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The Social Implications of Children's Media Use

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The Social Implications of Children's Media Use

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Dedication

To Leela. Your love, sacrifices, and support have made this possible.

And

To John Wright. If I can touch one life to the extent that you touched so many, I'll consider my own life well lived.

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The Social Implications of Children's Media Use

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This study examined the relations between children's media use and the time they spend with their friends as well as their social behaviors. Considering *the displacement hypothesis* as the primary perspective in this area, this study evaluated the tenets of this hypothesis and put forth four alternative hypotheses. Issues of media's social context, content, and relations to structured social events were considered in order to challenge the assumptions of displacement.

A sample of 1,951 children ages 2 to 12 from the Panel Study of Income Dynamics Child Development Supplement was used. This nationally representative dataset includes measures of children's behaviors and time diaries that provide a record of how and with whom children spent their time. Television and video games titles from these diaries were coded for violent content.

For some age groups, television viewing was found to be related to less time spent with friends and more problematic social behaviors. However, when viewing was separated into violent and non-violent content, only violent television predicted

worse social outcomes. Displacement is an insufficient explanation for these relationships.

Analyses considering the social context of media use found that older children spent a higher percentage of their media use time with their friends. The more time children spent coviewing media with their friends, the more time they spent with their friends in other activities. For 9- to 12-year-olds, sharing television and game play experiences with siblings was related to lower levels of peer integration.

A unified model that summarizes the role of media in children's social lives is presented. A speculative process is put forth where violent media use is seen as influencing aggressive behavior that leads to social isolation. In turn, children who are isolated view more television and more violent content. Sharing media with friends is seen as an indication of healthy friendships, while co-using media with siblings is positively linked to social isolation. The correlational nature of these results necessitates further testing of this model.

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Chapter 1: Introduction and Literature Review

Children's success in their interpersonal peer relationships has substantial and long-lasting effects on their social adjustment. Those who excel in the negotiations of social exchanges will have opportunities to refine their social skills through further interactions and will benefit from the support afforded by peer group integration (Berndt & Ladd, 1989). Those who fail are likely to experience isolation, delays in social development, and maladjustment in adolescence and adulthood (Cowen, Pederson, Babigian, Izzo & Trost, 1973; Parker & Asher, 1987). Considering the long-term implications of these successes and failures, researchers have sought to understand the influences that contribute to successful peer integration and thriving social relationships.

Often overlooked in this pursuit is the capacity for children's electronic media use to influence their social development. The presence of media in children's environment and the social messages they present both have the potential to greatly influence the amount of time available for children's social interactions as well as their social skills. It is a widely held belief that the large amount of time children spend with media curtails their opportunities for social interactions. Known as *the displacement hypothesis*, this notion is generally accepted in both the scientific community and general population. Researchers, parents, and pediatricians who take this position believe that media use directly replaces developmentally appropriate activities including peer interactions.

The displacement hypothesis makes a number of assumptions that can be called into question. First is the belief that children's time is a zero-sum or exchange-based commodity. In other words, when one activity is being performed (i.e., media

use) another (i.e. peer socialization) cannot occur. Contrary to this assumption, research has found that media use occurs in a social context, often concurrently with peer interactions (Livingstone & Lemish, 2001).

Secondly, *the displacement hypothesis* assumes that media have no social utility for its users. This assumption has been found to be erroneous; information and skills gleaned from media use provide a social platform from which children can initiate and enhance social interactions (Suoninen, 2001).

The displacement hypothesis considers all activities equally likely to be replaced by media. This assumption is especially problematic when this hypothesis is applied to peer interactions, some of which occur in unstructured settings while others are scheduled and ordered (e.g. sports team practices, club meetings, church events). Such organized social events and extracurricular activities are likely to serve a different function that is possibly more crucial to children's social development and the maintenance of their social network. Additionally, the scheduled aspect of these events makes them less likely to be adversely affected by children's participation in activities that primarily fill discretionary time. All of these factors decrease the likelihood that media use displaces structured social events (Himmelweit, Oppenheim, & Vince, 1958).

Finally, *the displacement hypothesis* assumes that the content of the media children experience does not alter its effects on their social experiences. All media use, regardless of the information it presents, is believed to interfere with children's social interactions. However, considering that violent television has specific behavioral effects on children (See Bushman & Huesmann, 2001 for a review), it is very likely that it also influences children's social lives differently from other content.

Using violent media is likely to elicit aggression that, in turn, could negatively affect children's peer relationships.

In view of *the displacement hypothesis's* questionable assumptions, it is uncertain if it is appropriate as an explanation for the relations between children's media use and their social integration, social behaviors, and social outcomes. Alternative hypotheses should be explored. The purpose of this study is to test the utility of *the displacement hypothesis* and to present and evaluate competing hypotheses that predict a relationship between children's media use and the quality and quantity of their social interactions. These competing hypotheses are implicit in the agenda of media researchers, but, many have yet to be systematically examined.

Furthermore, these hypotheses may not be equally applicable to all children or to all types of media. Certain family and child characteristics may shelter children from some social influences of media use, while others may put children at higher risks for such effects. Video games and television may differ in their social context or in the role they play in influencing children's social integration. After empirically evaluating the validity of all these hypotheses, I will be in the position to present a unified model of the relations between children's media use and their social outcomes.

BRIEF DESCRIPTIONS OF THE HYPOTHESES

Before undertaking a more systematic and thorough review of the hypotheses tested in this study and their empirical foundations, I will briefly describe the primary predictions made by each. The five hypotheses that attempt to explain the relationship between media use and children's social integration and behaviors are *the displacement hypothesis, the common culture hypothesis, the marginal/fringe hypothesis, the shared media hypothesis, and the violent media hypothesis.*

The displacement hypothesis claims that the more media children use, the less time children will spend in social interactions. This will lead to lower levels of peer integration and fewer opportunities to learn and benefit from positive social behaviors. Overall, the displacement of important, peer-oriented social interactions will lead to social problem behaviors and delayed social development.

The common culture hypothesis diametrically opposes *the displacement hypothesis*. It posits that children gain cultural information from television viewing and video game play that translates into an ability to relate to peers and, consequently, to more social opportunities. According to *the common culture hypothesis*, using media empowers children with a type of knowledge that has the potential to increase their peer integration and other positive social outcomes.

The marginal/fringe hypothesis is a derivative of *the displacement hypothesis*. Recognizing that different types of social activities can be affected differently by media use, *the marginal/fringe hypothesis* predicts that media use displaces the time children spend in unstructured social situations but does not affect their attendance to structured events such as club meetings or sport team practices.

The shared media hypothesis takes the position that media time is more flexible than proponents of displacement might consider; children can participate in media use while simultaneously interacting with their friends. Furthermore, sharing media experiences with friends is as valuable a social experience as any other. These events provide children with the opportunity to interact with their peers and to develop social ties and social skills. This hypothesis predicts that the more time children spend sharing media with their friends, the more time they will spend in social activities away from media.

It has been well established that violent media use leads to aggression and other antisocial behaviors. The *violent media hypothesis* frames these well-evidenced behavioral effects in terms of peer integration and other, similar, social outcomes. This hypothesis posits that the aggressive behaviors learned from violent media will lead to fewer peer interactions and more negative social outcomes.

While each of these hypotheses makes different predictions concerning the effects of media use on children's social outcomes, they do have one fundamental similarity. Each one predicts that media use causes changes in children's social interactions and behaviors. For example, displacement claims that television use brings about a reduction in the amount of time children spend in social situations. However, the reverse causal direction is also potentially true—socially isolated children may turn toward television to alleviate their negative emotions. In a similar example, *the violent media hypothesis* claims that exposure to violence in the media causes increased aggressive behavior. Children with violent dispositions may, conversely, be attracted to violent media. Similar alternative causal directions are possible for each of the presented hypotheses and need to be considered as possible explanations whenever correlational support is found for these hypotheses.

In the sections to follow, I review the research that forms the foundation of the relationships put forth in each of the five hypotheses. Before each section, I will present a figure that depicts the relevant relationship predicted by the hypothesis, and following each section I will present research hypotheses and questions based on the review. First, however, I will briefly describe the dataset to be used in this study and its particular, relevant strengths.

THE PANEL STUDY OF INCOME DYNAMICS CHILD DEVELOPMENT SUPPLEMENT

Data from the Panel Study of Income Dynamics (PSID) Child Development Supplement (CDS-1) will be employed for this study in order to explore and explain the relationships predicted by each of the hypotheses. In 1997 the longitudinal, nationally representative PSID was amended to include intensive measures of children's time use as well as a multitude of other determinants of healthy development. Along with many behavioral measures from multiple respondents, the researchers at the Institute for Social Research at the University of Michigan collected twenty-four hour time diaries that included the titles of all television programs watched and video games children played. These diaries also provide a record of the people each child spent time with over two days. As a whole, this information lends itself well to the research questions of the present study.

A primary goal of this study is to integrate the results from exploring each of the given hypotheses to present a unified model of the social implications of media use. Since application of this model to multiple populations is an essential aspect of this goal, the large, nationally representative sample provided by the PSID-CDS-1 is necessary. Another strength of the PSID-CDS-1 data is the multitude of personal characteristics and background variables that it contains. Consistently, most media researchers are able to collect only limited information about their participants. The PSID-CDS-1, on the other hand, provides measures of cognitive ability, parental warmth, family structure, and many other variables that could affect children's media use and the quality of their social lives. Experiencing some of these factors may allow children to overcome the potential negative influences of media use on their social development. Conversely, other child and family characteristics may put children at greater risk for these influences. Without considering the familial and

cognitive context in which media use occurs as well as the potential effects of individual differences, conclusions about the relationships between media use and social development would be severely limited.

The data from the PSID-CDS-1 are exceptionally well suited to investigate the role of media in children's social development. Researchers have already utilized this dataset to address a number of questions in this area. These studies that are relevant to the research at hand will be highlighted in the reviews that follow.

At its current phase, the PSID-CDS is not appropriate to test the direction of effect predicted by the five hypotheses presented. The data are cross-sectional in nature and will only allow for correlational analyses. The results from any analyses will, therefore, only indicate the presence or absence of relationships and will not specify a causal direction. By using these data, it is beyond the scope of this paper to test the hypothesized causal direction against an alternative one. In order to manage this limitation, I present evidence in this chapter supporting the idea that media use is the cause of the hypothesized relationships and then discuss the possibility of alternative explanations of the results in the final chapter. Ultimate decisions about the causal directions implied by my results are based on both the statistical findings as well as the theoretical bases. While this approach does not provide statistical support for concluding that one causal direction is more applicable than the other, it does provide some novel speculation based on a large sample concerning the relations between children's media use and their social isolation.

THE DISPLACEMENT AND MARGINAL/FRINGE HYPOTHESES

Examining the Displacement Hypothesis: Do Electronic Media Replace Social Interactions?

Recent measures of children's media use indicate that they view between 13 ½ hours and 19 hours 22 minutes of television a week (Wright et al., 2001; Kaiser Family Foundation, 1999, respectively). A commonly cited statistic says that when children graduate from high school they will have spent more time watching television than they have spent in school (Comstock & Paik, 1991). While children dedicate less time per week to playing video games (between 2 hours and 20 minutes and 6 hours and 14 minutes; Kaiser Family Foundation, 1999; Wright et al., 2001, respectively), it is still a preferred free-time activity.

Considering that once activities such as eating, sleeping, and self-care are accounted for, children have approximately 51 hours of discretionary time a week (Hofferth & Sandberg, 2001), it is easy to understand how media researchers, parents, teachers, and the general public perceive media use as an activity that interferes with children's important familial and peer interactions. It is these beliefs that have led to the proposal of *the displacement hypothesis*. The concept behind the hypothesis is quite simple: Children have limited time available to them and the time they spend using television or video games displaces more valuable pursuits. Figure 1 depicts the relationship predicted by *the displacement hypothesis*—the overall amount of media children use is negatively related to the amount of time they spend in peer interactions.

In 1977 Marie Winn brought this issue to the forefront of the public mind with her book released in the public press entitled *The Plug in Drug*. One of the major

tenets of this book is that the presence of television in the home undermines family interactions and prevents children from learning how to engage in social situations:

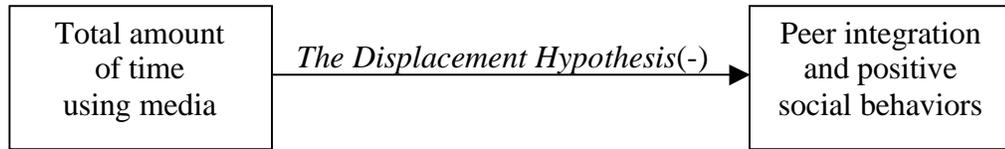
It is not only the activities that a family might engage in together that are diminished by the powerful presence of television in the home. The relationships of the family members to each other are also affected, in both obvious and subtle ways. The hours that children spend in a one-way relationship with television people, an involvement that allows for no communication or interaction, surely affect their relationships with real-life people (p. 145).

Here, Winn presents a process through which media use influences social interactions as well as interfering with the healthy development of positive social behaviors. According to this hypothesis, when television use replaces social interactions, be they familial or peer-oriented, children miss opportunities for learning the social skills necessary for developing successful human relationships.

The above quotation makes explicit one of the primary assumptions of the *displacement hypothesis*; the only interactions that occur during television viewing (and by extension video game play) are those between the viewer and the characters on screen. While these types of interactions are one-way and are unlikely to meet the social needs of children, social interactions that occur around media between children and their friends and family may be very valuable. It is important to recognize early in a discussion of *the displacement hypothesis*, that it is based on a limited perception of the media use experience. *The shared media hypothesis*, described in detail below, begins to address and challenge this perception.

Winn (1977) goes on to claim that television use replaces many activities important to children's healthy development, and while many of her statements are powerful and match the popular beliefs about television, few are founded on empirical research. In her book, Winn's conclusions are based primarily on individual interviews with teachers, parents, family therapists, and other child-

Figure 1. The Displacement Hypothesis



oriented professionals. Many of her ideas, however, have been explored more systematically by other, more empirically based, theorists and researchers.

Naturalistic Research Exploring the Displacement Hypothesis

As television was introduced throughout the world, there were a number of opportunities for researchers to test *the displacement hypothesis* in naturalistic settings. By examining children's lives before and after the introduction of television, social scientists could explore how the launch of television changes the lives of children.

Perhaps the best known of these studies was performed in rural Canada in the 1970's (Williams, 1986). Three towns were used that were very close to each other geographically, but differed because of their mountainous locations in their access to broadcast television. One town (Notel) received no television, but was expecting its introduction. The other towns were labeled Unitel and Multitel and received one channel and many channels respectively. There were two phases of data collection, one before Notel received television and a second two years after it was available. The researchers collected data related to many aspects of community life from residents of all ages. One of their key findings was that once television was introduced into Notel, children attended fewer community activities and adults attended fewer social clubs and meetings. Children and adolescents did not, however, change their habits of participation in youth oriented social clubs. While television did seem to alter children's participation in some large-group community activities, it did not interfere with the smaller group, age-specific social activities that are likely more important for children's social development.

Especially for early adolescents and teenagers, social events are critical to their everyday lives. Williams (1986) claimed that it is unlikely that television (and

perhaps any other medium that does not serve a social function) would replace these activities. Overall, Williams (1986) found that the introduction of television transforms the more mundane aspects of everyday life of a community, but the activities that are most important to individuals are less affected.

At least one other study found evidence that television does not displace older children's social activities. Studying young people in Great Britain, Himmelweit, Oppenheim, and Vince (1958) collected data from families who did and did not have access to television in their homes. They found that younger (10- to 11-year-olds) children's movie and club attendance was reduced if they had television at home, but these same activities were not affected by the presence of television for 13- to 14-year-olds. Again, the amount of time dedicated to activities that are significant to one's lifestyle, such as older children's social interactions, are not changed by the introduction of television.

In another landmark study on the introduction of television into communities, Schramm, Lyle, and Parker (1961) looked at the displacement qualities of the medium in California and in the Rocky Mountains during the late 1950's. They focused their research on children from first to tenth grade, and collected extensive data on these children's media use and daily activities. They found that young adolescents (sixth to tenth graders) in communities with television spent less time listening to the radio, going to movies, and reading comic books than their peers with no access to the medium. Other activities, such as reading books and newspapers, were unaffected by the introduction of television. Much like Himmelweit, Oppenheim, and Vince (1958), these researchers conclude that television significantly restructures children's free time, but does not greatly influence activities that serve a function more important than occupying unscheduled time.

Refining the Displacement Hypothesis Based on Naturalistic Evidence

These studies made numerous valuable contributions to the understanding of how television displaces children's other activities. Perhaps one of the most important was a specification of the types of activities that media use may replace. Two, more specific hypotheses, were formulated around the results of the naturalistic studies—*the functional displacement hypothesis* and *the marginal/fringe displacement hypothesis*.

The functional displacement hypothesis

Proposed by Himmelweit, Oppenheim, and Vince (1958), *the functional displacement hypothesis* states that one type of media use will replace another if it serves the same purpose but does so in a more efficient, enjoyable or convenient manner. Therefore, television use replaced radio use because the former can provide news and entertainment at least as efficiently as radio but with higher levels of enjoyment for the user. The large studies performed as television began to permeate world culture show that it fulfills the need of entertainment that movies, comic books and the radio once dominated thereby reducing children's use of these other media.

A number of researchers have described two separate types of television viewing: instrumental viewing and ritualized viewing (Rubin, 1984; Windahl, 1981). The first is motivated by a need for specific information or content, and the second by a need for diversion. As people age, they become more instrumental viewers (Kubey, 1986). Therefore, for children, the primary function of television is diversion or simple entertainment. Considering children's social interactions, the *functional displacement hypothesis* would predict that only media capable of meeting children's social needs would displace real-life friendships. Diversionary activities such as television are not very likely to affect children's social activities. This is especially

true as children reach the ages of school entry and early adolescence when their peer relationships begin to serve a larger purpose in their lives.

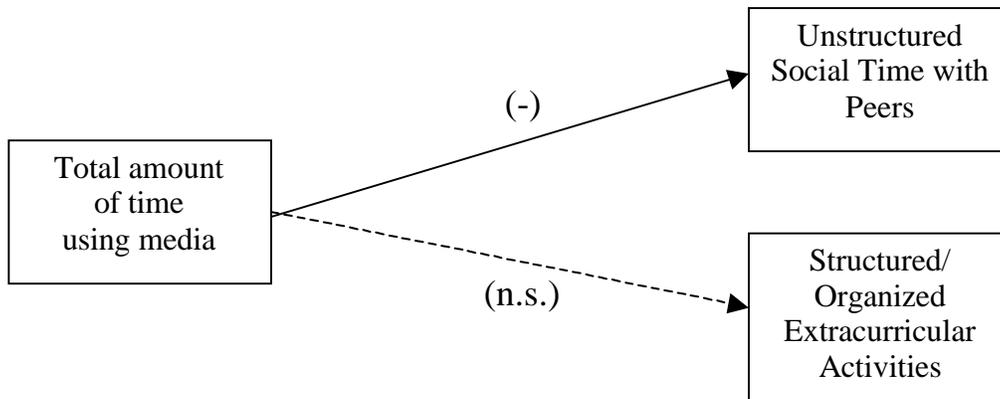
The marginal/fringe hypothesis

Another aspect of the displacement hypothesis proposed by Himmelweit, Oppenheim, and Vince (1958) is concerned with activities they labeled “marginal/fringe activities.” They claim that unscheduled, informal activities are most likely to be disrupted and replaced by media use. Structured activities and, in terms of peer relationships, planned social activities are more resilient to the potential threat of being displaced by media use. Figure 2 illustrates the relationships predicted by the *marginal/fringe hypothesis*.

When exploring the reason for this resilience, it becomes apparent that *the functional equivalent hypothesis* can be integrated with *the marginal/fringe hypothesis*. It is generally accepted that television as well as other media primarily serves as a default activity (Kubey, 1986). That is, children use media to fill their free time when there are little or no other equally attractive activities available. From this perspective, media use serves very little function. It is unlikely, therefore, that displaces activities such as social club meetings and church gatherings that serve specific, important functions in children’s lives. The differing functions of media use and organized social activities elucidates why *the marginal/fringe hypothesis* predicts that participation in these social events are unaltered by children’s use of media.

Furthermore, the structure of media use is very different from structured social activities. Media use occurs primarily in the home, is unscheduled, and can often be entered into and exited from at the will of the child. Structured social events, on the other hand, are scheduled, organized, and occur outside the home away from media.

Figure 2. The Marginal/Fringe Hypothesis



At a practical level, it is easy to accept that a child is very unlikely to be able to watch television instead of attending a scout meeting or church function.

Measuring the amount of time children spend in completely unstructured and unplanned leisure activities is very problematic and makes testing this hypothesis quite difficult. Traditionally these activities are not seen as important and go unmeasured. In fact, marginal and fringe activities have been “defined as anything *not* measured” (Mutz, Roberts, & van Vuuren, 1993, p. 55). In terms of social interaction, however, this definition may be inaccurate. Researchers have considered marginal social activities as times when children were simply “hanging out” with their friends (Himmelweit, Oppenheim, & Vince, 1958; Neuman, 1988), times when important social experience is gained. *The marginal/fringe hypothesis*, therefore, would predict that television and video game play displaces unstructured social time causing children to miss the spontaneous social moments that structure children’s everyday social interactions. Children’s participation in more organized social activities, on the other hand, is unaffected by children’s media use giving even heavier users the opportunity to benefit from these social occasions.

Empirical Exploration of the Displacement and Marginal/Fringe Hypotheses

Now that television is pervasive throughout most of the world, research testing *the displacement hypothesis* and *the marginal/fringe hypothesis* can no longer focus on the effects of the introduction of television. Scientists now have two primary methods for this type of research: explore the concurrent relations between media use and other activities in children’s lives, or use a longitudinal approach to look at how changes in television use affect changes in other activities.

A correlational study of the marginal/fringe hypothesis

While her primary research question involved the relationship between television viewing and children's literacy, Neuman (1988) did examine *the marginal/fringe hypothesis* in terms of children's social lives. Using both the National Assessment of Educational Progress (NAEP) and educational assessment studies from eight states, she performed correlational analyses using a large sample of American children from kindergarten to twelfth grade. Along with questions about how often they watch television and spend time with their friends, the NAEP asks children which one activity they did most during their leisure time. The most typical free time activity differed with age: children under 13 years old responded "television viewing" and high-school aged children reported "spending time with friends." Much like the results of the early studies reviewed above, this finding suggests that social interactions surpass media use in importance as children age.

In a more direct test of the marginal/fringe displacement hypothesis, Neuman (1988) explored the relation between television viewing, time children spend with friends, and time in sporting activities. She found non-significant correlations that were very close to zero for all age groups and concluded that television use is unrelated to children's other leisure-time pursuits. Again, a major research study found only very limited support for the displacement hypothesis.

A longitudinal approach to the displacement hypothesis

In a three-year longitudinal study with two cohorts of young children, Huston, Wright, Marquis & Green (1999) took a novel approach to examining the relations between television use and other childhood activities. They recognized the possibility that children's free time activities may be related to what they watch on television as well as to how much they watch. Over the three years of the study they

collected extensive data on children who aged from 2 to 5 in cohort 1 and from 4 to 7 in cohort 2. Children's television viewing, including the titles of programs watched, and other activities were measured using up to 18 individual 24-hour time-use diaries that were collected throughout the span of the study. Each show was coded as child informative, child animated, or general audience. The researchers found that the more the younger cohort watched general audience programming the less time they spent in social activities. There was no other evidence that television viewing was related to social interactions. The authors caution against making causal conclusions from this result; it is possible that developmental changes in children's social activities could cause more television viewing. Overall this study provides important information about an age group often excluded from analyses of time-use. Furthermore, it provides additional evidence that when television serves as entertainment it is related to fewer social interactions among young children.

Evidence from Previous Studies of the PSID-CDS-1

Considering the richness of the PSID-CDS-1 data, it is not surprising that it has previously been used to test the suitability of *the displacement hypothesis* to explain the relationship between media use and a number of children's social and non-social activities. In one study, my coauthors and I found that the more time a child spends watching television the less he or she spends with their parents and their siblings (Vandewater, Bickham, & Lee, 2003). This finding supports *the displacement hypothesis* and adds credence to the warnings from the American Academy of Pediatrics that television viewing interferes with familial interactions (American Academy of Pediatrics Committee on Public Education, 1999). While these findings can help inform the study at hand, it is important to recognize that peer interactions are both structurally and functionally different from those that occur

within the family. Peer relationships become more important to children's social development as they age while family interactions become less important. Furthermore, they occur in very different physical and emotional spaces and successes and failures in each lead to radically different consequences.

Additionally, the findings from this study show that the relationship between children's non-social activities and media use differ according to the specific activity being considered. Important developmental pursuits such as playing outside and doing homework were found to be unrelated to children's television watching and video game play. However, playing inside and, in one occasion, reading, were found to decrease as media use increased. Again, while these results refer to time-use activities that are different from those of interest to the study at hand, the findings can certainly inform the current endeavor. Activities that were structurally similar (occurring inside the home) and functionally similar (serving similar purposes) to media use were negatively related to television viewing; this fact adds further credence to the prediction that older children's social relationships will be unrelated to their media use. For school aged children, peer relationships are much more complex than reading or playing inside. They take place in many locations, including those outside the home, they involve using and developing social skills and negotiations in order to maintain access to them, and they serve to fulfill the need for human contact. To restate the central point, it is unlikely that such diverse, essential, and desirable activities will be replaced by isolated media use experiences.

Characteristics Providing Resilience or Vulnerability to Displacement Effects

The evidence provided above supports the belief that as children age, their social relationships become less vulnerable to being displaced by television viewing or video game play. It is likely that other attributes of both the child and the child's

family will make children's peer relationships more resilient to the negative effects of media use. In a review of the literature that evaluated the validity of a displacement approach to the relationship between reading time and media use, Beentjes and Van der Voort (1988) found that children who were more intelligent or socially advantaged were at greater risk for a reduction in reading time when they watched television. Similar characteristics may moderate how children's media use is related to their peer integration and social development.

Apart from age, children's gender and their ethnicity are the most likely attributes to influence this relationship. Both violent (Huesmann, 1986) and sexual media messages (Strouse & Buerkel-Rothfuss, 1987) affect boys and girls differently. Furthermore, the peer socialization process for boys and girls is notably different.

Ethnic groups differ in the amount of media they use as well as in the important predictors of their use (Bickham et al., 2003). Media representations of ethnic groups differ in both quantity and nature with minorities appearing less often than whites but more often as criminals (Children Now, 2004; Entman & Rojecki, 1998). Moreover, social behavior, social influences of peer group, and social organization all differ across ethnic groups (Robinson, 1998). Considering the differences in social and media experiences between genders and ethnicities, boys and girls as well as members of different ethnic groups may experience very different social effects of media use.

Other factors that might influence the effects of media use on children's social development and peer integration include children's intelligence, antisocial behaviors, and the parental warmth they experience in their family. More intelligent children read more and watch television less (Beentjes and Van der Voort, 1988). Children with higher intellectual capacity were also found to learn more prosocial behaviors

from *Sesame Street* than children of average intelligence (Tower, Singer, Singer, & Briggs, 1979) and to be less effected by the images of violent media (Wiegman, Kuttschreuter, & Baarda, 1992).

Children's antisocial behaviors greatly influence their level of peer acceptance (see the extended discussion below). It is possible, therefore, that for children who exhibit these types of behaviors, participating in social interactions is less desirable and available than for other children. Consequently, media use might be a much more attractive option and replace activities that are important to healthy social development.

There is evidence that parenting factors play a significant role in children's social competence and their successful negotiations of early peer interactions (Mize, Russell, & Pettit, 1998). This research has reached the generally accepted conclusion that parents who exhibit, among other attributes, high levels of affection, warmth, and responsiveness raise children who are socially competent (Cohn, Patterson, & Christopoulous, 1991). Children experiencing the high quality family environment and social skills that stem from such positive parenting may have the tools necessary to create successful peer relationships even while participating in high levels of media use.

Throughout this study these five variables will be considered possible mediators of all the social effects of media on children. Periodically, empirical evidence will necessitate specific hypothesis concerning these moderators and the expected results from the study at hand (as in the prediction that displacement effects will differ by age). For the remainder of the effects being tested, examinations of these moderator effects will be considered exploratory and will be based on research questions with no specifically hypothesized direction.

Conclusions from the Tests of the Displacement Hypothesis

The results of these studies converge on the idea that children primarily use television as a default activity, watching it when they have few if any other options. Television's use displaces other activities that are as easily accessible and may have previously been the preferred default. As children age, their social lives and school related activities become more engaging and time-consuming (Neuman, 1991). These activities become more and more important to maturing children and less likely to be affected by an activity that is primarily used to fill time.

Many of the studies discussed above limited the lower limit of their sample to elementary school-aged children. This may explain why they were unable to find consistent support for the *displacement hypothesis*. For very young children, their peer relationships are not central to their current stage of social development and, therefore, serve limited functions. Huston et al. (1999) were some of the few researchers to include very young children in a study relating media use and social interactions. Their results support the claim that during the early years of life media use can displace social interactions.

Hypotheses for the Current Study Derived from Displacement and Marginal/fringe

The children in the current study range in age from 2 to 12 years. The majority of these children fall into the age range where media use is likely to displace social relationships. Children at the upper end of the sample are entering early adolescence when social relationships become increasingly important and, therefore, less likely to be affected by their media use.

The majority of children's peer-oriented social time occurs is unstructured (74% unstructured, 26% structured; Irving, 1998) and is, at least for these young

children, likely to be negatively related to children's media use. Children's structured extracurricular social time, on the other hand, is structurally and functionally different from their media use. It is, therefore, much less likely to be displaced by television viewing or video game play.

Given these empirically-based statements, the following hypotheses can be drawn concerning the study at hand:

Hypothesis 1: Both television viewing and video game use will be negatively related to younger children's social interactions, social outcomes, and social behaviors.

Hypothesis 2: Television and video game use will not be a strong predictor of children's involvement in structured social events and extracurricular activities.

Considering the potential for various child and family characteristics to add either resilience or vulnerability to children's social relationships, the following research question can be posed:

Research Question 1: Do the displacement effects of media use on children's peer interactions and structured social events differ by children's gender, ethnicity, intelligence, parental warmth, or behavior problems?

ALTERNATIVES TO THE DISPLACEMENT HYPOTHESIS

The Shared Media and Common Culture Hypotheses

The displacement hypothesis clearly predicts a reduction in a child's social interactions if he or she participates in media use. It is possible, however, that media use has a positive effect on the social lives of children. Figure 3 illustrates two hypotheses that would predict this type of relationship.

Much of the research on media effects ignores the ecological setting in which television viewing and video game play occur. *The shared media hypothesis,*

however, predicts that participating in media with peers will enhance children's social abilities, just as they would be enhanced in other experiences of peer interaction. This hypothesis violates the assumption of *the displacement hypothesis* that social interactions do not occur during media events. If this hypothesis is correct, the more time children spend with their friends using media, the more advanced they should be in their social skills and the more time they should spend with their friends in non-media social situations.

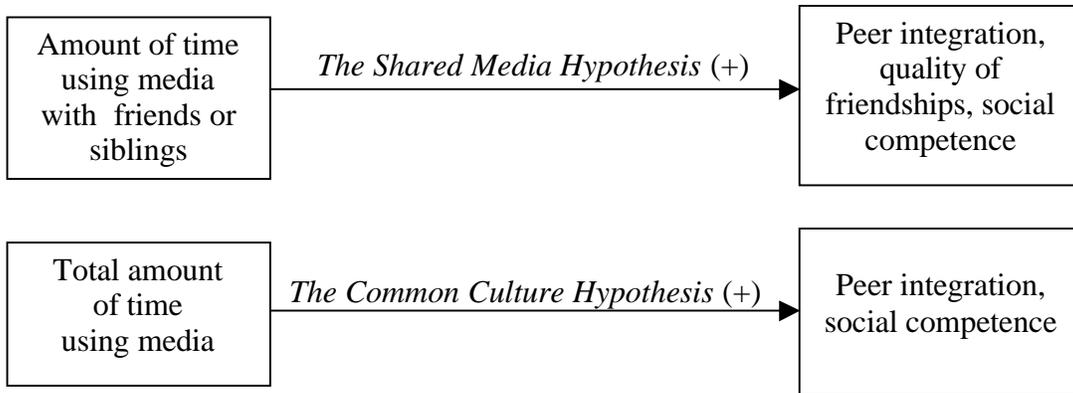
By playing popular video games and watching popular television programs, children may enjoy other social benefits from media. These experiences provide a social platform from which children can launch daily interactions. They provide fodder for conversations with their current friends as well as social lubricants for when they meet new children. *The common culture hypothesis* predicts that this type of knowledge will result in more successful social interactions and more competence in social interactions.

While this is the first place that these two hypotheses have been named and tested along with *the displacement hypothesis*, they are implicit in the agenda of media effects researchers (see Huston & Wright, 1997). There is, therefore, some, although limited, literature that explores the relationships illustrated in Figure 3.

The Shared Media Hypothesis

When researchers study children's social experiences around media, they primarily focus on the family unit (Austin, Roberts & Nass, 1990; Buckingham, 1993; Lawrence & Wozniak, 1989; Wright, St Peters, Huston, 1990). Researchers have consistently found that through covieing and discussion, parents can provide their children with detailed information about how to interpret and process the content they are witnessing. When children's media experiences are shared and discussed

Figure 3. The Common Culture Hypothesis and the Shared Media Hypothesis



with parents, the effects of violent media are tempered (Desmond, Singer, & Singer, 1990) and the lessons of educational media are enhanced (Wright et al., 1990).

While it is clear that the social context of media use contributes to its effects, rarely is the presence of peers included in this research. Some researchers have explored how the presence of a similar-aged co-viewer might affect the understanding or mediate the effects of content. When young people watch television with their peers, they are more likely to imitate any violence they see (Nathanson, 2001), they use the peer as a cue of when to watch and when to look away (Anderson, Lorch, Smith, Bradford, & Levin, 1981) and (when viewing with siblings) they have altered views of the programs characters (Haefner & Wartella, 1987). While the people around a child during a television program apparently change how the child experiences the event, it is still unknown if the interaction around media influences children's social abilities. The *shared media hypothesis* predicts that it does.

Documenting the social context of children's media use

While there is no empirical evidence that social interactions around media are related to successful peer integration, there are a number of studies that illustrate that children's media use often occurs in the presence of friends. Undertaking an impressive venture, researchers throughout the world studied the media habits and environments of 11,368 children in 12 European countries (Livingstone & Lemish, 2001). Among the instruments were questions about where and with whom children use media. While children use media with their friends in all countries, it is a daily occurrence in countries that are considered "peer oriented" (e.g. Finland and Denmark; Suoninen, 2001). In general, however, children said they usually watch television alone and when no other activity was available. Videos and children's

favorite programs are somewhat different viewing experiences, and children, especially older children and teenagers, prefer to watch them with friends.

This multinational study also found that the social context that surrounds children's video game play is very different from that of their television use. Children play video games with their friends more than they do with anyone else, and as children get older they are more likely to play games with their friends (Suoninen, 2001). While many children seek out their friends to play video games, boys go to a friend's house to play video games more often than girls do. Overall, the results of this study emphasize that media use takes place in a social context, but the context differs by types of media.

Another large, recent study documented the social context of children's media use. Employing a nationally representative sample of 3,155 children from the ages of 2 to 18, the Kaiser Family Foundation (KFF; 1999) set out to describe the media lifestyles of today's children and adolescents. Through face-to-face interviews of their complete sample (parents completed the surveys when the participants were between 2- and 7-years-old) as well as a subsample of media use diaries, the KFF explored with whom children and adolescents use media. They found that children between the ages of 2 and 18 spend more time watching television with their siblings or peers (44% of their television time) than with their parents (about 25%). Both of these percentages shrink slightly with age. The KFF also asked older children (7th through 12th graders) with whom they mainly used other media. Although videos were used over half the time with peers or siblings, video games were primarily used alone—only about 1/3 of the respondents said they mainly used these games with other young people.

The results from the KFF report differ in some important ways from the findings of the multinational study described above. Television viewing with similar aged children is quite common among the KFF sample. This finding, however, may have been caused by the inclusion of siblings in this sample. Alternately, video game play with friends or siblings occurs much less often than other studies have reported. More research in this area will help clarify how different media differ in their social context.

In an exploration into the social context of video games, Kubey and Larson (1990) utilized an “Experience Sampling Method” in which children and adolescents responded to a pager’s tone by describing the activities they were participating in and the social context surrounding them. While video game play only accounted for 3.3% of the children’s media time, over one-third of this game time was spent with friends. On the other hand only 17.8 percent of video game play was shared with family members. In the lives of these 9- to 15-year-olds, video games, while rare (a similar study today would most likely find substantially different results), appear to have provided the children, and especially the boys, with an activity easily shared with friends.

The PSID-CDS-1 provides a powerful tool for exploring the social context of children’s media use. In an effort to describe who is present during video game play, Scantlin (1999) used the data provided by the time-use diaries of the PSID-CDS-1. For this measure, parents were asked to report every activity that their child participated in over two twenty-four hour time blocks (one weekday and one weekend day). They also described who else was present for each event and what else the child was doing. For the oldest children in this sample (9- to 12-year-olds) 44% of their video game play occurred alone—more often than for the other age groups (1- to

5-year-olds and 6- to 8-year-olds). However, the groups did not differ significantly in the percent of video game play that occurred with at least one friend or sibling present (32%, 37% and 36% respectively by the three age groups). This finding is counter to the well-established notion that older children spend more time with their friends than younger children. An evaluation of children's video game play with friends and not siblings might produce different results. Overall, this study provides more evidence that children often use media in the presence of their friends and siblings.

In another study using the PSID-CDS-1 data, some evidence was found that covieing television with parents is part of a family environment where interaction occurs more often overall. Using the same time-use diary as the current study, Vandewater et al (2003) found that among 4- to 6-year-olds parental-shared television viewing was positively related to the amount of time children spent with their parents away from television. The experimenters concluded from this finding that families who tend to spend time together do so while participating in a wide variety of activities including media use.

The results from Vanderwater et al. (2003) support a growing perspective that media use has become an important medium around which family members communicate and share experiences (see Lull, 1980; Messaris, 1986). Heavy viewers of television viewing have been found to spend more time with their families and enjoy this time more than other children (Kubey & Csikszentmihalyi, 1990). Furthermore, the parent-child shared viewing experience is an opportunity to teach language, interpret content, and teach about the medium itself (Wartella, 1986). All of these findings indicate that parents who are skilled at providing home environments rich in social interactions will also do so in the presence of media. Therefore, children with exceptionally warm parents may learn how to socialize in

the presence of media and be more skilled at turning all shared-media events (including those with peers) into socially beneficial experiences.

Shared media as a positive social event

The shared media hypothesis equates media use with friends or siblings to any other shared activity, and it assumes that all of this time (regardless of the specific shared activity) is positively related to social outcomes and peer integration. One weakness of nationally representative survey data in this area is its inability to measure or analyze micro-level aspects of interactions. Therefore, to evaluate the prediction of *the shared media hypothesis* at a population level, we cannot differentiate between positive and negative interactions or assign judgments to the quality of the resulting friendships. For example, a child's acceptance into a peer group seen by parents as undesirable must be considered successful peer integration in the same way as acceptance into a highly valued peer group. After accepting this weakness (and the strength of generalizability that accompany this type of research), it is easy to recognize that peer-oriented social time can both lead to and be considered a measure of peer integration. Not surprisingly, empirical evidence has found that children who spend time with their friends are rated by their peers as more popular (Erwin, 1993; Ladd, 1983).

Positive effects of social time with siblings

The time children spend with their siblings may also provide them with the opportunity to practice social interactions and to learn to build strong relationships. Empirical findings support the presence of such a process. In fact, sibling relationships have been seen as one of the most important interaction experiences from which children can establish successful social skills (Dunn, 1992). Siblings are often at the core of children's earliest and longest lasting similar-aged relationships

and are commonly full of emotion and intensity (Powell & Gallagher, 1993). Quality and type of sibling relationships have been found to be related to social competence, peer acceptance, and social behaviors (Howes 1988, Martin & Ross, 1995; Stromshak, Bellanti, & Bierman, 1996). Considering the importance of these formative relationships and the evidence that siblings often share media experiences, it is essential to consider the role of media co-use with siblings in an evaluation of *the shared media hypothesis*.

Interactions occurring during social media use

While it is clear that children use media in the company of their parents, siblings, and friends, the only reason to expect that these shared experiences foster healthy development is if interactions occur during media use events. In one observational study, researchers found that siblings often interact during television viewing (Alexander, Ryan & Munoz, 1984). While the discussions held by the siblings included mentions of the television medium, its characters, and its production techniques, most of these conversations centered on the children's lives outside of media events.

A limited number of other studies found that siblings who watch television together carry on conversations during the viewing event. Siblings have been found to console younger brothers or sisters during frightening programs (Hoffner & Haefner, 1997) and to discuss non-central program content (Haefner & Wartella, 1987). Considering that relationships with siblings are a source for learning social competence, shared media events appear to be a viable venue for the building of closer sibling ties and the transfer of social knowledge.

The evidence concerning interactions between parents and children during co-viewing is mixed. Numerous studies have found that parents interpret televised

content for their children, provide background information relative to the program being viewed, and encourage children to verbally label onscreen images (Dorr, Kovaric, & Doubleday, 1989; Lemish & Rice, 1986; Messaris, 1986). While these conversations do occur, however, documentation has shown that they are rather rare (Huston & Wright, 1996; Lin & Atkin, 1989; Mohr, 1979). Interactions around television may be more likely when viewers are of similar age and watching content that is relative to both of them.

In the study discussed above, Scantlin (1999) described the activities that young children participate in concurrently with video games. While the majority of children's game time was spent in the absence of a secondary activity (54% to 60%), approximately one-third of the time children were playing games they were also talking with other people. Considering that friends and siblings were the primary groups sharing video game play, these results support the conclusion that these games provide a setting suitable for peer interaction.

All these studies indicate that media use does not occur in a social vacuum. When children share media experiences with other people, often they do not sit quietly, but discuss the medium, its content, and non-media topics. These studies, however, are based on parents and siblings; peer interactions around media may be different. The hypotheses presented below assume conversations during use. If they are not supported in the current study, the absence of such interactions is a reasonable explanation of alternative findings.

Conclusions and hypotheses

The studies reviewed thoroughly document the fact that children use media with their peers and siblings. Some also indicate that videotapes and video games tend to occur with friends more often than television viewing. Since there is some

evidence that shared media use can be an aspect of a parent-child relationship that does not interfere with (and may in fact encourage) other non-media based interactions, it is possible that shared media use has a role in well-developed peer relationships as well. Finally, interactions with siblings appear to be appropriate for building the skills necessary to succeed among peers.

The primary question of *the shared media hypothesis*, however, remains unanswered in the current literature: Does spending time sharing media experiences with friends or siblings translate into more successful social relationships? If the following hypotheses are true, then researchers who want to explore or make claims about the implications of media use on children's social outcomes need to consider the social ecology of the of the media events.

Hypothesis 3: The percentage of media time children spend with their friends will increase across ages and will be higher for videotape and video game use than for television.

Hypothesis 4: Using television, video games or videotapes with friends or siblings will all be related to higher levels of peer integration and more positive social behaviors and outcomes. Shared video game and videotape time will be more consistent and stronger predictors.

Hypothesis 5: Children with high parental warmth will have a positive relationship between shared-media experiences and social success.

Research Question 2: Do any child characteristics (gender, ethnicity, intelligence, or behavior problems) determine the strength or direction of the relationship between social media use and peer integration or social behaviors?

The Common Culture Hypothesis

The common culture hypothesis posits that television viewing and video game play can provide children with information and expertise that will help them succeed socially. They experience through television or video games a cultural event that is common among children their own age: a type of “joint cultural heritage” (Suoninen, 2001, p. 209). The more children do this, the more they understand the popular culture that is culture among young people. This will, hypothetically, aid them in having successful interactions with their peers (as indicated in Figure 3).

The common culture hypothesis was formulated around three types of empirical findings. First are those that indicate that media are an important topic of discussion and interaction for young people. Second are findings that point to positive relations between media use and social interactions. And third are findings related to social imaginative play.

Evidence that media are a topic of discussion

The longitudinal, multinational study described above (Livingstone & Bovill, 2001; Suoninen, 2001) also measured the percentage of children who talk about different forms of media. Between 57% and 74% of younger children and teenagers respectively, reported talking to their friends about television, and about 40% of both age groups used video games as a topic of conversation. The researchers also interviewed children about how they socialized around media. They found that children’s play often centered around media with some peer groups reciting entire films or episodes. All of these results support their statement that “Talking about media . . . is clearly the most important way in which media affect peer group relationships” (Suoninen, 2001, p. 209).

Evidence that media use enhances social interactions

Since media use is a common topic of discussion among young people, then having a working knowledge of its content may lead to more popularity. One study specifically examined the causal direction between television use and the frequency of children's peer interactions. In an ambitious longitudinal panel study performed in Sweden, researchers collected extensive data on 1,250 children in 4th through 8th grades over three years (Johnsson-Smaragdi, 1983). Their project included self-report measures of adolescent's television use as well as an index of how often they participated in various activities with their friends (i.e. play sports, listen to music, practice a hobby). The researchers predicted a reciprocal relationship between television viewing and peer interaction:

TV is . . . a popular topic of conversation among peers. Knowledge of popular adult TV programs may be a way to gain and maintain status within the peer group . . . This in turn is likely to stimulate TV viewing and interest in programs that are especially popular among peers (p.189).

Contrary to their predictions of a reciprocal relationship, they found a one-way relationship where television predicted positive peer interactions. This was only true among 11-year-old children (the youngest in their sample). Furthermore, television viewing predicted positive concurrent peer interactions, but did not predict future ones measured in later waves. It seems, therefore, that the relationships predicted by *the common culture hypothesis* are best suited to explain a contemporaneous relation between television and social interactions for children in the middle of their elementary schooling.

Imaginative play

While children in later elementary school are likely to discuss and socialize around common media events, younger children may benefit socially from media

experiences by having them guide their social imaginative play. At approximately age two, children's imaginative play begins to develop as separate from the physical world around them. Around age three, this play begins to become more social allowing for playmates to share in and contribute to the child's fantasy world. Such social imaginative play peaks around age 6 and then begins to decline (see Fein, 1981 for a full description of imaginative play development).

The content for imaginative play can have its roots in a multitude of children's experiences ranging from events at school and home to storybooks and stuffed animals. Media have also been found to serve as an inspiration for imaginative play. In one study of themes within children's play, researchers found that many of children's heroic or adventure play was based on television characters and programs (Singer & Singer, 1981). Other studies have also found that television programs provide content to children's imaginative play (James & McCain, 1982).

These studies show that children's imaginative play can be based on television programs and that much of this play for children over the age of three occurs in the presence of peers. *The common culture hypothesis* projects that having knowledge of televised content can allow for successful social imaginative play sessions. Imagine two young children, one with a working knowledge of the most popular television programs and the other with no television experience. When entering most television-based play events, the first child already understands the content of the play and can both participate in it and add to it. The second child, on the other hand, would be at a considerable loss in such an event. While for older children media knowledge can be an entrée into social discussions, for these younger children it could be an important tool for easily entering unstructured imaginative play sessions.

Conclusion

These studies illustrate how important media are to young people's social interactions. Media act as a topic of conversation and using media endow children with the ability to relate, at least on one level, to their peers. There is limited evidence that this ability translates into positive social interactions. Therefore, children who never use media may miss important cultural events and have difficulty connecting with their peers.

Research Hypothesis Based on the Common Culture Perspective

The common culture hypothesis predicts relationships directly opposite of those predicted by *the displacement hypothesis*. While the analyses outlined in the next chapter will test both of these hypotheses, it is important to make specific predictions concerning the findings based on which literature is more convincing. Considering the argument presented above that peer relationships are functionally similar to media use for young children (from 1 to 8), it is more difficult to accept *the common culture hypothesis* for these children. Even if media exposure does enable them to enter social play more easily, heavier viewers may not have such opportunities. However, given that older children's (9- to 12-year-olds) relationships are less likely to be displaced by media use, and that Johnsson-Smaragdi (1983) found a positive relationship between media and social interactions for children in this age group, *the common culture hypothesis* may be more appropriate for explaining this relationship for this age group. Considering that video games are also important sources of child culture for this age group, this hypothesis is equally applicable to the relationship between these games and children's social success.

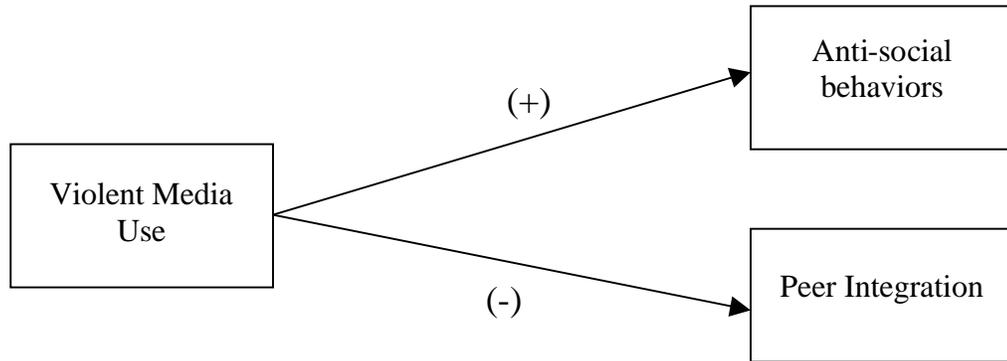
Hypothesis 6: For children aged 9 to 12, television viewing and video game play will be positively related to peer integration, social behaviors, and social success.

THE SOCIAL EFFECTS OF VIOLENT MEDIA CONTENT

The displacement hypothesis and its competing hypotheses all assume that the content of the media used does not change the relationship between children's media use and the quality or quantity of their social interactions. The extensive literature illustrating the causal effects of violent media use on social behaviors makes this assumption difficult to accept. Applying these findings to the questions at hand, *the violent media hypothesis* (depicted in Figure 4) predicts that using violent media will lead to anti-social behaviors as well as lower levels of peer integration.

In the previous hypotheses, the link between media use and the amount of time children spend in social interactions is relatively clear (e.g. media use simply replaces children's social time). Because these hypotheses do not consider specific types of content, they are too simplistic to explain the relationships presented in Figure 4. *The violent media hypothesis* posits that violent media use will affect children's social outcomes differently than non-violent media use will. Implicit in this hypothesis is the assumption that peer integration is dependent upon children's positive and negative social behaviors. That is, by increasing children's antisocial behaviors, their acceptance by peers, in turn, suffers. Empirical evidence supporting this process is described below. I will begin by examining how violent media are related to anti-social behavior. Then I will present evidence that children's behavior is related to their success in peer relationships.

Figure 4. The Violent Media Hypothesis



The Effects of Media on Children's Aggressive Behavior

While media have been accused of many of society's ills, the most consistent allegation and perhaps the one with the most credence is that media violence influences the aggressive behavior of its users. Starting in the 1960's Bandura and his colleagues (Bandura, 1965; Bandura, Ross, & Ross, 1963) illustrated the power of this effect with the famous Bobo doll experiments. Since then there have been hundreds of studies using a multitude of measures that have consistently found a relationship between using violent media and aggressive behaviors. Viewing violent television has been found to produce both immediate violent behavior as well as long-term aggressive attitudes.

Considering the sheer magnitude of the research available of this topic, a review of even a sizeable fraction of the literature is beyond the scope of this paper. Many thorough reviews of the effects of media violence have been published by major researchers in the field (Bushman & Huesman, 2001; Huston & Wright, 1997; Paik & Comstock, 1994; Sparks & Sparks, 2002). A more reasonable approach is to review in detail exemplary studies from the key researchers in the field that represent the variety of methods they employ. This review will include early landmark experimental studies, longitudinal field studies, later experimental studies including research on video games and finally recent meta-analyses.

Early experimental evidence that televised violence causes aggression in children

In the 1960's social learning theorist Albert Bandura designed a series of experiments to test how children imitate behaviors differently dependent upon the consequences that befall the model (Bandura, Ross, & Ross, 1963; Bandura, 1965). Two groups of children were shown a film of an adult ordering an inflatable doll out

of her way. When it did not comply, she hit it with her hands and a mallet. One of the groups saw only this behavior while the other saw the adult being punished for her actions. Children in the former group were more likely than those who saw the consequences of the model's action to imitate the behavior in a post-viewing play environment that contained an inflatable doll and other toys. These studies are credited by many as the first experimental examples of children learning from filmed violence.

The children's behaviors in these studies added credibility to the application of social learning theory to the effects of media use. Social learning theory stresses the importance of observational learning and claims that children become socialized by watching adult models and imitating their behavior. When a child witnesses a rewarded response, this act is disinhibited even if previously the child had learned that the response was inappropriate. Through this mechanism, children learn when certain types of behavior are accepted in their culture (Bandura, 1967; Bandura & Walters, 1963). The studies above exemplify that this type of learning and imitating can occur when the rewarded or punished model is a televised actor. It is important to recognize that the context of the violence presented will have different effects on viewers: rewarded violence is more likely to result in imitation than punished violence (see Kunkel et al., 1996 for a thorough review of the importance of the context of televised violence). When children witness violence as it is often presented on television, without the consequences that accompany it in the real world, they are likely to imitate it.

Criticism of Bandura's work

Bandura's experimental studies were met with considerable criticism. The primary accusations were that neither the programs viewed nor the behaviors

measured represented real-life situations for the children. Many researchers saw the operationalization of aggression as problematic. It is difficult to equate violence toward a toy to aggression toward other people (Liebert, Sprafkin & Davidson, 1982). Furthermore, the programs children saw were unlike any they were likely to see on television (see Sparks & Sparks, 2002). Questions arose about the likelihood of children's aggression being transferred to objects and situations not identical to those presented to them on film.

Experimental Studies of the Effects of Televised Violence

A long series of experimental studies followed Bandura's work, many of which improved upon the ecological validity of these early studies. In general, researchers in this field used similar methods that included showing children either a violent or non-violent program and then observing children's behavior either in a laboratory or more natural play setting. Results from laboratory studies usually resulted in minor acts of aggression such as pushing or hitting an inanimate object, while the acts in more naturalistic settings were more severe (Bushman & Huesmann, 2001).

In a study representative of many experimental studies, Liebert & Baron (1971) showed children from 5 to 9 years old either an episode of *The Untouchables* (a violent crime program) or a non-violent sports program. The participants then participated in a help-hurt game in which a button press would either aid or hinder a fictional child win a game. Children who saw the violent program pressed the hurt button more often and for longer amounts of time than those who saw the sports show.

In one typical naturalistic study, children in the experimental group were shown episodes of *Power Rangers* (Boyatzis & Matillo, 1995). Their behavior on the

playground was more violent than those in the control group. In general, these experimental studies found that exposure to instances of televised violence could lead to short term increases in children's aggression. These studies exemplify how the experimental research in this area moved toward exposing children to content that they might see at home and measuring behaviors that represent social aggression.

In the 1970's a group of researchers prepared an extensive report to the Surgeon General concerning the relationship between television viewing and social behavior. One of the conclusions of this report was that "there is rather clear evidence that exposure to current television programs that include aggressive acts produce greater subsequent aggression than one would find without such exposure" (Leifer & Roberts, 1972; p. 125). Even though this conclusion was accepted among most media researchers and psychologists, many continued to document the relationship using more complex methods including longitudinal designs and meta-analyses.

Longitudinal Research Exploring Violent Television as a Cause of Aggression

In a 1-year longitudinal study of 141 preschoolers, Singer and Singer (1981) found strong positive correlations between watching action television shows and aggression. Their results indicated that television viewing was causing aggression, not that aggressive children were drawn to violent programs. This well designed, longitudinal study measured both television use and aggression in children's real-life environment and discovered a link between violent media and anti-social acts that was as robust as those found in laboratory studies.

In another longitudinal study of the effects of television on aggressive behavior, researchers interviewed children and their mothers four times over 17 years from 1975 to 1992 (Johnson, Cohen, Smailes, Kasen, & Brook, 2002). At each time

point, children's television viewing and aggressive behaviors were assessed. In 2000, when the participants who were previously children averaged 30-years old, some of the sample was given questionnaires assessing their violent acts. Television viewing at age 14 and 22 was associated with subsequent aggression toward another person even after environmental characteristics that are known to influence both television viewing and aggression were controlled. While this study adds to the evidence that television viewing causes aggressive behavior, it does not address the effects of specific televised content. This study would have been even more valuable had the researchers assessed children and adolescents' exposure to violent television and their subsequent behaviors.

Perhaps the most comprehensive field study of the longitudinal effects of using violent media followed a panel of boys as they aged from 8 to 30 years old (Huesmann, 1986). The two major reports on this research reported the results of the study when the participants reached 18 (Eron, Huesmann, Lefkowitz, & Walder, 1972) and then when they reached 30 (Huesmann, 1986). After 10 years of following these boys and studying both their violent behavior and their violent media use at every stage of their lives, the researchers were able to make some strong causal claims. They found a strong relationship between viewing violent television at age 8 and aggression level at age 18. The reverse relationship, however, was not true: aggression at a young age was not predictive of teenage violent television viewing (Eron, Huesmann, Lefkowitz, & Walder, 1972).

After twenty-two years of following these boys now turned men, the social importance of understanding the effects of violent media use became clear. The boys who were very heavy viewers of violent television at the age of 8 were more likely to commit serious crimes when they became 30-year-old men (Huesmann, 1986). With

this finding taken into consideration, young boy's violent media use, especially when it is extensive, may be seen as a high-risk behavior with serious, long-term effects.

Recently, these same researchers followed up a second sample of children who had been originally interviewed in the late 1970's as 8- to 9-year-olds (Huesmann & Eron 1986; Huesmann, Moise-Titus, Podolski, & Eron, 2003). Between 1992 and 1995, archival data concerning the participants' criminal justice records were collected and the original participants were contacted and interviewed. Childhood violent television viewing was found to predict aggressive behaviors in adulthood for both males and females even when early aggression and numerous parental and familial attributes were controlled (Huesmann, Moise-Titus, Podolski, & Eron, 2003). Furthermore, men who had been in the top 20% of violence viewers as children were more likely to have physically assaulted their spouses or been convicted of a crime during the year before the last interviews. This longitudinal finding adds further evidence that violent television viewing is one cause of adult aggression, and that such media exposure can have severe personal and social consequences.

Meta-analyses of the effects of violent television

The studies described above are a small sample of the research exploring the association between television viewing and aggressive behaviors. To summarize the magnitude and direction of these findings, a number of researchers have performed meta-analyses using research from this area. Two meta-analyses performed in the 1970's concluded that in laboratory studies across this body of literature children who were exposed to violent television became more aggressive than those who saw other types of programs (Anderson, 1977; Hearold, 1986). Each estimated an aggregate

effect size approximately between .30 and .70 for experimental studies and much smaller effects (between .07 and .30) for field research.

Extending this work into the late 1980's, Wood, Wong, and Chachere (1987) found results corroborating the previous meta-analyses. They saw the field studies in this area as having poorly defined measures of aggressive outcomes, and, therefore, limited their analysis to the 23 studies that used as their outcome aggressive behavior in a naturally occurring unconstrained social interaction. Such outcomes were primarily measures of aggressive play. In an analysis of 23 experimental studies, children who were shown violent media exhibited greater amounts of aggression toward other people than children in control groups. Twelve of the studies included sufficient information for an effect size analysis that yielded an overall small to moderate effect ($d = .40$). This effect size is comparable to other predictors of aggression including alcohol intake, gender, empathy, and social class.

In an ambitious effort to document the overall effect size of violent media use on aggression and to test the difference of effect sizes found across methodologies, Paik and Comstock (1994) analyzed the results of 217 different studies. They found an overall effect size of .19 for both cross-sectional field studies and longitudinal field studies and a larger effect size of .40 for laboratory experiments. Combined, the effect size of violent media on antisocial behavior was .31, a relationship only slightly weaker than the correlation between smoking and lung cancer (Bushman & Huesmann, 2001). Even though lab-based studies generally find a larger correlation between violent media consumption and aggressive behavior, the size of the overall effect for field studies is still large enough to be important. In general, these studies control for more variables that are likely to play a role in this relationship. Paik and

Comstock (1994) found an aggregated effect size of .19 for studies employing a longitudinal or cross-sectional field design.

In the most recent meta-analysis, Bushman and Anderson (2001) explored both experimental and field studies of violent media effects on aggression in a chronological manner. Their primary objective was to pinpoint the time period when there was sufficient experimental evidence to claim a link between violent media exposure and aggression. Analyses of the 80 studies performed before 1975 (their earliest time point) revealed an effect size different from zero. Adding five years of research to each subsequent analysis, the effect size increased consistently until the year 2000 (their last time point). This study reinforces the findings of the previous meta-analyses while making the following two additional contributions: 1) there has been sufficient evidence that violent television is a serious public health concern for over 25 years and 2) the reported link between televised violence and aggressive behavior is getting stronger. The authors provide a number of explanations for the second finding including higher levels of television viewing and better methodology.

Critics of media research, especially those funded by the Motion Picture Association of America, may be able to find faults in almost every individual study that demonstrates the effects of televised violence on aggressive behavior (see Freedman, 2002). But when a series of meta-analyses, each with slightly different methods and each performed using slightly different samples of the literature, make almost identical conclusions, it can be stated unequivocally that the research has converged on a common finding. Considering the level of agreement across studies, many researchers have begun to explore ways to reduce the effects of television violence. Such strategies include assessing intervention techniques (see Cantor &

Wilson, 2003) and documenting child and family characteristics that make individual children more or less resilient to the influence of violent media.

Age, gender, and intelligence as moderators of the effects of violent television

The link between watching violent television and aggressive behavior has been proved quite decidedly. It is possible, however, that this relationship is more robust for some children than for others. Because of the multitude of large-scale studies on this topic, researchers have had the opportunity to explore if, and how, different child characteristics moderate the relationship between television and behavior. The three that have attracted the most attention are age, gender, and intelligence.

As children mature, the effects of violent television on their behavior diminish but do not completely disappear. Young children are more susceptible to the effects of violent media for two reasons: (1) they have difficulty discriminating between real and fictional events portrayed on television (McKenna & Ossoff, 1998; Van der Voort, 1986) and (2) their early phase of cognitive schema and social script development is exceptionally malleable. Having more advanced cognitive functions may protect older children from some of the effects of violent television. For example, if negative consequences befall the aggressive character on television, older children are more likely than younger children to understand the cause of such punitive events and be less influenced by the aggression (Bushman & Huesman, 2001). Furthermore, as children proceed through elementary school and reach the age of 12, they become more sophisticated viewers with the ability to recognize more accurately fictional content (Van der Voort, 1986). This certainly does not indicate that the effect of violent media disappears when children graduate from elementary school. In the meta-analysis discussed above, the effect was much less for 12 to 17

year-olds (.20) than for children under 6 (.49) but was certainly far from non-existent (Paik & Comstock, 1994).

The role that gender plays in the relation between violent media and aggression is much less apparent. Some reviews of the literature have led to the conclusion that violence plays a long-term role in the development of behavior only among boys, not girls (Turner, Hesse, & Peterson-Lewis, 1986). Others have found generational differences. In the landmark longitudinal studies spearheaded by Huesmann and his colleagues, girls who grew up in the 1950's and 1960's did not experience the long-term effects of watching television violence that boys did (Eron, Huesmann, Lefkowitz, & Walder, 1972). However, the girls they studied in the 1970's and 1980's did not differ from the boys (Huesmann, 1986). Changes in popularity in violence on television, the manner in which violent women are portrayed on television, and the socialization processes of young girls are all possible explanations for this finding. Finally, Paik and Comstock's (1994) meta-analysis revealed that boys are more susceptible to the negative consequences of violent media than girls are. This held true for all the different types of studies, but the difference was very small in naturalistic studies.

Intelligence can provide children with a tool that shields them from the harmful effects of media violence. At least one study found that the effects diminished drastically when intelligence was introduced into the model (Wiegman, Kuttschreuter, & Baarda, 1985). Furthermore, the more intelligent a child is, the less likely he or she is to seek out or enjoy violent television (Lynn, Hampson, & Agahi, 1989). It must be remembered, however, that IQ does not provide an impermeable barrier against the consequences of viewing violent television. Singer and Singer (1981), for example, found that including intelligence as a covariate had no effect on

the relationship between “action” viewing and aggressive behavior. While more intelligent children may be less susceptible to the effects of violent media, they are not immune to them.

Effects of Violent Video Games on Children’s Behavior

Video games are vying with television to be the most influential and violent media in the lives of children. While children do not play these games as often as they watch television—boys average 31 to 53 minutes a day and girls 8 to 37 (Kaiser Family Foundation, 1999; Wright et al., 2001; this latter study reported time estimates for children who play any video games)—they do show a strong preference for violent games (Funk, 1993; Buchman & Funk, 1996). Of 47 popular video games in the early 1990’s, 40 of them had violent content (Provenzo, 1991). Furthermore, with the increasing ability of video game consoles to depict realistic human-to-human violence, the consistent pattern of rewarding violent acts, and the interactive and first person nature of these games, even limited exposure may have a very large impact on children’s behaviors and social outcomes (Dill & Dill, 1998; Cooper & Mackie, 1986).

Research into the effects of video game violence on children’s behavior has been fairly consistent since the early 1980’s but has lacked a systematic guiding theory and has been plagued with numerous methodological problems (Sherry, 2001). The result has been an area of research based on studies that have used different measures of exposure to and definitions of video game violence, different ages of children and adolescents being tested, and different types of aggressive outcomes measured. Instead of converging on a common finding, the results from these studies have varied almost as widely as their methods. In order to systematize the array of

findings in this area, researchers have begun to review the literature and perform meta-analyses.

Literature reviews of video game violence

In their review of the literature, Dill and Dill (1998) separated the research on violent video games into experimental studies and descriptive studies. Their primary conclusion from the experimental literature was that violent video game play is linked to violent outcomes. The four true experiments included in the review found that violent video game play leads to higher rates of aggression.

In Dill and Dill's (1998) review of survey data, they point out a number of methodological mistakes, but also commend the researchers in this area for including in their studies more varied measures of aggressive outcomes including peer reports of aggression and delinquency. The results from these studies provide more evidence that a relationship exists between violent game play and aggression. Overall, however, Dill and Dill's final conclusion regarding survey research is that the small number of these studies and the methodological problems that permeates them make drawing conclusions problematic.

Despite the procedural weaknesses of the research in this area, Dill and Dill (1998) conclude that the literature they reviewed provides enough evidence to hesitantly support a causal relationship between violent video game play and aggressive behaviors. They claim that the studies that had faulty designs mainly had results that did not support their own hypotheses or found no relationship between the variables. They suggest that future research be designed carefully in order to avoid the problems of the past.

In his review of the literature, released only one year later and published in the same journal, Griffiths (1999) refuses to draw any definite conclusions. He claims

that all of the research that has explored the relationship between violent video games and aggression have fundamental methodological flaws. He points out that correlational studies do not account for spurious effects of unmeasured variables and that experimental studies do not have ecologically valid measures of aggressive outcomes.

Griffiths' criticisms are identical to those made of the television violence research when it was still a fairly young field. As with television, longitudinal data, well designed experimental studies and naturalistic research will likely verify the early, if flawed, findings. But Griffiths' criticisms are problematic for another reason as well. Although the defects he reveals are legitimate, no research method is flawless. Results only become conclusive when different methods lead to similar conclusions, as appears to be happening in this area. In an attempt to criticize each type of method used in this research, Griffiths has missed the larger picture that Dill and Dill (1998) clearly present.

Meta-analyses of violent video game effects

With the inability of literature reviews to add clarity to the findings in this research area, Sherry (2001) performed a meta-analysis. Using 25 studies from the 1980's to the present, Sherry calculated an overall correlation of .15 indicating that violent video game play has a small to medium effect on aggression. Experimental studies found a slightly smaller effect (.11) than survey studies (.16).

A second meta-analysis (Anderson & Bushman, 2001) supplemented Sherry's attempt to provide some order to this tumultuous area. Using the results from 35 research reports, the researchers examined the aggregated link between violent video game play and children's aggression, helping behavior, aggressive cognition, aggressive affect and arousal. The average effect size of violent video games on

these outcomes was .19 with no difference between boys and girls or for experimental or non-experimental studies.

In another report of this same analysis, the authors directly addressed the concern of Griffiths (1999) and others that much of the research in this area suffers from fatal methodological flaws (Anderson et al., 2003). Nine potential methodological flaws were determined and studies were categorized as “best-practices” studies if they did not make any of the nine technical mistakes. While results for both flawed and unflawed studies showed a positive link between video game violence exposure and aggressive outcomes, the relationship was stronger among the best studies. These results are contrary to claims made by the industry that no relationship exists and to those made by critics of the research that all studies in this area are flawed. Conclusions from this and the other meta-analyses should allow researchers to move beyond the search for an effect of violent video games and into more advanced concerns about population effect sizes and moderators of the relationship.

Contributions of the Present Study

The goal of this review has been to illustrate the strong relationship between violent media use and aggressive outcomes among children. The current study advances this literature in a number of ways. First, it provides population estimates for the effects of violent media on very young children—the group most vulnerable to these effects and most often excluded from research samples. Secondly, it explores the effects of violent video game play in a large, nationally representative sample. And finally, it looks beyond the behavioral effects of violent media and documents the resulting social consequences of the aggressive behavior these types of media promote.

Hypotheses

Considering the extensive evidence that violent media use is related to aggressive behaviors, the following hypothesis can be made concerning the expected results for the current study.

Hypothesis 7: Exposure to violent television and video games will be related to more antisocial behaviors and fewer positive behaviors.

Hypothesis 8: The relation between violent media exposure and negative social behaviors will be greater among younger children, boys, and children with lower levels of intelligence.

THE RELATIONS BETWEEN SOCIAL BEHAVIORS AND PEER INTEGRATION

Figure 4 illustrates the hypothesized relationships between violent media and children's social behaviors and peer integration. The evidence described above provides a clear rationale for predicting a relationship between violent media use and aggressive behavior, but it does not necessary explain why such media use could lead to lower levels of peer integration or social successes. The argument that such a link exists stems from the influences of children's behaviors on their social relationships. The discussion that follows illustrates how negative social behaviors (such as aggression) lead to social isolation and positive social behaviors lead to successful peer relationships. If violent media use is related to antisocial behaviors and such behaviors predict low levels of peer integration, it follows that in the current study there will be a link between violent media use and peer rejection. The following review presents empirical evidence that children's behaviors shape their social interactions.

The Importance of Social Relationships

Building a successful social network based on positive peer relationships is the primary developmental tasks that children must accomplish outside the home. Once integrated into a peer group, children benefit from numerous opportunities to acquire and improve social skills as well as from the social support positive relationships provide (Berndt & Ladd, 1989). Children who are unable to forge successful peer relationships may suffer from long-term delays in social development and other types of maladjustment in adolescence and adulthood (Cowen, Pederson, Babigian, Izzo & Trost, 1973; Parker & Asher, 1987; Roff, 1961; Roff, Sells & Golden, 1972). It is important, therefore, to understand what constitutes a successful relationship and what contributes to children's social success and failure.

Indicators of Healthy Friendships

One aspect of young people's successful social relationships is the amount of unstructured time that they spend with other children. Playing with friends during free time allows children the opportunity to develop social skills and to build relationships (Bernt & Ladd, 1989). This is an important activity, and children who do not participate in it are at risk for the long-term consequences of underdeveloped social abilities. Furthermore, more popular children spend more time with friends and are more likely than rejected children to have friends who are their own age, well liked by peers, and, belong to a network of mutual friends (Erwin, 1993; Ladd, 1993). Children's time with friends, it seems, is both an indication of children's popularity as well as an opportunity for them to develop social skills that will lead to further peer acceptance.

While spending time with friends may indicate popularity, it has been argued that it is the quality of children's friendships that predicts higher levels of

psychological well being, adult social adjustment, and social competence (Bagwell, Schmidt, & Newcomb, 2001; Bukowski, 2001). Having high quality friendships, for example, has been found to be related to a more developed sense of self-esteem. In a study of 164 high school students, participants completed measures of self-esteem and quality of their best friendships (Thomas & Daubman, 2001). Scores on these two measures were correlated for all children, but was more consistently related for girls. High quality friendships may help children develop a more secure sense of self, or such an attribute may allow children to initiate and maintain high quality friendships. Most likely, both these processes are occurring simultaneously. Regardless of the causal process, children with high quality friendships are likely to be psychologically healthy and have well developed social behaviors.

Children's Social Behaviors as an Antecedent of Social Success

To achieve numerous, high-quality friendships, children must demonstrate a number of social skills centered on utilizing interpersonal cues and behavioral strategies to meet specific social goals (Dodge, 1985; Mize & Ladd, 1988; Rubin & Krasnor, 1986). Researchers tend to agree that the most important factors in predicting children's level of social acceptance are their behaviors to others in their peer group (Coie, Dodge, & Kupersmidt, 1990; Dodge, 1983; Ladd & Price, 1993; Mize & Ladd, 1990).

Early examinations of the antecedents of social success suffered from cross-sectional designs that made it difficult for them to assess the causal direction between children's behaviors and their peer acceptance (see Ladd & Price 1993; Dodge, 1983; Putallaz & Gottman, 1981 for descriptions of these studies). In the early 1980's, however, researchers began employing complicated, longitudinal designs in order to better examine the behavioral causes of peer status. Some of these studies used

observational techniques and took advantage of either the controlled environment of the laboratory setting or the more naturalistic environment of the playground. Other studies were larger and based on survey methods. All of these methods produced results that converged on the conclusion that different types of behaviors lead to different levels of peer acceptance.

While their primary question concerned the stability of children's social status over a five year period, Coie and Dodge (1983) also explored behavioral antecedents of children's social integration. In each year of this study, the researchers surveyed 96 third graders and 112 fifth graders. Through interviews with classmates the researchers were able to create a social status score for each child in their study for every year of the study. They found positive behavioral ratings from peers predicted peer acceptance and negative ratings predicted peer rejection. This finding was especially strong for children labeled by their classmates as "Cooperative" or as "Starts Fights." These results illustrate how aggressive and prosocial behaviors can contribute to children being accepted or neglected by their peers.

Apart from the overt problem behaviors associated with aggression, more internal, mood-based behaviors are also linked to popularity among peers. In one study, 117 sixth grade students rated themselves and were rated by their teachers and peers on a popularity scale and an internalizing problem behavior scale (Sanson, Finch, Matjacic, & Kennedy, 1998). These behaviors included questions such as "seems unhappy, looks sad," and "gets worried, feelings get hurt easily." Children's scores on the internalizing scale were negatively related to their level of popularity and positively related to their level of rejection. High levels of withdrawal and depression, like high levels of aggression, can result in social isolation and other undesirable social outcomes.

Explorations into the development of peer relationships

The studies above, while adding credence to a causal relationship between behavior and peer status, did not take into consideration the many external social factors that exist in a school setting and may contribute to this relationship. In order to control these factors and observe the development of children's social status, Dodge (1983) performed a study in a laboratory setting using 48 previously unacquainted second-grade boys. Their behaviors and interactions in small semi-structured playgroups were coded. The children were also given sociometric interviews about who in their group they liked the best and least. Using these scores, the researchers categorized the children as popular, rejected, neglected, controversial, and average. They found that popular children tended to engage in more cooperative play than the other children. On the other extreme, the rejected children displayed more aggressive and inappropriate behaviors as well as more hostile verbalizations and hitting of peers than did the average children. Other researchers using similar methods have found comparable results (Coie & Kupersmidt, 1983). The evidence from these studies indicates that children's behaviors are strong predictors of their social status with aggression leading to rejection and prosocial behaviors leading to popularity.

Naturalistic studies of the development of social relationships

While the methods of the above study allow for strong causal conclusions to be drawn about the relation between behavior and peer status, they do not explore the development of social relationships in a naturalistic environment. Ladd, Price & Hart (1988) explored the development of young children's interactions and social status on the playground, a setting that they argue is conducive to children's social relationships and allows for multiple age groups to interact. The researchers observed

the playground behaviors of 28 preschool children over three 6-week periods throughout the school year. The initial observation period occurred at the beginning of the year when the children became acquainted with each other for the first time. Children's behaviors were coded into categories of interactive behavior and non-interactive behavior. Following each play session, participants were asked to nominate the playmates they liked and disliked and to rate each peer on a likeability scale; these data were used to create a peer acceptance score. A higher level of cooperative play at the beginning of the school year was found to predict larger gains in social status by the end of the year. Early argumentative behavior, on the other hand, was linked to declines in peer acceptance. The researchers conclude that cooperative behaviors build peer approval by facilitating social interactions and bringing about positive play experiences for all children involved. Conversely, arguing disrupts the play behaviors of other children thereby resulting in negative peer attitudes (Ladd & Price, 1993). These results add to the evidence that children's prosocial and antisocial behaviors are causally linked to their social status.

Influencing children's social success by changing their behaviors

These three studies exemplify the copious research reports that conclude that children's behaviors are one of the primary antecedents of their subsequent peer relationships. Other predictors of peer integration have been identified and include child characteristics such as physical attractiveness (Young & Cooper, 1944) and the commonness of children's first names (McDavid & Harari, 1966) as well as school factors such as pupil turnover rate (Roistacher, 1974). All of these predictors differ from children's behavior in that they are virtually impossible to alter with any type of child-level intervention (Putallaz & Gottman, 1981). Systematic behavioral training, on the other hand, has been shown to increase children's positive social strategies as

well as their peer acceptance (Mize & Ladd, 1990; Mize, Ladd & Price, 1985; Ladd, 1984).

The relations put forth in figure 4 suggest a simple, inexpensive intervention that has the potential to reach millions of young children. Since watching violent television can increase children's aggressive behaviors and such behaviors can lead to peer rejection, it follows that discouraging the viewing of this type of programming may positively impact children's social relationships. If the hypothesized results are found to hold true for research performed with a nationally representative sample, then this intervention could translate into profound behavioral change for a generation of young people.

Hypotheses Concerning Violent Media and Peer Integration

The above evidence illustrates how children's antisocial behaviors influence their peer integration as well as other positive social outcomes. Since violent media use is linked to increases in negative behaviors, then it is likely that such use also predicts lower levels of peer acceptance and worse social outcomes.

Hypothesis 9: Exposure to violent television and video games will be related to lower levels of peer integration.

Hypothesis 10: The relation between violent media exposure and peer integration will be greater among younger children, boys, and children with lower levels of intelligence.

CONCLUSION

The purpose of the above review was to illustrate that media play a crucial, multifaceted role in children's healthy social development. The ten hypotheses and two research questions presented in this chapter were built from the empirical evidence described and serve as the foundation for the analyses proposed below. The

primary purpose of the current study is to test these hypotheses, and, based on the results of these tests formulate a general model of how television viewing influences children's peer interactions, social behaviors, and other outcomes that are critical to a successful navigation of their social world.

Chapter 2: Method

DESCRIPTIONS OF SAMPLES AND MEASURES

The CDS-1 Sample and Subsamples

Data from the Panel Study of Income Dynamics (PSID) were employed to address the hypotheses and research questions presented above. Since 1968, the PSID has been an ongoing, nationally representative panel study focusing primarily on the transfer of social and economic capital within families. In 1997, additional data about the PSID children and their families were collected via the first wave of the Child Development Supplement (CDS-1). In order to remain nationally representative, the CDS-1 sample originating from the PSID was supplemented with an additional over-sampling of low-income, mostly African American families, and a refresher sample of immigrant families (Hofferth, 1998). The resulting CDS-1 sample is 3,562 children.

The sample for the present study

The current study used two subsamples from the CDS-1. Only children ages 2 and older were included in this study because parents of younger children were not asked to complete the behavior problem index (the majority of parents with two-year-olds did not complete this index, but those with complete data were included in the study). Considering that a number of the hypotheses presented above predict different relationships for children of different age groups, all analyses in this study were performed separately for three age groups: 2- to 5-year-olds, 6- to 8-year-olds, and 9- to 12-year-olds.

The “diary subsample” contains 1,951 children who returned two time-use diaries (see below for a description of this instrument) and had complete data on all the variables in the models. This was the primary subsample and was used in analyses testing hypotheses about television and video game use as general activities. By age group, the sample breaks down as follows: 2- to 5-year-olds, $n = 595$; 6- to 8-year-olds, $n = 563$; and 9- to 12-year-olds, $n = 793$.

For a number of analyses, measures collected from the children’s teachers were used as dependent variables. Teachers had a much lower response rate than children’s parents; only 34% of the children in the diary subsample had information from their teachers. Whenever an analysis contained a teacher-report variable, the following sample sizes were used: 2- to 5-year-olds, $n = 209$; 6- to 8-year-olds, $n = 339$; and 9- to 12-year-olds, $n = 482$.

The “violent television content” subsample comprises the 1,482 children whose diaries contained a sufficient amount of codeable television data. During the television program coding procedure (described below) many of the show titles recorded in the time diaries were incomplete or otherwise uncodeable. For example, the violent content of entries such as “cartoons” or “channel 15” could not be determined. If over 30% of an individual child’s television data was uncodeable they were dropped from the sample. Therefore, the 1,482 children in the violent television content subsample all had at least 70% codeable television data. The following sample sizes apply to the three age groups for the violent television content sample: 2- to 5-year-olds, $n = 467$; 6- to 8-year-olds, $n = 411$; and 9- to 12-year-olds, $n = 604$.

Weights

With the addition of an over-sample of African American families as well as a new immigrant sample, it was necessary to alter the survey weights from the PSID in

order to match the CDS-1 sample. When applied, these weights increase or decrease the relative importance of each observation in order for the complete sample to match national statistics on a number of economic, geographic, and social demographics.

Three factors were used in the construction of the new CDS-1 analysis weights. According to the CDS-1 documentation these were “1) a family selection weight which is the inverse of the family’s probability of selection; 2) a post-stratification factor which adjusts the sample family totals to the 1997 CPS estimated totals for forty-eight demographic/geographic cells; and 3) a within family selection weight which is the inverse of the probability of selection of the child from the set of children age 0-12 in the family” (Institute for Social Research, 1999). Therefore, the CDS-1 weights are a combination of selection weights and strata weights. The 48 cells which represent the different strata were created by crossing the following categories with one another (1) race of head (Non-Black / Black); (2) education level of head (< high school graduation / high school graduation / some post-secondary education); (3) Metropolitan Statistical Area (MSA) status (MSA / non-MSA); (4) Census Region (Northeast / Midwest / South / West). In other words, when using weighted CDS-1 data, the results are nationally representative in terms of race, education level, urban classification of hometown, and geographical location. For a more complete discussion of how these weights were created, see the CDS-1’s online documentation (Institute for Social Research, 1999). When these weights are employed, the diary subsample ($N = 1,951$) is 65.5% Caucasian American, 17.2% African American, 11.1% Hispanic American, 6.2% “Other” and has a median income of \$50,506.

Time Diaries

Central to the study at hand is the method that the CDS-1 used to collect detailed information about children's time use. On one randomly chosen weekday and one randomly chosen weekend day, primary caregivers of the children in the CDS-1 were asked to complete a written, comprehensive time-use diary. Time-diary forms were mailed to parents with the instructions indicating the day that they should be completed (See Appendix A for an example of a time-diary page). The primary caregiver, with help from their child when appropriate, completed the diary by accounting for every minute of activity performed by their child from midnight to 11:59 in the evening. They recorded the start and end time of each activity (including sleep and school) as well as where the activity took place, who else was present during the activity, and what else the child was doing at the same time. The following day, the researchers either contacted the parent by phone or visited the parent's home and reviewed the diary with them. At this time the diary was edited for clarification if necessary (For complete description of how the time diary was collected see Hofferth & Sandberg, 2001).

Collecting time-use data using a diary provides the highest quality and most valid data possible without an extraordinary commitment of time or money. While observational data may more accurately represent how children spend their time, this method is extremely costly and intrusive. Summative data—asking parents to summarize the amount of time their child spends performing specific activities—is the simplest to collect. This method, however, is socially biased and leads to higher estimates of positive behaviors and lower estimates of negative ones (Hofferth, 1999). The data collected using a time-use diary, on the other hand, has been found to be consistently valid and reliable (Juster & Stafford, 1985) and requires only a limited

time commitment from participants and researchers. Furthermore, time-use diary reports of children's media use have been found to be very similar to observational data from videotapes made of the child's home (Anderson & Field, 1991).

Children's media use

A unique feature of the CDS-1 time diary is the inclusion of a query for video game and television content. Whenever the primary caregiver reported television viewing as the primary activity, they were also asked to indicate the title of the program the child was viewing and if it was being watched from videotape. When the child was playing a video game, the parent reported the title of the game being played and if it was being played on a home computer or a video game console. Trained coders then determined if the television program or video game being used contained violent content.

Television violence coding

Considering the large number of programs reported by the respondents of the CDS-1, it was extremely impractical for coders to view every show as a method of categorization. Instead, coders used their own knowledge of the program as well as information gained from television-based websites to reach conclusions about the presence of violence in the shows. All programs were categorized as being violent or nonviolent. Television shows were considered violent if they met one of the following criteria 1) violence was a central theme to the program, 2) the program depicted more violence than normally exists in a child's life, or 3) the profession of the main characters included responding to or participating in violence (e.g. superheroes, police officers, emergency room workers). All the television programs were coded by two coders who reached an inter-rater reliability (Kappa) of .81 and

resolved their disagreements through discussion (see Appendix B for the violence coding sheet).

Video game content coding

A coding method similar to the one applied to television programs was used to determine the violence level of the video game titles reported in the time-use diaries. As with the television programs, video game coders did not play the games to determine their content. Instead, they referred to manufacturers' and reviewers' websites in order to gain an understanding of the level of violent content included in the game. Titles were coded as having no violence, mild violence, or severe violence according to the definitions shown on the coding sheet (see Appendix C). For the purposes of the current study, games coded as containing mild or severe violence were considered violent titles. One expert coder classified every title while ten trained student coders each coded 10% of the reported games. The average exact agreement between the student coders and the expert coder was 88%.

Measures of Children's Media Use

Measures of children's media use were obtained from the time-use diary data. The total number of minutes that each child watched television or played video games as a primary or secondary activity was computed by summing every instance of these types of media use throughout each individual time diary. The resulting number of minutes served as a measure of media exposure. This technique was used for measures of daily video game play, television viewing, and videotape viewing. Mean values of total exposure by types of media for each of the three age groups are provided in Table 1.

Media violence

Exposure to media violence was computed in a similar manner to overall media use. Instead of summing the total number of minutes of use, the total time using violent television and video games was calculated. In this way exposure to violent television and video game content was estimated. Table 1 also provides descriptive information for this measure.

Time-Use Measures of Social Outcomes

Time spent with friends

Peer integration was operationalized in three ways. The first measure was created by using the time diaries to determine the amount of time children spent with their friends (the second two measures of peer integration, *quality of friendships* and *number of friends*, are discussed below). Since primary caregivers were asked to report other people present during the activities in the time diary (either participating in the activity or simply present), it was possible to determine the total amount of time that each child spent with his or her friends over the two days represented. This measure was used in analyses to predict children's media use. For these analyses, the time that children used the specific medium with their friends was subtracted from the total amount of time they spent with peers. This procedure prevented overlap between independent and dependent variables. The means and standard deviations of the resulting variables, *Time with friends no TV* and *Time with friends no video games*, are given in Table 1.

Children's involvement in extracurricular activities

As part of the data preparation procedure, every activity reported in the time diaries was coded into one of approximately 200 categories (see Institute for Social

Table 1. Means and Standard Deviations for All Time-Use Variables by Age Group

	2-5 (n =595)	6-8 (n =563)	9-12 (n = 793)
Variables	Mean (SD)	Mean (SD)	Mean (SD)
Time Watching Television	287.05 (176.61)	289.67 (182.37)	290.34 (200.47)
Time Watching Television with No Friend Present	275.67 (176.52)	272.27 (178.99)	263.36 (189.92)
Time Watching Violent Television ^a	79.80 (86.36)	85.21 (82.76)	82.65 (105.76)
Time Watching Non-Violent Television ^a	121.33 (104.01)	128.24 (108.24)	139.83 (123.48)
Time with Friends (no TV)	124.18 (187.12)	168.69 (214.82)	251.44 (266.64)
Time Watching TV with Friends	11.38 (39.73)	17.40 (55.84)	26.99 (79.62)
Time Watching TV with Sibling	184.13 (172.70)	213.01 (182.23)	199.54 (177.40)
Time Playing Video Games	22.51 (66.18)	39.79 (96.98)	53.33 (96.21)
Time Playing Video Games with No Friends Present	9.95 (27.29)	27.29 (90.56)	26.67 (64.51)

Table continues

Table 1 continued

	2-5 (<i>n</i> =595)	6-8 (<i>n</i> =563)	9-12 (<i>n</i> = 793)
Variables	Mean (<i>SD</i>)	Mean (<i>SD</i>)	Mean (<i>SD</i>)
Time Playing Video Games with Friends	3.61 (25.66)	4.48 (19.64)	14.11 (50.99)
Time Playing Video Games with Siblings	13.61 (47.51)	29.96 (85.35)	28.19 (69.55)
Time Playing Violent Video Games	8.62 (38.69)	19.83 (85.46)	23.38 (56.85)
Time Playing Non-Violent Video Games	5.99 (22.26)	5.91 (21.88)	10.94 (45.38)
Time with Friends (No Video Games)	131.95 (199.38)	181.62 (231.03)	264.31 (293.16)
Time Watching Videotapes	82.90 (109.16)	61.71 (89.42)	56.61 (109.50)
Time with Friends Watching Videotapes	5.08 (27.94)	4.99 (25.46)	14.12 (66.76)
Time in Extracurricular Activities	36.29 (71.46)	59.71 (102.45)	76.40 (123.10)
Extracurricular Activities (Yes/No)	--	.64 (.48)	.78 (.41)

Note. Dash indicates that this data was not collected for 2-to 5-year-olds. The means represent the amount of time in the activities over the two diary days.

^a Violent Television sample: 2-5, *n* = 467; 6-8, *n* = 411; 9-12, *n* = 604.

Research, 1997 for the full list of activities). Many of these represented structured extracurricular events such as club meetings and sport team practices. Through consensus coding, two graduate student coders determined every activity that should be considered a structured social activity (See Appendix D for all activities coded as extracurricular). All of these activities were considered social even if peers were not listed as present during the event. As with the other measures from the time-use data, the number of minutes in structured social activities was summed and is described in Table 1.

A second measure of children's structured social time came from the Home Observation Measure of the Environment (HOME) (Caldwell & Bradley, 1984). Primary caregivers of children ages six and older were asked if their child participated in any extracurricular activities. Examples were given that included gymnastics, scouts, music lessons, a sports team, and a boys' or girls' club. This item allowed for analyses comparing differences in media use according to a more general measure of extracurricular activity participation. The percentage of parents who responded "yes" to this question is given in Table 1.

Social media use

By summing the amount of time children spent in media activities that occurred in the presence of peers or siblings, measures of social media use were created. Five separate measures were created: television with friends, video games with friends, videotapes with friends, television with siblings, and video games with siblings. Means and standard deviations are given for all social media use variables in Table 1.

Other Measures of Social Outcomes

The number of friends children have

The second measure of peer integration was a parental report of the size of their child's social group. As part of the parental monitoring scale (adopted from the scale used by the National Longitudinal Survey of Youth, NLSY; Baker, Keck, Mott & Quinlan, 1993), primary caregivers were asked the number of close friends their child has. The mean number of friends by each age group is reported in Table 2.

The quality of children's friendships

The final measure of peer integration was a question to the primary caregiver concerning the quality of children's peer relationships. Because it is the closeness of childhood friendships that is related to psychological health and adult adjustment, the quality of friendships has been found to be a reliable predictor of social competence (Bagwell, Schmidt, & Newcomb, 2001; Bukowski, 2001). As part of the parental monitoring scale, primary caregivers were asked to rate on a four-point scale the quality of their child's friendships. The question read: "Think now about how things are going in general in (CHILD)'s life. Please rate each of the following parts of (CHILD)'s life as either excellent, good, fair, or poor . . . (His/Her) friendships." Across children of all age groups, the majority of parents reported that their child's friendships were either excellent (42%) or good (51%). Therefore, the variable was collapsed into a dichotomy with excellent relationships coded as 1 and all other responses as 0. The percentage of parents reporting excellent relationships for their child is represented by the mean presented for this measure in Table 2.

Table 2. Means and Standard Deviations for Social Behaviors and Outcomes

	2-5 (<i>n</i> =595)	6-8 (<i>n</i> =563)	9-12 (<i>n</i> = 793)
Variables	Mean (<i>SD</i>)	Mean (<i>SD</i>)	Mean (<i>SD</i>)
Number of Friends	4.40 (5.63)	4.98 (4.82)	4.80 (5.48)
Social Competence (Teacher Report) ^a	3.16 (.64)	3.19 (.68)	3.10 (.67)
Externalizing Behavior Problems (Parent Report)	26.57 (5.95)	25.20 (5.89)	24.93 (6.01)
Internalizing Behavior Problems (Parent Report)	15.19 (2.84)	15.83 (3.22)	16.62 (3.77)
Positive Behavior Scale	42.13 (4.82)	42.08 (5.53)	42.58 (5.56)
Externalizing Behavior Problems (Teacher Report) ^a	1.25 (.34)	1.28 (.37)	1.27 (.36)
Internalizing Behavior Problems (Teacher Report) ^a	1.15 (.19)	1.23 (.33)	1.24 (.30)
Quality of Friendships	.46 (.50)	.39 (.49)	.42 (.49)

^a Teacher report scales sample sizes: 2-5, *n* = 209; 6-8, *n* = 339; 9-12, *n* = 482

Measures of Social Behavior

Apart from peer integration, a number of the hypotheses presented earlier predict that media are related to specific types of behavior. Furthermore, because behaviors are closely linked to peer acceptance, there is value in exploring the relationship between media and social behaviors even when such a relationship is not explicitly put forth. Therefore, the relationships between media use and the following measures were explored in the analyses described below.

Social competence

Among the items that made up the teacher-report questionnaires was one that asked the teachers to rate on a four-point scale the social competence of the child: “How **socially** competent is this child with (his/her) peers (popular, likable, etc.)?” The mean and standard deviation of this measure for each age group is given in Table 2.

Externalizing and internalizing behavior problems

The 28-item, 3-point behavior problems index describes the incidence of both internalizing and externalizing behavior problems including cheating, bullying, depression and others (Peterson & Zill, 1986). This measure is widely used, consistently has moderate to high levels of internal reliability (.54 to .76; Peterson & Zill, 1986), and is designed to be separated into internalizing and externalizing behavior subscales.

Questions from the externalizing subscale measure aggressive behaviors and include: “How true are the following statements about your child (3 = Often, 2 = Sometimes, 1 = Never): He or she is disobedient, He or she has trouble getting along with other children?” The internalizing subscale measures sadness and depression and includes questions such as: “How true are the following statements about your child:

He or she is unhappy, sad or depressed, He or she is easily confused, He or she is not liked by other children” (see Appendix E for all 28 questions in the behavior problem index and their classification as internalizing or externalizing behaviors). For all children in the Child Development Supplement, the externalizing and internalizing subscales had the following internal reliabilities respectively: $\alpha = .86$, $\alpha = .81$.

In the CDS-1 the behavior problems index was completed by children’s primary caregiver as well as their elementary and preschool teachers. Analyses were performed on the parental and teacher report of behavioral problems separately because their reports on the same children’s behavior often vary dramatically (Achenbach, McConaughy, & Howell, 1987) and because children behave differently at home and at school. For the diary subsample teacher and parent reports of externalizing and internalizing behaviors are moderately related (externalizing, $r = .38$, $p < .01$; internalizing, $r = .26$, $p < .01$). The mean and standard deviation for both the parental and teacher reports of the behavior problems subscales are given in Table 2.

Positive behaviors

A mean value of the Positive Behavior Scale completed by each child’s primary caregiver was used as the measure of children’s positive interpersonal behaviors. This index consists of ten items scaled from 1 to 5 (from “not at all like child” to “totally like child”) that measure positive aspects of children’s lives including their self control, social competence and autonomy. Items include such statements as “Child is cheerful and happy,” “Child gets along well with other children,” “Child is admired and well liked by other children.” Originally this scale was designed and used as part of the New Chance survey and was found to have high levels of internal consistency ($\alpha = .94$; Polit, 1998). In the PSID-CDS-1 data, this

scale has an acceptable level of reliability ($\alpha = .79$). See Appendix F for this entire instrument and see Table 2 for its mean and standard deviation by age group.

Covariates

The CDS-1 contains multiple family and child level variables that may contribute to children's exposure to media as well as their level of social adjustment. These will be included in analyses as control variables; means and standard deviations for each of these variables are given in Table 3.

The head of each child's household was asked the number of years of educational he or she had completed. This question served as a measure of *parental education*.

Children's primary caregiver also reported their family's total annual income for the year 1996. This value was divided by the poverty threshold provided by the Census Bureau for the appropriate family size (Census Bureau, 1996). The resulting value, known as the *income-to-needs ratio*, was used as a measure of socioeconomic status.

Children's *intelligence* was measured using the Digit Span task from the Wechsler Intelligence Scale for Children (WISC). Children were asked to repeat a series of digits that were read to them, and then, in a second task, they were asked to repeat other digits in a reverse order. The final score is a standard score combining the two tasks that is based on published norms for children's age. While in actuality this task measures children's short-term memory, the scale is consistently related to other subtests measuring intellectual ability (e.g., Otis-Lennon School Ability Test, Differential Ability Scales; Wechsler, 1974).

Table 3. Means and Standard Deviations for Covariates

	2-5 (<i>n</i> =595)	6-8 (<i>n</i> =563)	9-12 (<i>n</i> = 793)
<i>Covariates</i>	Mean (<i>SD</i>)	Mean (<i>SD</i>)	Mean (<i>SD</i>)
Parental Education	13.00 (2.66)	12.58 (3.07)	12.64 (3.33)
Income-to-Needs Ratio	2.98 (2.51)	2.93 (2.72)	3.21 (4.26)
Minority Status	.31 (.46)	.35 (.48)	.36 (.48)
Age	3.98 (.82)	6.92 (.79)	10.52 (1.16)
Gender	.45 (.50)	.45 (.50)	.55 (.50)
Parental Warmth	4.70 (.43)	4.49 (.50)	4.27 (.62)

Children's *minority status* was determined by parents' report of their children's ethnicity. Children in any of the following racial categories were considered minorities: Black, Hispanic, Asian, Native American, or "Other." White children were considered non-minorities. The means presented in Table 3 for this variable correspond to the percentage of children in each age group who are minorities.

Although all analyses were performed separately by the three age groups described, children at different ages within in each group are likely to differ from each other in a number of ways that are critical to the proposed questions. In order to control for these differences, children's age in years (as reported by their primary caregiver) was included as a covariate in the model. Table 3 shows the mean age and standard deviation for each age group.

Children's *gender* was also included as a covariate in the regression analyses with girls given a code of 1 and boys of 0. The reported means in Table 3 correspond to the percentage of girls in each age group.

The quality of the children's home environments was assessed using the Home Observation for Measurement of the Environment (HOME)—Short Form (Caldwell & Bradley, 1984). The HOME combines observational items completed by the researcher and self-report questions completed by the participant to measure a number of aspects of emotional support and cognitive stimulation that parents provide their children. These include information about educational materials in the home (e.g. books, magazines, musical instruments), parents' emotional and verbal responses to their children, and children's opportunities for a variety of experiences outside the home. Many questions in the HOME are relevant only to a specific age group. For example, parents of younger children are asked if they help their child

study numbers and colors while parents of older children are asked if they encourage their children's hobbies. On account of these differences in the instrument, HOME scores were standardized within each age group.

The six-item five-point *parental warmth* scale developed by Child Trends was used to measure the warmth of the relationship between the child and the parent. Primary caregivers were asked how frequently they participated in a number of behaviors that are indicative of strong positive bonds. These behaviors included hugging the child, telling the child they loved them, and participating in activities that the child enjoys. For the PSID-CDS-1 sample, the parental warmth scale has a Cohen's Alpha of .82 (see Appendix G for the full instrument).

The final covariate is the measure of children's *external behavior problems*. In view of the evidence that aggressive children are likely to be rejected by their peers and that aggression is related to more media use (especially violent media use), the influence of children's behaviors on their peer integration needs to be partialled out of the analyses exploring the relations between media use and peer integration. This covariate was excluded from analyses where the dependent variable is a measure of internalizing or externalizing problem behaviors.

ANALYSES PLAN

Characteristics of the CDS-1 data

The research questions of this study will be addressed through regressions. There are a number of attributes of the CDS-1 data, however, that complicate these analyses and demand specific analytical attention.

Non-independent data

Because the CDS-1 included in its sample up to two children from each family in the PSID, these siblings have family level data (e.g. family income, parental education) and child level data from the same reporter. This data feature violate a primary assumption of regression and can result in deflated error estimates leading to an increase in the type 1 error rate. This violation was be addressed by using “cluster” command in STATA 8.0. This procedure corrects the standard error estimates so that resulting probability tests are more reliable in the face of non-independent data.

Tobit regression analyses

The second data issue is a common characteristic of diary data; many participants do not participate in some activities during the diary days (Bianchi & Robinson, 1997; Hofferth & Sandberg, 2001). The resulting distribution is censored; that is, a number of the participants have a zero score for the time-use variables. A censored distribution cannot be remedied using the transformations typically employed to correct other non-normal data distributions for regression analyses. Tobit analysis (Tobin, 1958), however, accounts for the censored data when it occurs in the dependent variable. It utilizes all observations in a dataset and is, therefore, superior to using OLS regression and including only the information above the zero value (McDonald & Moffitt, 1980).

The dependent variable in Tobit analysis is often explained as a latent variable where the observed measure of the dependent variable is the realization of the latent variable (Breen, 1996). That is, the threshold for having the latent variable be observable is the censoring point (zero in the case with the CDS-1 time-use data). In

this way the latent variable allows for values less than the censoring point. Therefore, not all zero values of the observed variable are equal in the latent dependent variable.

Tobit analysis is a maximum likelihood estimation procedure. It uses a two-stage modeling approach where the first stage resembles a probit analysis and provides information on the probability, given the independent variables, that the value of the dependent variable will be above the censor point. The second stage resembles an OLS regression and provides estimates for values of the dependent variable above the censor point that are equivalent to unstandardized regression coefficients (Breen, 1996). The coefficients that this process produces are hybrids of the unstandardized coefficients produced by OLS regression and those produced by a probit analysis. The more censored the dependent variable is, the more similar these estimates are to probit coefficients. The less censored the dependent variable, the more similar these estimates are to unstandardized regression coefficients.

For the present study, Tobit analyses were utilized whenever a time-use measure (e.g. time with friends, time using media with friends) was the dependent variable. Tobit analyses were performed using the “intreg” command in STATA 8.0 (the standard Tobit command in this software is unable to simultaneously correct for non-independence of data). Tobit analyses, like other maximum likelihood estimators, are highly sensitive to non-normal dependent variables. For the Tobit and related commands in STATA to produce reliable estimates, the non-zero values of the dependent variables must approximate a normal distribution (E. Norton, personal communication, March 11, 2004).

The time-use measures used as dependent variables of the present study were highly and consistently positively skewed. In order to make Tobit analyses possible, all time-use measures used as dependent variables were transformed by taking the

natural log of the number of minutes reported for each activity. Since log transformed values are much smaller than untransformed values, the resulting unstandardized coefficients produced in the Tobit analyses are also very small. Considering that the hybrid quality of Tobit coefficients makes them difficult to interpret as effect sizes and the resulting size of the unstandardized coefficients, Tobit coefficients were used only to determine the significance level and direction of effects of independent variables.

Tobit analyses do not correct estimates when the independent variable is censored. Therefore, whenever fewer than 10% of any age group did not participate in a time-use variable that was to be used as a predictor variable in an analysis, the analysis was not performed for that age group. Table 5 lists each of the time-use variables and the number of children for each age group that participated and did not participate in each.

Using the CDS-1 weights

The final data concern is the use of the CDS-1 survey weights. In order for the results of this study to represent national estimates, the CDS-1 weights must be used. STATA recognizes commands for three different types weights; the “p-weight” command is the appropriate choice for sampling weights similar to those in the PSID-CDS-1 data. These weights represent the inverse of the probability that any given child would be selected for the sample. Therefore, individuals with higher weights have greater influence on the final analyses. While applying these weights falsely elevates the actual sample size, STATA makes the necessary corrections in order to ensure reliable probability testing.

Analyses Addressing the Proposed Hypotheses

Most of the proposed hypotheses and research questions were addressed using either Tobit analyses or standard Ordinary Least Square regressions. Tobit analyses were used whenever a time-use measure was a dependent variable. OLS regressions was used in most other analyses except when the dependent variable was dichotomous (as was the case for the measure of friendship quality) in which case relationships were estimated using logistic regression. In each analysis, the following five variables were tested to determine if they moderate the relationship between the independent variable of interest (the media use variable) and the dependent variable: external behavior problems, parental warmth, intelligence, minority status, and gender. Table 4 shows the analytical technique used to test each of the hypotheses.

Displacement and marginal/fringe hypotheses

Hypothesis 1 states that television viewing and video game play will predict lower levels of (a) social interactions, (b) social outcomes, and (c) social behaviors for younger children. Because the measure of social interactions is a time-use measure (amount of time spent with friends), part *a* of this hypothesis was tested using Tobit analyses. The measures that correspond to part *b* are questions concerning the number of friends children have and the quality of their friendships. Relations between media use and these variables were tested using OLS regressions and logistic regressions respectively. Finally, part *c* was addressed in twelve separate OLS regressions. Television use and video game play were tested separately in determining their relations to the six measures of social behaviors (see Table 2 for the six measures).

Table 4. Analysis Plan

<i>Hypothesis</i>	<i>Analysis Type</i>	<i>Independent Variables of Interest</i>	<i>Dependent Variable(s)</i>
Displacement/ Common Culture	Tobit	<ul style="list-style-type: none"> • Television • Video Games 	<ul style="list-style-type: none"> • Time with Friends
Displacement/ Common Culture	OLS/ Logistic Regression ^a	<ul style="list-style-type: none"> • Television • Video Games 	<ul style="list-style-type: none"> • Number of Friends • Quality of Friendships
Displacement	OLS Regression	<ul style="list-style-type: none"> • Television • Video Games 	<ul style="list-style-type: none"> • 6 measures of social behaviors^b
Marginal/Fringe	Tobit	<ul style="list-style-type: none"> • Television • Video Games 	<ul style="list-style-type: none"> • Structured Social Time with Friends
Marginal/Fringe	Logistic Regression	<ul style="list-style-type: none"> • Television • Video Games 	<ul style="list-style-type: none"> • Extracurricular Activity Participation
Shared Media	Tobit	<ul style="list-style-type: none"> • Media with friends^c • Media with siblings 	<ul style="list-style-type: none"> • Time with Friends
Shared Media	OLS / Logistic Regression	<ul style="list-style-type: none"> • Media with friends • Media with siblings 	<ul style="list-style-type: none"> • Number of Friends • Quality of Friendships
Shared Media	OLS Regression	<ul style="list-style-type: none"> • Media with friends • Media with siblings 	<ul style="list-style-type: none"> • 6 measures of social behaviors
Violent Media	Tobit	<ul style="list-style-type: none"> • Violent Television • Violent Video Games 	<ul style="list-style-type: none"> • Time with Friends
Violent Media	OLS / Logistic Regression	<ul style="list-style-type: none"> • Violent Television • Violent Video Games 	<ul style="list-style-type: none"> • Number of Friends • Quality of Friendships
Violent Media	OLS Regression	<ul style="list-style-type: none"> • Violent Television • Violent Video Games 	<ul style="list-style-type: none"> • 6 measures of social behaviors

^a OLS Regressions are used with *Number of Friends* as the dependent variable and Logistic Regressions with *Quality of Friendships*

^b Social Competence, Externalizing Problem Behaviors, Internalizing Problem Behaviors, Positive Behaviors, Externalizing Problems (teacher), Internalizing Problems (teacher)

^c Analyses for each type of medium (television, video games, and videotapes) are performed separately.

Hypothesis 2, derived from the *marginal/fringe hypothesis*, posits that children's media use is unrelated to their (a) structured social events and (b) extracurricular activities. Structured social events are measured using the time-use diary. Therefore, Tobit analyses were used to test the relations between media use and these activities. The measure of extracurricular activities is dichotomous. Logistic regressions were used when this measure was the dependent variable.

Research question 1 was addressed by including in the above analyses a step of five interaction terms. In order to avoid issues of multicollinearity, children's media use (television viewing and video game play separately) was centered on its mean before being multiplied by each of the following potential moderating variables: gender, minority status, intelligence, parental warmth, and external behavior problems (Aiken & West, 1991). Of these moderators, only parental warmth and externalizing behavior problems were centered before the interaction term was created since the others were either dichotomous or standardized.

When the coefficient of any interaction term reached a significance level of .05 or less and the interaction block as a whole added significantly to the model (as indicated by a significant R^2 or X^2 change), the directions of the effects were determined. In accordance with the procedures described by Aiken and West (1991), the moderating variables were re-centered on values equal to one standard deviation above and one below their means. These values were then multiplied by the media use variable to create new interaction terms. Three new analyses were then performed, one corresponding to the high value of the moderating variable, one to the average value, and one to the low value. For *gender* and *minority status*, the new analyses were performed separately by the categories of the variables (boys vs. girls or minority vs. non-minority). Because the interaction terms were significant, any

differences in sign or magnitude indicated in these interpretative analyses were also significant.

In general, the remaining analyses were performed using these same techniques. The notable change necessary to test the other hypotheses was different independent variables of interest. The following descriptions as well as Table 4 indicate the specific variables used to test each hypotheses.

The shared media hypothesis

Hypothesis 4 claims that media use with friends or siblings is related to more peer integration and positive social behaviors. As put forth in Table 4, a similar analytical strategy was used to test this hypothesis as was used to test hypothesis 1. However, the independent variable of interest for these analyses was the amount of time children spent using media with other children. Since there are three types of media use being explored (television, video games, and videotapes) and two social contexts (with peers or with siblings), six different regressions were performed for each of the dependent variables. In order to address hypothesis 5 and research question 2, an interaction step was added to each analysis and the appropriate interpretation analyses were performed.

The common culture hypothesis

Because the *common culture hypothesis* makes a prediction that is the opposite of that presented by the *displacement hypothesis*, the claims made in hypothesis 6 will be tested when the procedures testing hypothesis 1 are complete. Table 4 shows that the analyses testing these hypotheses are equivalent. If there is a positive relationship between older children's media use and the time they spent with their peers, the tenets of the *common culture hypothesis* will be used to explain the relationship.

Violent media hypothesis

Hypothesis 7 predicts that violent media use is related to increased antisocial behaviors and decreased positive behaviors. To test this hypothesis a series of OLS regressions was performed with the six measures of social behaviors as dependent variables. In each analysis, both the amount of violent media (television or video games) and the amount of nonviolent media were included as predictor variables.

Because children's behaviors are strong predictors of their peer acceptance, hypothesis 9 speculates that children's violent media use is related to their social integration. This relationship was tested using Tobit analyses when time with friends was the dependent variable. Again, violent and nonviolent media were included in each analysis.

Analysis Interpretation Plan

Using the results from these analyses, I present a unified model of how children's television viewing and video game play are related to the quality and quantity of their peer relationships as well as their social behaviors. The approach of this model is to expand *the displacement hypothesis* to incorporate any relevant aspects of the proposed hypotheses that the results support: such as the social context of children's media use or the content of the programs they view. The potential results from the proposed study are widespread, and it is the goal of this project to formulate a model that accommodates the majority of them.

Chapter 3: Results

DESCRIPTIONS OF KEY VARIABLES

Table 1 shows the means and standard deviations for each of the time-use variables. The same statistics are shown for the social behavior and social outcome variables in Table 2. The values in both tables are weighted to represent national averages for each given age group.

Because large proportions of children did not participate in some of the time-use activities used in this study, some of the mean values presented in Table 1 are rather small. Table 5 describes the number of children by age group who did and did not participate in each media and social-based activity. As previously mentioned, when such censored variables are to be used as dependent variables in regressions equations, Tobit analyses must be employed. Thus, Table 5 also indicates which dependent variables were examined via Tobit analyses.

The control variables described in the previous chapter were included in each OLS regression, Tobit analysis, and logistic regression described below. The bivariate relations between these measures and each of the dependent variables are available in Tables 6 through 8. Each of these tables is specific to one of the three age groups (2-5, 6-8, or 9-12).

TESTING THE DISPLACEMENT AND THE SHARED CULTURE HYPOTHESES

According to the displacement hypothesis, the more time children dedicate to television viewing and video game play the less time they will spend socializing. If this is true, their level of peer integration as well as other social outcomes and social

Table 5. Number of Children who participated in Each Time-Use Activity by Age Group

Variables	Children Participating		
	(Children Not Participating)		
	2-5 <i>n</i> =595	6-8 <i>n</i> =563	9-12 <i>n</i> = 793
Watching Television	585 (10)	540 (23)	770 (23)
Watching Television with No Friend Present	583 (12)	539 (24)	762 (31)
Watching Violent Television ^a	338 (129)	304 (107)	414 (190)
Watching Non-Violent Television ^a	402 (65)	349 (62)	513 (91)
Spending Time with Friends (no TV) ^b	299 (296)	361 (202)	604 (189)
Watching TV with Friends	61 (534)	64 (499)	140 (653)
Watching TV with Sibling	424 (171)	462 (101)	638 (155)
Playing Video Games	131 (464)	204 (359)	315 (478)

Table continues

Table 5 continued

Variables	Children Participating		
	(Children Not Participating)		
	2-5 (<i>n</i> =595)	6-8 (<i>n</i> =563)	9-12 (<i>n</i> = 793)
Playing Video Games with No Friends Present	76 (519)	142 (421)	209 (584)
Playing Video Games with Friends	16 (579)	37 (526)	81 (712)
Playing Video Games with Siblings	78 (517)	154 (409)	218 (575)
Playing Violent Video Games	58 (537)	99 (464)	181 (612)
Playing Non-Violent Video Games	42 (553)	46 (517)	78 (715)
Spending Time with Friends (no Video Games) ^b	300 (295)	360 (203)	606 (187)
Watching Videotapes	341 (254)	244 (319)	270 (523)
Watching Videotapes with Friends	20 (575)	19 (544)	49 (744)
Extracurricular Activities ^b	188 (407)	214 (349)	376 (417)

^a Violent media subsample: 2-5, 467; 6-8, 411; 9-12, 604.

^b These variables were used as dependent variables in Tobit analyses.

Table 6. Bivariate Correlations between Control Variables and Predicted Variables for 2-5 Year-olds

<i>Dependent Variables</i>	<i>Covariates</i>								
	Age	Parental Education	Income/Needs Ratio	Minority Status	Sex	Digit Span	HOME Score	Parental Warmth	Externalizing Problem Behaviors
Time Spent with Friends not Watching TV ^a	.12*	.12*	.03	-.12*	.00	.05	.04	.02	-.02
Time Spent with Friends not Playing Video Games ^a	.12*	.11#	.03	-.12*	.00	.05	.05	.04	-.01
Minutes of Extracurricular Activities ^a	.05	.12*	.14*	-.14**	.07	.18**	.15**	.02	-.10#
Number of Friends	.09#	-.02	-.06	.04	-.01	.05	.02	.06	-.03
Quality of Friendships	.11*	.17**	.16**	-.04	.07	.18*	.15	.09#	-.22***
Social Competence	-.09	.03	.11	-.11	.14	.01	.11	-.01	-.19**

Table continues

Table 6 continued

<i>Dependent Variables</i>	<i>Covariates</i>								
	Age	Parental Education	Income/Needs Ratio	Minority Status	Sex	Digit Span	HOME Score	Parental Warmth	Externalizing Problem Behaviors
Externalizing Problem Behaviors	-.13*	-.09#	-.18*	.01	.00	-.18**	-.14*	-.12#	--
Internalizing Problem Behaviors	.02	-.07	-.15**	.04	-.03	-.08	-.14#	-.15*	.59***
Positive Behaviors	.09#	-.07	.03	.06	.06	.04	.01	.15*	-.60***
Externalizing Problems (teacher)	-.06	-.02	-.06	-.04	-.22**	.03	-.06	.02	.22*
Internalizing Problems (teacher)	.20**	.00	-.08	-.06	.01	-.07	-.00	.04	.12

^aThese Variables were modified using a logarithmic transformation to achieve normality.

$p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

Table 7. Bivariate Correlations between Control Variables and Predicted Variables for 6-8 Year-olds

<i>Dependent Variables</i>	<i>Covariates</i>								
	Age	Parental Education	Income/Needs Ratio	Minority Status	Sex	Digit Span	HOME Score	Parental Warmth	Externalizing Problem Behaviors
Time Spent with Friends not Watching TV ^a	.07	.21**	.11*	-.13#	.07	.05	.20**	.03	-.04
Time Spent with Friends not Playing Video Games ^a	.07	.21**	.11*	-.13#	.07	.04	.20**	.02	-.03
Minutes of Extracurricular Activities ^a	.07	.30***	.27***	-.14*	.04	.19***	.30***	.01	-.14**
Child Participates in Extracurricular Activities (Y/N)	.14**	.42***	.35***	-.42***	.14*	.30***	.57***	.10#	-.17**
Number of Friends	-.09	-.01	-.07	.13	-.10	-.05	-.19*	.06	.11

Table continues

Table 7 continued

<i>Dependent Variables</i>	<i>Covariates</i>								
	Age	Parental Education	Income/Needs Ratio	Minority Status	Sex	Digit Span	HOME Score	Parental Warmth	Externalizing Problem Behaviors
Quality of Friendships	.08	.24***	.20**	-.17**	.11#	.09	.28***	.13*	-.23***
Social Competence	-.08	.17*	.09	-.04	.08	.11	.19**	.03	-.35***
Externalizing Problem Behaviors	-.00	-.10*	-.18***	.05	-.17**	-.09#	-.19**	-.11*	--
Internalizing Problem Behaviors	.11*	-.12#	-.11*	.02	-.02	-.04	-.07	-.08	.68***
Positive Behaviors	.06	-.10	.07	.07	.15**	.08	.06	.18**	-.61***
Externalizing Problems (teacher)	.08	-.12*	-.11#	.06	-.16*	-.08	-.18**	-.03	.40***
Internalizing Problems (teacher)	.10#	-.15*	-.18**	.01	-.07	-.16**	-.17*	.01	.39***

^aThese Variables were modified using a logarithmic transformation to achieve normality.

$p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

Table 8. Bivariate Correlations between Control Variables and Predicted Variables for 9-12 Year-olds

<i>Dependent Variables</i>	<i>Covariates</i>								
	Age	Parental Education	Income/Needs Ratio	Minority Status	Sex	Digit Span	HOME Score	Parental Warmth	Externalizing Problem Behaviors
Time Spent with Friends not Watching TV ^a	-.03	.17**	.07#	-.14**	.02	.12**	.11*	.04	-.04
Time Spent with Friends not Playing Video Games ^a	-.04	.17**	.07#	-.14**	.02	.12**	.12*	.04	-.03
Minutes of Extracurricular Activities ^a	.06	.18**	.16**	-.10*	-.05	.18***	.20***	.07	-.05
Child Participates in Extracurricular Activities (Y/N)	-.05	.27***	.17*	-.24***	-.10*	.14*	.42***	.19***	-.08
Number of Friends	.04	.04	-.04	.05	-.06	.01	-.05	-.02	-.05

Table continues

Table 8 continued

<i>Dependent Variables</i>	<i>Covariates</i>								
	Age	Parental Education	Income/Needs Ratio	Minority Status	Sex	Digit Span	HOME Score	Parental Warmth	Externalizing Problem Behaviors
Quality of Friendships	-.01	.05	.10**	-.06	.06	.07	.14**	.16**	-.27***
Social Competence	-.08	.10#	.01	-.07	.03	.19***	.14**	.02	-.22***
Externalizing Problem Behaviors	.07	-.05	-.07#	.04	-.13*	-.09#	-.11*	-.12#	--
Internalizing Problem Behaviors	.07	-.00	-.04	-.02	.03	-.08#	-.04	-.13#	.67***
Positive Behaviors	-.02	-.23***	-.08	.21***	.19***	.03	-.04	.20**	-.62***
Externalizing Problems (teacher)	.00	-.07	-.09	.25***	-.30***	-.10#	-.30***	-.10#	.40***
Internalizing Problems (teacher)	-.04	-.10#	-.08	.09	-.09	-.20***	-.12#	-.05#	.18*

^aThese Variables were modified using a logarithmic transformation to achieve normality.

$p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

behaviors will suffer. Diametrically opposed to the displacement hypothesis, the shared culture hypothesis predicts that media use will lead to more socialization, more successful social outcomes, and more developed social behaviors.

Tobit analyses were performed to estimate the relationship between media use (in the absence of peers) and the amount of time children spend with their friends (in all activities except the relevant media use). Television viewing and video game play were used as independent variables in different analyses. Results from these analyses are reported in Table 9.

The results consistently supported *the displacement hypothesis* and not *the shared culture hypothesis*—children’s television viewing was negatively related to their level of peer interactions. Although this finding was consistent across age groups, it only reached the level of a trend for the youngest children. Because these marginal findings were in the same direction as the significant findings, it is reasonable to consider they are important enough to interpret. Throughout this paper, when marginal findings are consistent in direction with significant findings, as they were in this case, they will be discussed.

Providing further support for the displacement hypothesis, the more time 6- to 8-year-old children spent playing video games, the less time they spent with their friends (see Table 10).

Moderators of the Displacement Hypothesis

Interaction terms were added as the second step of the higherarchical Tobit analyses. When the associated coefficients reached a significance level of .05 and the step significantly added to the model (as measured by a significant change in the X^2 statistic), the interactions were further explored for interpretative purposes.

Table 9. Summary of Tobit Analyses Using Television Viewing to Predict Time with Friends

	2-5 Year-olds		6-8 Year-olds		9-12 Year-olds	
	Time with Friends (no TV)		Time with Friends (no TV)		Time with Friends (no TV)	
	Coef.	SE	Coef.	SE	Coef.	SE
TV (no Friends) ^a	-.001#	.001	-.002*	.001	-.001#	.001
X^2 (10)	16.33#		17.98#		27.27**	
<i>Interaction Terms</i>						
TV X Ext. Probs.	.000	.000	.000	.000	.000	.000
TV X Par. Warmth	-.001	.002	-.001	.001	-.001	.001
TV X Digit Span	.000	.000	.000	.001	.000	.000
TV X Gender	.001	.001	.002	.001	-.001	.001
TV X Ethnicity	.003#	.001	-.001	.001	.002***	.001
X^2 (15)	27.19*		21.20		56.61***	
X^2 Change (5) ^b	10.86#		3.22		29.34***	

Note. These coefficients are based on Tobit analyses where each dependent variable was log transformed.

^a Coefficients in this row are taken from the model without the interaction block unless it significantly improved the model. ^b X^2 change refers to the increase in the predictive success of the model with the addition of the interaction block.

$p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

Table 10. Summary of Tobit Analyses Using Video Game Use to Predict Time with Friends

	2-5 Year-olds		6-8 Year-olds		9-12 Year-olds	
	Time with Friends (no VG)		Time with Friends (no VG)		Time with Friends (no VG)	
	Coef.	SE	Coef.	SE	Coef.	SE
Video Games (no Friends) ^a	-.001	.004	-.006*	.003	-.001	.004
<i>Interaction Terms</i>						
VG X Ext. Probs.	.001#	.001	-.000	.000	.000	.000
VG X Par. Warmth	-.007	.005	-.002	.002	-.001	.002
VG X Digit Span	.007*	.004	.003#	.002	.003**	.001
VG X Gender	.007	.010	-.001	.005	-.001	.002
VG X Ethnicity	-.008	.008	.006	.004	.002	.002
X^2 (15)	58.25***		35.19**		42.36***	
X^2 Change (5) ^b	44.14***		22.75***		17.03**	

Note. These coefficients are based on Tobit analyses where each dependent variable was log transformed.

^a Adding interaction terms significantly improved each model in this table. Therefore, all estimates are from the analyses that included interaction terms. ^b X^2 change refers to the increase in the predictive success of the model with the addition of the interaction block.

$p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

The relationship between television viewing and the amount of time children spend with their peers differed by their minority status for 2- to 5-year-olds and 9- to 12-year-olds (see Table 9). Among non-minority children, television viewing predicted less time with their friends. No relationship between these variables was found for the minority children (2-5 Minority, Tobit Coef. = .001 (.001), ns, $X^2 = 7.47$, ns; 2-5 Non-Minority, Tobit Coef. = -.002 (.001), $p < .01$; $X^2 = 20.36$, $p < .05$; 9-12 Minority, Tobit Coef. = .000 (.001), ns, $X^2 = 9.93$, ns; 9-12 Non-Minority, Tobit Coef. = -.002 (.000), $p < .01$; $X^2 = 36.50$, $p < .01$).

The interaction analyses revealed that, for both 2- to 5-year-olds and 9- to 12-year-olds, video game play was related to children's social time differently according to their level of cognitive ability (see Table 10). However, the direction of the interaction was different for these two age groups (see Table 11). Among 2- to 5-year-olds with lower cognitive ability, video game play is negatively related to peer interactions. Conversely, for the oldest children who had average or high levels of cognitive ability, video game play was negatively related to social time.

Media Use and Children's Social Outcomes and Social Behavior

Although they make opposite claims about direction, both the *displacement* and the *shared culture* hypotheses predict a relation between media use and multiple aspects of children's social lives. For most measures of social outcomes and behaviors, two-step higherarchical ordinary least square regressions were used to test for such a relation. The first step included the covariates and the measure of media use. The second step included the interaction terms. Similarly designed logistic regressions were used for analyses predicting the quality of children's peer relationships because this measure was dichotomous. The results support the displacement hypothesis (see Table 12).

Table 11. Summary of the Video Game by Digit Span Interaction Predicting Time with Friends

	2-5 Year-olds		9-12 Year-olds	
	Time with Friends (no VG)		Time with Friends (no VG)	
	Coef.	<i>SE</i>	Coef.	<i>SE</i>
Video Games at Lower Intelligence	-.011	.141	.001	.001
Video Games at Average Intelligence	.000	.004	-.002*	.001
Video Games at Higher Intelligence	.003	.003	-.005***	.001

Note. These coefficients are based on Tobit analyses where each dependent variable was log transformed.

* $p < .05$, *** $p < .001$

Table 12. Coefficients for Television Viewing Predicting Social Outcomes and Behaviors

<i>Dependent Variable</i>	2-5 Year-olds			6-8 Year-olds			9-12 Year-olds		
	Television Viewing			Television Viewing			Television Viewing		
	Coef.	<i>SE</i>	<i>R</i> ² / <i>X</i> ²	Coef.	<i>SE</i>	<i>R</i> ² / <i>X</i> ²	Coef.	<i>SE</i>	<i>R</i> ² / <i>X</i> ²
Number of Friends	.001	.002	.02	.002	.002	.08	-.001	.001	.02
Quality of Friendships ^b	.99#	.001	25.9**	.99**	.001	44.4**	1.00	.001	43.2**
Social Competence	-.000	.000	.12*	-.001#	.000	.20***	.000	.000	.10***
Externalizing Problem Behaviors	-.000	.002	.09***	.002	.002	.09***	.007*** ^a	.003	.07**
Internalizing Problem Behaviors	-.001	.001	.06	.003* ^a	.002	.07**	.000	.001	.04
Positive Behaviors	-.001	.002	.06**	-.007*** ^a	.002	.16***	-.005# ^a	.003	.18***
Externalizing Problems (teacher)	.000	.000	.07	.000	.000	.08**	-.000	.000	.19***
Internalizing Problems (teacher)	-.000	.000	.08*	.001*	.000	.13***	-.000	.000	.06**

^aThese coefficients come from the interaction block. ^bAnalyses of “Quality of Friendships” were logistic regressions. Coefficients are odds ratios, and the *X*² is provided. All other analyses were OLS regressions.

#*p*<.10, **p*<.05, ***p*<.01, ****p*<.001

Children's television use was negatively related to positive social behaviors and other measures of good social outcomes only sporadically, and primarily for children aged 6 to 8. For this age group, the more television they watched, the higher their level of internalizing problems at home and at school, and the greater their odds of having lower quality peer relationships. Among 9- to 12-year-olds, television viewing was related to more externalizing and fewer positive behaviors.

No main effects were found associating children's video game use to their social behaviors and social outcomes.

Moderators of the relationship between television use and social outcomes and behaviors

There was some evidence that for 6- to 8-year-olds and 9- to 12-year-olds the relationship between television viewing and social behaviors differed by certain child characteristics. For 6- to 8-year-old children with low or average scores on the digit span task, watching television was positively related to internalizing problem behaviors (see Table 13).

Also for 6- to 8-year-olds, television was related to their positive behaviors differently by their gender and cognitive abilities. For boys and for children with low levels of cognitive ability, television viewing was negatively related to positive behaviors (see Table 13).

Among 9- to 12-year-olds non-minority children, watching television was related to more externalizing problem behaviors and fewer positive behaviors (see Table 14).

The level of parental warmth that a child experiences also moderates the relationship between television viewing and positive behaviors for 9- to 12-year-olds.

Table 13. Summary of the Television Interactions that Predicted Social Behaviors for 6-8 Year-olds

	6-8 Year-olds			6-8 Year-olds			6-8 Year-olds			
	Internalizing Problem Behaviors			Positive Behaviors			Positive Behaviors			
	<i>B</i>	<i>SE</i>		<i>B</i>	<i>SE</i>		<i>B</i>	<i>SE</i>		
Television at Lower Intelligence	.004**	.001	Television for Boys	-.006**	.002	Television at Lower Intelligence	-.005*	.002		
Television at Average Intelligence	.002*	.001				Television at Average Intelligence			-.003	.002
Television at Higher Intelligence	.000	.001				Television at Higher Intelligence			-.003#	.002

$p < .10$, * $p < .05$, ** $p < .01$

Table 14. Summary of the Television Interactions that Predicted Social Behaviors for 9-12 Year-olds

9-12 Year-olds			9-12 Year-olds			9-12 Year-olds		
Externalizing Problem Behaviors			Positive Behaviors			Positive Behaviors		
	<i>B</i>	<i>SE</i>		<i>B</i>	<i>SE</i>		<i>B</i>	<i>SE</i>
Television for Minority Children	-.001	.002	Television for Minority Children	.002	.002	Television at Lower Parental Warmth	-.004*	.002
Television for Non-Minority Children	.004#	.002	Television for Non-Minority Children	-.002	.002	Television at Average Parental Warmth	-.002	.001
						Television at Higher Parental Warmth	.001	.001

$p < .10$, * $p < .05$

Among children with lower levels of parental warmth, television viewing was negatively related to positive behaviors (see Table 14).

Moderators of the relationship between video game play and social outcomes and behaviors

The only indication that video game play was related to children's social behaviors and outcomes became evident in the exploration of interaction effects. For 9- to 12-year-olds, both their cognitive abilities and their minority status determined the direction and size of the relationship between video game play and the number of friends these children have. Among minority children and children with low cognitive ability, video game play is negatively related to the size of their social circle (see Table 15). For non-minority children and those with more advanced cognitive abilities, video game play is positively related to the size of their social circle.

Summary of Displacement Results

Overall, the results of the analyses testing *the displacement hypotheses* support predictions made by this perspective. The amount of time that children spent watching television was related to less time spent in social interactions with their friends and, for some age groups worse social behaviors. For children in the 6 to 8 age group, video game play was also related to less social time. Table 16 summarizes all the results corresponding to *the displacement hypothesis*. The column marked "predicted direction" in this table indicates with a check if the main effect supports the hypothesis; an "X" indicates a significant main effect in the direction counter to the hypothesis.

Table 15. Summary of the Video Game Interactions that Predicted Children's Number of Friends for 9-12 Year-olds

	9-12 Year-olds		9-12 Year-olds		
	Number of Friends		Number of Friends		
	Coef	SE	Coef	SE	
Video Games at Lower Intelligence	-.005	.003	Video Games for Minority Children	-.007#	.004
Video Games at Average Intelligence	-.000	.002	Video Games for Non-Minority Children	.002	.002
Video Games at Higher Intelligence	.004	.004			

$p < .10$

Table 16. Summary of Results for the Displacement Hypothesis

Predictor Variable	Outcome	Age Group	Main Effect	Predicted direction	Moderators
Time watching TV	Time with Friends	2-5	(-)	P	(-) Non Minorities
		6-8	(-)	P	
		9-12	(-)	P	(-) Non Minorities
Time playing video games	Time with Friends	2-5	ns		(-) Lower IQ
		6-8	(-)	P	
		9-12	ns		(-) Higher IQ
Time watching TV	Quality of Friendships	2-5	(-#)	P	
		6-8	(-#)	P	
	Social Competence	6-8	(-#)	P	
		Externalizing	9-12	(+)	P
	Internalizing	6-8	(-)	X	(+) Lower IQ
		6-8	(-)	P	(-) Boys, (-) Lower or Higher IQ
	Positive Behaviors	9-12	(-#)	P	(-) Non Minorities, (-) Lower Parental Warmth
	Internalizing (school)	6-8	(+)	P	
Time playing video games	Number of Friends	9-12	(ns)		(-) Minority, (-) Lower IQ

EVALUATING THE VIOLENT MEDIA HYPOTHESIS

Violent Media Use and Children's Social Time

The violent media hypothesis predicts that children's exposure to violent media drives the negative relationship between television use and their contact with peers. Using the television content sample and employing Tobit regressions, a model was constructed where exposure to violent and non-violent media were both used as predictors of the amount of time children spend with friends.

Violent and non-violent television

For the analyses considering television viewing, violent television exposure was found to predict lower levels of peer time. There was no evidence that non-violent television viewing was related to the amount of time children spend with their peers (see Table 17). This finding was consistent across the three age groups.

Moderators of the relationship between violent television use and social time

No interaction terms significantly predicted children's time with their friends. This main effect was consistent for children regardless of their ethnicity, gender, parental warmth, intelligence, and negative behaviors.

Violent and non-violent video games and social time

Fewer than 10% of the 2- to 5-year-olds in the sample played violent video games. Therefore, all analyses for this content were performed using children 6 and older. When video game play was separated into violent and non-violent content, neither content category predicted children's social time for either of the age-groups. Furthermore, no interactions were found, indicating that violent game play is unrelated to peer interactions regardless of children and family characteristics.

Table 17. Summary of Tobit Analyses Using Violent and Non-Violent Television Viewing to Predict Time with Friends

	2-5 Year-olds		6-8 Year-olds		9-12 Year-olds	
	Time with Friends (no TV)		Time with Friends (no TV)		Time with Friends (no TV)	
	Coef.	SE	Coef.	SE	Coef.	SE
Violent Television (no Friends) ^a	-.003*	.002	-.003**	.001	-.001*	.000
Non-Violent Television (no Friends) ^a	-.001	.001	-.000	.001	-.000	.001
χ^2 (11)	27.73**		18.23#		22.62**	

Note. These coefficients are based on Tobit analyses where each dependent variable was log transformed.

^a The addition of interaction terms to the model did not improve it for any age group. Therefore, these coefficients were estimated using the first block of the model.

#p<.10, *p<.05, **p<.01

Table 18. Coefficients for Violent and Non-Violent Television Use Predicting Social Outcomes and Behaviors

<i>Dependent Variable</i>		2-5 Year-olds			6-8 Year-olds			9-12 Year-olds		
		Coef.	SE	R^2/X^2	Coef.	SE	R^2/X^2	Coef.	SE	R^2/X^2
Number of Friends	Violent TV	-.000	.005	.03#	.006	.004	.11	.003	.002	.02
	Non-Vio TV	-.004	.003		.004	.005		-.002	.002	
Quality of Friendships ^b	Violent TV	.999	.002	25.68*	.999	.002	33.66*	1.002*	.001	35.25*
	Non-Vio TV	.998	.001		.996**	.001		1.000	.001	
Social Competence	Violent TV	.001 ^a	.001	.15*	-.001*	.000	.20***	-.000	.000	.16***
	Non-Vio TV	-.001 ^a	.001		-.000	.000		.001#	.000	
Externalizing Problem Behaviors	Violent TV	.007#	.004	.12***	.018*** ^a	.006	.13***	.009 ^a	.006	.06***
	Non-Vio TV	.002	.003		.002 ^a	.003		.003 ^a	.003	
Internalizing Problem Behaviors	Violent TV	.001	.002	.07	.009* ^a	.004	.08***	.004 ^a	.003	.08***
	Non-Vio TV	.001	.002		.001 ^a	.002		.001 ^a	.002	
Positive Behaviors	Violent TV	-.006#	.003	.07*	-.015*** ^a	.005	.13***	-.006 ^a	.006	.18***
	Non-Vio TV	-.002	.003		-.002 ^a	.003		-.000 ^a	.002	

Table continues

Table 18 continued

<i>Dependent Variable</i>		2-5 Year-olds			6-8 Year-olds			9-12 Year-olds		
		Coef	SE	R^2/X^2	Coef	SE	R^2/X^2	Coef	SE	R^2/X^2
Externalizing Problems (teacher)	Violent TV	-.000	.000		.001* ^a	.000		-.000 ^a	.000	
	Non-Vio TV	-.001	.001	.18*	.000 ^a	.000	.11***	.000 ^a	.000	23***
Internalizing Problems (teacher)	Violent TV	-.001*	.000		-.002* ^a	.001		.000	.000	
	Non-Vio TV	.000	.000	.09#	.000 ^a	.000	.16***	-.000	.000	.07*

^aThese coefficients as well as the corresponding *SE* and R^2 come from the interaction block. ^bThese values are from logistic regressions and indicate odds ratios and X^2 values respectively.

$p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

Violent Media and Social Behaviors and Outcomes

Violent television

For 6- to 8-year-olds violent, but not non-violent, television exposure predicted worse social behaviors and outcomes. For these children, watching violent television was related to lower levels of social competence and positive behaviors, and high levels of externalizing problem behaviors, internalizing problem behaviors, and school-based externalizing problem behaviors (see Table 18).

Although there is some evidence that violent television use is related to poor social behaviors for younger children, it is less consistent and often based on trends. For 2- to 5-year-olds, the more violent television they view the more externalizing problem behaviors, less positive behaviors, and more school-based internalizing behaviors they exhibit.

Two findings from these analyses contradict *the violent media hypothesis*: violent television viewing was related to a higher quality of friendships (for 9-12 year-olds) and non-violent television viewing was related to a lower quality of friendships (for 6-8 year-olds). Considering the overall, more consistent findings that relate violent television to negative outcomes, these findings may be discountable.

Moderators of the relationship between violent television use and social behaviors

For 6- to 8-year-olds and 9- to 12-year-olds, a number of variables were found to interact with violent television in the prediction of the various social behaviors and outcomes (see Tables 19 and 20). In an attempt to explore which of these findings were most consistent, only the independent variables that repeatedly interacted with violent television and where the interaction block significantly added to the predictive strength of the model were interpreted.

Table 19. Summary of Interactions with Violent Television Predicting Social Behaviors and Outcomes for 6- to 8-Year-olds.

<i>Dependent Variable</i>		6-8 Year-olds			<i>B of Violent Television</i>
		<i>B</i>	<i>SE</i>	<i>r</i> <i>R</i> ²	
Number of Friends	Violent TV X Parental Warmth	.015*	.006	.05*	
	Violent TV X Externalizing	.002*	.001		
Externalizing Problem Behaviors	Violent TV X Gender	-.022**	.008	.03*	For Boys
					For Girls
Internalizing Problem Behaviors	Violent TV X Parental Warmth	-.007*	.003	.03*	
Positive Behaviors	Violent TV X Gender	.022**	.007	.03*	For Boys
					For Girls
Externalizing Problems (teacher)	Violent TV X Minority Status	-.001*	.000	.03*	
Internalizing Problems (teacher)	Violent TV X Gender	-.002**	.001	.06*	For Boys
					For Girls

* $p < .05$, ** $p < .01$

Table 20. Summary of Interactions with Violent Television Predicting Social Behaviors and Outcomes for 9- to 12-Year-olds.

<i>Dependent Variable</i>		9-12 Year-olds			<i>B</i> of violent television	
		<i>B</i>	<i>SE</i>	<i>r</i> <i>R</i> ²		
Externalizing Problem Behaviors	Violent TV X Minority Status	-.014*	.005	.03*	For White	.006
					For Non-White	-.008*
Internalizing Problem Behaviors	Violent TV X Minority Status	-.009*	.004	.02*	For White	.004
					For Non-White	-.004*
Positive Behaviors	Violent TV X Minority Status	.011	.005	.02*	For White	-.004
					For Non-White	.003
	Violent TV X Parental Warmth	-.006**	.002			
Externalizing Problems (teacher)	Violent TV X Parental Warmth	.001*	.000	.01		

* $p < .05$, ** $p < .01$

Considering 6- to 8-year-olds, only their gender met these requirements. Analyses were run separately for boys and girls using violent television and the control variables as predictors of children's externalizing behaviors, positive behaviors, and school based internalizing behaviors (see Table 19). For each analysis, violent television viewing was related to worse social behaviors for boys but not girls.

For 9- to 12-year-olds, children's minority status acted as a consistent moderator of violent television's relationship with a number of social behaviors (see Table 20). Analyses were performed separately for minority and non-minority children. For non-minority children, violent television viewing predicted poorer social behaviors. On the other hand, violent television exposure predicted fewer problem behaviors and more positive behaviors for minority children.

Violent video games

The relationship between violent and non-violent video games and social behaviors and outcomes is much less clear than the results for television. When violent and non-violent games were separated, there was some limited evidence that both types of content lead to better social outcomes (see Table 21). Children in the 2 to 5 age group were removed from these analyses because less than 10% of them played violent video games.

For 6- to 8-year-olds, violent video game play predicts of higher levels of social competence. Among 9- to 12-year-olds, violent game play is related to lower levels of school-based externalizing behaviors. Non-violent game play was shown for to indicate fewer externalizing and internalizing behaviors for 6- to 8-year-olds and more positive behaviors for 9- to 12-year-olds.

Table 21. Coefficients for Violent and Non-Violent Video Game Play Predicting Social Outcomes and Behaviors

<i>Dependent Variable</i>		6-8 Year-olds			9-12 Year-olds		
		Coef	SE	R ² /X ²	Coef	SE	R ² /X ²
Number of Friends	Violent VG	-.001 ^a	.005	.11***	-.003 ^a	.007	.07***
	Non-Vio VG	-.013# ^a	.007		-.000 ^a	.005	
Quality of Friendships ^b	Violent VG	1.001	.001	38.8**	1.001	.002	49.4**
	Non-Vio VG	1.000	.005		.996	.003	
Social Competence	Violent VG	.003*** ^a	.001	.21***	-.001	.001	.11***
	Non-Vio VG	-.001 ^a	.002		.002	.001	
Externalizing Problem Behaviors	Violent VG	.002	.004	.09***	.008	.009	.06**
	Non-Vio VG	-.019#	.011		-.002	.005	
Internalizing Problem Behaviors	Violent VG	.001	.001	.04*	.003	.005	.04
	Non-Vio VG	-.010*	.005		.000	.002	
Positive Behaviors	Violent VG	.009 ^a	.010	.15***	.002 ^a	.007	.17***
	Non-Vio VG	.016 ^a	.011		.008* ^a	.003	

Table continues

Table 21 continued

<i>Dependent Variable</i>		6-8 Year-olds			9-12 Year-olds		
		Coef	SE	R^2/X^2	Coef	SE	R^2/X^2
Externalizing	Violent VG	-.001 ^a	.001		-.001* ^a	.000	
Problems (teacher)	Non-Vio VG	.001 ^a	.001	.09***	-.000 ^a	.001	.21***
Internalizing	Violent VG	-.000	.001		.000	.000	
Problems (teacher)	Non-Vio VG	.000	.001	.09***	.000	.000	.06**

^aThese coefficients as well as the corresponding SE and R^2 come from the interaction block. ^bThese values are from logistic regressions and indicate odds ratios and X^2 values respectively.

$p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

Moderators of the relationship between violent video game play and social behaviors

Moderator effects were also examined for violent video game play. Parental warmth and children's intelligence were the most consistent moderators of violent video game play on 6- to 8-year-olds' social behaviors (see Table 22). For children experiencing high or low levels of parental warmth, violent video game play was related to fewer positive behaviors. For children with low or average levels of parental warmth, exposure to violent video games was related to having fewer friends.

Considering intelligence for 6- to 8-year-olds, the lower their score on the digit span test, the stronger the relationship between violent video game play and fewer positive behaviors (see Table 22). Conversely, the higher children's intelligence, the stronger the relationship between violent video game play and more social competence.

Analyses of variables moderating the relationship between violent video games and social behaviors produced the most consistent results for 9- to 12-year-olds. For children in this age group with low scores on the digit span task, exposure to violent video games was related to more externalizing problem behaviors and fewer positive behaviors (see Table 23). Boys and girls in this age group also differed in how violent video games are related to social behaviors. For girls, this type of play predicted more externalizing problem behaviors at both home and school. This was not true for boys.

Table 22. Summary of Interactions with Violent Video Games Predicting Social Behaviors and Outcomes for 6-8 Year-olds

<i>Dependent Variable</i>	6-8 Year-olds				<i>B of Violent Video Games</i>	
	<i>B</i>	<i>SE</i>	<i>r</i>	<i>R</i> ²		
Number of Friends	Violent VG X				Higher Warmth	.000
	Parental Warmth	-.017*	.007		Average Warmth	-.006
					Lower Warmth	-.001
				.03*		
	Violent VG X Externalizing	-.001*	.000			
Social Competence	Violent VG X				Higher IQ	.004*
	IQ	-.002*	.001	.03*	Average IQ	.002#
					Lower IQ	.000
Positive Behaviors	Violent VG X				Higher IQ	-.001
	IQ	-.015*	.007		Average IQ	-.004
				.02*	Lower IQ	-.006
	Violent VG X				Higher Warmth	-.019*
	Parental Warmth	.014	.007		Average Warmth	.003
				Lower Warmth	-.014*	

#*p*<.10, **p*<.05

Table 23. Summary of Interactions with Violent Video Games Predicting Social Behaviors and Outcomes for 9-12 Year-olds.

<i>Dependent Variable</i>		9-12 Year-olds			<i>B of Violent Video Games</i>	
		<i>B</i>	<i>SE</i>	<i>r R²</i>		
Number of Friends	Violent VG X Parental Warmth	-.030*	.014	.04*		
Externalizing Problem Behaviors	Violent VG X IQ	.014**	.006	.02*	Higher IQ	-.003
					Average IQ	.008
					Lower IQ	.019#
	Violent VG X Gender	.030*	.015		For Boys	.002
				For Girls	.030*	
Positive Behaviors	Violent VG X IQ	-.010*	.005	.02*	Higher IQ	.003
					Average IQ	-.005
					Lower IQ	-.012#
Externalizing Problems (teacher)	Violent VG X Gender	.002**	.001	.03*	For Boys	-.001
					For Girls	.001

$p < .10$, * $p < .05$

Summary of the Violent Media Analyses

Overall, violent television, but not non-violent television, predicted worse social outcomes. Watching violent television was linked to less social time with friends for all age groups and worse social behaviors for 6-8 year olds. Results for violent video game plays were inconclusive. Significant findings indicated that violent game play was related to higher levels of social competence and lower levels of externalizing behaviors for some children. The video games findings do not appear consistent enough to draw reliable conclusions. The results corresponding to *the violent media hypothesis* are summarized in Table 24.

TESTING THE MARGINAL/FRINGE HYPOTHESIS

As opposed to children's free time activities, their extracurricular or structured social activities may have a different relationship to their media use. *The marginal/fringe hypothesis* predicts that children's media use will displace unstructured social activities but not structured or organized activities. The extent of children's participation in structured social activities was determined by adding their reported time spent in each of the activities listed in Appendix D. Tobit regressions were used to test the relationship between children's media use and the amount of time they spent in extracurricular activities.

The results reported in Table 25 are in direct opposition to the predictions of *the marginal/fringe hypothesis*. They show that the more television a child viewed, the less likely it was that he or she spent any time in extracurricular activities. No evidence was found that video game play is related to children's extracurricular activities.

Table 24. Summary of Results for the Violent Media Hypothesis

Predictor Variable	Outcome	Age Group	Main Effect	Predicted Direction	Moderators
Time watching violent TV	Time with Friends	2-5	(-)	P	
		6-8	(-)	P	
		9-12	(-)	P	
	Quality of Friendships	9-12	(+)	X	
	Social Competence	6-8	(-)	P	
	Externalizing	6-8	(+)	P	
	Internalizing	6-8	(+)	P	(+) Boys
	Positive Behaviors	2-5	(-#)	P	
		6-8	(-)	P	(-) Boys
		9-12	ns		(-) Non-minority
	Externalizing (school)	6-8	(+)	P	
		9-12	ns		(-) Minority
	Internalizing (school)	6-8	(+)	P	(-) Boys
		9-12	ns		(-) Minority
	Time playing violent video games	Number of friends	6-8	ns	
6-8			(+)	X	(+) Higher IQ
Externalizing		9-12	ns		(+) Lower IQ (+) Girls
Positive Behavior		6-8	ns		(-) Lower IQ (-) Higher or Lower Parental Warmth
		9-12	ns		(-) Lower IQ
Externalizing (at school)		9-12	(-)	X	(+) Girls

Table 25. Coefficients from Tobit and Logistic Regressions for Television Use Predicting Extracurricular Activities

	2-5 Year-olds		6-8 Year-olds		9-12 Year-olds	
	Time in Extracurricular Activities		Time in Extracurricular Activities		Time in Extracurricular Activities	
	Coef.	SE	Coef.	SE	Coef.	SE
Television ^{a,b}	-.002#	.001	-.003***	.001	-.002**	.001
X^2 (10)	39.16***		80.07***		56.85***	
			Does Child Participate in Extracurricular Activities?		Does Child Participate in Extracurricular Activities?	
			Odds Ratio	SE	Odds Ratio	SE
Television ^{a,c}			.998*	.001	1.00	.001
X^2 (10)			114.54***		80.10***	

^aThe addition of interaction terms to the model did not improve it for any age group. Therefore, these coefficients were estimated using the first block of the model. ^bCoefficients in this row are based on Tobit analyses where each dependent variable was log transformed. ^cThese coefficients are from logistic regressions predicting parental report of child participating in any extracurricular activity. The question was not asked for children under 6.

$p < .10$, ** $p < .01$, *** $p < .001$

Moderators of Media Use's Relations to Extracurricular Activities

To test if family or child characteristics moderate the relationship between media use and children's extracurricular activities, interaction terms were entered into the models. When television was the medium in questions, these terms did not improve the predictive ability of the model.

Among both 2- to 5- and 9- to 12-year-olds, children's externalizing behaviors moderated the relationship between video game play and participation in structured social activities (see Table 26). For children with low or high levels of externalizing behaviors, video game play predicted more time spent in structured social activities. Children at the mean level of problem behaviors showed a small, negative relationship between these variables (see Table 27).

Parental Response of Children's Extracurricular Activities

Logistic regression was used to perform a second test of the relationship between children's media use and their extracurricular activities. As previously described, each primary care giver of children over 5-years old was asked if their child participated in any extracurricular activities. Among 6- to 8-year-olds, the more television they viewed the less likely they were to participate in extracurricular activities (see Table 25). This finding's effect size is very small (odds ratio = .99) because television viewing is measured in minutes. For each minute decrease in television viewed, the odds of participating in extracurricular activities increase by a very small amount. However, for every hour of television viewed, a 6- to 8-year-olds odds of participating in extracurricular activities decrease by 11% ($1/.998 = 1.002$, $1.002^{60} = 1.13$, $1/1.13 = .885$, $.998 - .885 = .11$).

Table 26. Summary of Tobit Analyses Using Video Game Play to Predict Extracurricular Activity Participation

	2-5 Year-olds		6-8 Year-olds		9-12 Year-olds	
	Time in Extracurricular Activities		Time in Extracurricular Activities		Time in Extracurricular Activities	
	Coef.	SE	Coef.	SE	Coef.	SE
Video Game Play ^a	-.001	.004	-.002	.002	-.002	.002
X^2 (10)	35.93**		68.09***		46.52***	
<i>Interaction Terms</i>						
VG X Ext. Probs.	-.002*	.001	.000	.000	-.001*	.000
VG X Par. Warmth	.004	.005	-.002	.002	-.005**	.002
VG X Digit Span	-.005	.003	.002	.002	.002#	.001
VG X Gender	.003	.007	-.000	.005	-.001	.003
VG X Ethnicity	-.002	.007	-.004	.004	-.001	.002
X^2 (15)	53.51***		79.14***		74.55***	
X^2 Change (5)	17.58***		11.05		28.03***	

Note. These coefficients are based on Tobit analyses where each dependent variable was log transformed.

^a Coefficients in this row are taken from the model without the interaction block unless it significantly improved the model.

$p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

Table 27. Summary of the Video Game by Digit Span Interaction Predicting Extracurricular Activities

	2-5 Year-olds		9-12 Year-olds	
	Extracurricular Time		Extracurricular Time	
	Coef.	SE	Coef.	SE
Video Games at Lower Externalizing	.022#	.013	.007#	.004
Video Games at Average Externalizing	-.002	.002	-.001	.001
Video Games at Higher Externalizing	.037#	.021	.012#	.007

Note. These coefficients are based on Tobit analyses where the dependent variable was log transformed.

$p < .10$

Results from similar analyses using video game play as the independent variable of interest found no relationships. Moreover, the addition of the interaction terms did not significantly improve the model for any age group in the television or video game analyses.

Summary of Marginal/Fringe Analyses

The significant findings resulting from tests of *the marginal/fringe hypothesis* were counter to those predicted. The time that children spent watching television was negatively related to the amount of time they spent in structured social activities. Furthermore, for 6- to 8-year-olds, spending time watching television decreased the likelihood that a child participates in any extracurricular activities. A summary of these results is provided in Table 28.

TESTING THE SHARED MEDIA HYPOTHESIS

Social Media Use Differences by Age Group

To explore age differences in children's social use of media, three one-way ANOVAs were performed comparing across the three age groups the percent of time with television, video games, and videotapes that occurred in the presence of friends. Each of the three analyses found significant differences among the groups; television, $F(2, 1853) = 9.21, p < .001$; video games, $F(2, 897) = 19.93, p < .001$; videotapes, $F(2, 655) = 5.52, p < .01$. Post hoc tests revealed that 9-12 year-olds spent a higher percentage of all three media with their peers than did the other two age groups (Table 29).

Less than 10% of 2- to 5- and 6- to 8-year-olds played video games with their friends. These age groups, therefore, were not included in the analyses concerning the social context of video game play. Additionally, very few children from any age

Table 28. Summary of Results for the Marginal/Fringe Hypothesis.

Predictor Variable	Outcome	Age Group	Main Effect	Predicted Direction	Moderators
Time watching TV	Time in structured social events	2-5	(-)	X	
		6-8	(-)	X	
		9-12	(-)	X	
Time watching TV	Ever participate in extracurricular activity	6-8	(-)	X	
Time playing video games	Time in structured social events	2-5	ns		(+) Lower or Higher Externalizing
		9-12	ns		(+) Lower or Higher Externalizing

Table 29. Percent of Each Medium that Occurred in the Presence of Friends

Dependent Variable	Mean percent of media used with friends		
	2-5	6-8	9-12
Television	3.3% _a (12.7%)	3.9% _b (13.1%)	6.4% _{ab} (17.3%)
Video Tapes	4.0% _a (17.4%)	5.7% _b (21.1%)	14.0% _{ab} (31.9%)
Video Games	9.2% _a (26.7%)	12.5% _b (30.2%)	18.8% _{ab} (35.6%)

Note: Values within rows sharing the same subscript differ at $p < .05$ in the Tukey honesty significant difference comparison.

group watched videotapes with their friends. While analyses were planned to explore the relations between social videotape viewing and outcomes, the small number of children who participated in this activity made such analyses unreliable. Therefore, they were not performed.

Social-Time Outcomes Related to Media Time Spent with Peer

The *social media hypothesis* predicts that the more time children spend using media with their peers the more time they will spend with their peers in other activities. Tobit regressions were used to test this hypothesis for all children. The results presented in Tables 30 and 31 support this hypothesis. These results were consistent across all age groups and for television.

Moderators of the relationship between social media time and time with friends

The results of the interaction analyses for television viewing showed no consistency across age groups. Therefore, only the interactions for the 9- to 12-year-olds were interpreted. For these children, the relationship between the amounts of time they spend watching television with their friends and other time they spend with their friends differed according to their parent's level of warmth and their own intelligence. Coviewing television with friends is positively related to other social time with friends regardless of the level of parental warmth children experience or their cognitive abilities. However, this relationship is strongest for children with high levels of parental warmth or high scores on the digit span task (see Table 32).

Older children's external behavior problems also moderated the relationship between social video game play and other peer-oriented social time. For those with the highest or lowest levels of externalizing behavior problems, using video games with friends was negatively related to other time they spend with their friends (see

Table 30. Summary of Tobit Analyses Using Television Viewing with Friends to Predict Time with Friends

	2-5 Year-olds		6-8 Year-olds		9-12 Year-olds	
	Time with Friends (no TV)		Time with Friends (no TV)		Time with Friends (no TV)	
	Coef.	SE	Coef.	SE	Coef.	SE
TV With Friends ^a	.018***	.004	.008***	.001	.007***	.001
X^2 (10)	61.69***		57.66***		38.89***	
<i>Interaction Terms</i>						
<i>TV with Friends X...</i>						
Ext. Probs.	.000	.000	-.000	.000	.000	.000
Par. Warmth	-.013#	.008	-.001	.002	-.003*	.001
Digit Span	-.002	.003	-.001	.001	-.001*	.001
Gender	-.001	.004	-.001	.002	-.002	.001
Ethnicity	.002	.004	.001	.002	-.001	.001
X^2 (15)	76.51***		72.40***		111.95***	
X^2 Change (5)	14.82*		14.74*		73.06***	

Note. These coefficients are based on Tobit analyses where each dependent variable was log transformed.

^a Adding interaction terms significantly improved each model in this table. Therefore, all estimates are from the analyses that included interaction terms.

#p<.10, *p<.05, ***p<.001

Table 31. Summary of Tobit Analyses Using Video Game Play with Friends to Predict Time with Friends

9-12 Year-olds		
Time with Friends (no VG)		
	Coef.	SE
VG With Friends ^a	.004*	.001
X^2 (10)	24.00**	
<i>Interaction Terms</i>		
<i>VG with Friends X...</i>		
Ext. Probs.	.001**	.000
Par. Warmth	-.001	.001
Digit Span	-.001	.001
Gender	.003	.002
Ethnicity	-.001	.002
X^2 (15)	72.61***	
X^2 Change (5)	48.61***	

Note. These coefficients are based on Tobit analyses where each dependent variable was log transformed.

^a Adding interaction terms significantly improved the model. Therefore, all estimates are from the analyses that included interaction terms.

* $p < .05$, ** $p < .01$, *** $p < .001$

Table 32. Summary of Interactions with Television with Friends Predicting Other Time with Friends

	9-12 Year-olds			9-12 Year-olds			9-12 Year-olds	
	Time with Friends (no TV)			Time with Friends (no TV)			Time with Friends (no VG)	
	Coef	SE		Coef	SE		Coef	SE
TV with friends at lower Parental Warmth	.002**	.001	TV with friends at lower IQ	.003**	.001	VG with friends at lower externalizing	-.003	.003
TV with friends at average Parental Warmth	.005***	.001	TV with friends at average IQ	.004***	.001	VG with friends at average externalizing	.004***	.001
TV with friends at higher Parental Warmth	.007***	.001	TV with friends at higher IQ	.004**	.001	VG with friends at higher externalizing	-.008#	.004

Note. These coefficients are based on Tobit analyses where the dependent variable was log transformed.

$p < .10$, ** $p < .01$, *** $p < .001$

Table 32). For children with average levels of externalizing behavior problems, co-playing video games with friends was positively related to other social time.

Social Outcomes and Social Behaviors Related to Media Time Spent with Peers

Spending time using media with peers may positively influence children's social behaviors and various social outcomes. A series of regressions was performed using media use with friends to predict children's social behaviors and outcomes. Because younger children spent such a small amount of time using media with friends, these analyses were only performed for the 9- to 12-year-olds in the sample.

Watching television with friends

There was limited evidence that among 9- to 12-year-olds watching television with friends is related to better social adjustment. The more time these children spent viewing television with friends, the lower their school-based internalizing behavior problems score ($B = -.001$, $SE = .000$, $p < .05$; $R^2 = .07$, $p < .01$). The interaction analyses showed that this relation differed by gender ($B = .001$, $SE = .000$, $p < .05$; $r R^2 = .02$, $p < .05$). For boys, watching television with friends predicted fewer internalizing problems ($B = -.001$, $SE = .000$, $p < .05$). For girls, this type of social media use predicted more internalizing problems at school ($B = .001$, $SE = .000$, $p < .05$).

Playing video games with friends

There was no evidence that among 9- to 12-year-olds playing video games with peers is related to increases or decreases in social behaviors and outcomes. No significant main effects or interaction effects were found to indicate that these variables are related.

Social-Time Outcomes Related to Media Time Spent with Siblings

It is possible that children learn social skills from media-based interactions with their siblings that translate into more successful peer relationships. This hypothesis was tested using a Tobit regression to estimate the relationship between children's coviewing of television and videotapes or coplaying of video games with their siblings and the amount of time they spend with their friends. Since children from each age group experienced this type of media use, the entire sample was included in these analyses.

Overall, the results did not support the hypothesis. No evidence was found that for 2- to 5-year-olds or 6- to 8-year-olds television, video games, or videotapes used with siblings was related to the amount of time children spend with their friends. For 9-12-year-olds, the results were counter to those predicted by the hypothesis; as media use in the presence of siblings increased, the amount of time they spent with peers decreased. This was true for both television viewing (Tobit Coef. = $-.002$, $SE = .001$, $p < .05$; $X^2 = 33.99$, $p < .01$) and video game play (Tobit Coef. = $-.001$, $SE = .001$, $p < .10$; $X^2 = 21.13$, $p < .05$), but no effect was found for videotape viewing with siblings.

Moderators of the relationship between media time shared with siblings and time with friends

Exploring potential moderators of this relationship revealed that for 9- to 12-year-olds, their minority status determined how viewing television with siblings was related to their peer-oriented social time. For non-minority children, television viewing with siblings was related to less time with peers (Tobit Coef. = $-.002$, $SE = .001$, $p < .01$). For minority children, this relationship was not found (Tobit Coef. = $.000$, $SE = .001$, *ns*).

Social outcomes and social behaviors related to media time spent with siblings

Children may learn social behaviors by sharing media experiences with their siblings. The evidence from regressions testing this hypothesis, however, shows that using media with siblings is related to negative social behaviors, not the positive ones predicted by *the shared media hypothesis*. This finding was only evident among 6-8 year-olds for television viewing (Internalizing behaviors: $B = .003$, $SE = .001$, $p < .01$, $R^2 = .06$, $p < .01$; Internalizing behavior at school: $B = .001$, $SE = .000$, $p < .05$, $R^2 = .11$, $p < .001$) and videotape viewing (Internalizing behaviors: $B = .004$, $SE = .002$, $p < .05$, $R^2 = .05$, $p < .01$; Positive behaviors: $B = -.009$, $SE = .003$, $p < .01$, $R^2 = .13$, $p < .001$).

Moderators of the relationship between media time shared with siblings and social behaviors

While a number of variables moderated the relationship between the amount of media children use with their siblings and their social behaviors and outcomes, none did so with any level of consistency within medium type. Therefore, patterns of interactions were explored across medium. Because no interactions were found for video game play with siblings for any age group, only television and videotape viewing with siblings was considered.

For 2- to 5-year-olds, the relation between television or videotape viewing with siblings and the child's social competence is different for boys and girls (see Table 33). Among girls, watching either standard television or videotapes with their siblings is related to lower levels of social competence. This was not true for boys.

Children's intelligence was the only variable to interact with sibling-shared media use in the prediction of more than one social behavior or outcome among 6- to 8-year-olds (see Table 34). For children with low or average intelligence scores,

Table 33. Summary of Interactions with Media Use with Siblings Predicting Social Behaviors and Outcomes for 2-5 Year-olds

<i>Dependent Variable</i>		2-5 Year-olds			<i>B of Media Use with Sibling</i>	
		<i>B</i>	<i>SE</i>	<i>r R</i> ²		
Social Competence	Television with Siblings X Gender	-.002*	.001	.04*	For Boys	-.000
	For Girls				-.002*	
Social Competence	Videotapes with Siblings X Gender	-.004**	.001	.06**	For Boys	-.000
	For Girls				-.005***	
Quality of Friendships	Television with Siblings X Minority Status	-.001*	.000	.03*		

#*p*<.10, * *p*<.05, ***p*<.01, ****p*<.001

Table 34. Summary of Interactions with Media Use with Siblings Predicting Social Behaviors and Outcomes for 6-8 Year-olds

<i>Dependent Variable</i>		6-8 Year-olds				<i>B</i> of Media Use with Sibling	
		<i>B</i>	<i>SE</i>	<i>r</i>	<i>R</i> ²		
Number of Friends	Videotapes with Siblings X Intelligence	.009*	.004	.02*	Low IQ	.016#	
					Mean IQ	.007	
					High IQ	-.002	
Externalizing Behavior Problems	Videotapes with Siblings X Intelligence	.009*	.004	.02*	Low IQ	.020***	
					Mean IQ	.011**	
					High IQ	.002	
Positive Behaviors	Television with Siblings X Gender	.008**	.003	.02*			
Social Competence	Videotapes with Siblings X Minority Status	-.003*	.001	.03*			

$p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

watching videotapes with siblings was related with more externalizing behavior problems. Contrary to this finding, the more time 6- to 8-year-olds with low intelligence watched videotapes with their siblings, the more friends they have.

Among 9- to 12-year-olds, their parents' warmth and their minority status moderate the relation between sibling-shared videotape viewing and their social behaviors and outcomes (see Table 35). Unexpectedly, children with low and high levels of parental warmth appear similar to each other and different from children with a mean level of warmth. For children at both end of the range of parental warmth, watching television with their siblings makes them less likely to have high quality friendships. Furthermore, for both of these groups, sibling-shared videotape viewing is related to higher levels of positive behaviors and fewer internalizing behavior problems exhibited at school.

Co-viewing videotapes with siblings may lead to different outcomes for children dependent upon their minority status. The more minority students participated in this activity, the fewer externalizing problem behaviors they showed at home and school. Conversely, peer-shared viewing was related to more problem behaviors at home for non-minority children (see Table 35).

Summary of Social Media Analyses

The results testing tenets of *the social media hypothesis* were rather complicated; many variables moderated the relationships between social media use and outcomes. In general, watching television with friends was related to more time spent socializing with friends. Conversely, watching television with siblings was related to less time with friends, and, in some cases, worse social outcomes. Table 36 provides a summary of the results for *the social media hypothesis*.

Table 35. Summary of Interactions with Media Use with Siblings Predicting Social Behaviors and Outcomes for 9-12 Year-olds

<i>Dependent Variable</i>		9-12 Year-olds			<i>B of Use with Sibling</i>	
		<i>B/Odds Ratio</i>	<i>SE</i>	<i>r R²/r X²</i>		
Quality of Friendships ^a	Videotapes with Siblings X Parental Warmth	1.01*	.003	20.92**	Low Warmth	.98*
					Mean Warmth	1.00
					High Warmth	.97*
Positive Behaviors	Videotapes with Siblings X Parental Warmth	-.007**	.002	.03*	Low Warmth	.027**
					Mean Warmth	-.004
					High Warmth	.038**
Internalizing Behavior Problems (teacher)	Videotapes with Siblings X Parental Warmth	.001*	.000	.02*	Low Warmth	-.001*
					Mean Warmth	.000
					High Warmth	-.001*
Externalizing Behavior Problems	Videotapes with Siblings X Minority Status	-.017*	.007	.02*	Minority	-.012**
					Non-Minority	.010#
Externalizing Behavior Problems (teacher)	Videotapes with Siblings X Minority Status	-.001*	.000	.01#	Minority	-.001*
					Non-Minority	.000

^aCoefficients in this row correspond to a logistic regression and are odds ratios and a X^2 value.

$p < .10$, * $p < .05$, ** $p < .01$

Table 36. Summary of Results for the Shared Media Hypothesis

Predictor Variable	Outcome	Age Group	Main Effect	Predicted Direction	Moderators
TV with friends	Time with friends (no TV)	2-5	(+)	P	(+) Higher Parental Warmth (+) Higher IQ
		6-8	(+)	P	
		9-12	(+)	P	
	Internalizing (school)	9-12	(+)	X	(+) Girls
Video games with friends	Time with friends (no VG)	9-12	(+)	P	(+) Average Externalizing
TV with siblings	Time with friends (no TV)	9-12	(-)	X	
	Internalizing	6-8	(+)	X	
	Social Competence	2-5	ns		(-) Girls
	Internalizing (at school)	6-8	(+)	X	
Videotapes with siblings	Number of friends	6-8	ns		(+) Lower IQ
	Quality of friendships	9-12	ns		(-) Lower or Higher Parental Warmth
	Social Competence	2-5	ns		(-) Girls
	Externalizing	6-8	ns		(+) Lower IQ
		9-12	ns		(-) Minority
	Internalizing	6-8	(+)	X	
	Positive Behaviors	6-8	(-)	X	
		9-12	ns		(+) Lower or Higher Parental Warmth
	Externalizing (school)	9-12	ns		(-) Minority
	Internalizing (school)	9-12	ns		(-) Lower or Higher PW
Video games with siblings	Time with friends (no VG)	9-12	(-)	X	(-) Non-minority

Chapter 4: Discussion

Combined, the ten hypotheses and two research questions put forth in the first chapter represent a complex vision of the role of media use in young children's social lives. In order to translate the results into a reasonable explanation of this role, I will first address each hypothesis in turn. This will include reviewing the consistency of the statistical support (or lack of support) for each hypothesis as well as an interpretation of the moderator analyses. The purpose of this latter endeavor will be to explain which child and family characteristics (of the five tested) protect children from or make children susceptible to the influences described in each hypothesis. Such an interpretation will be presented for each hypothesis even if claims about such differences were not specifically stated.

Following the review of each research hypothesis, the findings will be synthesized into one unified model explaining the role media play in the formation and maintenance of friendships between young people. Information based on the results of this study as well as the empirical literature that serves as its foundation will be used to guide the development of this model. Results that are consistent across analyses and results that supersede other findings will have the most weight in the final model.

A CAVEAT CONCERNING CAUSAL DIRECTION

Before further exploration of the findings, it is important to make one large caveat concerning the applicability of the results to conclusions made about the hypotheses. Most of the hypotheses presented predict a specific direction of effect. For example, the research hypotheses based on the concept of displacement all predict that children's media use will cause reductions in their social interactions.

However, the data used in this study are cross-sectional and the analyses are correlational. Because of these limitations, the results in this study cannot be used to make claims concerning causal directions.

This does not necessarily eliminate the ability for the results to inform causal direction. Some causes are well established both theoretically and empirically such that the causal direction can be assumed (at least to some extent) when correlational data finds a relationship. For example, the literature as a whole shows that exposure to violent media causes aggression. Furthermore, tests of aggression leading to more long-term violent media use have often been unsuccessful (Huesmann et al., 2003). When seen in this empirical context, it is easier to attribute the correlational findings of violent media use to a causal relationship. Nevertheless, such claims will be made with much care and, whenever possible, alternate interpretations that explain the findings will be considered.

DISPLACEMENT AND COMMON CULTURE HYPOTHESES

Given that the same analyses tested both *the displacement* and *common culture hypotheses*, the first two research hypotheses discussed will be numbers 1 and 6:

Hypothesis 1: Both television viewing and video game use will be negatively related to younger children's social interactions, social outcomes, and social behaviors.

Hypothesis 6: For children aged 9 to 12, television viewing and video game play will be positively related to peer integration, social behaviors, and social success.

While there is consistent support for hypothesis 1 there is no support for hypothesis 6. Considering the lack of empirical evidence confirming *the common*

culture hypothesis and the rather consistent support for *the displacement hypothesis*, discussion concerning the former will end here and its theoretical perspective will not be used to inform the creation of the overall model.

Support for the displacement hypothesis

One of the most striking findings of this entire project was the level of consistent support for *the displacement hypothesis*. For all measures of peer integration and social behaviors and for both television and video game use, every significant finding from a test of *the displacement hypothesis* supported the idea that media use is linked to worse social outcomes. As children use more media they spend less time with their friends and as they watch more television they become less skilled socially.

Although the developmental differences predicted in hypothesis 1 were only partially confirmed, the age differences found are central to the interpretation of these findings. Television viewing and video game play were most consistently related to social outcomes for 6- to 8-year-olds. For children younger or older than this age group, video game play was unrelated to social integration and television viewing was only marginally related.

The question then becomes: Why do 6- to 8-year-olds show the strongest evidence that media use interferes with their social interactions and the development of positive social behaviors? At this age, children are entering school and beginning to be involved in many more social interactions. Early friendships are being formed and are beginning to play a larger role in the life of the child. Prosocial and cooperative behavior increase at this age as does the effectiveness of interpersonal communication among talented children (Erwin, 1993). Peer position and approval are also beginning to become important. It seems likely that children who thrive in

this rich, new social environment and are successful at bonding with their peers will turn away from media and toward the social interactions they enjoy. Similarly, the simplicity of media use and its comforting environs may lead some less-skilled children to choose it over the more complicated world of social interactions.

Such relationships would be expected to be less apparent among young children who have yet to enter this stage of social development as well as among older children whose social situations may be more stable. This does not necessarily mean that older children's peer integration and social behaviors are not related to their media use. Instead, children who are entering school and are new to interacting outside the home may have relationships that are more susceptible to the influences of media use or may be more likely to choose media when they do not have the skills necessary to thrive in social situations.

Moderators of displacement effects

Certain characteristics among 6- to 8-year-olds enhance the relation between media use and worse social behaviors. For children in this age group who are less intelligent, the more television they viewed, the more internalizing problems and fewer positive behaviors they exhibited.

Intelligence has been found to be an indicator of sophisticated social aptitude. Researchers who design interventions to improve children's social skills have found that children with more developed higher order thinking skills are often talented at navigating social interactions (See Shure & Spivack, 1980; Spivack & Shure, 1974). These children can recognize multiple solutions to a social problem and choose the most appropriate. Children, therefore, who are less intelligent and have lower levels of positive behaviors or higher internalizing problems, have multiple obstacles

preventing them from experiencing social interactions. In this difficult situation, these 6- to 8-year-olds appear to be turning toward media.

While these findings suggest that school entry is the age at which displacement type relations are most evident, results for the younger and older age groups, while not as consistent, are congruent in terms of direction to those for the 6- to 8-year-olds. The primary difference is that specific characteristics of the child dictate the direction and strength of the relationships for 2- to 5- and 9- to 12-year-olds. Children's minority status establishes how television is related to their peer integration and their intelligence determines this relation for video game play.

For both the youngest and the oldest groups of children in the sample, television viewing predicted less peer-oriented social time among white children, but not their minority counterparts. Furthermore, for 9- to 12-year-olds, television viewing predicted inferior social skills for white children only. In general minority children spend more time watching television (Bickham et al., 2003) and less time with their friends (Patterson, Vaden, Grieslter, & Kupersmidt, 1991) than white children do. Heavy television viewing and fewer social interactions may, therefore, be more normative among minority children and less likely to be related to each other.

Additionally, children from families with higher income levels are less socially isolated from their peers (Patterson et al., 1991). White children are more likely to have access to the monetary means necessary to travel, join social groups, or live in areas where unsupervised outdoor play is safe and common—all activities often necessary for children at school age to maintain social connections. Such opportunities may also mean more variability in social isolation among white

children. This would make a relationship between their peer interactions and media use more likely.

Another possible explanation for these ethnic differences is that friendships among minority children are more resilient to influences of media displacement than those among white children. A number of characteristics of life as a minority child in the U.S. may indicate that they have robust peer relations. Children, in general, are more likely to have same-race than cross-race friendships (Aboud, Mendelson, & Purdy, 2003; Graham & Cohen, 1997). One reason for this same-race preference is that similarities between children, both perceived and actual, are strong motivations for the creation of close relationships (Kupersmidt, DeRosier, & Patterson, 1995; Graham, Cohen, Zbikowski, & Secrist 1998). In a sea of majority faces, two minority children may feel that they are very similar to each other, more so than two white children. Regardless of the accuracy of this perceived similarity, it is likely to strengthen their relationship. If, in fact, friendships among minority children are stronger than those among white children, such strength might make them less susceptible to displacement effects of media.

Children's intelligence moderates the relation between their media use and a number of measures of peer integration and social behaviors. For 6- to 8-year-olds with higher levels of intelligence, the relationships between media use and negative social outcomes was weaker than for other children. It appears that for these children, cognitive abilities may act as a safeguard against the negative influences of media. The correlational results in this study show that for the oldest two age groups, intelligence is related to more social integration and fewer behavioral problems (see Tables 7 and 8). These intelligent, socially skilled children are very successful and

active social beings. Their social relationships are likely too important to be displaced by media use.

Cognitive abilities also play a role in these relationships for 9- to 12-year-olds. For more intelligent children, video game play predicted more friends. Conversely, for these same children, video game play was related to less time with friends. Children who have many friends but spend little time with them may have very few close friendships. Even though these children are smart, well liked, and well behaved, turning toward video games for entertainment might be enough to isolate them.

An alternative causal hypothesis

This interpretation of the evidence supporting *the displacement hypothesis* has made it clear that an argument claiming that media use causes a reduction in social interactions is inadequate. An explanation using an alternate causal direction may be more appropriate. While it is possible that children's social lives suffer when they use media, it is as plausible that isolated, lonely children will turn to media (Edgar, 1977).

A number of researchers have found that children and adolescents who are marginalized by their peers use television as both a way to escape the stresses of their lives and to meet their social needs (Johnstone, 1974; Riley & Riley, 1951). Furthermore, socially isolated children are at risk for experiencing the negative moods that are associated with unstructured solitary time. Television can be used to reduce these moods by acting as both a distraction and a proxy for social relationships (Kubey, 1986). Kubey (1986) provides a clear and succinct explanation for how television can reduce the pang of loneliness:

Television programs and commercials, after all, provide parasocial experiences and are constructed to keep the viewer's attention focused on the TV and not on the self. The medium thus provides a much-welcome and soothing alternative to the gaping voids of solitude and unstructured time. It is the fulfillment of this function that accounts, perhaps more than any other single factor, for the enormous and worldwide popularity of television. (p. 120)

From this perspective, it is children's social isolation and the negative state that accompanies it that motivates media use, not the other way around.

Research seeking evidence for these ideas has been successful. Children who are socially isolated or unable to adjust properly to their peers have been found to be heavy viewers of television (Edgar, 1977). For adults, social isolation has been found to be a primary motivator of television viewing (Kubey, 1986). Adolescents who are more integrated in their peer group and have more contact with their friends watch less television (Krosnick, Anand & Hartl, 2003). Overall, proponents of this argument have made and supported the claim that children who are isolated from their peers are drawn to television.

Because the study at hand is correlational in nature, all of the results that support *the displacement hypothesis* also support an alternative casual explanation. Most lend themselves well to interpretation using this framework. For example, 6- to 8-year-olds who watch more television have lower levels of positive behaviors. An argument based on *the displacement hypothesis* would claim that television use replaces the social interactions that would allow children to develop positive social behaviors. The alternate hypothesis claims that children who exhibit fewer positive social behaviors have fewer social opportunities and fill this extra time with television use. Considering that peer-oriented social interactions are only one venue in which children learn social skills, this second interpretation may be more easily accepted as true.

Findings concerning measures of peer integration are also easily explained using this causal direction. Children who are socially isolated from their peers have at their disposal more discretionary time that is likely to occur in the home. Because such time is often filled with media use, these children will watch more television and play more video games. The simplicity of this hypothesis as well as its high level of face validity adds to its credibility.

These two causal directions are not necessarily mutually exclusive; they could both be contributing to a cyclical process. Assuming that social isolation is the impetus for the process, a lack of social opportunities leads to higher levels of media use. Thus, children are less able to practice and develop social skills outside the home. Because children are unskilled, they see media use as a soothing and desired alternative to social interactions and it is sought out instead of other, more challenging activities. Media use begins as a symptom of social isolation but then contributes to its cause. The effects of such a cyclical process would be exceptionally detrimental to children at the age of school entry where social skills are being developed and peer status is being determined. While many of the results of this study support the presence of such a process, they do not confirm one's existence.

Displacement conclusion

Overall, the results of the study at hand support the tenets of *the displacement hypothesis*. Contrary to hypothesis 1, there was some, if not consistent, evidence that a displacement type relationship exists for all ages of children included in the study. Such a relationship was most apparent for children around the age of school entry and, for some age groups, European-American children. However, the complexity of the findings makes a simple displacement explanation seem insufficient. It is more

likely that a complex causal process is underway in these children's lives where poor social skills and media use play a role in influencing each other.

THE MARGINAL/FRINGE HYPOTHESIS

Hypothesis 2, based on the *marginal/fringe hypothesis*, claims that children's structured social time and extracurricular activities are not related to children's media use. The functional and structural characteristics of organized social activities were predicted to insulate them from any displacement influences of media.

Hypothesis 2: Television and video game use will not be a strong predictor of children's involvement in structured social events and extracurricular activities.

Since this hypothesis predicts no relationship, it was not directly tested. However, it would have been supported to some extent if children's unstructured social time (the vast majority of the social time reported in the time-diary) was negatively related to media use, but their structured social time and extracurricular activities were not. The findings do not provide evidence for the validity of the *marginal/fringe hypothesis* when applied to television. Similar to the results exploring the displacement hypothesis, children's structured social time was negatively related to their television viewing. Adding further support to this finding, the more time 6- to 8-year-old children spent watching television the less likely they were to participate in any extracurricular activities. The time children spend in organized activities does not appear to differ in its relationship with television from unstructured social time.

Conversely, there was no evidence that video game play is negatively related to structured social time. In fact, the only consistent findings of video game play revealed that for 2- to 5- or 9- to 12-year-olds with high or low levels of externalizing

behaviors, video game play predicted more structured social time. For these children, video game play certainly did not displace extracurricular activities.

These findings generate two questions that compel a response. The first asks why television viewing is negatively related to structured social activities. A rigid advocate for the displacement perspective would argue that television is so disruptive to children's social lives that it is even capable of replacing activities that are fundamentally different from it at both a structural and functional level. But this claim is contrary to the extensive evidence that indicates that these characteristics of activities determine their relation to media use (Himmelweit, Oppenheim, & Vince, 1958; Neumann, 1988).

An alternate causal direction, similar to the one presented above, can be employed to provide a concise and seemingly valid explanation: Children who do not participate in extracurricular activities have more time available to use television. This view is further supported by the results from the parental response measure of extracurricular participation. While it seems unlikely that television viewing would cause a child to never participate in these structured activities, it is easy to accept that a child who spends no time in extracurricular activities would have an abundance of free time available for media use.

The second question asks why this straightforward explanation is not equally applicable to children's video game play; there was no relation found between video game play and extracurricular activities. Considering that throughout the majority of the findings television and video games do not differ in their relations with children's social time, this one finding should not be given much consideration. It is likely an artifact of the small amounts of time children, and especially younger children, spend in both of these activities.

Marginal/fringe conclusion

Overall, these findings do not support *the marginal/fringe hypothesis*. This does not necessarily indicate that extracurricular activities are displaced by children's media use. Through the application of an alternate cause model, it becomes clear that children who do not participate in sports teams, church groups, or similar organizations will have more time available to be filled with media use.

THE SHARED MEDIA HYPOTHESIS

Hypotheses 3 through 5 all address relationships based on *the shared media hypothesis*. While hypothesis 3 is concerned with differences in amounts of media spent with friends across different age groups, both hypotheses 4 and 5 posit that shared media experiences are predictive of other indications of healthy peer relationships.

Hypothesis 3: The percentage of media time children spend with their friends will increase across ages and will be higher for videotape and video game use.

The findings support hypothesis 3; children in the oldest age group spent a higher percentage of their media time with friends than children in the other two groups. Age differences in the amount of time children spend using media with their friends mirror the differences in the overall time children spend with their friends. As children enter the 'tween years, they begin to spend more time with their peers and less time with their parents. This study has, in general, taken the position that being involved in social interactions with one's friends is a positive endeavor that provides the opportunity to practice social skills and is also evident of a successful level of social integration. The similarity in the developmental paths between media use with peers and other activities performed with friends provides evidence that social interactions in these venues are fundamentally the same. Therefore, children are

likely to gain the positive social benefits from any peer interactions, even those occurring around media.

The results also support the notion that some media are more likely to occur with friends present. As hypothesized, the percentage of time that specific media occurred with friends was highest for video games followed by videotapes, and, finally television. There are a number of explanations for this difference. While television content is limited at any given time to what is currently being aired, both video games and videotapes have specific content that is readily available. Using these media, children can choose to view or play any content they choose at any time. An entire program can be enjoyed together, and both players can begin a game simultaneously.

Also, many video games are designed to be played concurrently with other people. When played with a friend, sports, fighting and many other games provide both an exciting competitive experience as well as a different overall game than playing alone. Games that children have played many times might become more enticing when a friend with whom the game can be shared is present. Furthermore, video games provide an environment that is more conducive to social interactions. Unlike television or videotapes, children can have discussions and give advice during game play without distracting from the experience. Overall, video games are structurally equipped to encourage concurrent play and conversation.

Hypothesis 4: Using television, video games or videotapes with friends or siblings will all be related to higher levels of peer integration and more positive social behaviors and outcomes. Shared video game and videotape time will be more consistent and stronger predictors.

Hypothesis 5: Parental warmth will moderate the relationship between children's shared-media experiences and social success.

The research findings support most of the claims made in hypothesis 4. Across all types of media, using media with friends predicted more social time away from media. Very little media use occurs with friends among the youngest children, but the results for these children were consistent with the oldest group.

Contrary to the predictions of this hypothesis, social video game and videotape use was not more strongly or consistently related to peer integration than was social television viewing. While the coefficients were much larger for video game play with friends for children 8 and under, such a small amount of social game play occurred for these children that this might not be an important finding. Among 9- to 12-year-olds, where most of the social use is occurring, the coefficients for each type of medium were very similar in magnitude.

Consistent with hypothesis 5, parental warmth interacted with 9- to 12-year-olds' social television use to predict their other social time. For children with higher levels of parental warmth, social television use was positively related to other peer interactions. Children who have a model of positive social behavior in their home are more socially adept (Mize, Russell, & Pettit, 1998) and, therefore, appear able to convert social media experiences into stronger levels of peer integration. Children without such a model might not have as valuable social media experiences, but they still benefit from such experiences. At each level of parental warmth, even the lowest, children's social television use was related to more peer integration. The interaction results indicated that this relationship was strongest for children experiencing high levels of parental warmth. At some level, all children, regardless

of their relationships with their parents, are benefiting socially by sharing television experiences with their friends.

Children's intelligence also plays a role in dictating the strength of the relationship between social television use and peer integration. Among 9- to 12-year-olds, this relationship was stronger for children with higher levels of intelligence than for children with lower intelligence. But even for these less intelligent children, social media use was related to more peer interactions away from media. This finding is consistent with the view that intelligence is indicative of more advanced levels of social cognition (as argued above). Much like parental warmth, children with more developed cognitive abilities may be skilled at interacting with their friends around media. If they are able to understand when conversation and other social interactions can occur during a media experience without interfering with the enjoyment of the event, intelligent children will be adept at taking advantage of the social opportunities provided by a shared media experience.

Shared media and social behaviors

If social media use provides an opportunity to develop social skills, children who participate in it more often should have more advanced social behaviors. A number of findings supported this claim, but only for certain children. Among 9- to 12-year-old boys, viewing television with friends was related to lower levels of internalizing behavior problems. For minority children, watching videotapes with friends was related to more positive behaviors and fewer problem behaviors.

One similarity between 9- to 12-year-old boys and minority children is that both groups have higher levels of externalizing behaviors than their comparison groups. Possibly, children in these groups who share media use with their friends are able to learn skills that counter their more negative tendencies. Television may

present an environment where children's negative behaviors are discouraged. Behavior that interrupts the viewing process is likely to be met with more resistance from peers than the same behaviors in other settings. Therefore, children who might not normally learn positive behaviors from a social situation would be forced by their friends to exhibit them (or at least not exhibit negative ones) during shared television viewing. Because of the social rewards that this compulsory behavior elicits, such positive behaviors might become a larger part of these children's behavioral repertoire in other settings. Or in the case of boys, the positive response from their friends might reduce their negative internal state.

There was also evidence that social media use was related to negative social skills for some children. Girls who watched more television or videotapes with their friends had higher levels of internal behavior problems and were less likely to have very high quality friendships. The more time non-minority children spent sharing videotape viewing with their friends, the fewer positive behaviors and more externalizing problems they exhibited.

Girls and non-minority children are less likely than their counterparts to have external behavior problems. The social environment provided by television may not be as beneficial for these generally better behaved children. The positive behaviors that peers demand in a social viewing experience are likely akin to sitting quietly. Children with more advanced social skills would not necessarily benefit from practicing this behavior. In other words, the manners necessary to share television with friends are more positive than problem behaviors, but less positive than other socially beneficial behaviors.

Alternative causal explanation

Up to this point, most of the interpretations of the results testing *the shared media hypothesis* have taken the perspective that social media use leads to further interactions and, at least among some children, more positive behaviors. There is, however, an equally acceptable alternative causal explanation: Peer integration and positive social skills cause more shared media time. That is, co-using media with one's friends could be a common activity for young people involved in healthy peer relationships. Instead of being a cause of peer integration, social media use may actually be an attribute of it.

Children with certain behavioral tendencies may be more inclined to use television with their friends. For example, among minority children with external problem behaviors, the viewing environment may not be an appropriate venue for social interactions. As mentioned above, negative behaviors, especially verbal ones, are more disruptive to social television viewing than to many other social activities. It is unlikely that a child who is prone to arguing will find a friend with whom to watch television. Other activities will likely be chosen.

While either causal direction can explain the results of this study, a feedback or cyclical process is possible as well. That is, these two causal processes could be working in tandem. As children begin to forge a new relationship, shared media events might be important moments to discover similarities on which to base a friendship. The more often such events occur, the more likely other, non-media interactions will take place. Once the friendship is more developed, using media is an easy and enjoyable activity that both children can enjoy. At this later stage, the successful relationship stimulates more shared media use.

Media use with siblings

Hypothesis 4 also predicts that sharing media experiences with siblings will translate into more sophisticated social behaviors and more social interactions with their friends. Testing this aspect of the hypothesis revealed findings counter to the expected direction; the more time older children spent watching television or playing video games with their siblings, the less time they spent with friends. Moderator analyses revealed that the television-coviewing finding was only relevant for white children. For the other age groups, media use with siblings was unrelated to how much time they spent with their friends.

In general, when children spend time with their siblings they are participating in one of the longest lasting, most influence relationships in their lives (Dunn, 1992). It is perplexing, then, that peer interactions around media were shown to potentially benefit peer relationships while interactions with siblings in a similar environment did not. There are structural differences between friend and sibling co-use events that may help explain this finding. These differences, however, are speculative and do not apply every incidence of coviewing.

Interactions during media experiences may be more likely to occur when the co-use is with friends than when it is with siblings. Siblings are more likely to differ in age and, therefore, have very different tastes in media content. When older children choose a program or game, as is likely the case, younger siblings may not enjoy or understand its content. Except for providing physical proximity, these media events would be very different for each sibling and, thereby, less likely to encourage interaction. Without interaction, neither child will develop the social skills necessary to enhance their relationships with their friends.

An alternate, and simpler, interpretation of these data becomes clear when the results of the displacement analyses are considered. The extra media use brought on by social isolation could be seen as an artifact of children having additional home-based discretionary time. Because this media use is occurring in the home, it will often be shared by siblings. Time that a more socially integrated child would spend with their friends is spent in the home most likely co-using media with any family member present.

Although sibling-shared media use is occupying time that otherwise might be used for peer interactions, children may still learn positive social behaviors by co-using media with their siblings. The findings from this study, however, provide little consistent evidence that sharing media with siblings is an appropriate activity for building positive social behaviors. In fact, the only significant main effects indicate that for 6- to 8-year-olds, watching television (broadcast or video tapes) with siblings was related to more internalizing problem behaviors and fewer positive behaviors.

It is unlikely that sharing media with siblings causes internalizing problem behaviors. Instead, children with high levels of internalizing problems behaviors may spend more time using media with their siblings. Since internal problem behaviors are linked to peer rejection (Sanson, Finch, Matjacic, & Kennedy, 1998), children exhibiting them are likely to have fewer social opportunities outside the home. They will, therefore, spend more time in the home. Following the model described above, children at home will tend to use more media and to share more media with their siblings. From this perspective, children with less developed social skills will spend less time with friends and more time using media with siblings.

Shared media use conclusion

A rather complex and speculative explanation is necessary to argue that media use with friends causes increased social behaviors and peer integration. The alternative explanation claiming that co-using media with peers is a normative aspect of healthy friendships among children is much more easily accepted. The cyclical explanation, however, may be the most adequate. It incorporates into the alternative causal model the idea that media can provide a venue conducive to positive relationship building.

Results concerning media co-use with siblings were much more difficult to integrate. Considering their inconsistency, the simplest explanation may be the most acceptable. When children have fewer peer interactions they are likely to spend more time at home and fill this time with media use. Siblings also at home will share these media experiences with them.

VIOLENT MEDIA HYPOTHESIS

The empirical evidence that violent television is a cause of both immediate and long-term aggression is overwhelming (See Bushman & Huesmann, 2001). The link between anti-social behaviors such as aggression and peer rejection is also well established (Mize & Ladd, 1990; Dodge, 1983; Ladd & Price, 1993; Coie, Dodge, & Kupersmidt, 1990). It follows, and is the position of *the violent media hypothesis*, that violent media use will lead to social isolation through its instigation of violent behavior. The first step in evaluating the validity of this hypothesized process is to examine the evidence for a link between violent media and negative behaviors.

Hypothesis 7: Exposure to violent television and video games will be related to increased antisocial behaviors and decreased positive behaviors.

Hypothesis 8: The relation between violent media exposure and negative social behaviors will be greater among younger children, boys, and children with lower levels of intelligence.

The findings of this study generally support hypothesis 7. When measures of both violent and non-violent television use were included in the same regression analyses, violent, but not non-violent television viewing consistently predicted more negative behaviors and fewer positive behaviors. This relationship, however, was only evident for certain children. Findings were most consistent for children in the 6- to 8-year-old group, but were also present at a lesser magnitude among 2- to 5-year-olds, and 9- to 12-year-olds.

Consistent with the displacement findings, children around the age of school entry (6- to 8-year-olds) are the most susceptible to the influences of violent television. Their positive behaviors, external and internal behavior problems (at home and at school), and their social competence are all influenced by their exposure to violent television. Contrary to hypothesis 8, the results for the very young children in the sample were less consistent. They were, however, in the expected direction.

Moderators of the effects of violent television

Many of the relationships for 6-to 8-year-olds were found to be evident only among boys in this age group. While this finding is consistent with hypothesis 8 and is congruent with the results of a number of previous studies, the presence of different effects of violent media on boys and girls is still debatable. In their review of the issue, Bushman and Huesmann (2001) argue that the gender differences reported in early meta-analyses were an artifact of the lack of aggressive female characters on television. More recent studies of children growing up in the 1970's and 1980's have found similar results for boys and girls. To explain the results from the current study

using this argument, one would need to claim that in the 1990's television has presented fewer aggressive female characters. While this is possible, it seems counter to the trends of the medium's content. Another explanation of this finding is that boys are aroused by violence and girls are more saddened by it (Levine, 1995). The results presented here may indicate that, at a national level, girls' responses to televised media make them less vulnerable to influences of such content.

Among 9- to 12-year-olds, children's minority status moderated the relationship between violent television exposure and a number of behavioral outcomes. For minority children violent television use predicted more externalizing and internalizing problem behaviors. However, for non-minority children violent television exposure was linked to fewer positive behaviors. Considering that the effects of violent media have not been found to differ by economic status or culture (see Anderson et al., 2003), these findings may indicate that its effects simply manifest themselves slightly differently depending on a child's minority status.

There is, however, an argument that could be made that minority children are more susceptible to the negative effects of violent media. Children in most ethnic minorities in the U.S. watch more television than the majority group (Bickham et al., 2003). In general, minorities are depicted as criminals or in other similarly violent roles (Donnerstien, Slaby, & Eron, 1994). Since children identify with onscreen characters who share their ethnicity, minority children may be influenced more by the violence on television (Huntemann & Morgan, 2001). In fact, the finding that African American children enjoy violent television more (Botha & Van Vuuren, 1993) may be an artifact of their enjoyment of seeing their own ethnicity represented (Greenberg & Brand, 1994). While most studies have not found this difference

between different ethnic groups, it may be worth investigating in other, nationally representative inquiries.

Violent video games

The analyses exploring the relation between violent video game play and social behaviors produced results so inconsistent they are almost uninterpretable. Exposure to violent video games was related to more socially accepted behaviors in some analyses and to more antisocial behaviors in others. Furthermore, results for non-violent video games were often as predictive of specific behaviors as those for violent video games. The very limited amount of use when video game play is separated into violent and non-violent is the likely cause for such inconsistent findings. As video games continue to become more violent and played more often, average exposures will rise and these effects will likely become evident at a national level.

There was one somewhat consistent finding that was predicted by hypothesis 8. Among 9- to 12-year-old children, violent video game play predicted higher levels of externalizing behaviors for children low in intelligence. This finding supports previous studies that found that controlling for IQ significantly reduced the relationship between violent media use and negative behaviors (Milavsky, Kessler, Stipp, & Rubens, 1982). Although many studies found that violent media affect all children regardless of their intelligence (Huesmann et al., 2003), there are a number of arguments for why intelligence might mitigate the effects of violent media on children. Most arguments are based on television viewing and have only found minimal support (see Huesmann & Bushman, 2001; Anderson, et al., 2003).

The question, then, is why was this finding evident for video game play but not for television viewing? There is some evidence that children who see violent

media as presenting real life are more likely to experience higher behavioral consequences of exposure to violent content (Huesmann, 2003). Content and structural characteristics of video games make them appear less real than televised images. The challenge to differentiate realism from video game content appears to be less cognitively demanding than that imposed by television content. It is possible that children who see video games as more real are also less intelligent. These less intelligent children are, therefore, more susceptible to the influences of violent video games.

Violent media use and children's peer integration

Hypotheses 9 and 10 predict that children's violent media use is related to their peer integration. In general hypothesis 9 was supported for television viewing, but there was no evidence that the relationship between violent media and peer integration differed for any of the groups listed in hypothesis 10.

Hypothesis 9: Exposure to violent television and video games will be related to lower levels of peer integration.

Hypothesis 10: The relation between violent media exposure and peer integration will be greater among younger children, boys, and children with lower levels of intelligence.

This relationship between children's violent television viewing and the time they spend with their friends is most easily explained by a behavioral change. The negative behaviors caused by exposure to violent television leads to less acceptance by their peers. As children watch more violent television, they become more aggressive and less involved with friends.

Reevaluating the displacement findings

This result necessitates a reinterpretation of the findings that were presented above as support for *the displacement hypothesis* and the causal alternative to displacement. If a time exchange process were occurring, there would be little reason to expect that violent and non-violent television would have different relationships with children's social interactions. An advocate of displacement would argue that the content occupying most of the child's time would have the strongest influence on their social activities. In the present study, children spent about half again as much time watching non-violent television than violent television. This finding sheds serious doubt on the simplistic explanation that time spent with television replaces time that would be spent with peers.

The alternative explanation to the displacement findings argues that as children become less integrated with their peers they have more discretionary time that is filled with media use, the most popular default activity. The only claim that can be made that is congruent with this line of reasoning and incorporates content is that children who are socially isolated will be more attracted to violent media. This may be the case, but it is more likely that it is their aggressive behavior rather than their social isolation that attracts them to violent content. While longitudinal studies of viewing and aggression have found little support that aggressive tendencies lead to violent media use (Huesmann et al., 2003), when individual viewing experiences are considered, aggressive children do choose more violent programs (Bushman, 1995). At least in the short term, the associations between violent media and violent behavior are cyclical with one encouraging and enhancing the other (Bushman & Huesmann, 2001).

Violent media conclusion

The analyses testing tenets of *the violent media hypothesis* consistently supported them. The findings do appear, however, to be primarily relevant to television viewing and not to violent video game play. Perhaps most striking is the finding that exposure to violent television content but not to non-violent content predicted less peer-oriented social time. Of all the challenges of the assumptions of *the displacement hypothesis*, this one provided the most damaging evidence. Only the alternative causal explanation to the displacement hypothesis can incorporate into its model the findings from the violent media hypothesis. The exploration of the role of violent media in the social implications of children's media use has provided a level of complexity that will guide the formation of the unified model.

A UNIFIED MODEL OF MEDIA IN CHILDREN'S SOCIAL LIVES

The approach of this study has been to test research hypotheses derived from a displacement perspective as well as from a number of alternative perspectives that challenge the assumptions of displacement. One of the primary purposes of this endeavor has been to integrate the findings from all of the perspectives in order to model the role of children's media use in the development of children's peer integration and social behaviors. It is the goal of this study that this model be more reflective of the complex processes involved in children's lives than any one of the presented hypotheses. It is important to remember, however, that any causal model founded on these cross-sectional data is, by nature, speculative.

The value of a cyclical model

The interpretation of the results put forth in this chapter presented numerous causal explanations that accounted for each finding. Repeatedly, the reciprocal causal

models addressed the findings in a complex framework that appeared most representative of children's actual lives. Cyclical models are especially appropriate for explaining the relationship between violent media use and aggressive behaviors. A number of researchers have presented such models and argued for a bi-directional relationship between violent media use and aggression (Anderson et al., 2003; Bushman, 1995; Friedrich-Cofer & Huston, 1986; Huesmann, 1988). The key point of each of these reciprocal models is that violent media use is both a cause of anti-social behaviors and a symptom of children's aggressive tendencies.

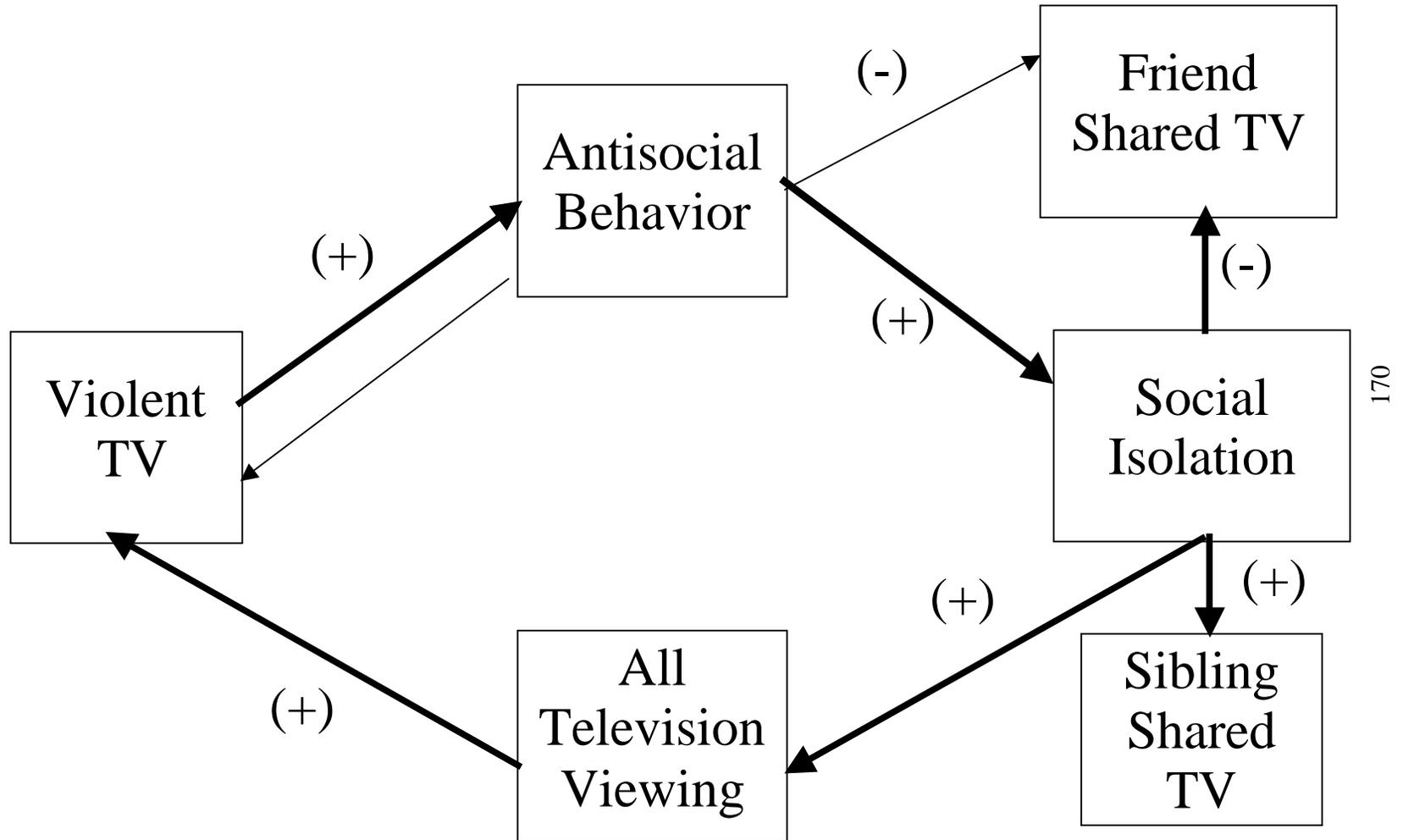
Peer integration, however, is not central to any of these models. In their description of a reciprocal model, Bushman and Huesmann (2001) make a side comment indicating the need to consider children's popularity in this process:

Children are stimulated to behave aggressively by watching TV violence. They behave aggressively. Then they turn back to watching TV violence because it makes them feel better about having behaved aggressively, and the cycle continues. The fact that aggressive behavior usually makes children unpopular, and unpopular children watch more TV, may add to this finding. (p. 243)

The results of the study at hand support the idea that adding concepts related to peer integration enhances and adds complexity to this model. The unified model presented below incorporates the reciprocal relations between violent media use and anti-social behaviors with the influence of such behaviors on children's social isolation.

The unified model presented in Figure 5 illustrates processes that most effectively explain the findings discussed above. While many of the findings for video games are consistent with this model, the lack of evidence that violent game play causes anti-social behaviors necessitates their exclusion from the model. As video game play continues to increase in popularity, future nationally representative research may be able to better capture the effects of violent game play.

Figure 5: The Unified Model of Children's Media Use and Social Isolation



The role of violent television in the unified model

A major decision in building a cyclical model is the determination of the force that drives the process. While effects may feed back into this primary cause, it is the impetus for the relationships that follow. Considering the consistent findings of this study as well as the overwhelming empirical evidence and theoretical foundation for a causal link between violent television and aggression, children's exposure to televised violence is presented as the initial cause of this process. By causing antisocial behavior in its viewers, violent television starts the process of peer isolation and excessive media use that follows. The placement of violent media in this role makes this model one of social isolation instead of peer integration (these two terms are intended to be reversed measures of the same construct).

It is important to note, however briefly, that this model is not proposing that violent television exposure is the sole cause of aggression or anti-social behaviors. There are numerous genetic, familial, social, and individual characteristics that are all causes of negative behaviors; viewing violent television is only one of them. Any cause of negative behaviors, however, is sufficient to begin the process presented.

The unified model illustrates one reciprocal relationship and one secondary causal relationship. In each of these, the primary causal relationship is represented in the figure as a thick line and the secondary or feedback cause as a thinner line. As described above, violent television causes aggressive behavior, which, in turn, makes violent television more appealing to children. Antisocial behavior is seen as primarily causing social isolation, which, in turn limits children's interactions around media. However, the direct effect between antisocial behaviors and friend shared television viewing is included in the model. Because friend shared media time is an

indication of peer integration, it is negatively related to children's antisocial behaviors and their social isolation.

The final stage of the model explains how increased social isolation has an end result of more violent media use. As children's social isolation increases, they have more discretionary time at home that they fill with more television viewing. This viewing is often, but not always, shared with siblings. The path that returns the process to its beginning is not necessarily causal. The argument is not that viewing more television causes exposure to violent content. There is a popular viewpoint that because of the pervasiveness of violence in the television landscape, more viewing always equates to more exposure to violence. This questionable perspective, however, is not necessary to justify the last path of the model. At this point in the process, an individual child has experienced increased anti-social behaviors, and higher levels of social isolation. Both these changes will increase the likelihood that the child chooses violent content during a viewing experience.

This model is not intended to doom every violent television viewer to an endless cycle of media use and loneliness. As described in the findings, a number of child or family characteristics could disrupt this process at any point. In fact, some of the key aspects of the model are built primarily on findings that were most consistent for 6- to 8-year-old boys. Specific vulnerabilities of friendships at school entry and certain characteristics of being male make these children more susceptible to the process illustrated. Other children may be experiencing very different processes. However, the moderators were not consistent enough to conclude that any one characteristic makes a child completely impervious to the influences described.

This model is, therefore, presented as both a general summary of the many findings of this study as well as a challenge for future research. The correlational

nature of these data makes the unified model inherently speculative. Future research is necessary to further test and challenge the specific causal directions and reciprocal process that this model presents.

STUDY LIMITATIONS AND FUTURE RESEARCH

The data from the PSID-CDS-1 are cross-sectional survey data and, therefore, are subject to all the limitations of this type of methodology. Considering that the fundamental purpose of this study was to challenge aspects of *the displacement hypothesis*, the inability for these cross-sectional data to address causal directions is the limitation that has the strongest implications for the interpretation of this study. There is no way to determine which of the potential causal directions described above is actually the one that best represents the effects of media on children's social lives. The strategy to reduce this limitation was to recognize that reciprocal models more readily reflect the complexity of children's actual lives and to apply these models to the findings whenever possible. While this technique does not completely address this problem, it does allow for cross-sectional data to inform more meaningful models. Furthermore, the rich time-use measures and nationally representative quality of the PSID-CDS-1 add strength to the data that is not present in most cross-sectional survey studies.

No measures, however rich, are flawless. Time-diary data is a good example. While there is evidence that time-use data collected from a diary is reliable and valid (Juster & Stafford, 1985), recent evaluations have found that among adults this type of data underestimate media use when compared to observational techniques (Papper, Holmes & Popovich, 2004). However, measures of children's media use from time-use diaries have been found to be much closer to those of video taped observational data than were parents' global estimates (Anderson & Field, 1991).

The effort involved in completing a time diary as well as the likely errors that occur when parents report their children's time use may add to the possibility that these data do not accurately represent children's activities. In a study with the scope of the PSID-CDS-1, observational methods, the only techniques that are likely to be more valid than time-use diaries, are virtually impossible to implement. Considering their choices, the designers of the PSID-CDS-1 selected the data collection method that, although arguably flawed, would provide them with the most accurate data and still be within the capacity of their study.

Another limitation of this study stems from the utilization of the time-use diary data, and, specifically the operationalization of peer integration. Throughout this study, the amount of time children spend with their friends has been considered a measure of social acceptance and peer integration. However, it may be the quality and not necessarily the quantity of peer relationships that is related to social success and healthy development. The PSID-CDS-1 has no measure of the quality of the interactions that were reported in the time diary. Regardless, other researchers have considered time with friends a positive measure of social experiences (Miller & O'Conner, 1995). Furthermore, the many time-based hypotheses of this study necessitate that their tenets be tested using time-based measures. The diary data, therefore, is the best available measure that meets this objective.

Lastly, the nature of the CDS-1 time diary data and the analyses they necessitated resulted in coefficients that provided no measure of effect size. Any alternate choices in analytical procedures would have produced coefficients with seriously questionable significant tests and reliability. While Tobit analyses allow for confidence in the direction of effects as well as the significance tests of the

coefficients, further research is necessary to explore how strongly children's social time is related to their media use.

Future research

Further evaluations of the hypotheses and models presented in this study need to have the ability to make more conclusive causal claims. Both longitudinal and experimental studies are better equipped for this task than cross-sectional methods. The upcoming second wave of the PSID-CDS will add to this data's ability to address the unanswered causal questions described here. The issue of displacement should be readdressed with this new data to determine if the relationship between media use and social time are, as interpreted in this study, driven by social isolation. Furthermore, the children in the PSID-CDS are now adolescents. At this age, peer relationships become extremely important and may be more, or less, resilient to displacement effects of media. By looking at measures of peer integration and media use from both waves of data, a more thorough, definitive, and developmental causal model may be built.

Only empirical or observational research can be used to further evaluate some of the reciprocal relationships posed in this study. For example, if co-using media with friends is to lead to more developed relationships, positive interactions around media must occur. The type of interactions that occur between friends in the presence of media may differ by the children involved as well as the content being experienced. Children's interactions during violent television or video games might be very different from those around more refined content. A study where children with different characteristics are observed in pairs using different types of media would greatly inform hypotheses concerning the co-viewing process.

Another direction of research that this study encourages involves newer forms of media. There are some indications that children's Internet use leads to social isolation and internal behavior problems (Kraut et al., 1998). The second wave of PSID-CDS data will provide a nationally representative dataset that can be used to scrutinize this finding. The cycle presented in the unified model may be broken if socially isolated children and adolescents turn to the computer-mediated communication available on the Internet instead of more traditional media. Interacting online may give these children the opportunities they are missing to develop social skills. Such skills would lead to more successful real life interactions and higher levels of peer acceptance.

Observational studies can address these issues as well. With the growing popularity of online gaming that allows for voice communication, video game players are having real time interactions with people who are not physically present. These interactions may be fundamentally different from those that occur around media when both actors are in the same room. They may be more aggressive and lead to the adoption of more violent behaviors. Conversely, they may provide positive social experiences otherwise unavailable that would encourage offline social interactions. Controlled studies of children and adolescents playing these games could explain how their use influences young peoples social development.

CONCLUSION

The social encounters that young children experience dictate their desire and ability to interact with other people for the rest of their lives. Children's media use by way of the content it presents as well as the time it occupies influences and is dependent upon these social experiences. For too long the dominating popular view of the relationship between these two activities has been simplistic: Time spent with

media takes away from social interactions. The results described here indicate that television use and peer interactions are, as expected, inversely related. However, by considering the influences of violent content and the social viewing environment, this study was able to model a process much more complex than the one predicted by *the displacement hypothesis*.

The behavioral influences of violent media take center stage in the model presented. While this was not the initial intent of this study, the results demanded it. After years of research in this area, scientists now recognize that the well-documented behavioral changes brought about by exposure to violent media have serious long-term consequences. This study suggests that social isolation may be one of them.

But media use can play a positive role in children's social lives as well. It can act as a venue around which friends can interact and develop their relationships. Interactions around television may even help some children reduce their negative behaviors.

Being with their friends and using media are likely the two activities children and adolescents enjoy more than any other. They are intimately connected and continuously influence each other. A thorough understanding of how the two are integrated in children's lives is necessary if we are to fully understand the social development of children in today's world.

Appendix A

Time Use Diary Example

	A	B	C	D	E	F	G	H	J
TIME	What did your child do?	Time Began	Time End	IF WATCHING TV, was that a video tape or TV program?	IF TV, VIDEO, COMPUTER GAMES, what was the name of the (program/video/ game) child was (watching/playing)?	Where was child?	Who was doing the activity with child?	Who (else) was there but not directly involved in the activity?	What else was child doing at the same time?
Midnight	<i>⓪ Sleeping</i>	<i>12:00</i>	<i>7:30</i>			<i>at home</i>			
	<i>⓪ Watching TV</i>	<i>5:30</i>	<i>6:00</i>	<i>T.V. program</i>	<i>Wishbone</i>	<i>at home</i>	<i>father, cousin</i>	<i>mother</i>	<i>playing w/ toys</i>
	<i>⓪ Eating dinner</i>	<i>6:00</i>	<i>6:25</i>			<i>at home</i>	<i>father, mother, cousin</i>		<i>talking</i>
	<i>Reading book from library</i>	<i>6:25</i>	<i>7:00</i>			<i>at home</i>		<i>cousin, mother,</i>	
	<i>Playing computer games</i>	<i>7:00</i>	<i>7:30</i>		<i>Oregon Trail</i>	<i>at home</i>	<i>cousin</i>	<i>mother, father</i>	
	<i>Taking a bath</i>	<i>7:30</i>	<i>8:20</i>			<i>at home</i>			
	<i>Brushing teeth</i>	<i>8:20</i>	<i>8:30</i>			<i>at home</i>			
	<i>Watching TV</i>	<i>8:30</i>	<i>9:00</i>	<i>Video</i>	<i>Aladdin</i>	<i>at home</i>	<i>cousin</i>	<i>father, mother</i>	<i>hitting cousin</i>
	<i>Listening to bedtime story</i>	<i>9:00</i>	<i>9:20</i>			<i>at home</i>	<i>mother</i>	<i>father</i>	
Midnight	<i>Sleeping</i>	<i>9:20</i>	<i>12:00</i>			<i>at home</i>			

Note. This table is an example. The actual time diaries had no lapses between recorded activities.

Appendix B

Violent Television Coding Sheet

CODING FOR TELEVISION VIOLENCE

Television programs will be coded as either violent or non-violent. Programs and movies will be considered violent if any one of the following criteria is met:

- a) Violence or the discussion of violence is an integral part of the series program (murder mysteries, courtroom dramas dealing with violent criminal cases, stories with themes of revenge).
- b) The characters' occupations involve aggression and violence (Police Programs).
- c) The main characters' purpose is to fight evil or to flee from evil.
- d) The program is labeled as "violence" or "fantasy violence" on a consistent basis.
- e) There is more violence in the plot than would be expected in the everyday life of an average American child (siblings hitting each other, random fist fight in the locker room would not be coded as violence).

Appendix C

Violent Video Game Coding Sheet

PSID VIOLENCE CODING SYSTEM

(Computer and Video Games)

Violence Codes

No Violence = 0; Mild Violence = 1; Severe Violence = 2

Examples of Mild Violence:

- **Comedic/Slapstick**
- Mild Acts Against Inanimate Objects
- Non-graphic Physical Acts
Death
Against Humans or Animals
Violence
(No Blood, Gore, etc.)
- Unsafe; Hazardous; Conflicting Behavior

Examples of Severe Violence:

- **Serious Acts Against Humans**
- Vicious Acts Against Animals
- Acts Producing Injury or

• Deliberate Vehicular

• Sexual Violence/Aggression
- Explosives; Blood; Gore;
Body Parts; Mutilation; Etc.

Appendix D

Structured Social Activities

The following table shows the 24 activities reported in the time-use diaries that were considered structured social activities. They are listed with the PSID activity code in the order of most to least common.

- 651 Attending services of a church or synagogue.
- 644 Other church activities, and groups; other activities as a member of church groups which are not helping-oriented.
- 883 Organized meets, games, and practices for team sports.
- 652 Religious practice carried out in a small group; Bible study group.
- 672 Other activities, family organizations; other activities as a member of child/youth/family oriented organizations including social activities and meals.
- 59 Part time job.
- 881 Lessons in dance.
- 671 Meetings, family organizations; attending meetings of child/ youth/family oriented organizations (Boy/Girl Scouts, Little League, YMCA etc).
- 887 Lessons in music, singing, instruments.
- 642 Religious groups: Other activities; religious helping groups.
- 884 Meets, practices for organized sports.
- 886 Lessons in gymnastics, yoga, judo, body movement.
- 643 Meetings: attending meetings of church group, not primarily helping-oriented
- 885 Lessons in sports activities such as swimming, golf, tennis, skating, roller-skating.
- 634 Direct help to individuals or groups as a member of volunteer helping organizations; visiting, bringing food
- 888 Other sports and leisure lessons.
- 863 Acting in/rehearsing for a play
- 641 Meetings: religious helping groups; attending meetings of helping-oriented church groups
- 633 Fund raising activities as a member of volunteer helping organization, collecting money, planning a collection drive.
- 635 Other activities as a member of volunteer helping organizations, including social events and meals.
- 689 Activities of a special interest or identity organization (NAACP, Polish-American Society, neighborhood/block organizations).
- 602 Social activities as a member of a professional or union group.
- 621 Meetings, political/citizen organizations; attending meetings of a political party or citizen group, including city council.
- 622 Other participation in political party and citizen's groups, including social activities, helping with election, and meals.

Appendix E

Problem Behavior Index

Question	External	Internal
(He/She)has sudden changes in mood or feeling.	X	
(He/She)feels or complains that no one loves him/her.		X
(He/She)is rather high strung and nervous.	X	
(He/She)cheats or tells lies.	X	
(He/She)is too fearful or anxious.		X
(He/She)argues too much	X	
(He/She)has difficulty concentrating, cannot pay attention for long.	X	
(He/She)is easily confused, seems to be in a fog.		X
(He/She)bullies or is cruel or mean to others.	X	
(He/She)is disobedient.	X	
(He/She)does not seem to feel sorry after (he/she)misbehaves.	X	
(He/She)has trouble getting along with other children	X	X
(He/She)is impulsive, or acts without thinking.	X	
(He/She)feels worthless or inferior.		X
(He/She)is not liked by other children.		X
(He/She)has difficulty getting (his/her) mind off certain thoughts.		X
(He/She)is restless or overly active, cannot sit still	X	
(He/She)is stubborn, sullen, or irritable.	X	
(He/She)has a very strong temper and loses it easily.	X	
(He/She)is unhappy, sad or depressed.		X
(He/She)is withdrawn, does not get involved with others.		X
(He/She)breaks things on purpose.	X	
(He/She)cries too much.	X	
(He/She)demands a lot of attention.	X	
(He/She)is too dependant on others.		X
(He/She)feels others are out to get (him/her).		X
(He/She)is secretive, keeps things to (himself/herself).		X
(He/She)worries too much.		X

Appendix F

Positive Behavior Scale

Thinking about (CHILD), please tell me how much each statement applies to (CHILD) on a scale from 1-5, where 1 means “not at all like your child,” and 5 means “totally like your child,” and 2, 3 and 4 are somewhere in between.

	Not at all like child				Totally like child
Is cheerful, happy.	1	2	3	4	5
Waits (his/her) turn in games and other activities.	1	2	3	4	5
Does neat, careful work.	1	2	3	4	5
Is curious and exploring, likes new experiences.	1	2	3	4	5
Thinks before (he/she) acts, is not impulsive.	1	2	3	4	5
Gets along well with other children.	1	2	3	4	5
Usually does what you tell (him/her) to do.	1	2	3	4	5
Can get over being upset quickly.	1	2	3	4	5
Is admired and well-liked by other children.	1	2	3	4	5
Tries to do things for (himself/herself), is self reliant.	1	2	3	4	5

Appendix G

Parental Warmth Scale

About how often in the past month have you:

	Not in the past month	1 or 2 times in the past month	About once a week	Several times a week	Every day
Hugged or shown physical affection to your child?	1	2	3	4	5
Told (CHILD) that you love (him/her)?	1	2	3	4	5
Spent time with (CHILD) doing one of (his/her) favorite activities?	1	2	3	4	5
Talked with (him/her) about things (he/she) is especially interested in?	1	2	3	4	5
Told (CHILD) you appreciated something (he/she) did?	1	2	3	4	5

References

- About, F. E., Mendleson, M. J., & Purdy, K. T. (2003). Cross-race peer relations and friendship quality. *International Journal of Behavioral Development, 27*, 165-173.
- Achenbach, T. M., McConaughy, S. H., & Howell, C. T., (1987). Child/adolescent behavioral and emotional problems: Implications of cross-informant correlations for situational specificity. *Psychological Bulletin, 101*, 213–232.
- Aiken, L. A., & West, S. G. (1991). *Multiple Regression: Testing and Interpreting Interactions*. Thousand Oaks, CA: Sage.
- American Academy of Pediatrics Committee on Public Education. (1999). Media education. *Pediatrics, 104*, 341-343.
- Alexander, A., Ryan, M. S. & Munoz, P. (1984). Creating a learning context: Investigations on the interaction of siblings during television viewing. *Critical Studies in Mass Communication 1*, 4.
- Anderson, C. A., Berkowitz, L., Donnerstein, E., Huesmann, L. R., Johnson, J. D., Linz, D., et al. (2003). The influence of media violence on youth. *Psychological Science in the Public Interest, 4*, 81-110
- Anderson, C. A. & Bushman, B. J. (2001). Effects of violent video games on aggressive behavior, aggressive cognition, aggressive affect, physiological arousal, and prosocial behavior: A meta-analytic review of the scientific literature. *Psychological Science, 12*, 353-359.

- Anderson, D. R., & Field, D. E. (1991). Online and offline assessment of the television audience. In J. Bryant & D. Zillman (Eds.), *Responding to the screen: Reception and the reaction processes* (pp. 199-216). Hillsdale, NJ: Lawrence Erlbaum.
- Anderson, D. R., Lorch, E. P., Smith, R. Bradford, R. & Levin, S. R. (1981). The effects of peer presence on preschool children's television viewing behavior. *Developmental Psychology, 17*, 446-453.
- Andison, F. S. (1977). TV violence and viewer aggression: A cumulation of study results. *Public Opinion Quarterly, 41*, 314-331.
- Austin, E. W., Roberts, D. F., & Nass, C. I. (1990). Influences of family communication on children's television-interpretation processes. *Communication research, 27*, 545-564.
- Bagwell, C. L., Schmidt, M. E., & Newcomb, A. F. (2001). Friendship and peer rejection as predictors of adult adjustment. In D. W. Nangle & C. A. Erdley (Eds.) *The role of friendship in psychological adjustment* (pp. 25-49). San Francisco: Jossey-Bass.
- Baker, P. C., Keck, C. K., Mott, F. L., & Quinlan, S. V. (1993). NLSY Child Handbook, Revised Edition. Columbus, Ohio: Center for Human Resource Research, Ohio State University.
- Bandura, A. (1965). Influence of models' reinforcement contingencies on the acquisition of imitative responses. *Journal of Abnormal and Social Psychology, 66*, 575-582.

- Bandura, A. (1967). The role of modeling processes in personality development. In W. W. Hartup & N. L. Smothergill (Eds.), *The young child: Reviews of research* (pp. 42-58). Washington, DC: National Association for the Education of Young Children.
- Bandura, A., Ross, D., & Ross, S. A. (1963). Imitation of aggression through imitation of film-mediated aggressive models. *Journal of Abnormal and Social Psychology, 66*, 3-11.
- Bandura, A. & Walters, R. H. (1963). *Social Learning and Personality Development*. New York: Holt, Rinehart & Winston.
- Beentjes, J. W. & Van der Voort, T. H. (1988). Television's impact on children's reading skills: A review of research. *Reading Research Quarterly, 23*, 389-413.
- Berndt, T. J., & G. W. Ladd (1989). *Contributions of peer relationships to children's development*. New York: Wiley.
- Bianchi, S. M. & Robinson, J. (1997). What did you do today? Children's use of time, family composition, and the acquisition of social capital. *Journal of Marriage and the Family, 59*, 332-344.
- Bickham, D. S., Vandewater, E. A., Huston, A. C., Lee, J. H., Caplovitz, A. G., & Wright, J. C. (2003). Predictors of children's electronic media use: An examination of three ethnic groups. *Media Psychology, 5*, 107-137.
- Botha, M. P. & Van Vuuren, D. P. (1993). Reactions of Black and White children to TV violence in South Africa. *South African Journal of Psychology, 23*, 71-80.

- Boyatzis, C. J. & Matillo, G. M. (1995). Effects of “The Mighty Morphin Power Rangers” on children’s aggression with peers. *Child Study Journal*, 25, 45-57.
- Breen, R. (1996). Regression models: Censored, sample selected or truncated data. Thousand Oaks, CA: Sage.
- Buchman D. D., & Funk, J. B. (1996). Video and computer games in the ‘90s: Children’s time commitment and game preference. *Children Today*, 24, 12-16.
- Buckingham, D. (1993). *Children Talking Television: The Making of Television Literacy*. Washington: The Falmer Press.
- Bukowski, W. M. (2001). Friendship and the worlds of childhood. In D. W. Nangle & C. A. Erdley (Eds.) *The role of friendship in psychological adjustment* (pp. 93-105). San Francisco: Jossey-Bass.
- Bushman, B. J. (1995). Moderating role of trait aggressiveness in the effects of violent media on aggression. *Journal of Personality and Social Psychology*, 69, 950-960.
- Bushman, B., & Anderson, C. (2001). Media violence and the American public: Scientific fact versus media information. *American Psychologist*, 56, 477-489.
- Bushman, B. J. & Huesmann, R. L. (2001). Effects of televised violence on aggression. In D. G. Singer & J. L. Singer (Eds.), *Handbook of Children and the Media* (pp. 223-254). Thousand Oaks, CA: Sage.
- Caldwell, B. M., & Bradley, R. H. (1984). *Home observation for measurement of the environment*. Little Rock: University of Arkansas Press.

- Cantor, J. & Wilson, B. J. (2003). Media and violence: Intervention strategies for reducing aggression. *Media Psychology, 5*, 363-403.
- Census Bureau (1996). *Poverty Thresholds*. Retrieved May 1, 2004, from <http://www.census.gov/hhes/poverty/threshld/thresh96.html>.
- Children Now (2004, April). *Fall colors 2003-2004: Prime time diversity report*. Oakland, CA: Author.
- Cohn, D. A., Patterson, C., & Christopoulos, C. (1991). The family and children's peer relations. *Journal of Social and Personal Relationships, 8*, 315-346.
- Coie, J. D. & Dodge, K. A. (1983). Continuities and changes in children's social status: A five-year longitudinal study. *Merrill-Palmer Quarterly, 29*, 261-282.
- Coie, J. D., Dodge, K. A., & Kupersmidt, J. B. (1990). Group behavior and social status. In S. R. Asher and J. D. Coie (Eds.), *Peer rejection in childhood*. (pp. 17-59). New York: Cambridge.
- Coie, J. D., & Kupersmidt, J. (1983). A behavioral analysis of emerging social status in boys' groups. *Child Development, 54*, 1400- 1416.
- Comstock, G. & Paik, H. (1991). *Television and the American Child*. San Diego, CA: Academic Press.
- Cooper, J., & Mackie, D. (1986). Video games and aggression in children. *Journal of Applied Social Psychology, 16*, 726-744.
- Cowen, E. L., Pederson, A., Babigian, M., Izzo, L. D., & Trost, M. R. (1973). Long-term follow-up of early detected vulnerable children. *Journal of Consulting and Clinical Psychology, 41*, 438-446.

- Desmond, R. J., Singer, J. L., & Singer, D. G. (1990). Family mediation: Parental communication patterns and the influences of television on children. In J. Bryant (Ed.), *Television and the American Family* (pp. 293-309), Hillsdale, NJ: Lawrence Erlbaum Associates.
- Dill, K. E. & Dill, J. C. (1998). Video game violence: A review of the empirical literature. *Aggression and Violent Behavior, 3*, 407-428.
- Dodge, K. A. (1983). Behavioral antecedents of peer social status. *Child Development, 54*, 1386-1399.
- Dodge, K. A. (1985). Attributional biases in aggressive children. *Advances in Cognitive Behavioral Research, 4*, 73-110.
- Donnerstein, E., Slaby, R. G., & Eron, L. D. (1994). The mass media and youth aggression. In L. D. Eron, J. H. Gentry, & P. Schlegel (Eds.), *Reason to hope: A psychosocial perspective on violence and youth* (pp. 219-250). Washington, DC: American Psychological Association.
- Dorr, A., Kovaric, P., & Doubleday, C. (1989). Parent-child co-viewing of television. *Journal of Broadcasting and Electronic Media, 33*, 35-51.
- Dunn, J. (1992) Sisters and brothers: current issues in developmental research. In F. Boer and J. Dunn (Eds.), *Children's Sibling Relationships: Developmental and Clinical Issues* (pp. 1-17). Hillsdale, N.J.: Erlbaum.
- Edgar, P. (1977). *Children and Screen Violence*. St Lucia: University of Queensland Press.

- Entman, R. M. & Rojecki, A. (1998). Minorities in mass media: A status report. In A. K. Garmer (Ed.), *Investing in diversity: Advancing opportunities for minorities and media* (pp. 67-85). Washington, DC: Aspen Institute.
- Eron, L. D., Huesmann, L. R., Lefkowitz, M. M., & Walder, L. O. (1972). Does television violence cause aggression? *American Psychologist*, *27*, 253-263.
- Erwin, P. (1993). *Friendship and Peer Relations in Children*. Chichester, UK: John Wiley & Sons.
- Fein, G. G. (1981). Pretend play in childhood: An integrative review. *Child Development*, *52*, 1095-1118.
- Freedman, J. L. (2002). *Media violence and its effects on aggression: Assessing the scientific evidence*. Toronto: University of Toronto Press.
- Friedrich-Cofer, L., & Huston, A. C. (1986). Television violence and aggression: The debate continues. *Psychological Bulletin*, *100*, 364-371.
- Funk, J. (1993). Reevaluating the impact of video games. *Clinical Pediatrics*, *32*, 86-90.
- Graham, J. A., & Cohen, R. (1997). Race and sex as factors in children's sociometric ratings and friendship choices. *Social Development*, *6*, 353-370.
- Graham, J. A., Cohen, R., Zbikowski, S. M., & Secrist, M. E. (1998). A longitudinal investigation of race and sex as factors in children's classroom friendship choices. *Child Study Journal*, *28*, 563-583.
- Greenberg, B. S., & Brand, J. E. (1994). Minorities and the mass media. In J. Bryant & D. Zillman (Eds.), *Media effects: Advances in theory and research*. Hillsdale, NJ: Lawrence Erlbaum Associates.

- Griffiths, M. (1999). Violent video games and aggression: A review of the literature. *Aggression and Violent Behavior, 4*, 203-212.
- Haefner, M. J. & Wartella, E. A. (1987). Effects of sibling coviewing on children's interpretations of television programs. *Journal of Broadcasting & Electronic Media, 31*, 153-168.
- Hearold, S. (1986). A synthesis of 1043 effects of television on social behavior. In G. Comstock (Ed.), *Public communication and behavior* (Vol. 1, pp. 65-133). San Diego, CA: Academic Press.
- Himmelweit, H. T., Oppenheim, A. N., & Vince, P. (1958). *Television and the child*. London: Oxford University Press.
- Hofferth, S. L. (1998). *Healthy environments. Healthy children: Children in families*. Ann Arbor, Mi: Institute for Social Research, University of Michigan.
- Hofferth, S. (1999, May). Family reading to young children: social desirability and cultural biases in reporting. Paper presented at the National Research Council Workshop on Measurement of and Research on Time Use, Committee on National Statistics, Washington. DC.
- Hofferth, S. L. & Sandberg, J. F. (2001). How American children spend their time. *Journal of Marriage and the Family, 63*, 295-308.
- Hoffner, C., & Haefner, M. J. (1997). Children's comforting of frightened coviewers: Real and hypothetical television-viewing situations. *Communication Research, 24*, 136-152,
- Howes, C. (1988). Peer interaction of young children. *Monographs of the Society for Research in Child Development, 53*(1, Serial No. 217).

- Huesmann, L. R. (1986). Psychological processes promoting the relation between exposure to media violence and aggressive behavior by the viewer. *Journal of Social Issues*, 42, 125-139.
- Huesmann, L. R. (1988). An information processing model for the development of aggression. *Aggressive Behavior*, 14, 13-24.
- Huesmann, L. R., & Eron, L. (1986). *Television and the aggressive child: A cross-national comparison*. Hillsdale, NJ: Lawrence Erlbaum.
- Huesmann, L. R., Moise-Titus, J., Podolski, C. L., & Eron, L. D. (2003). Longitudinal relations between children's exposure to TV violence and their aggressive and violent behavior in young adulthood: 1977-1992. *Developmental Psychology*, 39, 201-221.
- Huntemann, N., & Morgan, M. (2001). Mass media and identity development. In D. G. Singer & J. L. Singer (Eds.), *Handbook of children and the media* (pp. 309-322). Thousand Oaks, CA: Sage.
- Huston, A. C. & Wright, J. C. (1996). Television and socialization of young children. In T. M. MacBeth (Ed.), *Tuning in to Young Viewers: Social Science Perspectives on Television*. Thousand Oaks, CA: Sage.
- Huston, A. C., & Wright, J. C. (1997). Mass media and children's development. In W. Damon (Series Ed.), I. E. Sigel & K. A. Renninger (Vol. Eds.), *Handbook of child psychology: Vol. 4. Child psychology in practice* (5th ed., pp. 999-1058). New York: Wiley.

- Huston, A. C., Wright, J. C., Marquis, J. & Green, S. B. (1999). How young children spend their time: Television and other activities. *Developmental Psychology*, 35, 912-925
- Institute for Social Research (1997). *SSL Coding Manual*. Retrieved November 10, 2003, from University of Michigan, Institute for Social Research Web site: <http://psidonline.isr.umich.edu/CDS/questionnaires/codingman.pdf>
- Institute for Social Research (1999). *Description of the 1997 PSID Child Supplement*. Retrieved November 10, 2003, from University of Michigan, Institute for Social Research Web site: <http://psidonline.isr.umich.edu/CDS/weightsdoc.html>
- Irving, K. (1998). The location and arrangement of peer contacts: Links with friendship initiation knowledge in 4- to 7-year-olds. In P. T. Slee & K. Rigby (Eds.), *Children's Peer Relations* (pp. 164-182). London: Routledge.
- James, N. C. & McCain, T. A. (1982). Television games preschool children play: Patterns, themes, and uses. *Journal of Broadcasting*, 26, 783-800.
- Johnson, J. G., Cohen, P., Smailes, E. M., Kasen, S., & Brook, J. S. (2002). Television viewing and aggressive behavior during adolescence and adulthood. *Science*, 295, 2468-2471.
- Johnsson-Smaragdi, U. (1983). *TV Use and Social Interaction in Adolescence*. Stockholm, Sweden: Almqvist & Wiksell International.
- Johnstone, J. W. C. (1974). Social integration and mass media use among adolescents: A case study. In J. G. Blumler & E. Katz (Eds.), *The uses of mass*

- communication: Current perspectives on gratification research*. Beverly Hills, CA: Sage.
- Juster, F., & Stafford, F. P. (1985). *Time, Goods, and Well-Being*. Ann Arbor, MI: Institute for Social Research.
- Kaiser Family Foundation. (1999, November). *Kids and media at the new millennium*. Menlo Park, CA: Author.
- Kraut, R., Patterson, M., Lundmark, V., Kiesler, S., Mukophadhyay, T., & Scherlis, W. (1998). Internet paradox: A social technology that reduces social involvement and psychological well-being? *American Psychologist*, *53*, 1017-1031.
- Krosnick, J. A., Anand, S. N., & Hartl, S. P. (2003). Psychological predictors of heavy television viewing among preadolescents and adolescents. *Basic and Applied Social Psychology*, *25*, 87-110.
- Kubey, R. W. (1986). Television use in everyday life: Coping with unstructured time. *Journal of communication*, *36*, 108-123.
- Kubey, R., & Csikszentmihalyi, M. (1990). *Television and the quality of life: How Viewing shapes everyday experience*. Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.
- Kubey, R., & Larson, R. (1990). The use and experience of the new video media among children and young adolescents. *Communication Research*, *17*, 107-130.
- Kunkel, D., Wilson, B. J., Linz, D., Potter, J., Donnerstein, E., Smith, S. L., et al. (1996). *Violence in television programming overall*: University of California,

- Santa Barabara study. In *National Television Violence Study* (Vol. 1). Studio City, CA: Mediascope.
- Kupersmidt, J. B., DeRosier, M. E., & Patterson, C. P. (1995). Similarity as the basis for children's friendships: The roles of sociometric status, aggressive and withdrawn behavior, academic achievement, and demographic characteristics. *Journal of Social and Personal Relationships, 12*, 439-452.
- Ladd, G. W. (1983). Social networks of popular, average and rejected children in social settings. *Merrill-Palmer Quarterly, 29*, 282-307.
- Ladd, G. W. (1984). Social skill training with children: Issues in research and practice. *Clinical Psychology Review, 4*, 317-337.
- Ladd, G. W. & Price, J. M. (1993). Play styles of peer-accepted and peer-rejected children on the playground. In C. H. Hart (Ed.), *Children on Playgrounds: Research Perspectives and Applications* (pp. 130-161). Albany, NY: State University of New York Press.
- Ladd, G. W., Price, J. M., & Hart, C. H. (1988). Predicting preschoolers' peer status from their playground behaviors. *Child Development, 59*, 986-992.
- Lawrence, K, & Wozniak, P. H. (1989). Children's television viewing with family members. *Psychological Reports, 65*, 395-400.
- Leifer, A. D. & Roberts, D. F. (1972) Children's responses to television violence. In J. P. Murray, E. A. Rubinstein, & G. A. Comstock (Eds.), *Television and social behavior* (pp. 43-201). Washington, DC: U.S. Government Printing Office.

- Lemish, D., & Rice, M. L. (1986). Television as a talking picture book: A prop for language acquisition. *Journal of Child Language*, 13, 251-274.
- Levine, S. B. (1995). A variety of measures could combat media violence. In C. Wekesser (Ed.), *Violence in the media* (pp. 142-147). San Diego, CA: Greenhaven Press.
- Liebert, R. M. & Baron, R. A. (1971). Short-term effects of televised aggression on children's aggressive behavior. In J. P. Murray, E. A. Rubinstein, & G. A. Comstock (Eds.), *Television and social behavior: Vol. II. Television and social learning* (pp. 181-201). Washington, DC: U.S. Government Printing Office.
- Liebert, R. M., Sprafkin, J. N., & Davidson, E. S. (1982). *The early window: Effects of television on children and youth*. New York: Pergamon Press.
- Lin, C., & Atkin, D. (1989). Parental mediation and rulemaking for adolescent use of television and VCRs. *Journal of Broadcasting & Electronic Media*, 33(1), 53-67.
- Livingstone, S. & Bovill, M. (2001) *Children and Their Changing Media Environment*. Hillsdale, NJ: Lawrence Erlbaum Associates.
- Livingstone, S. & Lemish, D. (2001). Doing comparative research with children and young people. In S. Livingstone & M. Bovill (Eds.), *Children and Their Changing Media Environment* (pp. 31-50). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Lull, J. (1980). The social uses of television. *Human Communication Research*, 6(3), 197-209.

- Lynn, R., Hampson, S., & Agahi, E. (1989). Television violence and aggression: A genotype-environment, correlation and interaction theory. *Social Behavior and Personality, 27*(2), 143-164.
- Martin, J. & Ross, H. (1995). The development of aggression within sibling conflict, *Early Education and Development, 6*, 335-358.
- McDavid, J. W., & Harari, H. (1966). Stereotyping of names and popularity in grade school children. *Child Development, 37*, 453-459.
- McDonald, J. P. & Moffitt, R. F. (1980). The uses of Tobit analysis. *Review of Economics and Statistics, 62*, 318-321.
- McKenna, M. W., & Ossoff, E. P. (1998). Age differences in children's comprehension of a popular television program. *Child Study Journal, 28*, 53-68.
- Messaris, P. (1986). Parents, children, and television. In G. Gumpert & R. Cathcart (Eds.), *Inter/media: Interpersonal communication in a media world*. New York: Oxford University Press.
- Milavsky, J.R., Kessler, R., Stipp, H., & Rubens, W.S. (1982). Television and aggression: Results of a panel study. In D. Pearl, L. Bouthilet, & J. Lazar (Eds.), *Television and behavior: Ten years of scientific progress and implications for the eighties: Vol. 2. Technical reviews* (DHHS Publication No. ADM 82-1196, pp. 138-157). Washington, DC: U.S. Government Printing Office.
- Miller, B. M. & O'Connor, S. (1995). Out-of-school time: A study of children in three low-income neighborhoods. *Child Welfare, 74*, 1249-1281.

- Mize, J. & Ladd, G. W. (1988) Predicting preschoolers' peer behavior and status from their interpersonal strategies: A comparison of verbal and enactive responses to hypothetical social dilemmas. *Developmental Psychology*, 24, 782-788.
- Mize, J. & Ladd G. W. (1990). A cognitive-social learning approach to social skill training with low-status preschool children. *Developmental Psychology*, 26, 388-397.
- Mize, J., Ladd, G. W., & Price, J. M. (1985). Promoting positive peer relations with young children: Rationales and strategies. *Child Care Quarterly*, 14, 221-237.
- Mize, J., Russell, A., & Pettit, G. S. (1998). Further explorations of family-peer connections: The role of parenting practices and parenting style in children's development of social competence. In P. T. Slee & K. Rigby (Eds.), *Children's Peer Relations* (pp. 31-44). London: Routledge.
- Mohr, P. (1979). Parental guidance of children's viewing of evening television programs. *Journal of Broadcasting*, 23(2). 213-229.
- Mutz, D. C, Roberts, D. F., & van Vuuren, D. P. (1993). Reconsidering the displacement hypothesis: Television's influence on children's time use. *Communication Research*, 20, 51-75.
- Nathanson, A. I. (2001). Parents versus peers: Exploring the significance of peer mediation of antisocial television, *Communication Research*, 28, 251-274.
- Neuman, S. B. (1991). *Literacy in the television age: The myth of the TV effect*. Norwood, NJ: Ablex.

- Neuman, S.B. (1988). The displacement effect: Assessing the relation between television viewing and reading performance. *Reading Research Quarterly*, 23, 414-440.
- Paik, H. & Comstock, G. (1994). The effects of television violence on antisocial behavior: A meta-analysis. *Communication Research*, 21, 516-546.
- Papper, R. A., Holmes, M. E., & Popovich, M. N. (2004). Middletown media studies: Multitasking and how much people are really using the media. *The International Digital Media and Arts Association Journal*, 1, 4-56.
- Parker, J. G., & Asher, S. R. (1987). Peer relations and later personal adjustment: Are low-accepted children at risk? *Psychological Bulletin*, 102, 357-389.
- Patterson, C. J., Vaden, N. A., Griesler, P. C., & Kupersmidt, J. B. (1991). Income level, gender, ethnicity, and household composition as predictors of children's peer companionship outside of school. *Journal of Applied Developmental Psychology*, 12, 447-465.
- Peterson, J. L. & Zill, N. (1986). Marital disruption, parent-child relationships, and behavior problems in children. *Journal of Marriage & the Family*, 48, 295-307.
- Polit, D. (1998). *The Positive Behavior Scale*. Saratoga Springs, NY: Humanalysis.
- Powell, T. H. and Gallagher, P. A. (1993). *Brothers and Sisters – A Special Part of Exceptional Families*. Baltimore, MD: Paul H. Brookes Publishing Co.
- Provenzo, E. F. (1991). *Video kids: Making sense of Nintendo*. Cambridge, MA: Harvard University Press.

- Putallaz, M. & Gottman, J. M. (1981). Social skills and group acceptance. In S. R. Asher & J. M. Gottman (Eds.), *The development of children's friendships*. (pp. 116-149). New York: Cambridge University Press.
- Riley, M W and Riley, J W (1951) A Sociological Approach to Communications Research. *Public Opinion Quarterly*, 15, pp. 445-460.
- Robinson, J. A. (1998). The impact of race and ethnicity on children's peer relations. In P. T. Slee & K. Rigby (Eds.), *Children's Peer Relations* (pp. 76-88). London: Routledge.
- Roff, M. (1961). Childhood social interactions and young adult bad conduct. *Journal of Abnormal and Social Psychology*, 63, 333-337.
- Roff, M., Sells, S. B., & Golden, M. M. (1972). *Social adjustment and personality development in children*, Minneapolis: University of Minnesota Press.
- Roistacher, R. C. (1974). A microeconomic model of sociometric choice. *Sociometry*, 37, 219-238.
- Rubin, A. M. (1984). Ritualized and Instrumental Television Viewing. *Journal of Communication*, 34, 67-77.
- Rubin, K. H., & Krasnor. L. R. (1986). Social-cognitive and sociable behavioral perspectives on problem solving. In M. Perlmutter (Ed.), *The Minnesota Symposia on Child Psychology* (Vol. 18, pp. 1-68). Hillsdale. NJ: Erlbaum.
- Sanson, A., Finch, S., Matjacic, E., & Kennedy, G. (1998). Who says? Associations among peer relations and behaviour problems as a function of source of information, sex of child and analytic strategy. In P. T. Slee & K. Rigby (Eds.), *Children's Peer Relations* (pp. 183-204). London: Routledge.

- Scantlin, R. M. (1999). *Interactive media: An analysis of children's computer and video game use*. Unpublished doctoral dissertation, University of Texas, Austin.
- Schramm, W., Lyle, L., & Parker, E. B. (1961). *Television in the lives of our children*. Stanford, CA: Stanford University Press.
- Sherry, J. L. (2001). The effects of violent video games on aggression: A meta-analysis. *Human Communication Research, 27*, 409-431.
- Shure, M. B. & Spivack, G. (1980). Interpersonal problem-solving as a mediator of behavioral adjustment in preschool and kindergarten children. *Journal of Applied Developmental Psychology, 1*, 29-44.
- Singer, J. L., & Singer, D. G. (1981). *Television, imagination, and aggression: A study of preschoolers' play*. Hillsdale, NJ: Lawrence Erlbaum.
- Sparks, G. G. & Sparks, C. W. (2002). Effects of media violence. In J Bryant & D Zillman (Eds.) *Media Effects: Advances in Theory and Research* (pp. 269-285). Erlbaum: Mahwah, New Jersey.
- Spivack, G. & Shure, M. B. (1974). *Social Adjustment of Young Children: A Cognitive approach to Solving Real Life Problems*. San Francisco, CA: Jossey-Bass.
- Stormshak, E. A., Bellanti, C. J. & Bierman, K. L. (1996). The quality of sibling relationship and the development of social competence and behavioral control in aggressive children. *Developmental Psychology, 32*, 79-89.

- Strouse, J. S. & Buerkel-Rothfuss, N. (1987). Self-reported media exposure and sexual attitudes and behaviors of college students. *Journal of Sex Education and Therapy, 13*, 43-51.
- Suoninen, A. (2001). The role of media in peer group relations. In S. Livingstone & M. Bovill (Eds.), *Children and Their Changing Media Environment* (pp. 31-50). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Thomas, J. T., & Daubman, K. A. (2001). The relationship between friendship quality and self-esteem in adolescent girls and boys. *Sex Roles, 47*, 53-66.
- Tobin, J. (1958). Estimation of relationships for limited dependent variables. *Econometrica, 26*, 24-36.
- Tower, R. B., Singer, D. G., Singer, J. L., & Briggs, A. (1979). Differential effects of television programming on preschoolers' cognition, imagination, and social play. *American Journal of Orthopsychiatry, 49*, 265-281.
- Turner, C. W., Hesse, B. W., & Peterson-Lewis, S. (1986). Naturalistic studies of long-term effects of television violence. *Journal of Social Issues, 42*(3), 51-73.
- Van der Voort, T. H. (1986). *Television violence: A child's eye view*. Amsterdam: North-Holland.
- Vandewater, E. A., Bickham, D. S., & Lee, J. H. (April, 2003). Time well spent? The impact of electronic media use on children's free-time activities. In S. Calvert (Chair), *Children and media: A memorial to John C. Wright*. Paper presented at the biennial meeting of the Society for Research on Child Development, Tampa FL.

- Wechsler, D. (1974). *Wechsler Intelligence Scales for children-Revised*. New York: The Psychological Corporation.
- Wartella, E. (1986). Getting to know you: How children make sense of television. In G. Gumpert & R. Cathcart (Eds.), *Inter/media: Interpersonal communication in a media world*. New York: Oxford University Press.
- Wiegman, O., Kuttschreuter, M., & Baarda, B. (1992). A longitudinal study of the effects of television viewing on aggressive and prosocial behaviors. *British Journal of Social Psychology*, *31*, 147-164.
- Williams, T.M. (1986). *The impact of television: A natural experiment in three communities*. New York: Academic Press.
- Windahl, S. (1981). Uses and Gratifications at the Crossroads. In G. C. Wilhoit & H. de Bock (Eds.), *Mass Communication Review Yearbook, Vol. 2*. Beverly Hills, CA: Sage.
- Winn, M. (1977). *The Plug-In Drug*. New York: Viking Penguin.
- Wood, W., Wong, E., & Chachere, J. G. (1991). Effects of media violence on viewers' aggression in unconstrained social interaction. *Psychological Bulletin*, *109*, 371-383.
- Wright, J. C., Huston, A. C., Vandewater, E. A., Bickham, D. S., Scantlin, R. M., Kotler, J. A., Caplovitz, A. G., Lee, J. H., Hofferth, S., Finkelstein, J. (2001) American children's use of electronic media in 1997: A national survey. *Journal of Applied Developmental Psychology*, *22*, 31-47.
- Wright, J. C., St. Peters, M., & Huston, A. C. (1990). Family television use and its relation to children's cognitive skills and social behavior. In J. Bryant (Ed.),

Television and the American Family (pp. 227-251). Hillsdale, NJ: Lawrence Erlbaum Associates.

Young, L. L., & Cooper, D. H. (1944). Some factors associated with popularity. *The Journal of Educational Psychology*, 35, 513-535.

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