were no differences between conditions in teacher-reported classroom measures.

During the school year we lost one intervention classroom as all three participating children moved. We lost altogether 35 children during the year, evenly divided between the intervention (17 children) and control conditions, resulting in postintervention data on 122 classrooms and 429 children. Nearly all attrition was due to families moving, though one teacher requested that a child be allowed to leave the study as he showed distress when asked to sit during shared reading.

### *Measures and Procedures*

#### *Child Assessments*

The children were individually assessed pre- and postintervention by trained research assistants who were not informed about the condition of the classrooms they visited and who were qualified speakers of the assessed language. All assessments were conducted in a quiet room in the preschool with no time limits posed. Assessments in Norwegian were conducted using seven instruments administered in the following fixed order that allowed a variation between receptive and expressive tasks to keep the

child engaged: Targeted receptive vocabulary (VOC\_REECEPTIVE), Targeted expressive vocabulary (VOC\_EXPRESSIVE), The Multilingual Assessment Instrument for Narratives (MAIN), Test for Reception of Grammar, second edition (TROG-2), British Picture Vocabulary Scale, second edition (BPVS-2), The HUG test, and the Test of Emotion Comprehension (TEC). The research assistants were instructed to allow breaks if the child lost attention or interest. Preintervention assessments were split in two individual sessions lasting up to 30 min. Postintervention assessments were split in two if the assistant considered this necessary to keep the child engaged. Two of the seven instruments, MAIN and HUG, included two separate subsets of items, with the first set used to assess narrative skills (MAIN\_NARRATIVE, HUG\_NARRATIVE) and the second to assess perspective-taking skills (MAIN\_INTERNAL STATE COMPREHENSION, HUG\_PERSPECTIVE SHIFTING; for more information on instruments, see Supporting Information).

*Second-language vocabulary.* To assess children's second-language vocabulary skills we addressed both general and targeted vocabulary using four indicators.

The BPVS-2 (Dunn, Dunn, Whetton, & Burley, 1997; adapted to Norwegian by Lyster, Horn, & Rygvold, 2010) was used to assess general, nontargeted, receptive vocabulary. The child was shown successive panels of four pictures and asked to point to the picture that matched the word said by the assessor. The child got one point per correct response. Stop rules were used.

To assess the children's knowledge of the words targeted in the intervention we used three researcher-developed indicators.

VOC\_RECEPTIVE was developed as a 46-item receptive targeted vocabulary test, designed to be similar to the BPVS-2. Children were credited with one point for reference to each correct item, no stop rules were applied.

VOC\_EXPRESSIVE was a nine-item expressive vocabulary test developed to assess children's skills in defining targeted words. Children's responses were coded along a 3-point scale from 0 (*scored when the child repeated or rephrased the word or responded incorrectly*) to 2 (*scored when the child showed good conceptual understanding*). The interrater reliability was .86 (Cohen's  $\kappa$ ).

VOC\_SPONTANEOUS USE included the number of targeted vocabulary words that the child spontaneously used while narrating a wordless picture book. The child got one point per targeted vocabulary word used (repeated use of the word was not

counted). The measure is thus an indicator of the extent to which targeted vocabulary had become part of the children's productive word repertoire.

**Grammar.** To assess children's syntactic comprehension we used three sets (set C, D, and E, in total 12 items) of the TROG-2 (Bishop, 2003), adapted to Norwegian. The child was shown panels of four drawings and was asked to point to the drawing that matched the sentence said by the assessor (one point per correct response).

**Narrative skills.** We used two different instruments to assess children's skills in narrative production. *The HUG narrative test* (HUG\_NARRATIVE) assessed narrative skills using the wordless book Hug (Alborough, 2002). The book, which is unfamiliar in Norway and does not overlap in theme with books shared as part of the intervention, is about a baby monkey protagonist searching for and finally getting reunited with its mother. Audiorecorded stories were transcribed using the conventions of the Child Language Data Exchange System, CHAT (MacWhinney, 2000). Transcriptions were coded using the coding conventions developed by Luo, Tamis-LeMonda, Kuchirko, Ng, and Liang (2014). The story was divided into 33 possible story components; in addition to the opening and closing of the narrative the story components that fitted into the overall storyline of the book were coded. Simple labeling (e.g., naming animals, their colors, and numbers) in ways irrelevant to the storyline was not coded. The children were credited with one point for reference to each story component. Interrater reliability was .83 (Cohen's  $\kappa$ ).

*The MAIN* (MAIN\_NARRATIVE; Gagarina et al., 2012) is a narrative task that is available in several versions (we used the baby goat version) and that consists of a set of six pictures. We used the instrument's elicitation procedures and narrative structure scoring procedures in which children could receive up to 16 points for narrative production. The narrative structure of the story was divided into three episodes, each consisting of five elements; problem, goal, attempt, outcome, and reaction, in addition to an introductory setting description (time and place of the event), adding up to 16 elements that, if included, would result in one point each. Coding was based on audiotaped and CHAT-transcribed storytelling. The interrater reliability for the coding of narrative structure was .83 (Cohen's  $\kappa$ ).

**Perspective-taking skills.** We assessed children's perspective-taking skills using three different instruments that respectively assessed internal state comprehension, emotion comprehension, and skills in perspective shifting. None of these instruments

required that children know or respond with sophisticated vocabulary.

*Internal state comprehension* was assessed using the second and separate part of the MAIN (MAIN\_INTERNAL STATE COMPREHENSION). For this instrument we used the five questions that were relevant to assessing internal state comprehension, for example "How did the fox feel?" The children responded verbally and would get one point for reference to a relevant emotion (e.g., "sad" or "bad").

The TEC (Pons & Harris, 2000) consists of a set of brief stories that are read to the child, each with one or more corresponding illustrations. To assess *Emotion comprehension* we used TEC's set two, which addressed children's understanding of external causes of emotions (such as being angry when disturbed by a younger sibling). For each story the child was asked to select the relevant emotion by pointing to one of four drawings of facial expressions (receptive task). We excluded one anomalous item (the waiting for the bus item) that would have resulted in reduced reliability. Before exposing children to set two, we checked their understanding of the five emotion terms (*sad, happy, angry, scared* and *okay*) that were used to assess emotion comprehension in the set. We did this by asking them to identify the facial expression that corresponded to each emotion term. For the large majority of children the task was easy. The children responded correctly on average to four out of the five items.

To assess *Perspective shifting* we developed the HUG\_PERSPECTIVE SHIFTING tool, that was based on, but extended the HUG\_NARRATIVE. While the principal protagonist in the book was the little monkey, a baby elephant and its parent were secondary characters present on all pages except one. The children who produced a story during HUG\_NARRATIVE (not just labeling the pictures) were invited to retell the story "as it was for the baby elephant" (for description of this perspective-shifting task, see Grøver (2019)). We developed a narrative perspective-shifting coding scheme with an interrater reliability of .82. The children primarily displayed use of the first two categories in the coding scheme (1. "the elephant baby hugged or was together with its parent," and 2. "the elephant baby saw that the monkey was feeling alone or missed its mother") on which the analysis in the present article is based. We gave one point for a narrative shift to the elephant as the protagonist (Category 1) and two points for including the second category which we considered a stronger manifestation of a shift in narrative perspective.

*First-language receptive vocabulary.* We were able to assess the first-language vocabulary skills both pre- and postintervention of 292 children who spoke one of the 11 different first languages identified above. We used the 46-item receptive vocabulary test (VOC\_RECEPTIVE, developed in Norwegian) as a basis for assessing the children's first language knowledge of the words targeted in the intervention. The test was translated to each language by a professional translation firm that had access to the test picture material and was back-translated to Norwegian by bilingual research assistants who also consulted other bilingual speakers with extensive knowledge of preschool children's word use and preferences (for inspection of item-difficulty across languages at pretest, see Supporting Information). Three out of the 46-word items were excluded from the final first-language receptive vocabulary test versions as these words were not available in one or more of the 11 languages. The 43-item test included 18 words that appeared in the books that had been sent home as part of the intervention (see below) and 25 words that only appeared in books shared in preschool.

#### *Parental Interview*

Prior to the onset of the intervention parents were telephone interviewed by bilingual research assistants. Questions addressed family demographic information and language use.

#### *Teacher Questionnaire*

Lead teachers in each classroom responded to a questionnaire addressing teacher demographics, classroom composition, and curricular priorities.

### *The Extend Intervention*

#### *Developing the Extend Program*

Prior to conducting the intervention, the Extend program was piloted. A team of experienced preschool teachers and leaders collaborated closely with the researchers in considering various books and themes, words to target, and instructional strategies to support reasoning and to help identify characters' perspectives and emotions. Preliminary versions of the Extend program were piloted by another team of experienced lead teachers in their classrooms and their input was used to further develop the program.

Similarly, we piloted instructions to parents about audiorecording shared readings with their

child. We learned about the large variation across parents in how they experienced and responded to similar instructions. Thus, to allow parents from varying literacy backgrounds to share books with their children in ways that were natural to them, we decided to provide no explicit instruction about ways of communicating or teaching word meaning.

#### *The Extend Intervention*

The Extend program introduced four thematically defined units ("To travel and to belong," "To live together and find solutions," "To be me with my feelings," "On the savannah in Africa"). Each unit had a 4-week duration to allow time between units with no program activity. Criteria for the selection of books within each unit were that they be useful in inviting content-rich discussions with preschool children and that they reflect the overall theme they were part of, thus allowing words and themes covered in the discussion of one book to be revisited when discussing another. Fifteen books (10 narrative, of which four were wordless, and five information-based, see Supporting Information) were selected for the first 15 weeks of the intervention. The last week of the fourth unit teachers were asked to revisit the children's favorite books. The classrooms were asked to work with each book for 1 week with three shared reading sessions and to audiotape the last reading. For the two first readings the teachers could include any number of children they wanted, while for the third, audiotaped reading only consented participants could be present. Outside the reading sessions, teachers were asked to share information with parents about the child's ideas and comments during shared reading and to invite play and other activities that expanded the book theme.

During a shared reading session, the teachers were asked to (a) teach 4–5 targeted words, and (b) encourage reasoning through questions. When relevant they were also asked to (c) support identification of emotions, internal states and perspectives in the text, and (d) build knowledge aligned with the targeted vocabulary. To reduce preparation time for teachers each book came with support material that identified the targeted words, and suggested, in the form of examples rather than prescriptions, how teachers could use the book to address the components of the intervention.

We will illustrate how these components appeared in the teacher support material using one of the books read during the first thematic unit; "Lost and found" (Oliver Jeffers, in Norwegian

translation) which tells the story of a developing friendship between a boy and a penguin, the boy trying to take the penguin back home to the South pole, and only finally understanding that the penguin actually prefers to be with him. The support material identified five target words ("solid," "iceberg," "lost and found," "float," and "ponder") and proposed ways of discussing their meaning (such as for the word "ponder" "think hard about something, wondering about something. What do we look like when we ponder?") To encourage reasoning, the support material suggested various open-ended questions ("why do you think the boy wanted to take the penguin to the South pole?"). To support identification of emotions and perspectives the material suggested ways of reworking the text from new perspectives ("let's try to retell the story as it is for the penguin"). To support associated topic knowledge, the material offered information about and illustrations of icebergs. Finally, to support the play that extended the book theme, the material gave examples such as playing lost-and-found or being in a boat on a stormy ocean, emphasizing that the teacher should invite the children's own play ideas.

Four out of the 15 books (one for each unit, the same books for all families) were sent home and parents were asked to share the book with their child in their preferred language. These books were all narrative. Three out of four were wordless while the fourth included some text that was translated into the 11 languages. Parents were asked to read each book at least five times, and to support multiple readings parents received stickers (one for each reading) that could be attached to a folder that also included child-friendly illustrations of the targeted words written in the family language. Parents were not explicitly asked to teach these words to their children, but to share the book with their child in the way they would normally do. The parents received the books and accompanying information from the lead teachers. A stuffed penguin which participated in classroom shared reading sessions went regularly back and forth between the classroom and the children's homes. The penguin was typically used as a support for children when they retold the narrative they had developed with their parents in another language and a different setting.

While intervention and control group teachers collaborated across classrooms in other activities and projects, we asked them not to discuss the Extend program. During the intervention year, the control classrooms received one to two books (seven in total) within each thematic unit that were

topically linked to the unit, but not identical with the books that the intervention group received. Because teachers in the control classrooms would be given the intervention books and support material at the end of the year, we wanted to provide distinct materials during the intervention year. For example, while the intervention group received Oliver Jeffers "Lost and found" the control group received a similar book by the same author that also addressed social relationships. Children and parents in both control and intervention classrooms received holiday cards, thank you notes, and certificates of participation.

### *Intervention Fidelity*

Prior to the intervention the lead teachers participated in a 1-day workshop offered by the two first authors of this article in which the main features of the Extend intervention were introduced. The workshops were held at three different locations and time points to make sure that all teachers could attend. The books and support material in the first unit were presented in detail and discussed to exemplify the features of the intervention. Even though all participating children were DLLs, we expected their first- and second-language skills to vary widely, and the workshop thus emphasized adjusting instructional strategies to the specific group of children the teacher worked with. During the intervention year, each teacher was coached once in each thematic unit by one of the first two authors of the article who visited the teacher in her classroom to discuss implementation challenges (see Peterson, 2013 for discussion of individualized coaching).

We collected systematic information on implementation using teacher-report forms and audiotapes of shared readings in classrooms and at home. Teachers filled out a form for each book they shared, reporting on which students had been present during each shared reading session and which intervention components they had worked with. They also audiotaped one shared reading per week. According to the teachers' self-reports they engaged in 32.69 book readings ( $SD = 10.51$ ) out of 45 and read on average 12.69 books ( $SD = 3.25$ ) out of 15. The mean number of returned tapes was 11.10 ( $SD = 3.70$ ) out of 15, indicating a commitment to implement the intervention by most teachers. The mean length of recordings in minutes per book varied between 10.33 ( $SD = 5.73$ ) and 17.56 ( $SD = 8.07$ ), with the median recording time in minutes being 14.18 ( $SD = 6.91$ ).



Information on implementation of specific intervention components was derived from the teacher-report form. Most teachers reported working with targeted words, but with variation in frequency. On average, teachers reported working with targeted words in 10.07 of the 15 books ( $SD = 4.07$ ). The books varied in support for inviting perspective-taking. Teachers reported that they worked with perspective taking in 6.26 books ( $SD = 3.91$ ) out of 15. Close to half of the teachers (42.6%) never observed that children used ideas from the books in their play. Teacher communication with parents regarding shared reading in the classroom was mostly related to the books that were sent home and was more frequent in the first unit when the intervention was new to both teachers and parents; 39.3% of the teachers never reported talking with the parents about the child's participation in shared readings.

Children's exposure to the intervention within their classrooms, based on teacher-reported attendance during lesson implementation, was assessed. Children got on average exposure to about half of the maximum possible number of shared readings ( $M = 24.99$ ,  $SD = 11.08$ ). Preschool attendance is not compulsory in Norway, and some families used the preschool on an irregular basis.

Parents were asked to audiotape a shared reading of each of the four books at home, and the frequency with which parents returned audiotaped shared reading sessions can be used as an indicator of implementation. The mean number of returned tapes was 2.22 ( $SD = 1.52$ ) out of four; 20.7% of the parents never returned any tape, while 50.0% returned three or four tapes.

#### *Overview of Analytic Plan to Test Program Effects*

To answer RQ 1 we used structural equation modeling (SEM) techniques to estimate the Extend effect on preschoolers' language development and perspective-taking skills. Latent variable analysis allowed us to use and combine observed measures on different scales. This analytic technique takes only the common variance among observed variables into account, and allowed us to test the impacts without disturbance from measurement errors. The intraclass correlations revealed a clustering of scores within classrooms at pretest, varying from .06 to .15. We applied the so-called Complex option in the Mplus program (Muthén & Muthén, 1998–2017) to take the cluster effect on estimated standard errors into account. The model-based maximum-likelihood procedures

implemented in Mplus were relied on to handle missing data. We used autoregressive techniques with children's language skills postintervention as the dependent measures of the Extend program influence, taking into account children's preintervention language skills. Moreover, we included in our impact model covariates that controlled for child age in months at pretest and posttest to increase precision in the estimates of impacts, and in order to prevent bias in estimation of condition effects due to the significant difference in age between intervention and control groups that we had identified.

To answer RQ 2 we conducted a separate analysis to estimate the Extend effect on the more limited subsample assessed in their first language. Also for this analysis we used the Complex option in Mplus to take clustering into account. As parents received books and information from their child's preschool teachers we could not rule out that there were systematic differences in home implementation that reflected children's clustering in classrooms. The analyses of effects on first-language vocabulary outcomes were conducted with a latent variable model using the subset of targeted words that appeared in the four books read at home.

#### *Goodness-of-Fit Tests*

For tests of model fit the chi-square statistic, root mean square error of approximation (RMSEA) with 90% CIs, comparative fit index (CFI), Tucker–Lewis index (TLI), and standardized root mean square residual (SRMR) are reported. To indicate good fit we evaluate them against the following rules of thumb: the RMSEA estimate should be lower than .05, and the upper limit of its 90% CI should be lower than .08, CFI should be higher than .95, TLI higher than 0.90, and SRMR should be  $< .08$ .

#### *Effect Size*

We need measures of the degree to which the intervention group outperforms the control group, and also of the degree to which the posttest results are higher than the pretest results. A frequently used measure of effect is the standardized difference between two observed independent means, where the standardization is done either with the pretest/control group  $SD$  or with the pooled  $SD$ . For pretest–posttest data where observations are from the same individuals, the mean difference can be standardized either in the same way as for independent means, or with the  $SD$  of the individual

difference scores. For reasons of comparability we will use the procedure for independent means in both cases, generating a measure frequently referred to as Cohen's *d*. In a latent variable model of the type applied here the effects of an intervention may be calculated from the *y*-standardized coefficients for the regression of the latent dependent variables on a dummy variable representing group membership, and these estimates can be interpreted as Cohen's *d*. However, because the latent variable estimates are not affected by errors of measurement they are generally higher than estimates computed from observed variables.

Cohen (1992) proposed an effect-size scale for Cohen's *d* with limits of .20, .50, and .80 for Small, Medium and Large effects, respectively. However, the scale proposed by Cohen is not based on any substantive considerations, and there is reason to believe that what is an effect of small, medium, and large size varies across fields of research and may not be well suited for assessing the importance of educational interventions (for discussion, see Bloom, Hill, Black, & Lipsey, 2008). For the intervention investigated here, we will use the improvement of the control group from the pretest to the posttest as a benchmark for evaluating the meaningfulness of the effect of the intervention.

## Results

To answer RQ 1, we first present descriptive statistics of the children's raw scores for all measures pre- and postintervention (see Table 1). Effect sizes for the pre- to posttest change were calculated as the mean difference between the pre- and postassessment over the mean of standard deviations for the pre- and posttests. Both the control and intervention groups increased their scores over the time-period of approximately 7.4 months. For the 10 second-language measures the mean improvement was 0.53 for the control group, and 0.75 for the intervention group. [Correction added on January 14, 2020, after first online publication: the text "10-s language" was changed to "10 second-language" in the above sentence.] For both groups the effects reflect general development, effects of preschool attendance, and retest effects, and for the intervention group the estimates also include effects of the intervention. For all observed variables, except for BPVS-2 and MAIN\_NARRATIVE, the effect sizes were higher for the intervention group than for the control group.

The SEM model included four latent variables at pre- and postassessment: vocabulary, grammar,

narrative skills, and perspective taking. The model had an autoregressive structure, the four latent postassessment variables being regressed on corresponding latent preassessment variables. Latent variables at pretest were allowed to covary. In order to control for the age difference between the intervention and control groups, and to increase the statistical power of the analysis, age in months at pre- and posttest were included in the model as predictors of all the observed pre- and posttest variables, respectively. A dummy variable to represent the condition was also included. The model thus is of the MIMIC type (Multiple Indicators Multiple Causes; see Kline, 2016).

The model fitted the data well (Goodness of fit:  $\chi^2 = 456.98$ ,  $df = 279$ ,  $p < .001$ ; RMSEA = .039, CI<sub>90</sub> [.032, .045]; CFI = .963; TLI = .954; SRMR = .034). Table 2 shows the standardized factor loadings for the measurement model for the latent variables. As seen in the table, the four second-language vocabulary measures were used as indicators of a common variable construct that consisted of production as well as comprehension of targeted and nontargeted words; BPVS-2, targeted receptive vocabulary, targeted expressive vocabulary, and targeted vocabulary spontaneous use. This construct assesses an underlying vocabulary factor that captures the common variance shared by the four measures. For grammar we had only one observed variable, and we therefore used the three subsets of the TROG-2 as indicators of the latent construct grammar. The two narrative production assessments (HUG\_NARRATIVE and MAIN\_NARRATIVE) were used as indicators of the latent variable narrative skills. Finally, the observed variables emotion comprehension, internal state comprehension, and perspective-shift were used as indicators of perspective taking. All indicators loaded significantly on their respective constructs at pre- and posttest with similar factor loadings. Indicators with few items (VOC\_SPONTANEOUS USE and HUG\_PERSPECTIVE SHIFTING) tended to have lower reliability, but still loaded on the latent variables and contributed thereby to their estimation.

The standardized parameter estimates for the effects of age on performance are presented in Table 3. As seen in the table, all child outcomes were strongly related to age at both time points.

The intervention effects were estimated with the effect of the condition dummy on the latent variables. However, as previous research has reported large effects on targeted vocabulary in shared reading interventions and no or moderate effects on receptive general vocabulary, we modified the

Table 1  
Descriptive Statistics for Pre- and Posttests for the Intervention and Control Groups

	$\alpha$	Intervention						Control					
		$n$	Pre		Post		ES	$n$	Pre		Post		ES
			$M$	$SD$	$M$	$SD$			$M$	$SD$			
BPVS-2	.93	217	28.28	13.59	37.65	14.07	0.68	189	25.70	13.34	34.38	13.35	0.65
VOC_RECEPTIVE	.74	219	15.39	5.70	22.64	6.89	1.15	190	14.49	5.68	17.94	5.42	0.62
VOC_EXPRESSIVE	.88	213	0.85	1.50	2.67	2.80	0.85	182	0.70	1.57	1.47	2.13	0.42
VOC_SPONTANEOUS USE	—	207	0.06	0.24	0.26	0.50	0.54	169	0.05	0.21	0.12	0.39	0.23
TROG-2	.76	221	6.75	3.22	8.77	2.44	0.71	186	6.45	2.99	7.88	2.65	0.51
HUG_NARRATIVE	.86	207	3.89	3.14	8.61	4.23	1.28	169	3.30	3.45	7.30	4.45	1.01
MAIN_NARRATIVE	.76	205	2.38	2.32	3.40	2.29	0.44	169	1.75	2.32	2.75	2.18	0.44
MAIN_INTERNAL STATE	.80	205	1.55	1.67	2.50	1.77	0.55	172	1.13	1.55	1.84	1.80	0.42
EMOTION COMPRE	.61	200	2.25	1.39	3.03	1.20	0.60	156	2.03	1.40	2.69	1.30	0.49
HUG_PERSPECTIVE SHIFT	—	142	0.47	0.80	1.10	1.06	0.68	111	0.40	0.77	0.79	0.90	0.47
First-language vocabulary 43 items	.74	155	19.02	5.68	22.55	6.77	0.57	137	18.36	6.48	21.10	7.24	0.40
First-language vocabulary 18 items	—	155	7.72	2.78	9.95	3.11	0.76	137	7.41	2.90	9.04	3.22	0.53

*Note.* When not otherwise specified, assessments were in second language. *n* = number of children in each subsample. The effect size (ES) values are standardized mean differences between pre- and posttests, the standardization being done with the mean of pre- and posttest *SDs*. Cronbach's alpha could not be computed for VOC\_SPONTANEOUS USE and HUG\_PERSPECTIVE SHIFTING due to few items. For the first-language vocabulary instrument, Cronbach's alpha was computed on the full instrument. Statistical tests have been computed taking into account the students' clustering into classrooms. BPVS-2 = British Picture Vocabulary Scale, second edition; VOC\_RECEPTIVE = targeted receptive vocabulary; VOC\_EXPRESSIVE = targeted expressive vocabulary; VOC\_SPONTANEOUS USE = number of targeted vocabulary words spontaneously used; TROG-2 = Test for Reception of Grammar, second edition; HUG\_NARRATIVE = The HUG narrative test; MAIN\_NARRATIVE = The Multilingual Assessment Instrument for Narratives, narrative structure (first part of MAIN); MAIN\_INTERNAL STATE = The Multilingual Assessment Instrument for Narratives, internal state comprehension (second part of MAIN); EMOTION COMPREHENSION = Test of Emotion Comprehension; HUG\_PERSPECTIVE SHIFTING = The Hug book retold with a shift in perspective; First-language vocabulary = receptive vocabulary in the child's first language, in the entire test (43 items) and in the subset of words appearing in books shared at home (18 items).

model to include also a direct effect of the condition dummy on BPVS-2. This caused model fit to improve (Goodness of fit:  $\chi^2 = 423.64$ ,  $df = 278$ ,  $p < .001$ ; RMSEA = .035, CI<sub>90</sub> [.028, .041]; CFI = .970; TLI = .962; SRMR = .033). The model fit improved because there was no intervention effect on BPVS-2, as shown by a negative coefficient ( $b = -5.68$ ,  $t = -5.22$ ) for the condition dummy of the same size as the positive effect on the latent variable ( $b = 6.44$ ,  $t = 6.77$ ). These results imply that there was an intervention effect only on targeted words.

On the basis of the SEM estimates we found a significant effect on targeted vocabulary ( $d = .66$ ,  $t = 8.11$ ,  $p < .001$ ), grammar ( $d = .31$ ,  $t = 2.68$ ,  $p = .007$ ), and perspective taking ( $d = .41$ ,  $t = 3.46$ ,  $p < .001$ ), in favor of the intervention group, all effects being highly significant. We found no effect on narrative skills ( $d = .15$ ,  $t = 1.35$ ,  $p = .176$ ) (see Figure 1).

The unweighted mean of these four effect estimates computed from the latent variable model was 0.38. It is, however, also of interest to compare this estimate with the estimate of Cohen's *d* from observed variables. The mean of estimated effects computed as the difference between the 10 posttests and pretests for the intervention group and the

control group was 0.22. This estimate is lower than the estimate obtained from the latent variable model, which is because the observed variables are influenced by errors of measurement. From Table 1 we observed that the control group during the 7.4 months that passed between the pretest and the posttest improved their mean performance on the tests with an effect of 0.53. This implies that the intervention effect of 0.22 approximately corresponds to three additional months of development of language skills during a period of < 8 months. Even this conservative estimate would seem to be a practically important effect, in spite of the fact that it just barely reached the Small level on the Cohen (1992) effect-size scale.

To answer RQ 2, we first conducted a separate analysis of the effect of the intervention on the subset of the 18 target words that appeared in the books read at home, controlling for children's pretest first-language vocabulary scores as well as their age in months pre and post (for descriptives, see Table 1). As we had only one observed variable for targeted first-language vocabulary we divided the 18 items into three subsets by selecting every third item for each subset, and used the sums of scores

Table 2  
Standardized Factor Loadings for the Measurement Models for Pre- and Posttests

	Pretest			Posttest		
	$\beta$	SE	t-Value	$\beta$	SE	t-Value
Voc						
BPVS-2	.68	.03	21.74	.71	.03	24.09
VOC_RECEPTIVE	.68	.03	21.57	.74	.03	26.61
VOC_EXPRESSIVE	.56	.04	14.03	.61	.03	19.11
VOC_SPONTANEOUS USE	.33	.06	5.45	.32	.05	7.12
Grammar						
TROG_C	.58	.04	16.16	.57	.05	12.33
TROG_D	.58	.04	14.86	.56	.04	13.43
TROG_E	.59	.04	16.37	.50	.05	10.88
Narr						
HUG_NARRATIVE	.47	.04	12.74	.49	.05	10.39
MAIN_NARRATIVE	.50	.04	12.74	.52	.04	13.99
Persp						
MAIN_INTERNAL STATE COMPREHENSION	.47	.05	10.00	.53	.04	12.58
HUG_PERSPECTIVE SHIFT	.29	.05	5.70	.30	.05	5.97
EMOTION COMPREHENSION	.56	.04	14.81	.44	.05	9.73

Note. All assessments were in Norwegian.  $\beta$  = standardized factor loading; Voc = latent vocabulary variable; Grammar = latent grammar variable; Narr = latent narrative variable; Persp = latent perspective-taking variable; TROG-C, D and E = Test for Reception of Grammar, second edition, sets C, D, and E. For other variables, see Table 1.

Table 3  
Standardized Parameter Estimates for the Effects of Age on Performance at Pre- and Posttest

	Pretest			Posttest		
	$\beta$	SE	t-Value	$\beta$	SE	t-Value
BPVS-2	.53	.033	16.35	.50	.035	14.44
VOC_RECEPTIVE	.37	.041	8.96	.41	.038	10.80
VOC_EXPRESSIVE	.39	.035	11.06	.44	.035	12.34
VOC_SPONTANEOUS USE	.14	.049	2.85	.15	.046	3.29
TROG_C	.42	.039	10.82	.39	.043	8.96
TROG_D	.41	.038	10.67	.36	.047	7.63
TROG_E	.44	.045	9.93	.39	.043	9.12
HUG_NARRATIVE	.47	.037	12.56	.45	.038	11.98
MAIN_NARRATIVE	.50	.039	12.73	.52	.037	13.99
MAIN_INTERNAL STATE COMPREHENSION	.47	.039	11.87	.51	.037	13.68
EMOTION COMPREHENSION	.48	.043	11.05	.54	.039	13.96
HUG_PERSPECTIVE SHIFT	.33	.045	7.28	.29	.044	6.55

Note.  $\beta$  = standardized regression coefficient. For explication of variable names, see Tables 1 and 2.

on these subsets as indicators of a latent variable. The intervention effect on this latent variable representing targeted first-language words was significant ( $d = .30$ ,  $t = 2.49$ ,  $p = .013$ ). There was no effect of the intervention on knowledge of first-language words that the children were exposed to only in the books encountered in preschool (the 25 items).

In light of evidence reviewed in the Introduction suggesting that book sharing in the first as well as the

second language of young DLLs may support second-language vocabulary learning, we did a check on potential mediating effects of targeted first-language vocabulary (the 18 items) on targeted second-language vocabulary (VOC\_RECEPTIVE). First-language vocabulary posttest had a significant partial standardized regression coefficient on second-language vocabulary posttest ( $\beta = .16$ ,  $t = 2.31$ ,  $p = .021$ ) in addition to the strong relation between second-language vocabulary

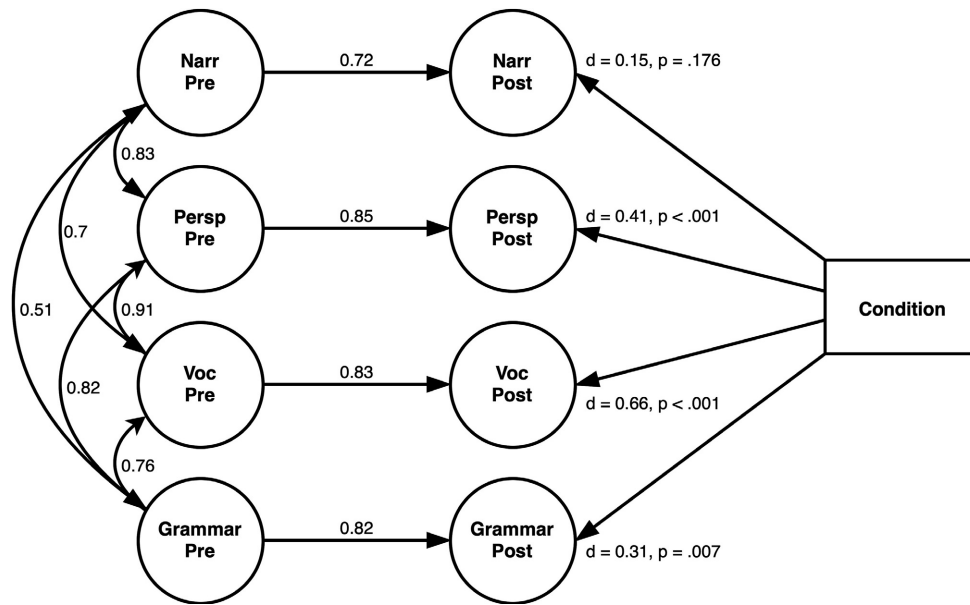


Figure 1. Path diagram—latent variables pre and post, correlations and effect sizes.

Note.  $d$  = Cohen's  $d$ . Condition = dummy variable for intervention and control group; Voc = latent vocabulary variable; Grammar = latent grammar variable; Narr = latent narrative variable; Persp = latent perspective-taking variable. [Corrections added on January 14, 2020 after first online publication: Figure 1 has been updated.]

pre- and posttest ( $\beta = .68, t = 11.02, p < .001$ ). There was a small and marginally significant indirect effect of the intervention via first-language vocabulary posttest on second-language vocabulary posttest ( $d = .05, t = 1.71, p = .087$ ).

## Discussion

Several important findings have emerged from this study. We will structure the discussion of intervention effects in relation to the two research questions before we discuss features of the intervention that may help explain the findings.

### *Intervention Effects on Second-Language Learning*

In response to RQ 1, we found that the Extend intervention, a loosely scripted classroom program organized around shared book reading, had significant and substantial impacts on young children's second-language vocabulary and grammar skills. In addition, the Extend intervention with its focus on perspective taking during book-reading activities resulted in impacts on children's ability to shift perspectives and understand others' emotions and internal states, a skill central to socioemotional development and also ultimately to the comprehension of text. These findings support and extend the

body of work demonstrating the efficacy of engaging children in conversations around books as a mechanism for promoting language growth.

The effects of the Extend intervention on the 10 observed variables (targeted and nontargeted) assessed in the second language were calculated to 3 additional months during a period of < 8 months, an effect that if sustained and accumulated over 3 years of preschool, could put DLLs in a position to be more prepared for the first years of formal schooling. The obtained effect size on the latent, targeted vocabulary was in line with results from many previous teacher-implemented language-focused interventions, though effect size variations across studies are considerable (see Wasik et al., 2016 for review). In line with most previous studies, we did not find an effect on general, nontargeted vocabulary (e.g., Dowdall et al., 2019).

The effect on grammar skills was consistent. A recent Dutch study reported that preschool teachers simplified their language when they shared books with DLLs compared with monolingual children (Aarts et al., 2016). The features of the Extend intervention might have helped teachers to offer and invite more complex and rich talk than they would have done otherwise.

The fact that the latent variable perspective taking showed an effect size close to half a standard deviation is noteworthy, and we can think of

several characteristics of the Extend intervention that may help explain these effects. First, recent studies in elementary classrooms have suggested that bilingual children's perspective-taking skills in particular may be responsive to classroom talk that supports discussion and debate (Kim et al., 2018). Moreover, and supporting this line of evidence, experimental studies have suggested that bilingual preschool children and monolingual children living in multilingual environments develop their perspective-taking skills faster than monolinguals (for review, see Grøver, 2019). DLLs who have to adapt to communication partners' needs on a daily basis may have been particularly susceptible to the focus on perspective taking in the Extend intervention. Second, it may also have been the experience of talking about one set of books with both teachers and parents, who no doubt told somewhat different versions of the wordless picture books, which activated expectations about perspectival differences. Finally, book familiarity, developed through the repeated readings, may have resulted in increased attention to characters' feelings (see McArthur, Adamson, & Deckner, 2005 for report on effects of book familiarity).

Contrary to expectations and to findings by Kuchirko et al. (2016) and Lever and Sénéchal (2011), who demonstrated that shared reading with features such as adult open-ended questions promoted narrative skills in preschoolers, and we found no impacts on any measure of narrative skills as assessed by two narrative production measures. Though 10 out of the 15 books were narrative, narrative skills were not particularly emphasized in the guidance to teachers. A question for further research is whether a greater emphasis on narratives would have enhanced the positive effects on this aspect of children's language skills.

Of course, the effect size in any intervention study reflects to some extent the nature of the counterfactual. The effect of the Extend program may be ascribable in part to the low frequency of text-related activity of any kind in the typical Norwegian preschool (Hagen, 2018). Based on the time that on average was spent on recorded shared reading sessions and the number of shared readings reported by the teachers, we can roughly estimate that the intervention classrooms on average spent between 7 and 8 hr in effective shared reading as part of the project throughout the year. Even this limited number of hours can evidently generate measurable improvements in outcomes, especially in comparison to children in the control classes, who had fewer book-reading experiences with adults, and

for whom the book-reading experiences were not organized around themes that ensured recurrent exposure to particular words and content. Relevant in that regard is the recent review by Dowdall et al. (2019), concluding that shared reading dosage mattered, but that even 1 hr of effective reading had an effect on expressive language, while no effect was found for briefer interventions.

### *Intervention Effects on First Language Learning*

In response to RQ 2, we found that the home components of the Extend intervention showed effects on children's first-language vocabulary skills for those words that appeared in the books sent home and that were shared in the family's preferred language. We found no effect of the intervention on first-language vocabulary knowledge for words that were targeted in preschool but did not appear in the selection of books that were shared at home. In a follow-up check we detected a small and marginally significant indirect effect of the intervention via first-language vocabulary posttest on second-language vocabulary posttest. These results are in line with previous studies finding that shared reading in the first language supported second-language vocabulary (Hermanns, 2010; Lugo-Neris et al., 2010; Roberts, 2008). It is important to note that we had a reduced first-language vocabulary sample with heterogeneity in language use and demography that limited power to detect such relations.

### *Intercorrelations Among Second-Language Latent Variables*

As seen in Figure 1, correlations among the second-language latent variables were in most cases very high at pretest. This could have implied that we should have collapsed some latent variables to simplify the model. However, we did not follow that approach for several reasons. One was that the strength of intercorrelation is affected by age with higher correlations for younger children, and we did not want to stratify the sample by age as the design of the study did not allow that. Temporary and situational factors (such as tiredness) may result in high covariance, particularly in measures of younger children. The second reason was that the autoregressive structure of the model protected against negative effects of multicollinearity. Third, the latent variables were based in recent research on precursors of academic skills. It is noteworthy that the three highest preintervention correlations among latent variables all included perspective

taking, with vocabulary ( $r = .91$ ), with narrative skills ( $r = .83$ ), and with grammar ( $r = .82$ ), while none of the three perspective-taking measures required sophisticated vocabulary or advanced syntactic skill. We can only speculate about why perspective taking correlated so highly with the three language variables, while these, though strongly correlated, showed somewhat weaker relations to one another. From a pragmatic or usage-based perspective (e.g., Lieven, 2014), language learning presupposes that children discern the intentions of other language users who apply linguistic conventions to achieve social goals, thus suggesting close relations between sociocognitive development and language learning. The high correlations among language skills and perspective taking in these young DLLs growing up in linguistically highly diverse contexts may reflect the usefulness of perspective-taking skills when learning a new language.

#### *Intervention Features That May Explain Effects*

We can think of several intervention features that may help explain our findings in relation to RQ 1 and RQ 2. The larger part of the Extend intervention took place in the preschool classrooms. Though we do not have a design that permits us to disentangle the preschool and home shared reading contribution to the children's outcomes, we believe that one potential factor related to the outcomes of the Extend intervention was the content-rich discussions that the teachers launched. The Extend intervention emphasized selecting thematically related books within units and offering guidance to teachers that would generate open-ended questions and discussion, so that the children's interest in the topics introduced led to greater semantic and grammatical richness in the classroom talk. We made an explicit decision to avoid scripting the Extend intervention, relying instead on professional development emphasizing general good practices to the teachers and book-specific suggestions for questions to pose. This design decision reflected our knowledge of the situation in Norwegian preschools, where teachers are committed to creating child-centered and play-focused settings. Thus we emphasized in the guidance to teachers that they should adapt the intervention to their own students. We found that most teachers could be supported to implement thematically focused curricular activities with fidelity, in the absence of scripts or strong programmatic incentives. We can certainly envision other settings in which more scripting or greater

attention to fidelity would be advantageous. Even in the intervention classrooms in the present study, we might have insisted more vigorously on encouraging children to engage in play linked to the book—a surprising omission in the implementation procedures, given the teachers' emphasis on play. Perhaps they defined play as activities selected by the children, and thus were reluctant to steer them into particular play themes.

We similarly decided not to script the shared reading intervention at home. The parents were recruited to engage in activities at home that were aligned with activities their children experienced at preschool, and most of them showed commitment to the project, despite teachers' reports of low levels of parental communication around implementation. The parents had highly diverse literacy backgrounds, varying from hardly any schooling to higher education degrees, and we wanted the program, offered through the public early education system, to be available for all. The fact that most parents returned tapes and that half of them returned three tapes or more (out of a maximum of four) suggests that the program, at least to some degree, succeeded in attending to the parents' diverse and culturally situated beliefs and practices about sharing books with young children (see Manz, Hughes, Barnabas, Bracaliello, & Ginsburg-Block, 2010). Educational settings with a less diverse population might have succeeded with a more scripted approach to shared reading at home. We can also envision contexts in which a more scripted intervention could have increased teacher communication with parents.

This first analysis of the data leaves several important questions open for further research. We have presented information confirming that the key features of the intervention design were indeed implemented, but we will exploit the variation across classrooms and homes to further explore how the dosage and quality of implementation relate to outcomes. We will undertake subgroup analyses, to determine whether the 11 major language groups represented in the sample differ in systematic ways in likelihood of implementation and in impacts. We will also explore in greater detail characteristics of the home interactions, in particular the language(s) used, frequency of attention to the targeted words, and the degree to which the interactions provided children with opportunities to talk.

#### *Limitations and Conclusion*

We acknowledge a number of limitations. First, given our design we cannot isolate the effects of

what went on during shared reading in the classroom from what went on at home. Ideally we would have randomly assigned children receiving the classroom intervention to a parent-involvement condition or not, but the sample size and language heterogeneity made this approach not feasible. Such a study could more easily be undertaken in a setting with a large group of DLLs from a single language background. Second, we do not have a design that allows us to disentangle the effects of receiving books (15 in the intervention classrooms and 7 in the control classrooms) from the effects of receiving instructional support (workshop, guidance material, coaching). However, while Norwegian preschools are very well equipped with children's books, with the extra books offered representing a marginal increase in the total number of books in the classroom, they score in the range of minimal quality when it comes to supporting children's actual access to books as observed by an international preschool environment rating scale (Bjørnstad & Os, 2018). We therefore believe that it was not the additional books per se that mattered for children's outcomes, but teacher guidance in how to use them in shared reading in ways that promoted language and perspective taking. Third, we did not have access to standardized or well-tested vocabulary instruments in the first languages. While we spent efforts on translation and back-translation of the targeted first-language vocabulary instruments, resources for examining whether the instruments included words at comparable frequency levels were not available. While we included first-language preintervention vocabulary in effect estimates and thus somewhat controlled for this potential limitation, we cannot fully exclude that first-language vocabulary assessments differed in the vocabulary skills they targeted. Finally, the characteristics of the sample impeded detecting small effects. Repeating the study with a larger and more language-homogeneous group might reveal impacts on narrative skills or other domains that could not be measured with sufficient sensitivity in this study.

In spite of these limitations, our findings support the efficacy of providing early childhood teachers with curricular supports, in the form of theme-oriented book-sets, guidance about generally good book-reading practices, and book-specific suggestions for words and content to focus on and questions to pose. This approach takes a middle road between scripted curricula, which preschool teachers in some settings will almost certainly reject, and curricular approaches that offer teachers and children little support and that can leave some children, DLLs in particular, without sufficient access to adult-child

language interactions. Our findings also confirm that immigrant parents are eager to help their children develop school-related skills, and that they can do so using their first language if opportunities for alignment with preschool-based activities are available. This study thus offers practical guidance for teachers in classrooms serving heterogeneous language groups, an increasingly common situation in both Europe and North America.

## References

- Aarts, R., Demir-Vegter, S., Kurvers, J., & Henrichs, L. (2016). Academic language in shared book reading: Parent and teacher input to mono- and bilingual preschoolers. *Language Learning*, 66, 263–295. <https://doi.org/10.1111/lang.12152>
- Adrian, J., Clemente, R., Villanueva, L., & Rieffe, C. (2005). Parent-child picture-book reading, mothers' mental state language and children's theory of mind. *Journal of Child Language*, 32, 673–686. <https://doi.org/10.1017/S0305000905006963>
- Alborough, J. (2002). *Hug*. Cambridge, MA: Candlewick Press.
- Aram, D., Fine, Y., & Ziv, M. (2013). Enhancing parent-child shared book reading interactions: Promoting references to the books' plot and socio-cognitive themes. *Early Childhood Research Quarterly*, 28, 111–122. <https://doi.org/10.1016/j.ecresq.2012.03.005>
- Beazidou, E., Botsoglou, K., & Vlachou, M. (2013). Promoting emotional knowledge: Strategies that Greek preschool teachers employ during book reading. *Early Child Development and Care*, 183, 613–626. <https://doi.org/10.1080/03004430.2012.678490>
- Bishop, D. (2003). *Test for Reception of Grammar Version 2 (TROG-2)*. Pearson Assessment (Translated and Adapted to Norwegian by S.-A. H. Lyster and E. Horn, 2009). London, UK: Psychological Corporation.
- Bjørnstad, E., & Os, E. (2018). Quality in Norwegian childcare for toddlers using ITERS-R. *European Early Childhood Education Research Journal*, 26, 111–127. <https://doi.org/10.1080/1350293X.2018.1412051>
- Bloom, H. S., Hill, C. J., Black, A. R., & Lipsey, M. W. (2008). Performance trajectories and performance gaps as achievement effect-size benchmarks for educational interventions. *Journal of Research on Educational Effectiveness*, 1, 289–328. <https://doi.org/10.1080/19345740802400072>
- Castro, D., Espinosa, L., & Paez, M. (2011). Defining and measuring quality in early childhood practices that promote dual language learners' development and learning. In M. Zaslow, I. Martinez-Beck, K. Tout, & T. Halle (Eds.), *Quality measurement in early childhood settings* (pp. 257–280). Baltimore, MD: Paul Brookes.
- Cohen, J. (1992). A power primer. *Psychological Bulletin*, 112, 155–159. <https://doi.org/10.1037/0033-2909.112.1.155>



- Connor, C., Morrison, F., & Slominski, L. (2006). Preschool instruction and children's emergent literacy growth. *Journal of Educational Psychology*, 98, 665–689. <https://doi.org/10.1037/0022-0663.98.4.665>
- Dickinson, D., & Smith, M. (1994). Long-term effects of preschool teachers' book readings on low-income children's vocabulary and story comprehension. *Reading Research Quarterly*, 29, 104–122. <https://doi.org/10.2307/747807>
- Dowdall, N., Melendez-Torres, G. J., Murray, L., Gardner, F., Hartford, L., & Cooper, P. J. (2019). Shared picture book reading interventions for child language development: A systematic review and meta-analysis. *Child Development*. <https://doi.org/10.1111/cdev.13225>
- Dunn, L. M., Dunn, L. M., Whetton, C., & Burley, J. (1997). *The British Picture Vocabulary Scale* (2nd ed.). London, UK: nferNelson.
- Fitton, L., McIlraith, A., & Wood, C. (2018). Shared book reading interventions with English learners: A meta-analysis. *Review of Educational Research*, 88, 712–751. <https://doi.org/10.3102%2F0034654318790909>
- Gagarina, N., Klop, D., Kunnari, S., Tantele, K., Valimaa, T., Baleiuniene, I., . . . Walters, J. (2012). MAIN—Multilingual Assessment Instrument for Narratives. ZAS papers in linguistics 56, Berlin, Germany. Retrieved from [http://www.zas.gwz-berlin.de/fileadmin/material/ZASPiL\\_Volltexte/zp56/MAIN\\_english.pdf](http://www.zas.gwz-berlin.de/fileadmin/material/ZASPiL_Volltexte/zp56/MAIN_english.pdf)
- Gámez, P., González, D., & Urbin, L. (2016). Shared book reading and English learners' narrative production and comprehension. *Reading Research Quarterly*, 52, 275–290. <https://doi.org/10.1002/rrq.174>
- Gjems, L. (2011). Why explanations matter: A study of co-construction of explanations between teachers and children in everyday conversations in kindergarten. *European Early Childhood Research Journal*, 38, 271–278. <https://doi.org/10.1080/1350293X.2011.623537>
- Grøver, V. (2017). Fostering vocabulary in early childhood education. In N. Kucirkova, C. E. Snow, V. Grøver, & C. McBride (Eds.), *The Routledge international handbook of early literacy education. A contemporary guide to literacy teaching and interventions in a global context* (pp. 284–295). London, UK: Routledge.
- Grøver, V. (2019). Young bilinguals' extended discourse skills: The role of perspective taking. In V. Grøver, P. Uccelli, M. L. Rowe, & E. Lieven (Eds.), *Learning through language. Towards an educationally informed theory of language learning* (pp. 179–191). Cambridge, UK: Cambridge University Press.
- Grøver, V., Uccelli, P., Rowe, M. L., & Lieven, E. (2019). Learning through language. In V. Grøver, P. Uccelli, M. L. Rowe, & E. Lieven (Eds.), *Learning through language. Towards an educationally informed theory of language learning* (pp. 1–16). Cambridge, UK: Cambridge University Press.
- Hagen, Å. M. (2018). Improving the odds: Identifying language activities that support the language development of preschoolers with poorer vocabulary skills. *Scandinavian Journal of Educational Research*, 62, 649–663. <https://doi.org/10.1080/00313831.2016.1258727>
- Hancock, D. (2002). The effects of native language books on the preliterate skill development of language minority kindergartners. *Journal of Research in Childhood Education*, 17, 62–68. <https://doi.org/10.1080/02568540209594999>
- Hermanns, C. B. (2010). *Leveling the playing field: Investigating vocabulary development in Latino preschool-age English language learners*. Unpublished doctoral dissertation, Harvard Graduate School of Education, Cambridge, MA.
- Hindman, A., Wasik, B., & Erhart, A. (2012). Shared book reading and Head Start preschoolers' vocabulary learning: The role of book-related discussion and curricular connections. *Early Education and Development*, 23, 451–474. <https://doi.org/10.1080/10409289.2010.537250>
- Howe, N., & Rinaldi, C. (2004). "You be the big sister:" Maternal-preschooler internal state discourse, perspective-taking, and sibling caretaking. *Infant and Child Development*, 13, 217–234. <https://doi.org/10.1002/icd.350>
- Isbell, R., Sobol, J., Lindauer, L., & Lowrance, A. (2004). The effects of storytelling and story reading on the oral language complexity and story comprehension of young children. *Early Childhood Education Journal*, 32, 157–163. <https://doi.org/10.1023/B:ECEJ.0000048967.94189.a3>
- Kang, J., Kim, Y.-S., & Pan, B. (2009). Five-year-olds' book talk and story telling: Contributions of mother-child joint bookreading. *First Language*, 29, 243–265. <https://doi.org/10.1177/0142723708101680>
- Kim, H. Y., Hsin, L., & Snow, C. (2018). Reducing academic inequalities for English language learners: Variation in experimental effects of Word Generation in high poverty schools. *International Journal of Bilingual Education and Bilingualism*. <https://doi.org/10.1080/13670050.2018.1535574>
- Kline, R. B. (2016). *Methodology in the social sciences. Principles and practice of structural equation modeling* (4th ed.). New York, NY: Guilford.
- Koskinen, P., Blum, I., Bisson, S., Phillips, S., Creamer, T., & Baker, T. (2000). Book access, shared reading, and audio models: The effects of supporting the literacy learning of linguistically diverse students in school and at home. *Journal of Educational Psychology*, 92, 23–36. <https://doi.org/10.1037/0022-0663.92.1.23>
- Kuchirko, Y., Tamis-LeMonda, C., Luo, R., & Liang, E. (2016). "What happened next?" Developmental changes in mothers' questions to children. *Journal of Early Childhood Literacy*, 16, 498–521. <https://doi.org/10.1177/1468798415598822>
- LaForge, C., Perron, M., Roy-Charland, A., Roy, E., & Carignan, I. (2018). Contributing to children's early comprehension of emotions: A picture book approach. *Canadian Journal of Education*, 41, 301–328. Retrieved from <https://zone.biblio.laurentian.ca/handle/10219/3110>
- Lever, R., & Sénéchal, M. (2011). Discussing stories: On how a dialogic reading intervention improve

- kindergartners' oral narrative construction. *Journal of Experimental Psychology*, 108, 1–24. <https://doi.org/10.1016/j.jecp.2010.07.002>
- Lieven, E. (2014). First language development: A usage-based perspective on past and current research. *Journal of Child Language*, 41, 48–63. <https://doi.org/10.1017/S0305000914000282>
- Lonigan, C., & Whitehurst, G. (1998). Relative efficacy of parent and teacher involvement in a shared-reading intervention for preschool children from low-income backgrounds. *Early Childhood Research Quarterly*, 2, 263–290. [https://doi.org/10.1016/S0885-2006\(99\)80038-6](https://doi.org/10.1016/S0885-2006(99)80038-6)
- Lugo-Neris, M., Jackson, C., & Goldstein, H. (2010). Facilitating vocabulary acquisition of young English language learners. *Language, Speech, and Hearing Services in Schools*, 41, 314–327. [https://doi.org/10.1044/0161-1461\(2009/07-0082\)](https://doi.org/10.1044/0161-1461(2009/07-0082))
- Luo, R., Tamis-LeMonda, C., Kuchirko, Y., Ng, F., & Liang, E. (2014). Mother-child book-sharing and children's storytelling skills in ethnically diverse, low-income families. *Infant and Child Development*, 23, 402–425. <https://doi.org/10.1002/icd.1841>
- Lyster, S.-A. H., Horn, E., & Rygvold, A.-L. (2010). Ordforråd og ordforrådsutvikling hos norske barn og unge: resultater fra en utprøving av British Picture Vocabulary Scale II, second edition [Vocabulary and vocabulary development in Norwegian children and youth: Results from testing with BPVS-2]. *Spesialpedagogikk*, 9, 35–43.
- MacWhinney, B. (2000). *The CHILDES project: Tools for analyzing talk*. Mahwah, NJ: Erlbaum.
- Manz, P., Hughes, C., Barnabas, E., Bracaliello, C., & Ginsburg-Block, M. (2010). A descriptive review and meta-analysis of family-based emergent literacy interventions: To what extent is the research applicable to low-income, ethnic-minority or linguistically-diverse young children? *Early Childhood Research Quarterly*, 25, 409–431. <https://doi.org/10.1016/j.ecresq.2010.03.002>
- Martucci, K. (2016). Shared storybook reading in the preschool setting and considerations for young children's theory of mind. *Journal of Early Childhood Research*, 14, 55–68. <https://doi.org/10.1177/1476718X14523750>
- Massey, S., Pence, K., Justice, L., & Bowles, R. (2008). Educators' use of cognitively challenging questions in economically disadvantaged preschool classroom contexts. *Early Education and Development*, 19, 340–360. <https://doi.org/10.1080/10409280801964119>
- McArthur, D., Adamson, L., & Deckner, D. (2005). As stories become familiar: Mother-child conversations during shared reading. *Merrill-Palmer Quarterly*, 51, 389–411. <https://doi.org/10.1353/mpq.2005.0025>
- Mol, S. E., Bus, A., De Jong, M., & Smeets, D. (2008). Added value of dialogic parent-child book readings: A meta-analysis. *Early Education and Development*, 19, 7–26. <https://doi.org/10.1080/17489539.2011.567891>
- Muthén, L. K., & Muthén, B. O. (1998–2017). *Mplus user's guide* (8th ed.). Los Angeles, CA: Author.
- National Academies of Sciences, Engineering and Medicine (NASEM). (2017). *Promoting the educational success of children and youth learning English: Promising futures*. Washington, DC: The National Academies Press.
- Nicolopoulou, A., Cortina, K., Ilgaz, H., Cates, C., & de Sa, A. (2015). Using a narrative- and playbased activity to promote low-income preschoolers' oral language, emergent literacy, and social competence. *Early Childhood Research Quarterly*, 31, 147–162. <https://doi.org/10.1016/j.ecresq.2015.01.006>
- Noble, C., Cameron-Faulkner, T., & Lieven, E. (2018). Keeping it simple: The grammatical properties of shared book reading. *Journal of Child Language*, 45, 753–766. <https://doi.org/10.1017/S0305000917000447>
- Norwegian Directorate for Education and Training. (2017). *Framework plan for kindergartens—Contents and tasks*. Oslo, Norway: Author.
- OECD. (2018). *Education at a glance 2018: OECD indicators*. Paris, France: OECD.
- Paez, M., Bock, K., & Pizzo, L. (2011). Supporting the language and early literacy skills of English language learners: Effective practices and future directions. In S. B. Neuman & D. K. Dickinson (Eds.), *Handbook of early literacy research* (Vol. 3, pp. 136–152). New York, NY: Guilford.
- Peterson, S. M. (2013). Readiness to change: Effective implementation processes for meeting people where they are. In T. Halle, A. Metz, & I. Martinez-Beck (Eds.), *Applying implementation science in early childhood programs and systems* (pp. 43–64). Baltimore, MD: Brookes.
- Pons, F., & Harris, P. (2000). *Test of emotion comprehension*. Oxford, UK: University of Oxford.
- Rezzonico, S., Hipfner-Boucher, K., Milburn, T., Weitzman, E., Greenberg, J., Pelletier, J., & Girolametto, L. (2015). Improving preschool educators' interactive shared reading: Effects of coaching in professional development. *American Journal of Speech-Language Pathology*, 24, 717–732. [https://doi.org/10.1044/2015\\_AJSLP-14-0188](https://doi.org/10.1044/2015_AJSLP-14-0188)
- Roberts, T. (2008). Home storybook reading in primary and second language with preschool children: Evidence of equal effectiveness for second-language vocabulary acquisition. *Reading Research Quarterly*, 43, 103–130. <https://doi.org/10.1598/RRQ.43.2.1>
- Ruffman, T., Slade, L., & Crowe, E. (2002). The relation between children's and mothers' mental state language and theory-of-mind understanding. *Child Development*, 73, 734–751. <https://doi.org/10.1111/1467-8624.00435>
- Schick, A. (2015). Wordless book-sharing styles in bilingual preschool classrooms and Latino children's emergent literacy skills. *Journal of Early Childhood Literacy*, 15, 331–363. <https://doi.org/10.1177/1468798414551942>
- Sénéchal, M. (2017). Shared book reading. An informal literacy activity par excellence. In N. Kucirkova, C. Snow, V. Grøver, & C. McBride (Eds.), *The Routledge international handbook of early literacy education. A contemporary guide to literacy teaching and interventions in a global context* (pp. 273–282). London, UK: Routledge.

- Sénéchal, M., Pagan, S., Lever, R., & Quelette, G. (2008). Relations among the frequency of shared reading and 4-year-old children's vocabulary, morphological and syntax comprehension, and narrative skills. *Early Education and Development, 19*, 27–44. <https://doi.org/10.1080/10409280701838710>
- Snow, C. (2017). The role of vocabulary in children's language learning: A fifty-year perspective. *Infancia y Aprendizaje, 40*, 1–18. <https://doi.org/10.1080/02103702.2016.1263449>
- Statistics Norway. (2018). *Immigrants and Norwegian-born to immigrant parents*. Retrieved from <https://www.ssb.no/en/innvbf>
- Wasik, B., Bond, M., & Hindman, A. (2006). The effects of a language and literacy intervention on Head Start children and teachers. *Journal of Educational Psychology, 98*, 63–74. <https://doi.org/10.1037/0022-0663.98.1.63>
- Wasik, B., & Hindman, A. (2014). Understanding the active ingredients in an effective preschool vocabulary intervention: An exploratory study of teacher and child talk during book reading. *Early Education and Development, 25*, 1035–1056. <https://doi.org/10.1080/10409289.2014.896064>
- Wasik, B., Hindman, A., & Snell, E. (2016). Book reading and vocabulary development: A systematic review. *Early Childhood Research Quarterly, 37*, 39–57. <https://doi.org/10.1016/j.ecresq.2016.04.003>
- Whitehurst, G., Arnold, D., Epstein, J., Angell, A., Smith, M., & Fischel, J. (1994). A picture book reading intervention in day care and home for children from low-income families. *Developmental Psychology, 30*, 679–689. <https://doi.org/10.1037/0012-1649.30.5.679>
- Zevenbergen, A., Whitehurst, G., & Zevenbergen, J. (2003). Effects of a shared-reading intervention on the inclusion of evaluative devices in narratives of children from low-income families. *Journal of Applied Developmental Psychology, 24*, 1–15. [https://doi.org/10.1016/S0193-3973\(03\)00021-2](https://doi.org/10.1016/S0193-3973(03)00021-2)

### Supporting Information

Additional supporting information may be found in the online version of this article at the publisher's website:

**Appendix S1.** Supplementary Material to the Method and Result Sections