

What is the impact of screen media use on language development of infants and toddlers?*

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This critical review examines the impact of screen media use on language development of infants and toddlers. Seven studies were included in this review. Study designs included: one case-control study, four prospective longitudinal cohort studies, one cross-sectional survey and one prospective longitudinal and cross-sectional study. Overall, the results of this review provide suggestive evidence that screen media use in infants and toddlers is negatively associated with language development. The evidence indicates that this association depends on both amount and content of the children's exposure. Recommendations for clinical practice and future research are discussed.

Introduction

The American Academy of Pediatrics (AAP) recommend that children under two years of age should have minimal or no screen media exposure (American Academy of Pediatrics, 2014). The AAP (2014) supports this recommendation with evidence about the negative impact of screen media (e.g. television, videos, computers, cell phones, tablets) on early brain development. Despite this recommendation, Wartella, Vandewater, & Rideout (2005) report that the majority of children under two years of age use screen media for more than two hours a day on average. A significant proportion of parents believe that screen media is important and beneficial for their children's intellectual development (Wartella, Vandewater, & Rideout, 2005).

Considering the number of children under two who are exposed to screen media regularly and the duration of this exposure, it is important to understand the impact this is having on their language development. Additionally, recommendations about screen media use should be based on strong evidence. Parents and caregivers of young children should have accurate information about the potential harms or benefits of allowing infants and toddlers to be exposed to screen media. This information should include how the amount of exposure and the content of exposure specifically impact language development.

It is important for speech-language pathologists to have an understanding of the association between language development and screen media use in infants and toddlers because speech-language pathologists have an important role to play in the prevention of language disorders and delays. Speech-language pathologists can use this evidence to

support and guide parents about best practice for toddlers. The secondary objective of this paper is to provide evidence-based recommendations for clinical practice and future research.

Methods

Search Strategy

The computerized databases PubMed, PsycINFO, Scopus, CINAHL and Google Scholar were searched using the following keywords: [(screen media) OR (screen time) OR (television)) AND ((language development) OR (language delay)) AND ((infant*) OR (toddler*) OR (child*))]. The search was specific to articles written in English. Reference lists of previously searched articles were used to obtain additional related studies.

Selection Criteria

Studies selected for inclusion in this critical review were required to investigate the impact of screen media use on language development in infants and toddlers. No limits were set on the study design, outcome measures or date of publication.

* This paper was created as a required assignment for the CSD9639 Evidence Based Practice for Clinicians course at Western. While it has been evaluated by course instructors for elements of accuracy and style, it has not undergone formal peer-review.

Data Collection

Results of this literature search yielded 7 articles fitting with the aforementioned selection criteria. These include the following study designs: case-control study [1], prospective longitudinal cohort study [4], cross-sectional survey [1], and prospective longitudinal and cross-sectional study [1].

Results

Study #1: Linebarger & Walker (2005) conducted a longitudinal study of 51 infants and toddlers from Midwestern American families and examined the correlation between television viewing and content on language development. Data were collected every six months over a two-year period. Demographic information was collected via parent interviews and viewing logs were used to record program names and the number of hours of television viewed per week. The MacArthur Bates Communicative Development Inventory (CDI) which measures word production, was administered every 6 months starting when children were 12 months of age. The Early Childhood Indicator was used to measure expressive communication of the children between 3 and 36 months of age. Analysis of the relationships between television content and language development revealed that language development can be negatively or positively associated depending on the television content. For example, programs such as *Blue's Clues* and *Dora the Explorer*, where onscreen characters speak directly to the child and actively elicit participation were positively related to expressive language production and vocabulary. Alternatively shows such as *Teletubbies* with loose narrative structure and poor language models, were negatively associated with vocabulary acquisition and expressive language use.

Strengths of this study include the use of both vocabulary and expressive language measures to determine outcomes. It may be important to examine these outcomes separately as the impact from television viewing may vary. Another strength of this study was the use of a viewing log that provided data every 3 months, which provides data that is more representative than a one-time sample. The log was also beneficial as this study was able to examine the associations between language development and specific types of television shows. A limitation in t-13(o)-8(f)-6() ()-419(b7)-157(wr() ()-4196(o)-8(f)-6-4(e)-7(x)-8(a)-)-6(i)-4(v)

Based on these limitations, this study provides level II evidence that is suggestive of a negative association between viewing baby DVDs/videos and language development in infants.

Study #3: Chonchaiya & Pruksananonda (2008) conducted a case-control study that examined the impact of frequency and onset of television viewing on language development in children aged 15 to 48 months. The study included 100 normal children and 56 children with language delay as diagnosed by language milestones and the Denver-II. A developmental pediatrician collected information about the child, home environment and television viewing via parent interviews. This study included several risk factors for language delay including child characteristics, parental and family characteristics, and television and time use characteristics. To determine the likelihood that children with and

of this study can be applied to families with low socioeconomic status, primarily from a Latino immigrant background but may not generalize to other groups.

Based on these strengths and limitations, this study provides level II evidence that is suggestive that media use at 6 months of age predicts language development at 14 months of age.

Study #7: Duch et al. (2013) conducted a cross-sectional and longitudinal study that examined the associations between screen media use, media content and language development of 119 Hispanic infants and toddlers. Parents of the children completed a questionnaire about the child's screen time use and play and leisure habits of the family. Screen time data was collected from parents through a 24-hour recall about the child's use. Screen media exposure was recorded as child-directed or adult-directed and included the use of television, cell phones, computers and YouTube videos. The Ages and Stages Questionnaire, Third Edition (ASQ3), which was used as the language outcome, was completed with the initial interview and approximately one year later. Cross-sectional and longitudinal data analysis revealed that watching more than 2 hours of television per day was associated with low scores on the communication domain of the ASQ3. These findings were consistent when models were adjusted for gender and parent education. Further analysis revealed that child-directed media increased the odds of low communication scores but adult-directed media did not.

Strengths of this study include the examination of the association between media use and language development in a high-risk population. Another strength in the design of this study is the use of cross-sectional and longitudinal analysis as this allows examination of the association between groups at one point in time and over time. A final strength of this study is the inclusion of several types of media exposure other than television alone. Despite these strengths, this study had several limitations. One

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