

BAR-ILAN UNIVERSITY

**Do E-Book Story Expansions Contribute to Story
Comprehension amongst LSES Preschoolers Beyond
Individual Factors?**

Dikla Goral

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Abstract

Recent studies have shown that the use of properly designed electronic books (e-books) can help advance children's language and literacy development, even at the preschool age. Language development, listening comprehension, and story comprehension at a young age are important skills that serve as a solid basis for the acquisition of later reading and comprehension. One way that e-books can support story comprehension is through the expansion function, which to a certain extent, parallels the expansions provided by an adult during shared reading of a print book. We have evidence that young children can understand the content of a story in an e-book fairly well. At the same time, young children show significant variability in their levels of oral language and story comprehension. The central assumption in this work was that children's individual differences (initial levels, age, gender) can impact upon their progress in listening comprehension of a story. Further, we suspect that the support of story expansions in an e-book will benefit all the children, and will contribute more than individual differences. As such, two questions are raised in this study: (a) How much will children's individual differences -- including initial language level, age, and gender -- contribute to the child's progress in understanding and reconstructing a story following its reading in an e-book with the support of story expansions? (b) Will the contribution of the story expansions advance children's story comprehension beyond the individual measures?

Participants in the study were 69 children (5-6-year-olds) from a low socioeconomic status, who attended three kindergartens. In each kindergarten, children were randomly divided into the intervention (32 children) and control groups (37 children). Pretests were conducted in the first phase, included a general vocabulary measurement (PPVT) and Kaufman's test of opposites for each child. Additionally, following a single reading of the e-book without any expansions, children were tested on story reconstruction and a closed test of comprehension. The second phase included an intervention with four sessions of reading the e-book separated by one to three days. The intervention group read the book with expansions while the control group read the book uninterrupted, without any expansions. Last phase included story reconstruction and a closed test of comprehension. We hypothesized that: (1) A positive relation would be found between the child's age and vocabulary level, score on the opposites test, story comprehension, and story reconstruction prior to the intervention. That is, we expected that older

children would have higher scores on the pretests. Additionally, we expected that girls would have higher scores on the pretests compared to boys; (2) Significant differences would emerge in story comprehension and reconstruction based on group (intervention, control) and time (pretest, posttest), with children in the intervention group advancing more than those in the control group; (3) Age, gender, pretest vocabulary level, pretest opposites score, and being in the intervention group would have a significant contribution to the explanation of progress in story comprehension and story reconstruction, beyond pretest score (story comprehension, story reconstruction). We expected a positive relation between each of the initial measures (age, gender, vocabulary level, opposites level) and progress in story comprehension and reconstruction, and a positive relation between the intervention group and level of progress; (4) Compared to the control group, we also expected children in the intervention group to have higher level of progress in story comprehension and reconstruction. Similarly, we expected that children in the intervention group with higher initial levels would progress more compared to other children.

Analyses were conducted controlling for the child's pretest level of story comprehension and story reconstruction. These hypotheses were partially supported. Regarding the first hypothesis, we found that at pretest, child's age was positively related with Kaufman's test of opposites. In contrast with our expectation, no relation was found between the child's age and the child's vocabulary level, story comprehension, or story reconstruction. In addition, no relation was found between child's gender and any of the pretest measures: vocabulary level, opposites, story comprehension, and story reconstruction. In terms of the second hypothesis, we found that children who read with the expansions progressed to the same degree as children from the control group who read without the expansions. A negative relation was found between pretest scores in story comprehension and reconstruction and the level of progress in these measures. That is, the lower the pretest scores, the greater the level of progress, and vice-versa. This analysis reveals that the weaker children made greater progress. It should be noted that this was found in both the intervention and the control groups. Regarding the third hypothesis, we found that progress in story comprehension in both the intervention group and the control group related to the child's initial vocabulary level (PPVT), such that children with higher initial scores made more progress. At the same time, no relation was found between group, age, gender, score on the opposites test, and child's progress in story comprehension. However, progress in

story reconstruction was found to relate to pretest opposites score, with higher scores on the test showing greater growth in story reconstruction. No relation was found between group, age, gender, and vocabulary level with progress in story reconstruction. Tests of the fourth hypothesis revealed that in the control group, there was no relation between pretest vocabulary level and progress in story comprehension, while a positive relation was found between these variables in the intervention group, which received expansions. This finding is in contrast to what was found above (the third hypothesis) and arose following a deeper exploration into the effect of the interaction. In other words, children with higher pretest vocabulary levels showed greater progress in story reconstruction only in the intervention group, but not the control group.

We reported above (second hypothesis) that in both groups (intervention and control groups), a negative relation was found between pretest story comprehension and progress in story comprehension, that is, that the weaker children made more progress. Fourth hypothesis analysis clarifies this finding, showing that this relation was stronger in the intervention group that received the expansions compared to the control group. That is, children with lower pretest scores showed greater growth in story comprehension, particularly amongst children in the intervention group. In sum, compared to the control group, the intervention group showed greater progress in story comprehension among children with higher initial vocabulary levels, and among children with lower pretest story comprehension levels. In contrast with the above results (third hypothesis), analysis of the findings relating to the fourth hypothesis revealed that in intervention group, no relation was found between the Kaufman's opposites test and progress in story reconstruction, while a positive relation was found in the control group. That is, in the control group, children with a higher score on the pretest opposites test made greater progress in story reconstruction. This finding shows that children with higher scores on the opposites test succeeded in better understanding the story, despite not receiving the expansions. Thus, the hypothesis relating to progress in story comprehension and story reconstruction was only partially supported. The intervention contributed more to children with higher initial vocabulary levels. However, in contrast with our hypothesis, only children in the control group with higher scores on the opposite tests progressed more in story reconstruction compared to children with lower scores on the opposites test. In other words, children with higher language and cognitive levels succeeded in reconstructing the story after they read the e-book without the support of expansions. The study's findings will be explored in

depth in the discussion section. As well, we will relate to the study's limitations and suggest future studies and educational work in the field.