





## and Attention Problems in Children

by Elizabeth P. Lorch, Ph.D., and Richard Milich, Ph.D.

THE FOLLOWING ARTICLE is a commentary on the recent study, “Early Television Exposure and Subsequent Attentional Problems in Children,” published in the April issue of *Pediatrics*, the research publication of the American Academy of Pediatrics. Co-authored by Drs. Christakis, Zimmerman, DiGiuseppe and McCarty, the study discusses how television viewing can affect the attention of children. The journal, *Pediatrics*, can be accessed through your local library system. For a fee payable to the American Academy of Pediatrics, Web-based online copies are available at [www.pediatrics.aappublications.org](http://www.pediatrics.aappublications.org).

“Does TV viewing in young children really cause AD/HD?” This has been a matter of speculation for years. We have heard many variations of that question from students, parents and colleagues since the publication of a recent study by Christakis and colleagues. Briefly, the study reported that the more daily hours of television toddlers view, the higher their risk of developing attention problems at age 7. The authors offer the explanation that auditory and visual stimulation from television viewing may contribute to attention problems by “rewiring” early brain development. In interviews with the authors and in columns concerning the study, conclusions and recommendations go farther. The following statements from the syndicated columnist, Derrick Jackson, are typical:

- The study found that “young children who watch TV are more likely to suffer attention deficit disorder.”
- The study found that “1-year-olds and 3-year-olds who watched just one hour of TV daily had 10 percent more risk of attention problems by age 7 than children who watched no TV at all.”
- “Limiting young children’s exposure to television as a medium during formative years of brain development...may reduce children’s subsequent risk of developing AD/HD,” quoting the lead author Christakis.

The question addressed in this study is undeniably important and worthy of research attention. The authors also should be commended for presenting results from a large, nationally representative sample

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in a longitudinal study that follows children’s development over time. However, because all data came from pre-existing parent surveys, the authors had to rely on brief and problematic measures of both attention problems and television viewing. A careful examination of how these measures limit conclusions from the study and consideration of alternative explanations of the findings indicate that we still know very little about the impact of early television viewing on later attention problems.

**Did the study find that early television viewing increases the risk of AD/HD?**

The authors acknowledge that the study does not involve diagnoses of AD/HD, but they do claim to be identifying related attention problems. The authors determined whether a child demonstrated attention problems at age 7 based on parent responses to five questions about the child’s behavior. Any parent of a child with AD/HD understands how seriously this approach violates recommended procedures for identifying childhood attention problems. For example,

judgments of attention problems should never be based on the report of a single individual, especially not on the responses of a parent to a small number of general questions. In addition, two of the five items (“is easily confused” and “has trouble with obsessions”) are not considered indicators of attention problems in diagnoses of AD/HD. Thus, we have no way of knowing whether “attention problems” identified in this study actually reflect attention problems that would be identified using more appropriate procedures. More specifically, media reports indicating that the study found a link between early television viewing and later AD/HD are gross overstatements.

**Did the study find that “1-year-olds and 3-year-olds who watched just one hour of TV daily had 10 percent more risk of attention problems by age 7 than children who watched no TV at all?”**

Variations on this quotation are common in media reports of this study and stem from the authors’ summary of how the amount of early television viewing can be used to predict the risk of later attention prob-

## TV and Attention Problems in Children

lems: each additional hour is associated with an additional 10 percent risk of attention problems. Although the authors acknowledge potential imprecision in parents' reports of hours of children's television viewing, they do not address the potential impact of this inaccuracy on the ability to predict risk for attention problems from specific amounts of early television viewing.

One problem is that parents who dramatically inflate the number of hours their child watches television also are likely to inflate other self-reported measures, including the level of their child's attention problems. In this sample, some parents report nearly nonsensical levels of television viewing (e.g., toddlers who viewed at least 16 hours per day). If these parents also are inflating reports of their child's attention problems, even a relatively small number of such parents could be responsible for the reported link between television viewing and attention problems claimed for the whole sample.

A second problem with parents' reports of viewing concerns the basis for the conclusion that every hour of early television viewing (even the first hour) is associated with 10 percent more risk of later attention problems. This kind of conclusion assumes that the relation between amount of viewing and degree of risk that is identified across the whole sample applies at each and every point along the way, which may not be true. Suppose, for example, that only very heavy early exposure to television is associated with considerably greater risk of attention problems. Even if the parents who report 10, 12, 14, even 16 hours per day of toddler television viewing were accurate, this relatively small number of parents still could determine the entire relation reported between television viewing and attention problems for the whole sample. If the data were reanalyzed after eliminating the minority of participants reporting extreme amounts of viewing, this relation may disappear. If extreme amounts of reported viewing determine the relation, conclusions warning of the risks of even one hour per day of early television viewing would be needlessly alarmist.

### **Will "limiting young children's exposure to television as a medium during formative years of brain development reduce children's subsequent risk of developing AD/HD?"**

Such a recommendation depends on one specific interpretation of the study, namely, that early television viewing causes or contributes to later AD/HD. However, in addition to all the measurement problems

that limit conclusions from this study, there are alternative interpretations of the same pattern of results other than the conclusion that the amount of early television viewing causes later attention problems. Let's consider some alternative explanations.

■ Which comes first, television viewing or attention problems?

Toddlers who are difficult to manage may be more easily soothed or engaged by television than by other means, leading parents to permit them more time with television. In this way, early behavior problems may lead to more television viewing, rather than more television viewing causing later attention problems. Although the authors dismiss the idea that attention problems are evident in toddlers, there is ample evidence that toddlers who are difficult to manage are the ones most likely to develop later attention problems. Parents of a child with AD/HD often can recall differences in their child's behavioral style or temperament long before a diagnosis was made. The findings reported in this study may reflect nothing more than the fact that these toddlers are allowed to watch or are attracted to more television than their age-mates who are easier to manage.

■ Do the findings reflect an effect of early television viewing or an effect of the early home environment? Overall, parents in this sample report high levels of viewing by toddlers, including some of the extreme amounts noted earlier. Many parents may not be reporting toddler television viewing so much as the amount of time the television is on in the home during the toddler's waking hours. For example, if the television is on indiscriminately, this may reflect homes



## TV and Attention Problems in Children

where parents have difficulty setting limits for their children, where parent-child interactions are not sustained or where children grow up in an environment that offers more distractions. These alternative explanations suggest that high levels of toddler television exposure, as measured in this study, actually may tell us more about the characteristics of the toddler's home environment than about toddler television viewing per se.

### **Is the amount of television viewing the only issue, or does content matter?**

The authors' recommendation to limit the amount of toddler television viewing presumes that only the amount of television viewing is important and that content is irrelevant. The authors acknowledge that their study produced no information on the content of the television programs reported by the parents. However, educational programming can have beneficial effects on children's development, including improvements in vocabulary and problem solving.

A blanket recommendation that all television viewing can lead to attention problems may discourage parents from carefully selecting beneficial programming for their young children.

### **What should parents do?**

Certainly the questions addressed in this study are important, but the very importance of the questions demands careful, systematic investigation followed by interpretation that does not overextend the meaning of the findings. The over-interpretations that are appearing in media reports of the study may unnecessarily panic parents even about relatively small amounts of television viewing. Claims that each hour of daily television viewing increases the risk of later attention problems by 10 percent or that early television viewing may "rewire" and damage the developing brain go well beyond what can be concluded from a flawed study that is open to a number of different interpretations. Further, it is premature to



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inform parents that they can reduce their children's risk of developing attention problems by restricting early television viewing, and it is unfair to suggest to parents of children with AD/HD that their child's disorder is a consequence of early television viewing.

We agree with the authors that there may be many reasons why parents should monitor and regulate both the quantity and the quality of their children's television viewing. It does make sense for parents to avoid an environment where the television is on all of the time or where the television is used merely as a babysitter. If young children do watch television, it makes sense for parents to choose programming that is appropriate to the child's age and that can promote the child's development. Further, research suggests that the benefits of educational programming can be enhanced when parents help children interpret and learn from the shows. Finally, effective parents encourage their children to engage in a diversity of social, physical, educational and creative activities, only one small component of which is television viewing. However, these recommendations were true prior to the publication of this study, and there is nothing in the results of this study to alter these recommendations. ■

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