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# The impact of educational television on young children's reading in the context of family stress

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## Abstract

This study examined the impact of educational media use on young children's (ages 2–5) reading and pre-reading skills in the context of various family stressors (lack of economic resources, family conflict, and maternal depression). We examined the utility of models positing that family stressors directly predict the quality of the home learning environment and educational media use, which then directly predict children's reading and pre-reading skills. Results indicated that all family stressors were negatively related to the quality of the home learning environment, which was in turn directly related to children's reading skills. However, only family conflict was negatively related to educational media use, though media use was positively related to reading skills. Moreover, the magnitude of the relationship between educational media use and reading skills was equal to that of the relationship between the quality of the home learning environment and reading skills. Results suggest that educational media use is less prone to disruption by family stressors than other influences on young children's reading and pre-reading skills.

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*Keywords:* Educational television; Reading skills; Young children; Family stress; Family context

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## 1. Introduction

Reading and pre-reading skills are a crucial component of children's healthy development. Evidence suggests that these skills set the stage for successful school entry and later academic success ([Entwisle,](#)

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Alexander, & Olson, 1997). For example, children who enter school with good pre-reading skills are more likely to be placed in higher ability groups and perceived as more competent by teachers than children who enter with lower pre-reading skills (Anderson, Huston, Schmitt, Linebarger, & Wright, 2001). They are also more likely than children without such skills to succeed in the first years of schooling, leading to a trajectory of further academic success and positive attitudes toward school (Rosengren & Windahl, 1989; Williams, 1986).

For preschool age children, the most important familial influence on such skills is the quality of the home environment for academic learning and parental involvement. Researchers report strong correlations between characteristics of the home environment (e.g., activities in the home involving the child, books and toys for learning) and reading skills (e.g., Aylward, 1997; Bradley et al., 1993; Molfese, Di Lalla, & Bunce, 1995; Sameroff, Seifer, Barocas, Zax, & Greenspan, 1987). Evidence suggests that children develop larger vocabularies and more advanced reading abilities in environments where conversational skills are encouraged and children engage in regular reading times (Lonigan, Anthony, Bloomfield, Dyer, & Samwel, 1999; Neuman, 1986; Share, Jorm, Maclean, Matthews, & Waterman, 1983).

There is also a fairly large body of evidence demonstrating that educational programming emphasizing cognitive and language skills can have substantial and long-lasting effects on children's early reading and later academic success (see e.g., Bickham, Wright, & Huston, 2001; Fisch, 2002; Fisch & Truglio, 2001). Zill, Davies and Daly (1994) found that watching Sesame Street during the preschool period predicted the ability to read storybooks alone and was negatively related to receiving help for reading problems in school during first and second grade. A recent report (Wright et al., 2001) found that children who watched educational programming between the ages of 2 and 3 scored higher at age 3 on tests of vocabulary, letter and word recognition, and school readiness. There is even evidence that these positive effects can persist through high school. Anderson et al. (2001) found that educational television viewing (especially Sesame Street) in preschool was related to higher high school GPA among boys. Taken together, these studies provide compelling evidence that the educational television experience can have positive, long-lasting academic effects.

Interestingly, though these two bodies of literature share a concern with young children's reading skills, they have shared little else. That is, researchers concerned with familial influences on children's reading have rarely (if ever) included educational media use in their models predicting young children's reading and pre-reading skills. Likewise, media researchers have tended to ignore (or simply control for) the impact of family contexts on the relationship between educational media use and reading skills. Thus we know little about the ways in which family contexts might either shape children's media use itself or change the nature of the impact of such use.

Nonetheless, viewed together, these literatures have compellingly demonstrated the importance of two factors influencing young children's reading skills: (1) parental involvement in educational activities, and (2) educational media use. Our purpose in this study is to draw together information from these two rather disparate literatures to further our understanding of the interrelationships between family contexts, educational media use, and young children's reading and pre-reading skills.

### *1.1. Parenting in the face of stress*

Though parental involvement in children's learning is a crucial predictor of young children's reading, there is a great deal of evidence suggesting that stressors negatively impact parenting in general and

parental involvement in learning activities in particular (Crnic & Acevedo, 1995). In turn, this disruption of parenting practices is related to decreased levels of child functioning. Though there are a potentially large number of stressors, three in particular have been implicated as disruptive to parenting and in turn, of children's well-being: economic resources, family conflict, and maternal depression.

For example, McLoyd and colleagues have demonstrated that chronic poverty is related to poor outcomes in children largely through its detrimental impact on the quality of parenting (McLoyd, 1998; McLoyd & Wilson, 1990). Likewise, Conger et al. have shown that economic strain disrupts parenting abilities (Conger et al., 1993; Conger, McCarty, Yang, Lahey, & Kropp, 1984; Elder, Conger, Foster & Ardel, 1992). Family conflict is another primary stressor undermining parent functioning (Belsky, 1984). Evidence suggests that conflictual family relations negatively impact parenting quality as well as parent–child relationships (Conger et al., 1994; Jouriles, Pfiffer, & O'Leary, 1989). Finally, maternal depression is known to interfere with mothers' ability to parent effectively (Cummings & Davies, 1994; Downey & Coyne, 1990). Maternal negative mood has been linked to both rejecting and punishing behavior (MacEwen & Barling, 1991). Depressed mothers have also been found to engage in less verbal interaction with their children (Jouriles, Murphy, & O'Leary, 1988), which may be particularly germane to the development of children's reading skills. Thus, there is a great deal of evidence that the relationship between family stressors of various kinds (for example economic, psychological) may influence children's developmental outcomes through their influence on the ability of parents to “parent well”.

### 1.2. The proposed model

Given that parental involvement in children's learning and educational media use are both implicated as importantly related to young children's reading skills, and given that family stressors have been shown to disrupt parenting quality (and in so doing disrupt child well-being), our main question in this paper was whether family stressors would either affect the use of educational media or disrupt the path from educational media to reading skills.

In order to address this question, we examined the proposed conceptual model presented in Fig. 1. The model specifies that family stressors would be indirectly related to children's reading and pre-reading skills only through their impact on the quality of the home learning environment and children's educational media use. On the basis of previous research, we expected a negative relationship between family stressors and the quality of the home environment. We also expected that a higher quality home

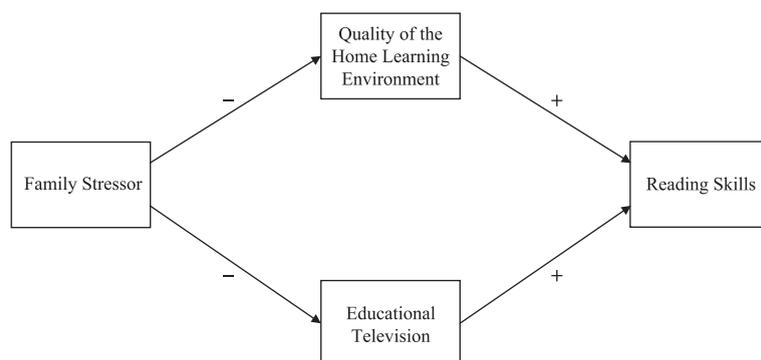


Fig. 1. Proposed conceptual model.

learning environment would be related to better developed reading skills among children. The paucity of existing research on the relationship between family stressors and educational media use rendered our expectation about the negative relationship between them more tenuous.

However, in preschool age children, it seems reasonable to assume that much of their media use is parentally determined. What children view on television is certainly at least partly a function of parental encouragement or discouragement of particular content (Pinon, Huston, & Wright, 1989; St. Peters, Fitch, Huston, Wright, & Eakins, 1991). At the very least, children of this age need relatively more parental help to view desired content (including turning on the television, setting it to the correct channel, or selecting and activating a chosen video). By this reasoning, educational program viewing would require a certain amount of parental involvement and attention to children's needs and desires. Thus, it seems reasonable to expect that family stressors might negatively impact children's educational media use in the same way they disrupt other parenting practices. Based on the large body of existing research, we expected a positive relationship between educational media use and children's reading and pre-reading skills. However, given the dearth of research in this area, it was difficult to speculate as to whether the positive effect of educational television on children's reading skills will be significantly disrupted by family stressors.

## 2. Method

### 2.1. Sample

The data for this study are from the first wave of the Child Development Supplement (CDS-I) which were collected in 1997 as an augmentation of the Panel Study of Income Dynamics (for a complete description, see Hofferth (1998) or <http://psidonline.isr.umich.edu/>). Included in the sample for this study are children from the CDS between the ages of 2 and 5 with complete data on the variables of interest ( $N = 310$ ). This sample has an average age of 4 years ( $SD = .82$ ); is made up of 43% girls and 57% boys; 60% Caucasians, 33% African Americans, 2% Hispanic and 5% "Other". The median family income of our sample is \$38,196 and the mean number of years of education the head of the household had achieved was 13.2 ( $SD = 2.4$ ).

### 2.2. Measures

The correlation matrix for all variables used in the models as well as their means and standard deviations are presented in Table 1.

#### 2.2.1. Family income-to-need ratio

According to household size, each family's income was divided by the poverty thresholds from the United States Census Bureau for the year 1996. The resulting income-to-needs ratio represents each family's socioeconomic status.

#### 2.2.2. Family conflict

Family conflict was measured using a six-item scale (Sweet, Bumpass, & Call, 1988) that asked primary caregivers questions concerning the overall conflict in the family. Participants indicated their

Table 1  
Correlations, means, and standard deviations for all variables

|                            | 1      | 2      | 3      | 5      | 6     | 7     | 8      | 9    | <i>M</i> | <i>SD</i> |
|----------------------------|--------|--------|--------|--------|-------|-------|--------|------|----------|-----------|
| (1) Income-to-needs ratio  |        |        |        |        |       |       |        |      | 3.05     | 2.55      |
| (2) Family conflict        | -.20** |        |        |        |       |       |        |      | 2.00     | .45       |
| (3) Maternal depression    | -.19** | .33**  |        |        |       |       |        |      | 1.61     | .55       |
| (5) HOME score             | .42**  | -.25** | -.35** |        |       |       |        |      | .17      | 1.06      |
| (6) Educational television | -.06   | -.08   | -.06   | .02    |       |       |        |      | 46.45    | 106.05    |
| (7) Reading ability        | .28**  | -.22** | -.18** | .33**  | .19** |       |        |      | 100.92   | 14.69     |
| (8) Parental education     | .52**  | -.13*  | -.26** | .46**  | -.07  | .29** |        |      | 13.17    | 2.41      |
| (9) Total television       | -.14*  | .11    | .06    | -.18** | .26** | -.10  | -.24** |      | 843.74   | 600.51    |
| (10) Age of child          | .00    | .10    | .04    | -.16** | -.06  | -.14* | .05    | -.02 | 3.95     | .82       |

\* $p < .05$ . \*\* $p < .01$ .

agreement on four-point scale to statements such as “family members often criticize each other”, “we fight a lot in our family”, and “family members sometimes get so angry they throw things”. The average of items was used as the final score, wherein higher scores indicate higher levels of family conflict ( $\alpha = .69$ ).

### 2.2.3. Maternal depression

Maternal depressive symptoms were measured using the short form of the Composite International Diagnostic Interview (CIDI), a 10-item measure assessing the primary caregiver’s depressive affect (Kessler & Mroczek, 1994). Mothers were asked how often they felt “nervous”, “hopeless”, “depressed”, and so on, during the past 30 days. The scale ranged from 1 “none of the time” to 5 “all of the time”, and an average was used as the final score ( $\alpha = .89$ ).

### 2.2.4. Educational television viewing

Among the battery of questionnaires included in the CDS were time-use diaries designed to measure the duration of every activity each child participated in during 2 days of the study (one randomly selected weekday and one randomly selected weekend day; see Hofferth & Sandberg, 2001 for a review of the diary procedure). Of critical importance to the study at hand is the fact that when parents reported that their child was watching television, they also reported the title of the program being watched. These titles were then coded by two coders into categories of educational and noneducational (Kappa = .81). Educational programs were defined as those with an explicit intent to educate children in a school-related skill such as reading, counting, or color identification. Programs such as Sesame Street, Blues Clues, and Bill Nye the Science Guy were considered educational. By multiplying the number of minutes a child watches television on a weekday by 5 and on a weekend day by 2, weekly estimates of both the amount of total television viewed ( $M = 14$  h and 4 min,  $SD = 600$  min) and educational television viewed ( $M = 46$  min,  $SD = 106$  min) were formulated. For a detailed description of the coding procedures, see Wright et al. (2001).

### 2.2.5. Quality of the home learning environment for school-related learning

The quality of the home environment was assessed using the short form of the Home Observation for Measurement of the Environment (HOME) (Caldwell & Bradley, 1984) that included both observational data reported by interviewers and self-report data reported by the primary caregiver. The measure included such questions as “About how many books does the child have”, “Does your

family get a daily paper”, and “Is there a musical instrument that the child can use at home”. Questions asked of the primary caregiver differed by the age of the child. Therefore, HOME scores standardized within age groups were used.

### 2.2.6. Reading skills

Reading and pre-reading skills were measured using the Woodcock–Johnson letter-word recognition test (Woodcock & Johnson, 1989). For the young children included in this study, the scores on this test can be considered a representation of the academic school readiness.

### 2.3. Analysis plan

The three models tested each illustrate a similar theoretical hypothesis but consider it in the framework of a different type of life stressor (income-to-needs ratio, family conflict, and maternal depression). In each model, parental education, age of child, and the estimate of amount of weekly television viewed were included as covariates (see Table 2 for the covariate analyses results). By controlling for the total amount of television viewed, we are able to discount the likelihood that children who watched more television also watched more educational television. Maximum likelihood coefficients for path models with observed variables were estimated using AMOS 5.0.

## 3. Results

### 3.1. Path analyses

Standardized coefficients for all three path analyses are presented in Fig. 2. Standardized path coefficients for model covariates are presented in Table 2. Across all three stressors, the path analysis results were close to identical. All models provided an excellent fit with the data (*income-to-needs ratio*,  $\chi^2 = 1.96(1)$ ,  $p = .16$ , CFI = .99, IFI = .99, RMSEA = .06; *family conflict*,  $\chi^2 = .84(1)$ ,  $p = .42$ , CFI = 1.00,

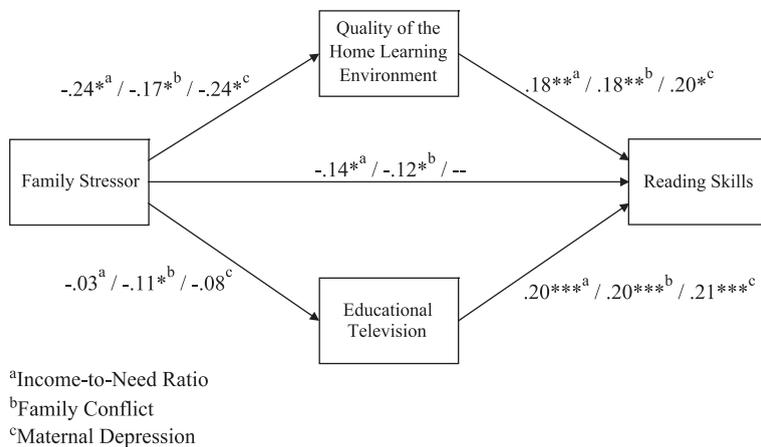


Fig. 2. Standardized coefficients from path analyses.

Table 2  
Standardized path coefficients from covariates to all variables in each stressor model

| Covariate          | Model 1: income-to-need ratio as stressor |            |                        |                |
|--------------------|---|------------|------------------------|----------------|
|                    | Income-to-needs                           | HOME score | Educational television | Reading skills |
| Parental education | -.51***                                   | .33***     | -.01                   | .14*           |
| Total television   | .02                                       | -.07       | .26***                 | -.07           |
| Age of child       | .03                                       | -.18***    | -.06                   | -.10*          |
| Covariate          | Model 2: family conflict as stressor      |            |                        |                |
|                    | Family conflict                           | HOME score | Educational television | Reading skills |
| Parental education | -.11*                                     | .43***     | -.02                   | .19***         |
| Total television   | .08                                       | -.06       | .27***                 | -.06           |
| Age of child       | .10                                       | -.16***    | -.04                   | -.09           |
| Covariate          | Model 3: maternal depression as stressor  |            |                        |                |
|                    | Maternal depression                       | HOME score | Educational television | Reading skills |
| Parental education | -.26***                                   | .39***     | -.03                   | .20***         |
| Total television   | -.00                                      | -.08       | .26***                 | -.07           |
| Age of child       | .06                                       | -.17***    | -.05                   | -.10           |

\* $p < .05$ . \*\*\* $p < .001$ .

IFI = 1.00, RMSEA = .000; *maternal depression*,  $\chi^2 = 1.28(2)$ ,  $p = .42$ , CFI = 1.00, IFI = 1.00, RMSEA = .000). As expected, all stressors (low income-to-needs ratio, high family conflict, and high maternal depression) were significantly related to a decrease in the quality of the home environment for school-related learning. Moreover, both the quality of the home learning environment and educational television viewing were positively related to children's reading skills, regardless of stressor. It is worth noting that the standardized path coefficients from educational television exposure to children's reading skills were of equal magnitude as those from the quality of the home learning environment to reading skills.

While the relationship between each family stressor and children's educational television viewing was in the expected direction (negative), only the relationship between family conflict and educational viewing was significant. In contrast, the relationship between all stressors and the home learning environment was significantly negative. Thus, while the quality of children's home environment and their educational television viewing are related to their reading skills, home learning environment is more systematically and strongly influenced by maternal depression or lack of economic resources.

The similarity of the results across models may be somewhat attributable to correlations between these stressors, but Table 1 shows that these relations are only modest, ranging from .11 to .42. Thus, while these stressor variables may be capturing similar qualities of a problematic home life, they are not measuring identical aspects.

### 3.2. Alternative models: Direct effects

Based on previous theory and evidence that the influence of stress on child outcomes are mediated through its impact on the quality of parenting (Belsky, 1984; Patterson, 1983; Webster-Stratton, 1990),

we proposed a fully mediated model in Fig. 1. However, it is also plausible that even when indirect (i.e., mediated) relationships exists, there remains a significant direct effect of stressors on children's reading ability.

In order to test this possibility, we ran models adding a direct path between each stressor, respectively, and children's reading skills. In path models such as these, the accepted practice for testing whether the mediated model fits the data better than models that include both the direct and mediated paths is to examine the significance of the  $\Delta\chi^2$  (Bollen, 1989). Much like OLS regression, the model with more paths will always have a smaller chi-square. The question here is whether the increase in chi-square from the direct effects model to the fully mediated model is significant. If the  $\Delta\chi^2$  between the two models is not significant, then the more parsimonious (i.e., the mediated only) model is accepted as fitting the data equally well relative to the less parsimonious (i.e., the direct effects) model.

To assess whether the relationships between the stressor variables and children's reading skills are entirely mediated by the quality of children's home learning environment and their exposure to educational television, the  $\Delta\chi^2$  was evaluated for models with and without the direct path from each stressor to children's reading skills. Adding the direct path from income-to-needs ratio and family conflict, respectively, significantly improved the fit of the model (*income-to-need*,  $\Delta\chi^2 = 4.9(1)$ ,  $p < .05$ ; *family conflict*,  $\Delta\chi^2 = 4.8(1)$ ,  $p < .05$ ). Thus, income-to-needs ratio has a direct effect on reading skills above and beyond its effect on the quality of the home learning environment. Family conflict has a direct effect on children's reading skills, above and beyond its indirect effects on reading skills, through its effect on the quality of the home environment and educational media.

However, the change in chi-square was not significant for the direct effects versus mediated maternal depression model ( $\Delta\chi^2 = .5(1)$ , *n.s.*). Thus, since the relationship between maternal depression and educational television use was not significant, the relationship between maternal depression and children's reading skills is largely mediated by its impact on the quality of the home environment.

#### 4. Discussion

This study examined the possibility that much like reading to their young children, parents might use educational television programming to enhance their children's intellectual development. If this is true, then factors known to be disruptive to good parenting practices, such as economic strain, family conflict, and maternal depression may also disrupt parents' encouragement of educational television in their young children. In this study, we examined the plausibility of this basic hypothesis in three path models examining the direct and indirect effects of economic resources, conflict between parents, and maternal depression.

We found that each of these stressors was predictive of lower quality parenting (in the form of providing an educationally enriching environment for children). In this finding, our results echo those of many others. In the face of stressors, parents are less able to provide the structure and warmth necessary for optimal development of their children.

Contrary to our expectations, the results suggest that in general, family stressors seem to be somewhat less important in children's educational media use than they are in the quality of the home environment.

Specifically, neither economic resources nor maternal depression were significantly related to educational media use. This indicates that even in a home where finances are limited and maternal psychological health is less than optimal, children may be watching educational television and reaping its benefits.

On the other hand, the results indicated that family conflict was significantly and negatively related to both young children's educational media use and the quality of the home learning environment, and also directly (and negatively) related to young children's reading skills. Thus, family conflict seems to be a particularly powerful stressor in children's lives, disrupting the quality of the home environment, educational media use and reading skills alike. This finding is commensurate with a fairly large body of literature documenting the negative impact of family conflict on children's developmental outcomes (Amato & Keith, 1991; Vandewater & Lansford, 1998).

#### 4.1. Implications

There are multiple explanations for why educational television might be unrelated to most strained economic resources and maternal depression. Television is available to children of all income levels and is easily accessible to parents at any moment. Turning on the television for their child to watch involves no time commitment from the parent and can actually provide the parent with valuable time away from the child. Unlike preschool children's exposure to print media, which requires the presence of adult (most often the parent), television viewing can occur in the parents' absence and when parents are otherwise occupied. For older children, this ensures high doses of general entertainment television. For younger children, however, viewing in the absence of a parent is likely to consist of educational programming. Shows such as *Sesame Street* and *Dora the Explorer* are appealing to preschoolers, and when left alone they may choose to view them. Furthermore, parents may tune the television to these programs before leaving the room. Considering the popularity of these shows, it is likely that children will not turn away. The ubiquitous quality of television allows for its educational potential to be available to parents of young children regardless of most strains on their emotional and financial resources.

However, this explanation does not seem to apply for family conflict, which was negatively related to educational television viewing. Furthermore, follow-up analyses of the impact of stressors on minutes of noneducational viewing showed that family conflict was again the only stressor related to noneducational television use, and that the relationship was positive ( $\beta = .10$ ,  $p < .05$ ). The central question then, is why family conflict seem to interfere with educational television viewing while encouraging noneducational viewing? It may be that in families with high levels of conflict, there exists a fair amount of "free-floating" hostilities and tension, which encourage more viewing of "escapist" television programming (i.e., noneducational programming). It is also possible that family conflict enhances children's interest in programming with violent content. Vandewater, Lee, and Shim (in press) report that family conflict is positively related to school-aged children's viewing of television programs with violent content and use of video games with violent content. Since noneducational programming is much more likely to contain violent content than educational programming (Wilson et al., 1997), perhaps young children in conflictual families are drawn to programming with such content. Whatever the reason, these results indicate that the relationship between family conflict and children's media use is an important area of inquiry for future study.

## 4.2. Conclusions

This study represents an important first effort toward understanding the ways in which family contexts and young children's media use intersect to influence important developmental outcomes. Our results suggest that educational media use can, in some ways, be considered the "great equalizer". That is, it seems undisrupted by two family stressors (strained economic resources and maternal depression) known to disrupt the positive influences of parenting practices on young children's reading skills. It is important to note, however, that family conflict seems to be a particularly powerful stressor, disrupting both parenting practices and educational television use. Nonetheless, educational media use was as strongly related (somewhat more so, in fact) to reading skills as was the quality of the home learning environment. This result indicates that parents should be encouraging educational television viewing in their young child as much as possible. Perhaps more importantly, they suggest that in the face of family stress, sitting a child down in front of an educational show may, in fact, be a coping mechanism for parents that is also good for the child.

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