

SpongeBob may impair 4-year-olds' brains

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Four-year-olds who watched nine minutes of the fast-paced cartoon *SpongeBob Squarepants* showed temporary attention and learning problems, researchers found.

The study compared 60 children who were randomly assigned to watch *SpongeBob*, the slower-paced PBS cartoon *Caillou* or to draw pictures as a control.

After nine minutes, the children did four tests to tap their "executive function" — such as attention, problem-solving and delay of gratification — which allows people to set goals and implement them. Executive function is important for helping children to learn and function in school and be creative, the researchers said.

"Just nine minutes of viewing a fast-paced television cartoon had immediate negative effects on four-year-olds' executive function," Angeline Lillard and Jennifer Peterson of the psychology department at the University of Virginia concluded in Monday's issue of the journal *Pediatrics*.

"Parents should be aware that fast-paced television shows could at least temporarily impair young children's executive function."

In the fast-paced show, the scenes changed, for example, from a swimming pool to a bedroom, every 11 seconds on average compared with every 34 seconds on average in the educational TV show, the researchers said.

The children also watched for nine minutes, while many cartoons last 11 minutes. Two such episodes are often shown in a 30-minute programming slot, Lillard and Peterson noted in suggesting that watching a full fast-paced program could be more harmful.

"It's as if watching a nine-minute TV show that's very fast-paced created temporary ADD in these four-year-olds," said Dr. Marsall Korenblum, a child psychiatrist at the Hincks-Dellcrest Centre in Toronto and a professor of psychiatry at the University of Toronto.

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The investigators speculated that the combination of fantastical events and fast pacing are responsible for the effects, but they were unable to tell exactly what features might be responsible.

Limitations and questions

"I wouldn't advise watching such shows on the way to school or any time they're expected to pay attention and learn," said Lillard, adding that she found a similar effect with other fast-paced cartoons.

The small, experimental study had several weaknesses, such as a small sample, cautioned Dr. Dimitri Christakis, a child development specialist at Seattle Children's Hospital who wrote an editorial accompanying the study.

"Similar to many initial forays into a new area, it raises as many (or more) questions than it answers," Christakis wrote.

"For example, the outcomes were measured immediately after viewing; are these deficits in executive function transient? The age range selected was quite narrow; does the age of the child matter?"

Another drawback of the study was that the children were not tested before they watched TV.

Media is a public health issue that needs harm-reduction approaches and more research to steer children and teens toward safe media activities, Christakis said, particularly in an age of media multi-tasking, such as doing homework while listening to music and texting a friend.

"We may be just dealing with a changed world in which thought processes don't go on in such a deep and concentrated fashion, and you know there will be costs for that," Lillard said.

Spongebob for older kids

Nickelodeon spokesman David Bittler disputed the findings and said *SpongeBob SquarePants* is aimed at school-age kids, not four-year-olds.

"Having 60 non-diverse kids, who are not part of the show's targeted (audience), watch nine minutes of programming is questionable methodology and could not possibly provide the basis for any valid findings that parents could trust," he said.

In the study, those who watched *SpongeBob* scored on average 12 points lower than the other two groups, whose scores were nearly identical.

The theory is that the children are being overstimulated by the fast-paced, fantastical shows, which taxes their brains so they can't pay attention to what they need to, Korenblum said.

None of the children had diagnosed attention problems and their parents all gave them similar scores on a questionnaire of the kids' behaviour, such as "constantly fidgets or squirms" or "easily distracted."

Study participants were recruited from a database of children who were mainly white and from middle- to upper-middle class families.

The study's authors said they had no financial relationships relevant to the article to disclose.

With files from CBC's Kelly Crowe and The Associated Press

