Digital Media and Young Children's Learning

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“Children are in the midst of a vast, unplanned experiment.”

- Hirsh-Pasek, Zosh, Golinkoff, Gray, Robb & Kaufman, 2015

Introduced in 2007

How have mobile media devices changed your daily lives?

Introduced in 2010

“Children are in the midst of a vast, unplanned experiment.”

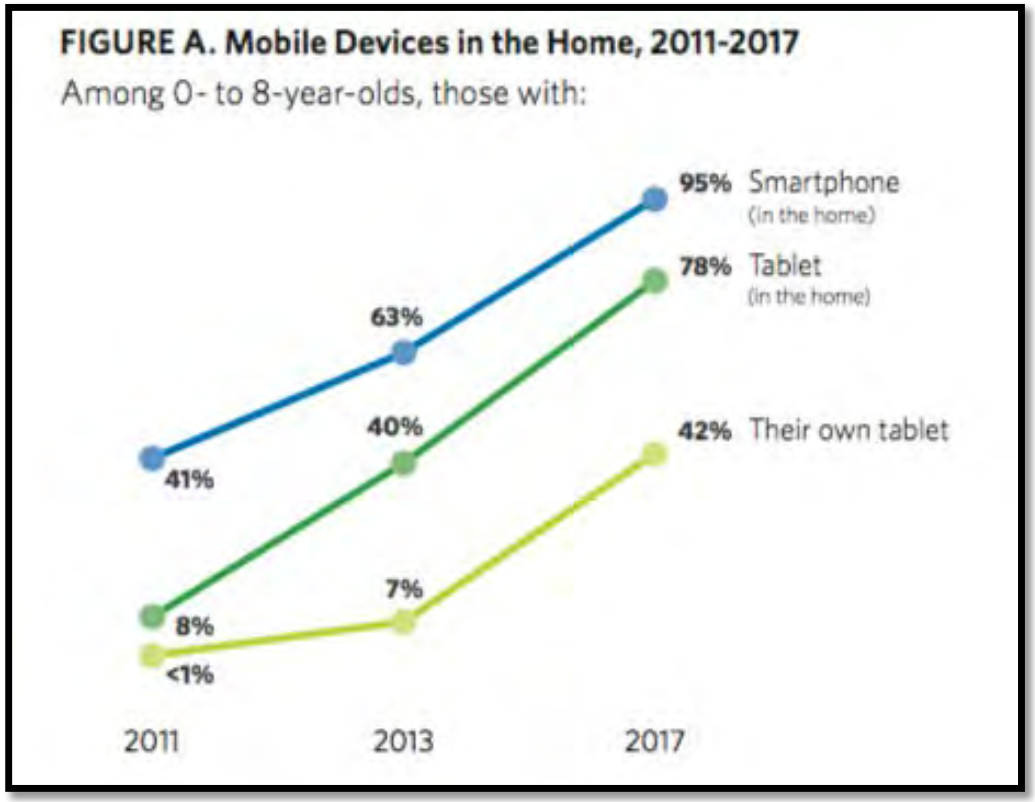
- Hirsh-Pasek, Zosh, Golinkoff, Gray, Robb & Kaufman, 2015

Introduced in 2007

HUGE changes in children’s lives in this short time period…

Introduced in 2010

Children's time on mobile devices ***tripled*** from 2013 to 2017



2020:

- 97% Smartphone
- 98% any mobile device

Rideout, 2017, Rideout & Robb, 2020

Fear of new media

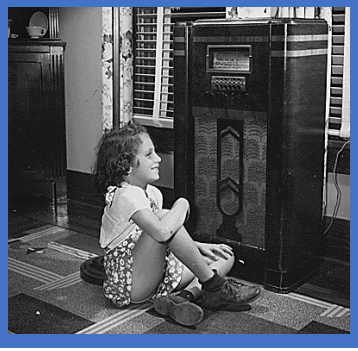
- “Confusing and harmful abundance”
- “The Pied Piper is back…His cunning witchery…”

Fear of new media

- "Confusing and harmful abundance of ***books***" - Conrad Gesner, 1545
- "The Pied Piper is back…His cunning witchery…"

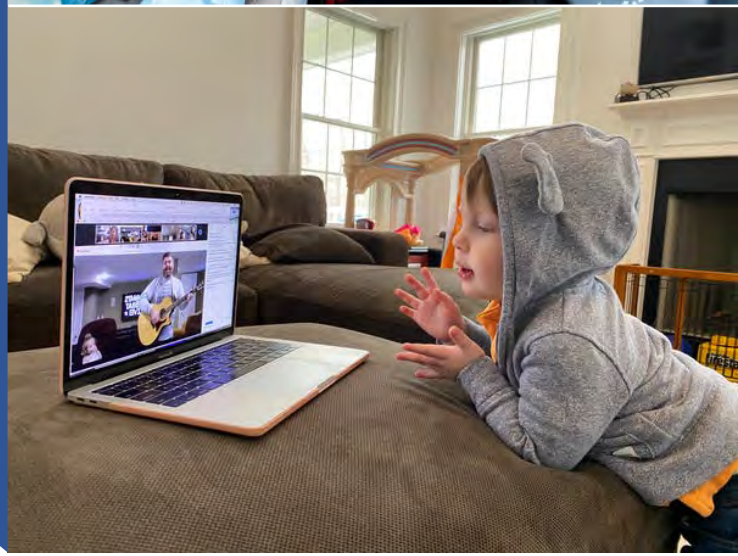
Fear of new media

- "Confusing and harmful abundance of ***books***" - Conrad Gesner, 1545
- "The Pied Piper is back… he comes disguised as a ***television transmitter***. His cunning witchery is piped through air channels estimated to reach 13,000,000 sets by the spring of 1951."- Robert Lewis Shayon, 1951



Media and children's learning

- Potential dangers of today's new media for children's learning
  - Easier to access across time/place
  - More solo use
- Potential advantages of today's new media
  - Possibility of more interactive content
  - Extend learning across remote settings



CNN health Food Fitness Wellness Parenting Vital Signs • LIVE TV Edition

Coronavirus forces parents to change screen time plans

By Laura Jarrett and Yon Pomrenze, CNN

Updated 6:04 AM ET, Tue April 21, 2020

The New York Times

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Children's Screen Time Has Soared in the Pandemic, Alarming Parents and Researchers

6.6 hours per day in low-income kindergarteners (Dore et al., in press)

Outline

- **Part 1:** Is media use associated with language and literacy development?
  - Multiple ways of asking this question
  - Go beyond “screen time”
- **Part 2:** How can we use media in positive ways to promote learning?
  - Experimental study in preschool classrooms
  - Feasibility and preliminary impacts of virtual intervention

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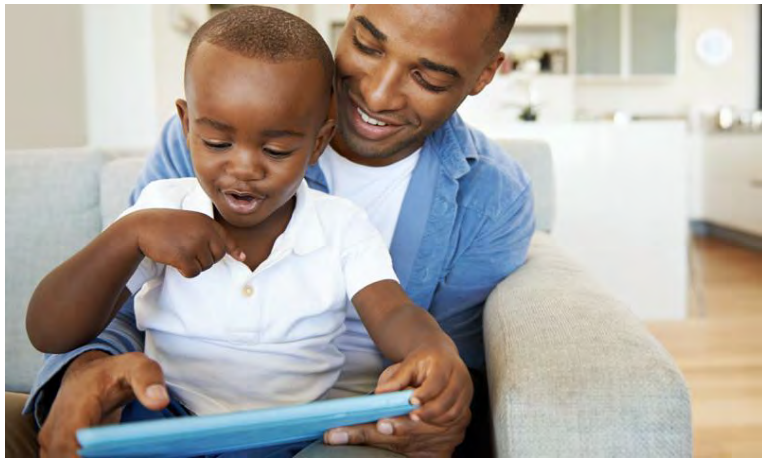
Why might media affect language and literacy?

- "Displacement hypothesis"
  - Replace educational activities or parent-child interaction

Going beyond “screen time”

- Joint media engagement
  - Using media together, asking questions, etc.
  - Extends interaction to new context



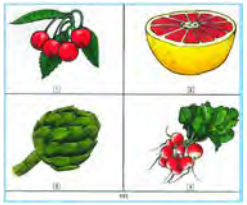
(Stevens & Penuel, 2010; Takeuchi & Stevens, 2011)

Links with language and literacy

- 488 children in first grade
- *Woodcock Johnson Test of Achievement III*

Language: Picture Vocabulary subtest

Literacy: Letter-Word Identification subtest



- Spring of kindergarten, spring of first grade
- Caregivers reported media use

Quantity

Think about the most recent school day. From the time your child woke up in the morning until she/he got to school about how long did they spend engaging in each of the following activities?

	None (0)	30 minutes (1)	1 hour (2)	1.5 hours (3)	2 hours (4)	2.5 hours (5)	3 hours (6)	3+ hours (7)
Watching any kind of video including TV, movies, or short clips on any type of device.	○	○					○	○
Using apps or games on any type of electronic device.	○	○	○	○	○	○	○	○

- Weekday before school
- Weekday after school
- Weekend day
- Weighted sum of 6 items for weekly total

Dore et al., 2020b

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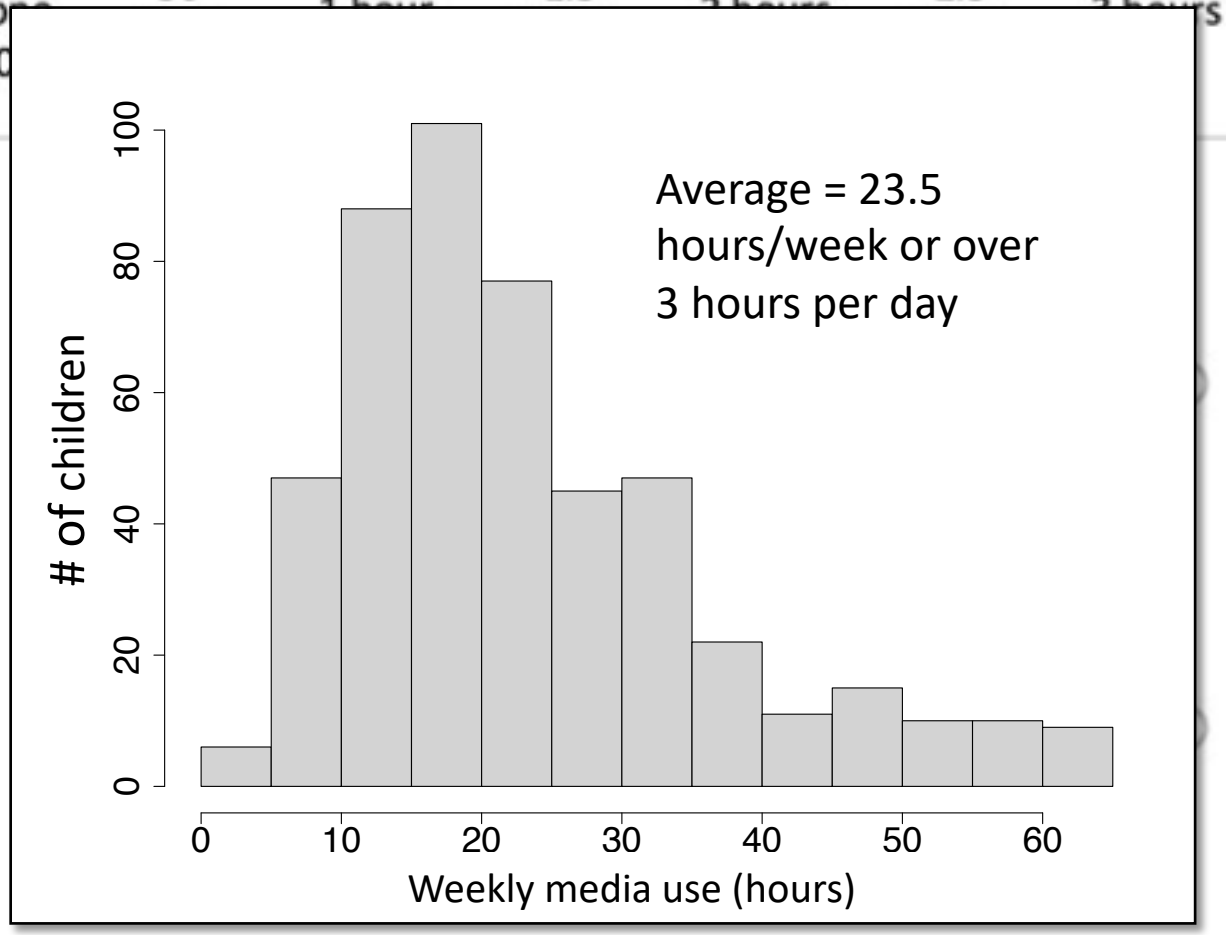


Dore et al., 2020b

Joint media engagement

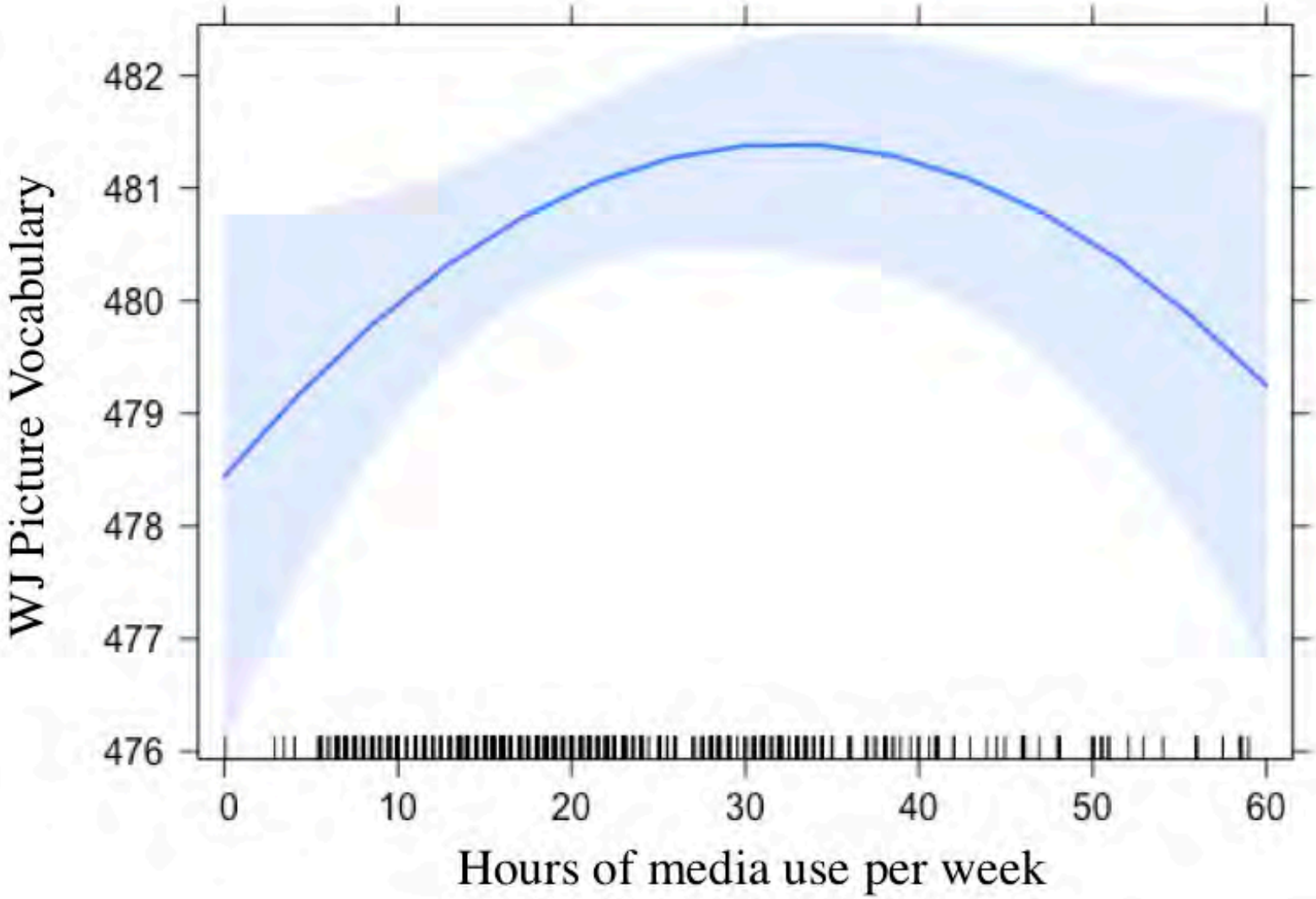
When my child is using media *outside of school*…

1. It is usually in the same room as me or another adult.
2. I am not sure whether they are watching videos or using apps/games.*
3. I comment on or ask my child questions about what is happening.
4. I do not interrupt him/her to talk about what he/she is doing or watching.*
5. We do not talk much about what he/she is doing or watching.*
6. I bring up what he/she saw or did in other conversations.
7. We talk about it beforehand.

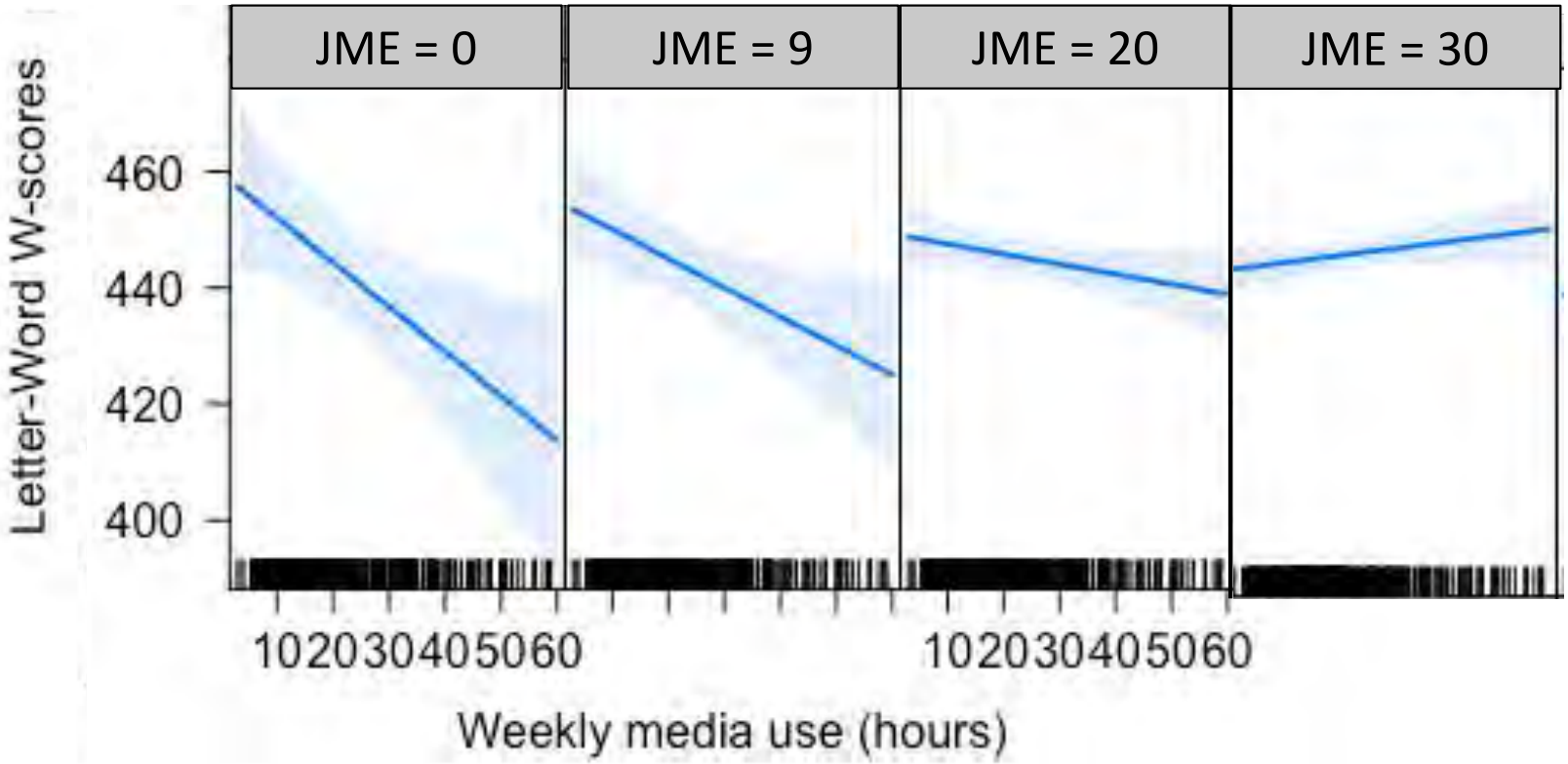
**Reverse scored.*

Dore et al., 2020b

Language: Quantity



Literacy: Joint media engagement



Is media use associated with language and literacy ?

- Not in a simplistic way
- **Language:** Moderate levels associated with higher gains than low or high use
- Could be displacement at high levels
- Why moderate better than low?
  - Educational value
  - Expose to new vocabulary

Dore et al., 2020b

Is media use associated with language and literacy ?

- Not in a simplistic way
- **Literacy:** Media use was negatively related to gains, but not when joint media engagement was high
  - Could be displacement at low-levels of JME
  - At high levels, could be using media to promote literacy

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Media and technology in early childhood classrooms

- Rising availability and use of media in early childhood settings (Northwestern, 2015, 2019)
- Recent data from 317 preschool teachers in Ohio (Dore & Dynia, 2020)
  - 63% used tablet; 47% at least once a week
  - Of those, 68% use for teaching new material and 82% use to review already-learned material
- Lack of high-quality educational media for preschoolers and little evidence on its use in classrooms

Mobile vocabulary game

- Part of a larger project creating an intervention to teach low-income preschoolers new vocabulary through reading and play

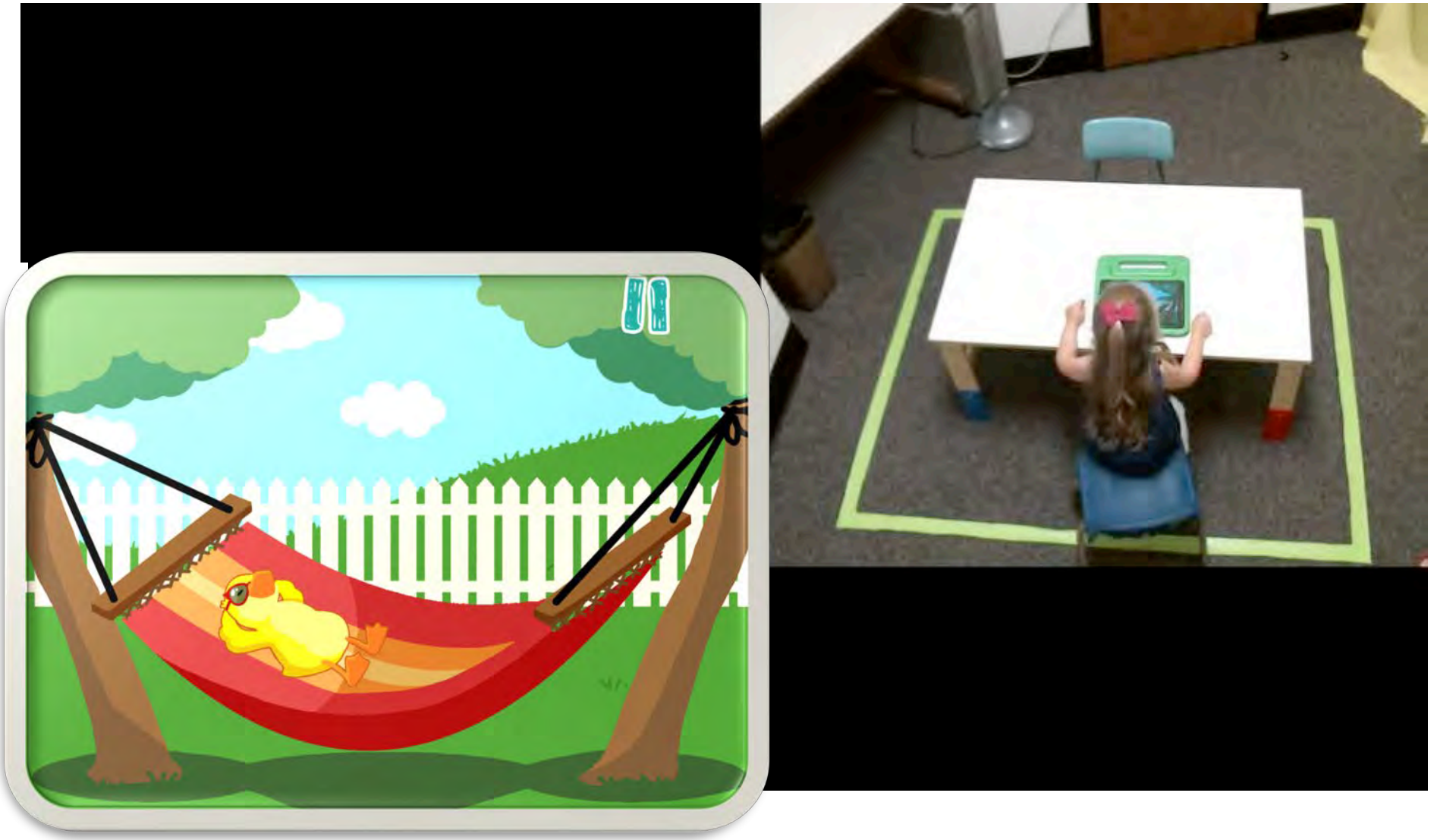
Dore et al., 2019

Mobile vocabulary game

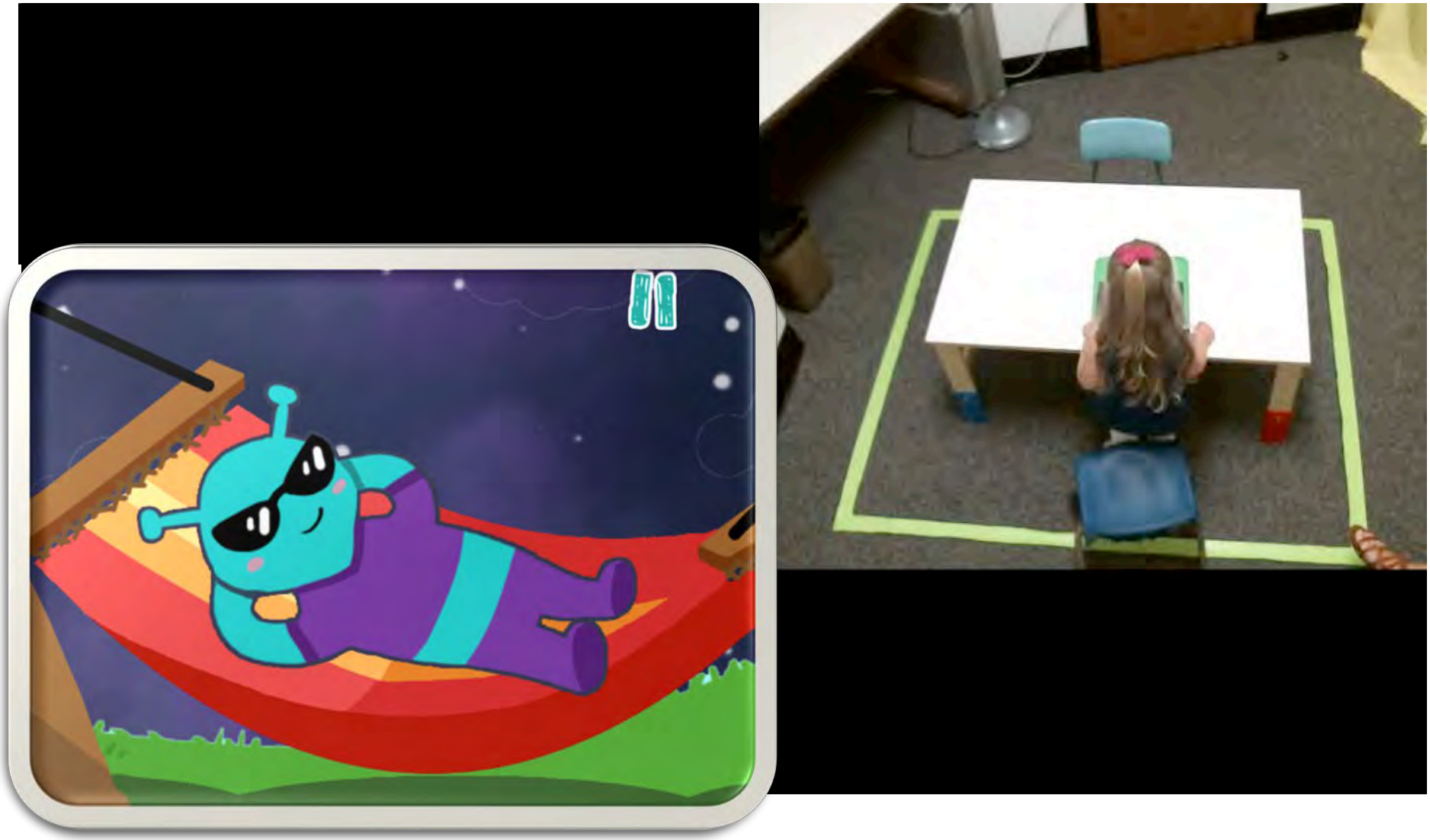
- 10 difficult words
- Takes about 10 to 12 minutes

Dore et al., 2019

Mobile vocabulary game



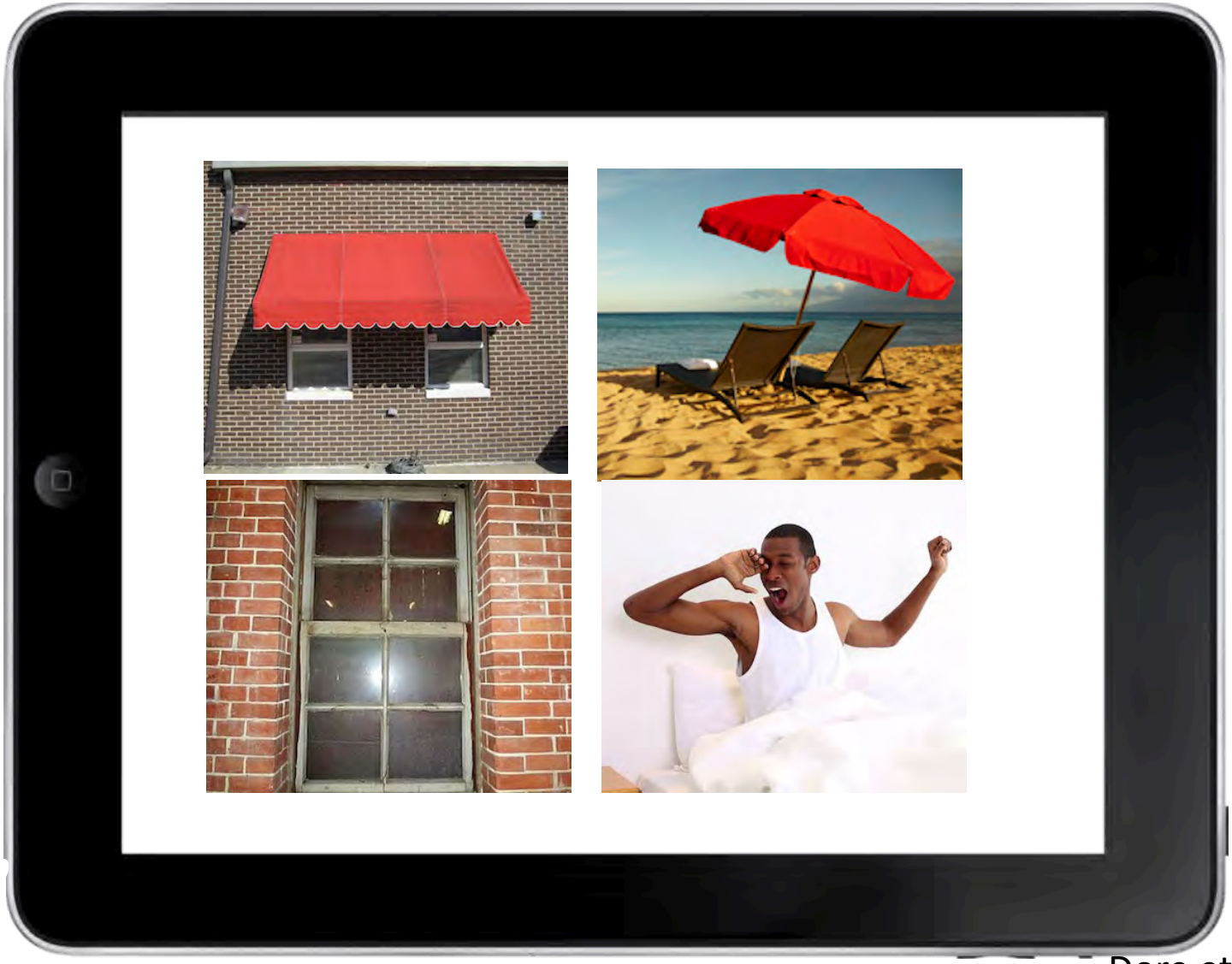
Mobile vocabulary game



Mobile vocabulary game

Dore et al., 2019

Receptive vocabulary test



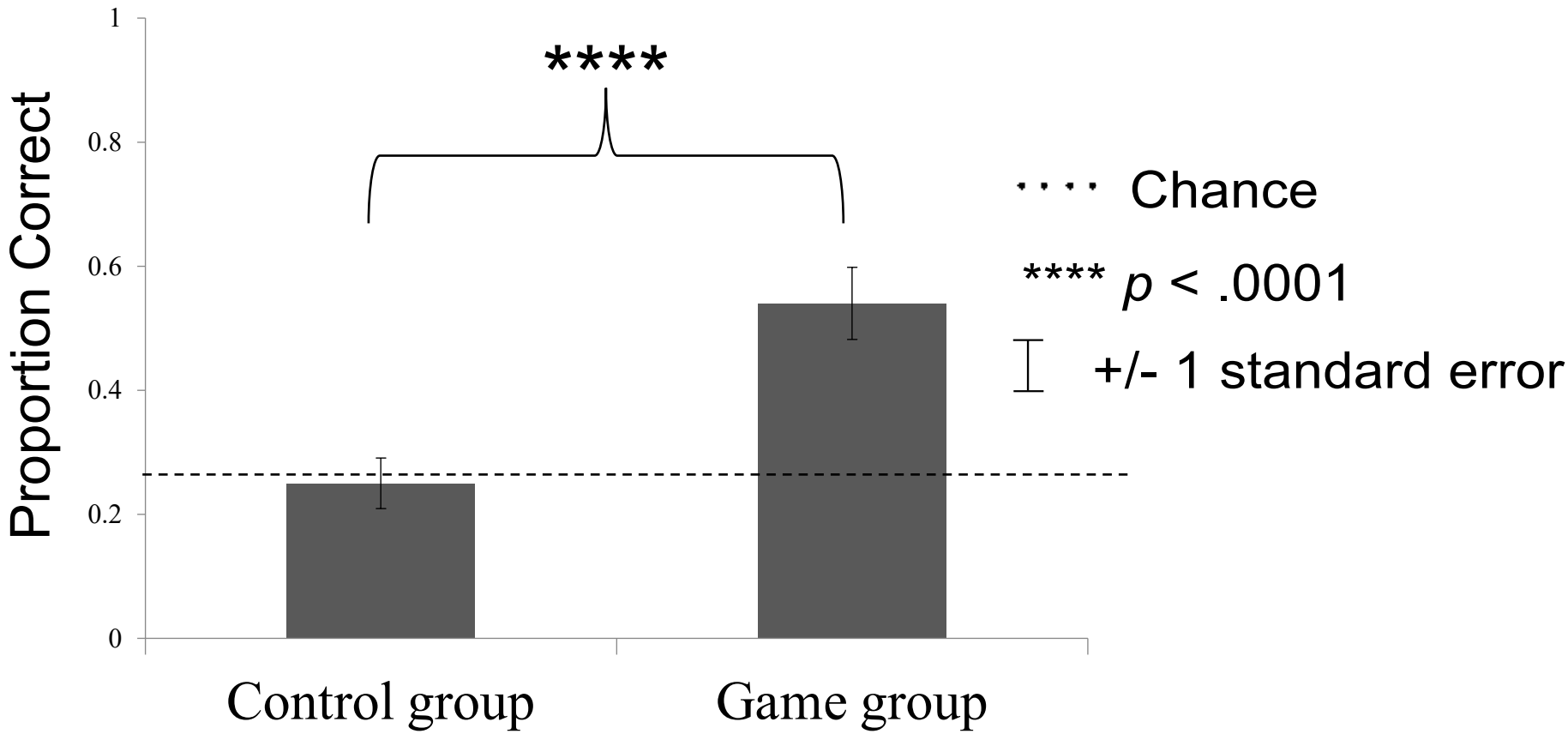
Dore et al., 2019

Lab study

- 4-year-olds from middle-income homes
- 34 children played the game and took the test
- 23 children (control group) just took the test

Dore et al., 2019

Lab study



Dore et al., 2019

Classroom study

- 3- and 4-year-olds in low-income preschools in two cities
- 33 children played mobile game

4 weeks (Play once a week)

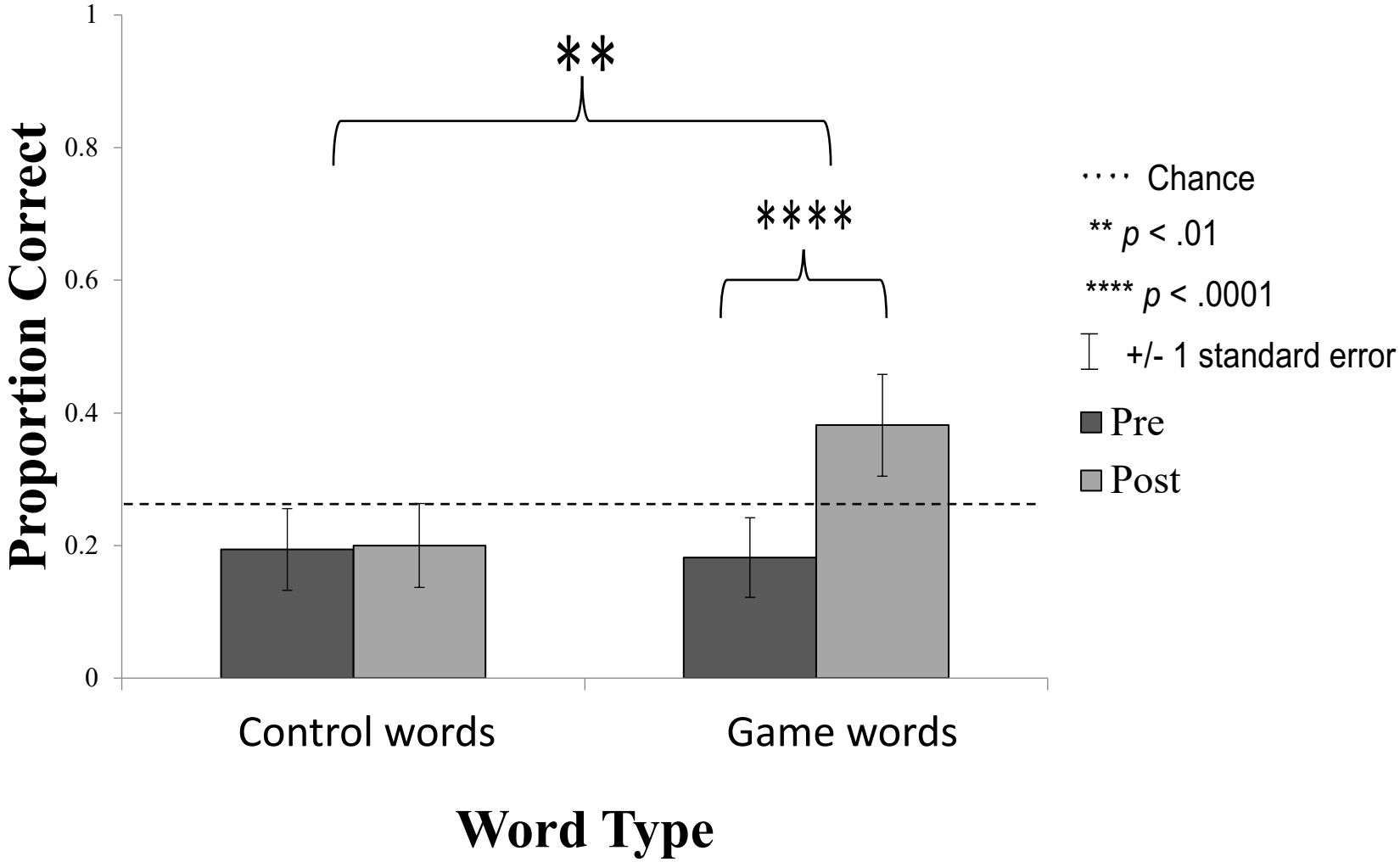
Pretest

Posttest

5 no-exposure control words

Dore et al., 2019

Receptive vocabulary



Dore et al., 2019

Mobile vocabulary game

- Children can learn vocabulary from a mobile game
  - Even in classroom context
  - Even without outside instruction
- Shouldn’t replace teacher instruction
  - Potential for supplementary instruction or extra support at home

Dore et al., 2019

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Kindergarten readiness programs

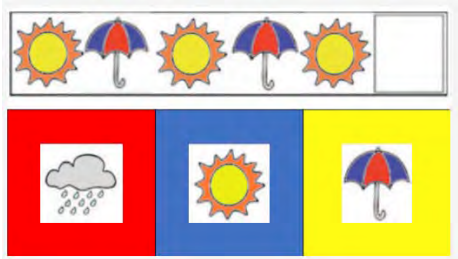
- COVID-19 prevented implementation of in-person summer learning programs
- Important for young children from underserved populations entering kindergarten with little to no preschool experience

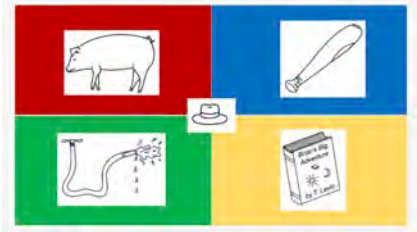
Summer Success at Home

- Capitalize on virtual options to deliver programming
  - Educational media (Anderson et al., 2001; Mares & Pan, 2013)
  - Video chat lessons (Gaudreau et al., 2020; Troseth et al., 2006)
- Use a combined approach to target both children and caregivers
- Aimed to assess feasibility, social validity, and preliminary impacts

Summer Success at Home

- 91 preschool-age children and their caregivers
- Primarily low-SES (median income: $33k)
- 4-week program
- Targeted skills:
  1) Social-emotional
     - Emotion understanding
  2) Math
     - Cardinality
     - Counting
     - Patterning
  3) Literacy
     - Alphabet knowledge
     - Emergent literacy





Summer Success at Home

- *Materials*: Tablet, four books, home learning activities
- 5 ingredients
  1) Weekly caregiver-teacher video chat or phone calls
  2) Two weekly *Watch Together* activities
  3) Two weekly *Play Together* activities

Summer Success at Home

- *Materials*: Tablet, four books, home learning activities
- 5 ingredients
  1) Weekly caregiver-teacher video chat or phone calls
  2) Two weekly *Watch Together* activities
  3) Two weekly *Play Together* activities
  4) One or two weekly *Read Together* activities
  5) Weekly child-teacher video chat lessons

Feasibility and Social Validity

Table 1

Caregiver Survey Responses for Program Satisfaction (n = *21)*

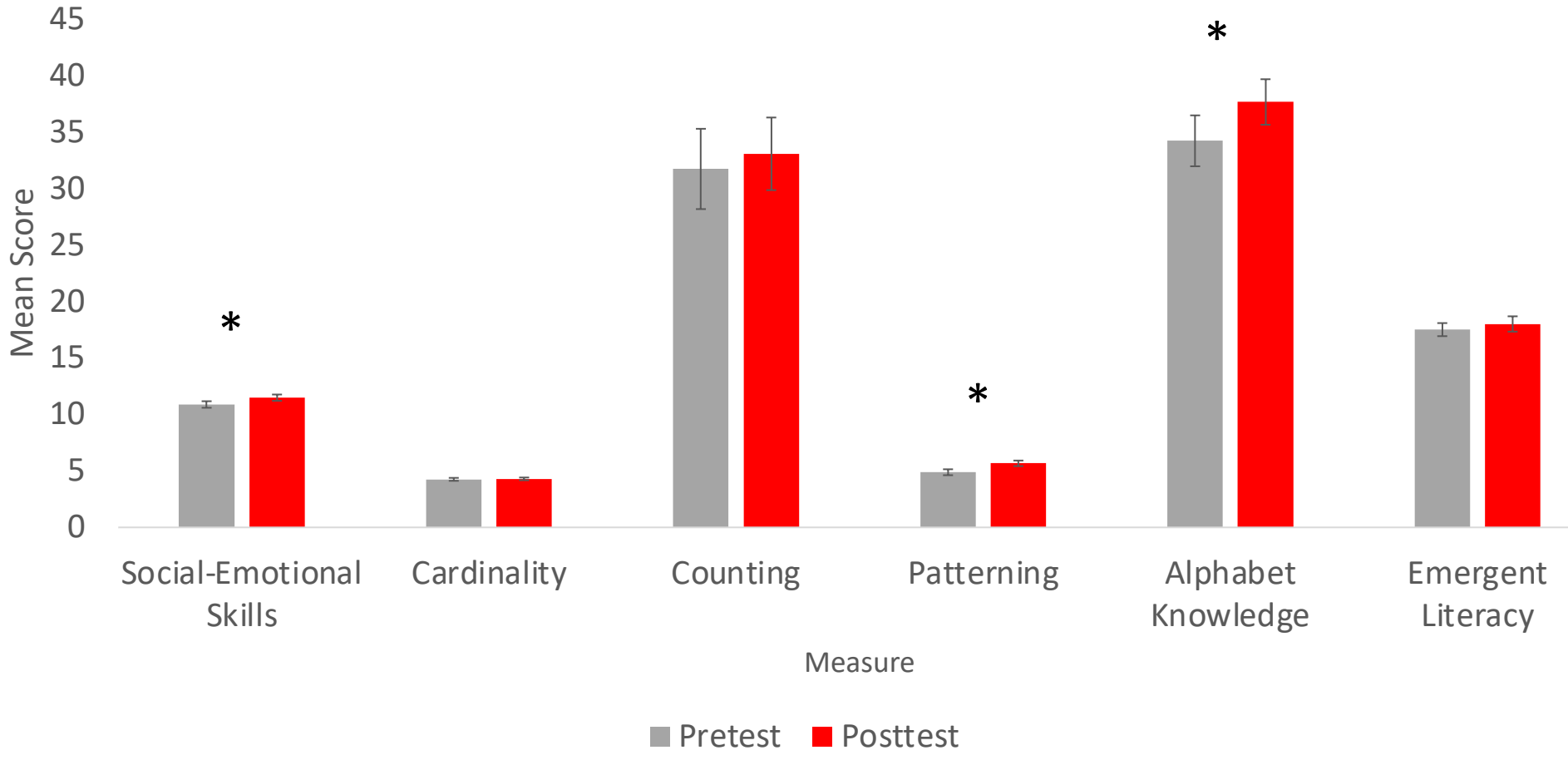
Item: "Please rate…"	*M*	*SD*	Range	% High*
Your child's experience in Summer Success	4.71	0.7	3-5	86%
Your child's interactions with Summer Success staff	4.71	0.6	3-5	91%
Your experience in Summer Success	4.90	0.4	3-5	95%
Your experience with the Summer Success staff	4.86	0.5	3-5	95%
The overall quality of the Summer Success program	4.90	0.3	4-5	100%

*Percent of responses coded as 4 or 5 with survey anchors as 1 = *poor*, 3 = *average*, 5 = *excellent*

Feasibility and Social Validity

- Easily recruited 100 families and 91% started program
- High caregiver ratings
- Teacher-rated child engagement in video chat lessons
  - Average = 2.4 out of 3
  - 53% engaged for whole lesson
  - 90% engaged for > half of lesson

Preliminary impacts



Summer Success at Home

- Were able to successfully capitalize on virtual options to deliver programming
- Unclear which aspects of programs were effective and should be rigorously tested
- Evidence of promise for positive use of media and technology under pandemic conditions or for other remote contexts

Takeaways

- Media use in early childhood has *changed* drastically in the last decade and has *risen* during COVID-19 closures
- *Fear* of new media is not new
- Potential *disadvantages* and *advantages*
- For language and literacy, relationship is not simple: some media use may be a positive influence and *context* and *content* likely matter
- When used in *purposeful* ways, media and technology can support and promote learning
- ***Challenge*** is to create and implement high-quality, research-based media products and programs

Questions/comments?

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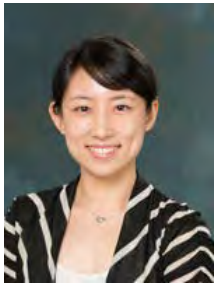
THE CITY OF COLUMBUS

NATIONWIDE CHILDREN'S

Jessica Logan



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