Mobile and Interactive Media Use by Young Children: The Good, the Bad, and the Unknown

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The use of interactive screen media such as smartphones and tablets by young children is increasing rapidly. However, research regarding the impact of this portable and instantly accessible source of screen time on learning, behavior, and family dynamics has lagged considerably behind its rate of adoption. Pediatric guidelines specifically regarding mobile device use by young children have not yet been formulated, other than recent suggestions that a limited amount of educational interactive media use may be acceptable for children aged <2 years.1 New guidance is needed because mobile media differs from television in its multiple modalities (eg, videos, games, educational apps), interactive capabilities, and near ubiquity in children’s lives. Recommendations for use by infants, toddlers, and preschool-aged children are especially crucial, because effects of screen time are potentially more pronounced in this group. The aim of this commentary is to review the existing literature, discuss future research directions, and suggest preliminary guidance for families.

EARLY CHILDHOOD INTERACTIVE MEDIA USE: EVIDENCE AND THEORY

Educational Value

Although well-researched television programs such as Sesame Street or Blue’s Clues can promote early academic skills in preschool-aged children, children <30 months cannot learn from television and videos as they do from real-life interactions.2 Interactive media, on the other hand, allow for contingent responses to children’s actions and thus may facilitate more retention of taught material. For example, socially contingent media (ie, with appropriate content, timing, and intensity) such as videophone apps are just as effective as real-life encounters in teaching language to 24 month olds,3 but otherwise, published research on whether infants and toddlers can learn from interactive screens is scant. Promising research suggests that interactive media such as learn-to-read apps and electronic books (e-books) may increase early literacy skills4 by providing practice with letters, phonics, and word recognition. E-books can be useful in promoting vocabulary development and reading comprehension and could be more engaging for young children via digital scaffolds (eg, oral narration, synchronous text highlighting, and embedded sound effects, animations, or games). However, such extraneous e-book...
enlargements have also been shown
to distract children's attention from
the story and to interfere with com-
prehension. In other words, the
visual design, sound effects, and
touchscreen interface of interactive
media can either engage young chil-
dren or distract them from educa-
tional content. A balance between the
2 is necessary to facilitate learning.

Distraction From Distress
The ability of mobile media to
effectively distract and entertain
young children is also a potential
benefit of their use. Indeed,
smartphones and tablets are
increasingly used to help distract
children during anesthesia induction
or medical/surgical procedures. However, the use of mobile media to
occupy young children during daily
routines such as errands, car rides,
and eating out is becoming
a common behavioral regulation tool: what the industry terms a "shut-up toy." Because young children need to
develop internal mechanisms of self-
regulation, it needs to be determined
whether mobile device use, although
helpful in the short term, could be
detrimental to later social-emotional
outcomes when used as the principal
way in which children are taught to
calm themselves down.

Displacement of Activities
One mechanism by which heavy
television exposure negatively affects
child development is by displacing
language- and play-based interactions
with caregivers. The instant
accessibility and portability of mobile
devices make them potentially more
likely to displace human interactions
and other enriching activities.

Because thousands of apps are
marketed as "educational" (without
evidence for this claim), parents may
feel comfortable with this relative
increase in screen time. Although
interactive media are well suited to
teach concrete knowledge (so-called
skills and drills), other important
preacademic skills such as
self-regulation, empathy, social skills,
and problem-solving are primarily
learned through children exploring
the natural environment, interacting
with peers and caregivers, and
playing in unstructured, creative
ways. Moreover, interactive media use
by young children may displace
sensorimotor activities
(eg, manipulation, climbing, building)
that support development of visual-
motor skills important to later
success in math and science.

Parents' use of interactive media also
has the potential to distract from
parent-child interactions. Parent
media use usually involves work,
errands, or social or other content
requiring significant information
processing, which makes it harder to
balance attention between devices
and managing child behavior. On the
other hand, videophone apps may
enhance interpersonal connections by
allowing children to maintain face-to
face interactions with distant family
members or during military
deployment.

Context and Parent Engagement
Like traditional media use, child use of
mobile and interactive media does not
occur in a vacuum. Many factors,
including parenting style,
socioeconomic status, and child
temperament, modify the positive and
negative effects of media on children's
behavior and development. Most
important is parent-child (or teacher-
child) interaction during media use:
how we use technology rather than
the technology's qualities per se. Mobile
and interactive media have great
potential to promote learning through
joint engagement between caregivers
and children, by demonstrating ideas
for parent-child activities, or by
modeling teaching strategies (eg,
dialogic reading, phonetic, or sound
blending skills) with which low-literacy
parents may not be familiar.

Research Needs
Existing research is limited, and many
questions remain, such as

• At what age and what content can
  young children start learning from
  interactive media compared with
  experiences in the real world?
• What tablet enhancements facilitate
  the most learning at different
developmental stages?
• Do children from low-literacy fam-
  ilies benefit more from apps that
  engage the caregivers in the child's
  learning experience?
• Do children with self-regulation
  problems, whose parents might use
  media more to calm them down,
have better or worse outcomes as
a result?

PRELIMINARY GUIDANCE FOR PARENTS
Although much remains to be
researched, clinicians can specifically
raise the issue of interactive/mobile
media use with parents of young
children; in fact, parent or child
mobile device use in the office
commonly presents opportunities for
achievable moments. At with
television, it is crucial to ask how
parents decide which technology and
content is best for their children and
how they monitor and set rules for
use. Violence on mobile media should
be avoided, and when encountered,
children should be helped to
understand it. Providers can
recommend age-appropriate,
educational content and suggest the
use of resources such as PBS Kids
(www.pbskids.org), Sesame
Workshop (www.sesameworkshop.
org), or Common Sense Media (www.
commonsensemedia.org) to guide
media choices. Parents should be
couraged to try a game or app first,
play it with the child, and ask the
child about it afterward to see which
he or she is learning. Clinicians
should strongly emphasize the
benefits of parents and children using
interactive media together to enhance
its educational value.

In addition, asking about mobile/
interactive media use provides
a window into how parents help their
children learn to calm down and is an opportunity to discuss how media can either support or displace important parent-child interactions and play. Digital resources provided by early childhood organizations such as Resources for Early Learning (www.resourcesforearlylearning.org) or Zero to Three (www.zerotothree.org) can provide parents with ideas for other developmentally appropriate activities to pursue with their child, and provide alternative strategies for teaching a child to self-regulate when distressed or bored.

Television has had a clearly documented impact, both positive and negative, on children. Mobile devices, because of their portability and interactive components, are introducing media into all aspects of children's experience and deserve serious attention and research. Until more is known, pediatric providers can offer guidance on preserving quality, connected family interactions, whether through "unplugged time" or a designated family hour, and how to establish healthy childhood media habits from early childhood.

ACKNOWLEDGMENTS
We thank Dr Michael Rich, MD, Director of the Harvard Center on Media and Child Health; Dr Natalia Kucirkova, PhD, Faculty of Education and Language Studies, The Open University, Milton Keynes, United Kingdom; Dr Lori Takeuchi, PhD, Senior Director and Research Scientist at the Joan Ganz Cooney Center at Sesame Workshop; and Dr Michael H. Levine, PhD, Executive Director of the Joan Ganz Cooney Center at Sesame Workshop, for their thoughtful review of this manuscript.

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Pediatrics 2015;135;1; originally published online December 29, 2014;
DOI: 10.1542/peds.2014-2251

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