Electronic books are not inherently harmful for parent-child interaction and learning

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In a recent online issue of *Pediatrics*, Munzer, Miller, Weeks, Kaciroti, and Radesky (2019) report on a well-designed study in which they compare the interactions that parents and 2-year-old children have when looking at print and electronic books. They found that parents and children talked more about the content of the story and were more often physically close and collaborative when interacting with print books than tablet ebooks. Although the authors did not measure children's learning directly in their study, it is a well-established finding that the quality of parent-child interaction during shared book reading is linked to children's later literacy development (Mol, Bus, de Jong, & Smeets, 2008). The authors conclude that parents may wish to select print over electronic books, especially when it comes to ebooks which contain distracting audiovisual features. In the same journal, Tomopolous, Klass, and Mendelsohn (2019) use Munzer and colleague's study to call for more needed research in this area. They also claim that there is a risk that solo play with ebooks may replace positive parent-child interactions observed with print books and recommend that practitioners take these findings as support for advising parents to avoid them.

The results of Munzer et al's study are consistent with other studies that have reported that parents reading to children in this age range (Krcmar & Cingel, 2014) and slightly older (Chiong, Ree, Takeuchi, & Erickson, 2012) use language related to the content of the book more frequently when reading print, as opposed to electronic, books. Nevertheless, other research in this area has shown positive evidence for the use of electronic books to support children's learning. For example, unlike Munzer et al. (2019), in our own research with younger toddlers (17-26 months), we found no differences in the type of language parents used when reading an ebook or print book (Strouse & Ganea, 2017a). Crucially, however, in our study we used a very simple and basic ebook designed to teach children the names of animals. The book had pictures of animals with individual statements about the animals, no overarching narrative story, and no actions or hotspots for children and parents to tap to produce extra features. Parents engaged in our study used similar amounts of content-related language with the print and electronic books, and we found that electronic books supported children's learning by way of increasing their engagement and attention. In other research we have also found that children's prior experiences with digital media more generally mediate how they interact with and learn from electronic books (Strouse & Ganea, 2017a,b). These findings suggest that the format of the medium (print or electronic) interacts with other important factors (genre of the story, type of pictures, or inclusion

of multimedia enhancements) to influence the nature of parent-child interactions and children's learning. These are questions that future research will need to address to fully understand the effects of different media on parent-child reading interaction.

Meta-analytic reviews of studies with children ages 3 to 10 years also provide evidence that ebooks can play a role in supporting children's development. They indicate that multimedia features like animations and sound effects are supportive of learning (Takacs, Swart, & Bus, 2015) and may be equally as effective in supporting learning as scaffolding by an adult (Takacs, Swart, & Bus, 2014). However other multimedia features like hotspots and games were found to detract from learning (Takacs, Swart, & Bus, 2015).

It is also known that parents express a strong preference for print media (Pew Research Center, 2012; Scholastic Kids, 2015; Strouse & Ganea, 2017c) and report using it as a way to bond with their children (Audet, Evans, Williamson, & Reynolds, 2008), so they are unlikely to stop reading print with their children. On the other hand, they report using digital media for purposes such as child enjoyment and independence (Cingel & Krcmar, 2013). Therefore parents who choose to provide their children with screen time may not be doing it at the expense of time spent reading print.

Because this is a very new area of research, with limited and mixed evidence, researchers should avoid drawing strong conclusions about the effects of electronic media on children's development. More research on the topic is needed given the small number of existent studies and the lack of evidence for causal effects of electronic media on children's cognitive, language and social-emotional development. Recommendations for whether parents should use ebooks or not based on a small number of studies are premature at this point in time.

As developmental researchers, we are doing a disservice to parents by warning them to avoid screens altogether; this may result in beliefs that screens cannot be tools for reading or teaching, and result in parents not providing high-quality supportive language and interactions during digital media use.

Instead we should encourage parents to reflect on their children's experiences with media—that they should be mindful of how they are using the digital device with their children, make sure it is not replacing time spent interacting, and try to support it in socially interactive ways. For example, parents could:
- Choose simple ebooks or ebooks with features that enhance the content of the story rather than draw attention away from it
- Talk with their children about the content of the story rather than distracting features of the device
- Ask children questions to engage talking and interacting around the story content
- Link the story content to the child's daily life
- Express positive emotion and interest in children's questions

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