

Children's Television Viewing and Cognitive Outcomes A Longitudinal Analysis of National Data

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FROM ABSTRACT

Objective

To test the independent effects of television viewing in children before age 3 years and at ages 3 to 5 years on several measures of cognitive outcomes at ages 6 and 7 years.

Design

Using data from a nationally representative data set, we regressed 4 measures of cognitive development at ages 6 and 7 years on television viewing before age 3 years and at ages 3 to 5 years, controlling for parental cognitive stimulation throughout early childhood, maternal education, and IQ.

Results

Before age 3 years, the children in this study watched an average of 2.2 hours per day; at ages 3 to 5 years, the daily average was 3.3 hours.

Adjusted for the covariates mentioned earlier, each hour of average daily television viewing before age 3 years was associated with deleterious effects on the Peabody Individual Achievement Test Reading Recognition Scale of 0.31 points, on the Peabody Individual Achievement Test Reading Comprehension Scale of 0.58 points, and on the Memory for Digit Span assessment from the Wechsler Intelligence Scales for Children of -0.10 points.

Conclusions

There are modest adverse effects of television viewing before age 3 years on the subsequent cognitive development of children.

These results suggest that greater adherence to the American Academy of Pediatrics guidelines that children younger than 2 years not watch television is warranted.

THESE AUTHORS ALSO NOTE:

"A large number of studies have reported deleterious effects of children's television viewing on outcomes such as obesity, inactivity, attentional problems, aggression, and sleep patterns."

Children aged 3 to 5 years watch an average of 2 hours or more of television per day, and much of this is not devoted to educational programming.

"59% of children younger than 2 years regularly watch television every day, and these children watch 1.3 hours of television per day, despite the fact that there is no programming of proven educational value targeted at this age range."

"The American Academy of Pediatrics recommends no screen time for children younger than 2 years and only high-quality, age-appropriate viewing thereafter."

One study reports that "high achievers" used television as a complement to school learning, whereas "low achievers" used television as a substitute for it.

Another study showed that the lower the education of the parent, the more hours of television their children watched.

Television viewing by children reduces cognitive outcomes.

Reduced television improves performance IQ and attention time on cognitive tasks.

Television and video have been shown "to depress imagination and creativity."

Parents need to be advised to undertake greater efforts to steer their children toward educational television and/or reduce overall television viewing time.

The participants in this study were age 6 and were assessed for memory, mathematics, reading recognition, and reading comprehension.

Age 6 years was chosen because it's the age at which many children begin first grade and television viewing typically drops off at this time.

In this study, the primary predictor of interest was the hours of television watched per day prior to age 6 years.

"When parents reported that their child watched more than 16 hours per day, they were dropped from the analysis because the response was not credible."
[Interesting]

The scores on each of the outcomes revealed that "all scores were lower among the children with unreasonably high TV hours than among the children with values in the reasonable range, and these differences were significant."

“Certain parents may be either less invested than others in their children’s cognitive development or simply less aware of the American Academy of Pediatrics guidelines and the potential adverse effects of television viewing. Such parents may be more permissive in allowing their children access to large amounts of television time and also less likely to spend time reading to their children, taking them to museums and zoos, and so forth.”

The mean number of hours per day of television viewing was:

- 2.2 hours per day for children younger than 3 years
- 3.9 hours per day for children aged 3 to 5 years
- 3.54 hours per day for children aged 6 years

“Television viewing before age 3 years was associated with a deleterious effect on both reading recognition and reading comprehension, with each additional hour per day leading to a reduction in scores of 0.31 and 0.58, respectively.”
 [This means there was a 31% reduction in reading recognition and a 58% reduction in reading comprehension with each additional hour per day of television watching for children younger than age 3 years].

Early television viewing was associated with an adverse effect on memory, with each hour per day viewed associated with a 10% decrease in the score.

In families with a lower than median income, each hour per day of television viewing before age 3 years was associated with a 45% decrease in the math score.

COMMENT BY AUTHORS:

“This analysis has shown a consistent pattern of negative associations between television viewing before age 3 years and adverse cognitive outcomes at ages 6 and 7 years.”

These authors propose 3 mechanisms for these observed effects of television watching:

- 1) Children younger than 3 years who spend more time watching television spend less time in other activities, such as imaginative free play, interactions with adults, and so forth, that would be beneficial to their cognitive development.
- 2) The content of the television they watch is deleterious to their cognitive development.
- 3) It may be that the medium itself is deleterious, whether because of aspects of the production (eg, the pacing and rapid scene changes) or the simple fact of looking in a single direction at a single stimulus for a long time.

“This study suggests that television for very young children [including educational television] is not helpful for cognitive development and may indeed be harmful.”

Because of the way these authors conducted this study, they do not believe that television viewing is deleterious to children’s cognitive development because it displaces more valuable activities, such as reading. Rather, they believe that television viewing is deleterious because “the intense visual and aural stimuli” of television is harmful to the development of children’s brains in the early years, and that early exposure to television can have adverse consequences on brain processing.

“The American Academy of Pediatrics has issued guidelines urging parents to avoid any television or video viewing before age 2 years.” **[IMPORTANT]**

“This analysis complements this earlier work by suggesting that viewing a heavy television diet entails modest, but statistically significant, consequences for subsequent development in several key cognitive domains.” **[IMPORTANT]**

KEY POINTS FROM DAN MURPHY:

- 1) The mean number of hours per day of television viewing was:
 - 2.2 hours per day for children younger than 3 years
 - 3.9 hours per day for children aged 3 to 5 years
 - 3.54 hours per day for children aged 6 years
- 2) “59% of children younger than 2 years watch television every day.
- 3) “The American Academy of Pediatrics recommends no screen time for children younger than 2 years and only high-quality, age-appropriate viewing thereafter.”
- 4) Low achieving children use television as a substitute for learning.
- 5) The lower the education of the parent, the more hours of television their children watched.
- 6) Television viewing by children reduces cognitive outcomes.
- 7) Increased children’s television viewing increase obesity, inactivity, attentional problems, aggression, and negatively alters sleep patterns.
- 8) Reduced television improves performance IQ and attention time on cognitive tasks.
- 9) Television and videos depress imagination and creativity.

- 10) Before age 3, each hour of television viewing per day reduced reading recognition by 31%.
- 11) Before age 3, each hour of television viewing per day reduced reading comprehension by 58%.
- 12) Before age 3, each hour of television viewing per day reduced memory by 10%.
- 13) There is a negative association between television viewing before age 3 years and adverse cognitive outcomes at ages 6 and 7 years.
- 14) Television for very young children, including educational television is not helpful for cognitive development and is actually harmful.
- 15) Early television viewing actually harms the development of a child's brain.
- 16) "The American Academy of Pediatrics has issued guidelines urging parents to avoid any television or video viewing before age 2 years." **[IMPORTANT]**
- 17) Greater adherence to the American Academy of Pediatrics guidelines that children younger than 2 years not watch television is warranted.