Time to go on a space adventure!
Using digital games to support early vocabulary learning

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Background

o Although many apps for children are marketed as educational, little research exists testing their effectiveness (Vaala et al., 2015).
o **Objective: Test whether preschoolers can learn new vocabulary words from a narrative-based digital game.**

Method

Digital Game

o 10 target words were selected to be difficult for this age group.
o Each word has three *learning moments* throughout the game.
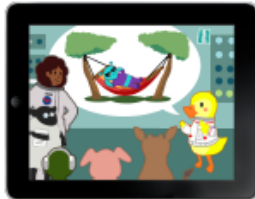
Learning Moment #1:
Defining word

"One afternoon, you were relaxing in your backyard on a **hammock**. A **hammock** is a bed made of cloth or rope that you can hang between two trees. Can you say **hammock**?"

Learning Moment #2:
Task using word meaning
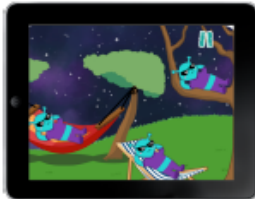
Find the alien laying on her **hammock**. She'll have a fuel nozzle for you!
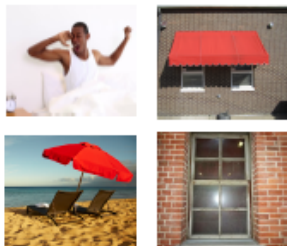
Learning Moment #3:
Review in context

Now you have to report on your mission! First, we found an old lady lying in a **hammock** who gave us a fuel nozzle.

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Receptive Vocabulary

Awning

Score is # of words correct

Expressive Vocabulary

"What does <u>awning</u> mean?"

Responses coded for information units such as describing a feature, giving a synonym, using in context

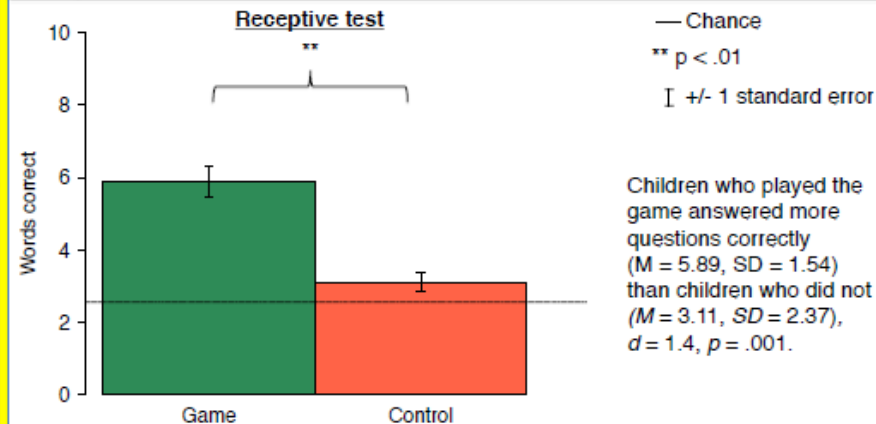Score is total # of information units generated

Study 1: Method

- Middle-SES 4-year-olds played the game in lab (N = 19); a control group (N = 10) had no exposure to the game; immediate test of receptive vocabulary knowledge
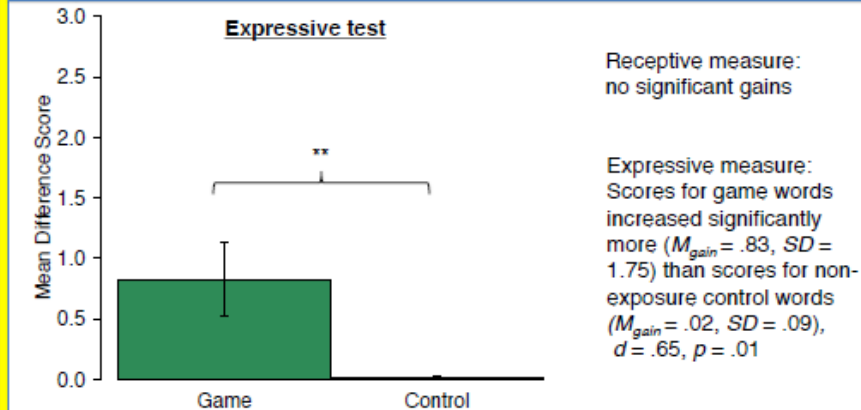
Study 2: Method

- Participants: 3- and 4-year-olds (N = 33) in a Head Start preschool in Philadelphia & in a low-income preschool in Nashville
- Children played the game four times over four weeks as part of a larger intervention.
- At pretest and posttest, children completed receptive and expressive vocabulary measures for words taught in the game and for five non-exposure control words.

Study 1: Results

— Chance
** $p < .01$
I +/- 1 standard error

Children who played the game answered more questions correctly (M = 5.89, SD = 1.54) than children who did not (M = 3.11, SD = 2.37), d = 1.4, p = .001.

Study 2: Results

Receptive measure: no significant gains

Expressive measure: Scores for game words increased significantly more (M_{gain} = .83, SD = 1.75) than scores for non-exposure control words (M_{gain} = .02, SD = .09), d = .65, p = .01

Discussion

- Both middle-SES children in the lab and low-SES children in the classroom learned new vocabulary from an interactive tablet game.
- These findings suggest that developmentally-appropriate digital games show promise for vocabulary learning during early childhood, especially when parents and teachers are not available.
- Future studies will compare learning to a control group who also has exposure to words.

Acknowledgements