

Critical Review:
Impact of Quality and Content of Television Programming on Preschoolers Expressive Language and Vocabulary Development

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It is well documented in the literature that television and extended screen time are detrimental to language development in children under the age of two, but features associated with this impact preschooler's language are poorly understood. This critical review considers the quality and content of television viewing in relation to preschooler's expressive language and vocabulary. Study designs include experimental designs and longitudinal multiple cohort survey designs. Overall the research indicates that television can have a positive impact on preschooler's expressive language and vocabulary development in moderation, when paired with high quality content and socially contingent learning opportunities through participatory cues. These findings can shape recommendations made to parents regarding television viewing and program content.

Introduction

In recent years, concern has risen regarding time spent watching television in infants and toddlers. Indeed, there is evidence to suggest that television viewing can be detrimental to language development in children under 2 years of age (Christakis, 2006). Time spent watching television has been negatively associated with an infant's expressive and receptive vocabulary (Tanimura, 2007), and language generally (Zimmerman, 2007) in their early years. Negative relationships with social communication skills and cognition have also been demonstrated (VanEvra, 2004). In fact, in 1999 the American Association of Pediatrics has published a statement recommending limitation of all television viewing for children in the first two years of life.

In the almost two decades since this statement was released, television and screen time in general have become ubiquitous, and there appears to be no slowing down. Television can now not only be viewed on TV's in the home but also on portable devices such as cell-phones, tablets, and iPads. Children are often first introduced to these devices around their preschool years and by kindergarten are master of them. With all of the mixed information about television viewing for children, many parents are conflicted about their position on the subject (Rideout and Hamel, 2006). Indeed, with the immersion of these children in television and screens, campaigns such as 'no screen time' are likely to fail. So what is the impact on television programming for these preschool aged children and what can be done to maximize the benefits of the time spent watching television at this age?

In recent years there has been a push for child focused television programming, creating shows that engage children and incorporate learning principles to

maximize the potential benefits of children's time in front of screens. Television programs such as Dora the Explorer, Mickey Mouse Clubhouse, and Blues Clues, employ an interactive strategy that asks the viewer questions and waits for a response. These strategies mimic social interactions, which are known to support language development (Kcmar, 2010). It is possible that these socially engaging approaches might open new avenues for learning language through television. It is important to critically examine emerging literature regarding the aspects of television programming that might convey potential benefits for their language and vocabulary development.

Objectives

The objective of this paper was to critically evaluate the qualitative aspects of television watched by preschoolers and related impacts on language. The secondary objective was to offer recommendations for future research and for ways to implement this research into clinical practice.

Methods

Search Strategy: Articles related to the topic of the critical review were found by searching a variety of computerized databases: CINHALL, PsychINFO, PubMed, and Web of Science. The following terms were used:

(television) OR (screen time) OR (television programs) AND (preschool) OR (children) AND (language) OR (expressive language) OR (vocabulary)

The search was limited to articles written in English between 2000 and 2017.

Selection Criteria

Studies selected for this critical review were included if they investigated the impact of television watching and the effect on some aspect of expressive language in preschool children ages 2-5.

Data Collection

Results of the above literature search provided 5 articles that met the selection criteria. Two articles were longitudinal studies, two used case series approaches, and one article was a randomized control study.

Results

Longitudinal Multi-Cohort Studies

Wright et al. (2001) conducted a multiple cohort 3-year longitudinal study that examined the relationship between TV viewing and school readiness, including vocabulary and letter awareness in 236 preschoolers of low-income families. Annual assessments included gold standard tests of child vocabulary and a published home environment questionnaire. In addition, phone interviews with parents completed 3-5 times a year provided data on the child's detailed activities from the previous day, specifically their television habits. Missing data was described and not substantial. Appropriate statistical analysis that the content of television was significantly related to preschooler's vocabulary and school readiness, and the inverse was found with regards to time spent watching television. Specifically, children who viewed child-audience informative television programming, had higher scores on the vocabulary and cognitive measures, and children who watched more general-audience programming performed poorer on all aspects of school readiness. The authors urged caution in interpreting these results given factors such as child preference, etc.

Strengths of this study include that it is longitudinal, use of phone interviews to minimize data loss, and appropriate measures for age range studied. Weaknesses included potential bias in reporting by parents, and inability to statistically control for all possible factors that could impact the child's language development.

Overall, this study provides highly suggestive evidence that type of television programming content is positively related to vocabulary development in preschool children from low-income families. It should be noted though that the authors also found a negative correlation between the amount of television watched, regardless of program, and vocabulary development.

Linebarger et al. (2005) reported a longitudinal study examining the relationship between television program specific exposure and children's vocabulary and expressive language skills in 51 families with children

followed from 9 months to 3 years of age. Appropriate outcome measures of language and cognitive development, parent-child interactions, and home environment were collected during play-based assessments, and in parent self-reports. As well, parents completed home television viewing logs. Measures were completed every 3-6 months, and took test validity for re-testing into account. Appropriate statistical analyses revealed a significantly negative relationship between total viewing time and vocabulary at 30 months. Specific associations were observed with increases in vocabulary related to shows such as *Blue's Clues*, *Dora the Explorer*, *Arthur*, and *Clifford*, and increases in expressive language related to shows such as *Arthur*, *Clifford*, *Dora the Explorer*, *Blue's Clues*, *Barney and Friends*, and *Dragon Tales*. These positive effects were increased when the programming was watched alongside an adult to increase language output. The authors speculated that the increase in expressive language could be due to the strong narrative style of the shows that simulate book reading. Shows such as *Sesame Street* and *Teletubbies* were seen to have had a negative impact on expressive language, and also vocabulary for the latter. Importantly, these positive effects were mediated by total time spent watching television such that positive effects on language for young preschoolers are only observed in time spent watching is low-moderate.

Strengths of this study included frequent measures over the time of study, as well as detailed descriptions of study procedures. Weaknesses include a potential bias in the sample (90% white, with high socioeconomic status). The authors also noted that selection effects could have occurred, in that children who are more cognitively mature, may choose one type of television programming over the other, leading to a bidirectional model.

Overall, this study provides highly suggestive evidence that television show content or quality is associated with vocabulary and expressive language in preschool children, provided total viewing time is moderate.

3 Single Group Studies

Carter et al. (2017) performed three single group experiments (with 3.5-5-year-old children) to examine the effects of manipulations in children's TV programming on child verbal engagement. These studies looked particularly at (1) the response time of participatory cues (n=17), (2) the repetition of the participatory question (n=16), and (3) the feedback given to children once they have responded to the participatory cue (n=24). All recruitment was through email and advertisements. For each study, a child was observed while watching a two 10-minute shows designed to manipulate characteristics of participatory

cues in common TV programming. The outcome measures included the number of verbal responses by the child during the viewings session as well as standardized measures of oral language were also completed. Appropriate statistical analyses revealed that children given longer response time (up to 10 seconds) after participatory cues had increased verbal output. It was also discovered that repeating the participatory cue for children who did not originally respond increased expressive language during viewing. Positive/negative feedback to correctness of response given by the child was found to be nonsignificant in terms of language outcomes.

Strengths of this study include detailed description of procedures, and systematically manipulated program content. The authors also used familiar preschool TV programming that simulated real life reactions to the manipulated content. One of the weaknesses for this study is that it only looks at a snapshot of expressive language. Although it compares each child to a control video of themselves, it might be looking too closely at specifically language output during the session and not overall improvement of language skills. A longitudinal style study would be able to better make those correlations. Some participants also overlapped in the studies and the sample sizes were small.

Overall this study provides moderately suggestive evidence that qualitative aspects of television programming can influence child responses. In particular, allowing time after participatory cues for responding and repeated questions if necessary, encourages the most expressive language from children. The authors predict that this positive influence could be due to these features mimicking social interactions that could be seen in an interaction between a parent and child.

Jenning et al. (2009) completed a case series study that examined the connection between a classroom TV program and the four kindergarten children's literacy, early literacy, and expressive language outcomes. The classroom wide program involved the TV program *Between the Lions*, as part of a classroom literacy tool. This television program is an animated show where the characters read popular children's books and then connect them "into" the story. These authors examined literacy and expressive language changes over 16 sessions (4 weeks) through qualitative measures by completing observations during and after sessions, and compared them to a baseline observations and standardized testing completed prior to the start of the program. The authors found that all of the participants after the 4 weeks showed more appropriate skills in terms of literacy and emergent literacy including the expressive language observations. The authors noted the

improvements in each child such as increased use of plural endings and correct verb form, improved participation in discussions related to literacy topics demonstrated in the show, and more developed expressive sentence structure.

A strength of this study is that because it is qualitative in nature it allows the researchers to capture information that might be difficult to quantify in terms of numbers such as increased engagement or improvement in verbal participation. Another strength of this study is that although a small sample size, the population was diverse and there was a mix of typically and atypically developing children, all of whom saw similar trends in results. One of the weaknesses is that it is unclear how these participants were chosen from those in the classroom, and the sample size of 4 is also not large enough to make strong assumptions about the findings. The outstanding weakness in this study though is the lack of a control group and any type of statistical analysis, because there is nothing to compare the results to except each child's singular baseline observation

Overall this study provided weak evidence that what was concluded from this study is enough to confirm the effectiveness of *Between the Lions* as a method to increase literacy and expressive language elements. Without the ability to quantify if any of the differences are statistically significant or not, concluding with any certainty that the changes observed were from this program would be irresponsible.

Randomized Control Study

Kcmar and Cingel (2017) explored the connection between children's novel word learning in relation to screen based learning events, either through direct-to-audience or third-party joint speaking styles. The authors noted that a similar study had been completed by psychology researchers, but that the videos created for the research study did not mimic typical television programming for young children. This study employed a between subject's experimental design that contained 73 children ages 1.5-4 who were recruited through local daycares. These children viewed short video clips where they were exposed to new objects, either through the control video where an on-screen third-party learns the new object on screen, or the experimental video where the on-screen actor uses participatory cues to teach the audience new words. After watching the video clip each child was tested for novel word retention by asking for objects during the video segment. The data analysis was appropriate given the study and found that both condition and age were significantly related to the child's word learning. Children ages 28-42 months who heard novel words through the direct-to-audience programming, which contained participatory cues, learned them better than children watching identical videos where an on-screen

third party learned the word. Children younger than 28 months were found to do equally poor in both conditions, and children older than 42 months did equally well.

A strength of this study is that it mimicked current popular television programming, unlike its previous counterparts, which lends to higher validity and ability to accept the results with confidence. Another strength of this study is that it gave specific instructions on how the experiment was conducted, in the case of replication again for consistency of results. A weakness of this design is that the videos were only 3 minutes long, and this is not long enough to identify any type of retention or lasting impact on the child's vocabulary. The authors also completed some exploratory statistics in that they went looking for significance in places where it might not have been originally anything statistically significant.

Overall this study provides highly suggestive evidence that children learn novel words better from direct-to-audience teaching, rather than observing someone else on screen learn. That being said, this effect was only found for children ages 28-42 months, but this encourages further research in this area.

Discussion

Overall, the findings from these studies indicate a relationship between certain aspects of television viewing programming and positive growth in preschooler's expressive language and vocabulary. The research shows us that there can be positive interactions with television programming for preschool aged children and there are benefits that can be gleaned from screen time.

It was concluded that television programming that imitates real life and mimics social interaction provides the best learning environment for both vocabulary and language growth. Carter et al. (2017) noted that the prompting questions asked by characters on screen, known as participatory cues, are similar to questions an adult might ask that child in real life. Encouraging a dialogue is what helps to encourage children to use expressive language and participate in the shows similar to a didactic conversation in real life. Prior to this in 2005, Linebarger et al. provided evidence for the benefit of certain commercial television programs over others on a child's expressive language and vocabulary. Many of the shows contained these participatory cues as mentioned by Carter (2017), but others did not. Those that did not seemed to follow a different pattern and that was one with a strong narrative storyline which also lead to positive outcomes in language. This finding should be interpreted with hesitancy though because the authors noted that this could be a bidirectional interaction with book reading outside of TV watching, and that the children who are

receiving this literacy time, might be drawn to specific shows that imitate them. It was also discovered that children are able to learn vocabulary better from being taught directly from the screen, compared to watching someone on the screen learn (Kcmar et al., 2017). This is in contradiction with research from the past which noted that children learned equally poorly regardless of method of teaching, but this article noted positive vocabulary growth in those who viewed audience directed learning.

Nevertheless, there are limits to the potential benefits. Television watching, regardless of "more beneficial" television or not, became detrimental for language when watched in large doses. This moderation of television viewing is important to note because it should not be used to replace genuine social interaction and communicating with strong language models, which still proves to be the best experiences for language and vocabulary development. A fundamental flaw in the some of these studies is that they focus on children's experiences viewing television programs or simulated television programs for short periods of time, and this is not typical for many children and families. Research that broadened into longitudinal studies found evidence that was less black and white and more bidirectional, which could describe why some children are more effected by extended television viewing than others.

Clinical Implications

Based on the findings of this critical review, there are suggestions for the television programming that will be most beneficial to a child's language development from the current research.

As speech language pathologists, information about television viewing for preschoolers might seem less clinically applicable, but it is important to understand the implications that television viewing can have on children. Clinicians need to understand that TV and other media devices used to view programming are going to be part of their clients lives, and their families lives. We are in a technologically saturated world and these devices and television programs are going to continue to be a larger part of clinical practice working with preschool populations. Based on the impact of television viewing that has been presented in the articles above and the critical review of them, it lays out "green flags" for what to be looking for in children programming and how to maximize language out of what seems to be mindless TV time. Nevertheless, this information gathered above is useful for helping to direct parents to the most powerful use of television, if that is other options are limited:

- Television that is age appropriate, no general audience or adult focused programming.

- Shows that follow a beginning, middle, and end narrative similar to a story help to link book reading style learning to TV watching.
- Shows that are engaging the child into the narrative, and are asking them questions for important learning moments.
- Programming that asks questions of the child, leaving time for them to respond to the anticipatory cues.
- Viewing television with an adult to help supplement information learned on screen.

References

- Carter, E. J., Hyde, J., & Hodgins, J. K. (2017, June). Investigating the effects of interactive features for preschool television programming. In *Proceedings of the 2017 Conference on Interaction Design and Children* (pp. 97-106). ACM.
- Christakis, D. A., & Zimmerman, F. J. (2006). Viewing television before age 3 is not the same as viewing television at age 5. *Pediatrics*, *118*(1), 435-435.
- Jennings, N. A., Hooker, S. D., & Linebarger, D. L. (2009). Educational television as mediated literacy environments for preschoolers. *Learning, Media and Technology*, *34*(3), 229-242.
- Krcmar, M. (2010). Can social meaningfulness and repeat exposure help infants and toddlers overcome the video deficit?. *Media Psychology*, *13*(1), 31-53.
- Krcmar, M., & Cingel, D. P. (2017). Do young children really learn best from the use of direct address in children's television? *Media Psychology*, 1-20. doi:10.1080/15213269.2017.1361841
- Linebarger, D. L., & Vaala, S. E. (2010, April). Screen media and language development in infants and toddlers: An ecological perspective. *Developmental Review*, *30*, 176-202. doi:10.1016/j.dr.2010.03.006
- Linebarger, D. L., & Walker, D. (2005). Infants' and toddlers' television viewing and language outcomes. *American behavioral scientist*, *48*(5), 624-645.
- Tanimura, M., Okuma, K., & Kyoshima, K. (2007). Television viewing, reduced parental utterance, and delayed speech development in infants and young children. *Archives of pediatrics & adolescent medicine*, *161*(6), 618-619.
- Van Evra, J. (2004). *Television and child development*. Routledge.
- Wright, J. C., Huston, A. C., Murphy, K. C., St. Peters, M., Pinon, M., Scantlin, R., & Kolter, J. (2001, September). The relations of early television viewing to school readiness and vocabulary of children from low-income families: The early window project. *Child Development*, *72*(5), 1347-1366.
- Zimmerman, F. J., Christakis, D. A., & Meltzoff, A. N. (2007). Associations between media viewing and language development in children under age 2 years. *The Journal of pediatrics*, *151*(4), 364-368.

Sherry Peter M.Cl.Sc (SLP) Candidate University of Western Ontario: School of Communication Sciences and Disorders This critical review examines the evidence evaluating the efficacy of non-speech oral motor exercises (NSOMEs) as a treatment approach for children with phonological/articulation disorders. Research studies include one randomized clinical trial design, one single group pre-test post-test design and one single subject design. Overall, the evidence does not support the use of NSOMEs to treat children with phonological/articulation disorders. Future and clinical recommendations are d

The Master of Science degree in Communication Sciences and Disorders provides graduate-level research training that addresses basic or applied questions about human communication and its disorders. This option is appropriate for students who wish to do research but not carry out clinical work in the field of Communication Sciences and Disorders, and also for students with professional qualifications who want basic research training in the field (without doing a Ph.D.). Students in this program must complete a minimum of 45 credits, have a minimum residency of 3 academic terms, and complete an M

The graduate program in Communication Sciences and Disorders at the University of Virginia prepares students for the professional practice of Speech Language Pathology. We provide academic and clinical instruction for establishing the knowledge and skill base necessary for (a) completing the Masters degree, (b) becoming a credentialed speech-language pathologist, and (c) practicing speech-language pathology across a variety of service settings and with culturally and linguistically diverse populations.Â

The School of Education and Human Development is offering \$12,000 fellowships to well-qualified individuals seeking to become speech-language pathologists who plan to work in P-12 schools. Information about Western University for Ontario Rehabilitation Sciences Programs Application Service (ORPAS) applicants.Â

Westernâ€™s School of Communication Sciences and Disorders (SCSD) educates graduate students in the professions of audiology and speechâ€™language pathology (SLP). Audiologists and speechâ€™language pathologists work with people who have hearing, speech, language, voice, swallowing and cognitive-communication impairments. They also investigate the symptoms, causes and treatments of such impairments, and conduct research into normal hearing, speech, language, voice, swallowing, and communication mechanisms and processes.