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Parent Media Attitudes and Guidance and Child Media Use for a Group of Preschool Children

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**Parent Media Attitudes and Guidance and Child Media Use for a
Group of Preschool Children**

by

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Parent Media Attitudes and Guidance and Child Media Use for a Group of Preschool Children

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This dissertation provides a review of the literature and three studies related to home media environments and parent characteristics, attitudes, and media guidance for a group of preschool-aged children. The studies used a cross-sectional survey ($N = 356$) parents conducted at public health district WIC clinics over three weeks during 2008.

In the first study, parents reported children's media use, child and family characteristics, and the home media environment. Child's age category ($\beta = .495, p = .000$) and the location of a TV or game console in the child's room ($\beta = .68, p = .000$) predicted the number of media channels used by the child. The likelihood of activity-promoting media use was highest for two- and three-year-old children.

The second study used structural equation modeling to examine child and parent characteristics, parent attitudes and home media density associated with time with media for 237 low-income Hispanic children aged six to 60 months. Results reflected significant relationships among parent media attitudes, home media density, and children's time with TV, DVDs, and videogames. Parent attitudes and media density mediated children's time with activity-promoting media.

The third study examined the relationships of parent media guidance to media attitudes and children's age and weight risk status. The study sample ($n = 257$) included low-income, primarily Hispanic, parents of children aged 12 to 72 months, with surveys matched to children's weight measurements. Factor analysis and structural equation modeling reflected that parent media guidance was comprised of restrictive and promotive factors. Child age and child weight risk category were associated with promotive guidance, and child weight risk was negatively associated with parents' health locus of control beliefs.

These media use patterns imply that young children will use home screen media that promote physical activity. Interventions geared to reduce young children's time with media as part of obesity prevention efforts should consider parent attitudes and beliefs concerning media and their children's health as well as the health-promoting potential of the media children are using.

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Chapter I: Review of the Literature

Background and significance

Parents face challenges in balancing the opportunities for education and entertainment with the potential adverse outcomes that might be associated with television and other home media use for their preschool children. The overall purpose of this research was to identify aspects of the home media environment and parental attitudes and actions that may be associated with health-promoting uses of media. Parents of preschool-aged children enrolled in WIC, the federal Supplemental Nutrition Program for Women, Infants, and Children, served as participants in the research. Because of the large program enrollment and nutritional risk status of WIC participants, effective health-promoting strategies for this population can contribute to progress in addressing childhood obesity. For WIC parents in particular, helping their children use TV and other screen media at home may be an important component of overall health for the child.

The relationship of parental roles to preschool children's media use is of concern from a public health perspective because of the increasing prevalence of overweight in low-income children in general (Mei et al., 1998a) and within the WIC population specifically (Cole, 2001). Home media have been considered, albeit with mixed findings, as factors in the growing epidemic of childhood obesity (Ariza, Chen,

Binns, & Christoffel, 2004; Ariza, Greenberg, & Unger, 2004; Dennison, Erb, & Jenkins, 2002; Dietz, 2001, 2004b; Dietz & Gortmaker, 2001).

The complex associations that may or may not exist between home media use, parental beliefs and actions, and children's overweight status require consideration from several perspectives. There is extensive research about the relationship between media use, particularly television and video games, and overweight or obesity in children. However, preschool children do use home screen media extensively, and it does not seem likely that this use will decrease. For low-income children, TV and other home screen media can serve as an educational resource and may serve as a major part of the family home environment.

Theoretical rationale

Bronfenbrenner's bioecological theory of human development (1979) and Christensen's conceptual framework for the health-promoting family (Christensen, 2004) provided the theoretical basis for this research. The work of these theorists emphasizes the consideration of environmental or ecological factors that impact on young children—and their parents- at various levels. Bronfenbrenner's socio-ecologic approach has influenced research in childhood obesity prevention and physical activity (Brewis, 2003; Davison & Birch, 2001; Lobstein & Dobb, 2005; Peterson et al., 2002; Salmon, Timperio, Telford, Carver, & Crawford, 2005) and has also been used by child media researchers (Atkin, 2001; Bronfenbrenner, 1979, 2005; Jordan, 2004; Jordan, 2004; Jordan, 2005; Trawick-Smith, 2003; Warren, 2005).

Trawick-Smith (2003) notes that ecological systems theory has been viewed as culturally sensitive, in that it fully integrates cultural differences into explanations of

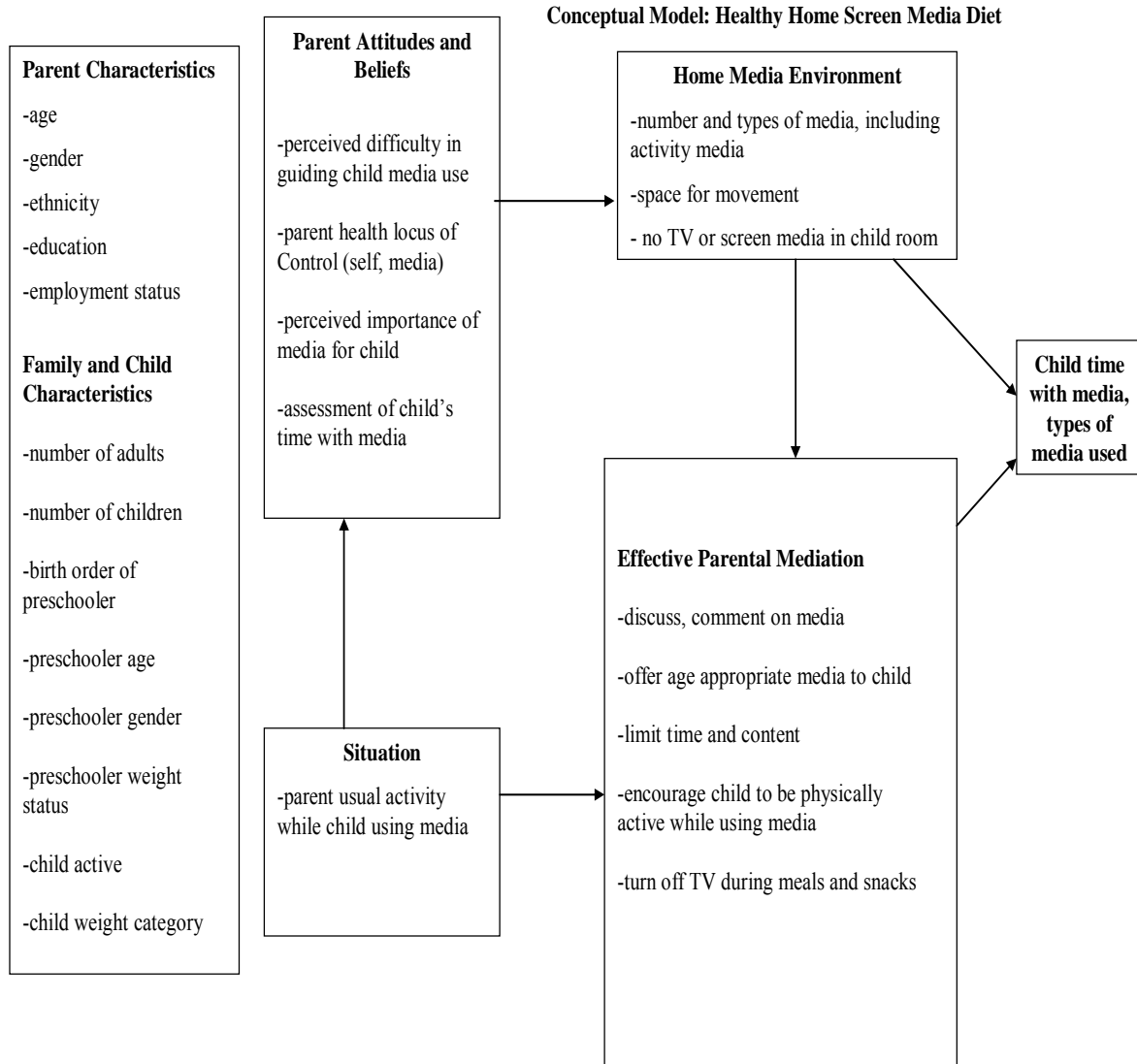
human development. For this reason, it is seen as especially useful in identifying social issues for children in poverty or in underrepresented groups. The model includes “mass media” as one component of the exosystem—institutions or people that may indirectly affect children’s experiences, according to Trawick-Smith (2003).

The present research focused on parents’ roles in preschoolers’ use of home screen media. The conceptual basis for the studies was that parents can promote children’s healthy use of media by mediating or guiding its use. The theoretical rationale built on Christensen’s (2004) conceptual framework for the health-promoting family, and expanded on the conceptual model of Machida, Taylor and Kim (2002) concerning the role of parental beliefs in predicting home learning activities. Using these foundations, such an orientation predicts that parents are likely to mediate (guide) their children’s use of home screen media to the extent that they perceive that this action will be beneficial to their child and to the extent that they perceive they are able to do so. In this framework, parents’ perceptions of the effects of media on their child’s health and their beliefs about own influence on their child’s health will influence the degree to which they provide media guidance. Parent and family characteristics and the home media environment will influence parents’ media attitudes and self-efficacy for guidance, which will in turn influence the degree to which parents provide guidance.

The most powerful research paradigm, according to Bronfenbrenner, is the Process-Person-Context Model. This model achieves the level of complexity that is implicit in the child overweight-media relationship, because it provides for consideration of the context within which the child’s media use occurs, the personal

characteristics of children, parents, and others in the home setting, and the process(es) that may occur vis-à-vis the child's use of media at home. The conceptual model shown in Figure I-1 provides a suggested schema for the relationships among preschool children's media use, child overweight, and parent's roles concerning the child's media use.

Figure I-1. Conceptual model: Healthy home screen media diet



This conceptual model is based upon the following rationale: For preschool children, media use at home is influenced by the home screen media environment, family and parent characteristics, context, and parent beliefs and actions. Parental guidance (regulation or “mediation”) of preschool children’s media use affects the time

and types of media used by children at home. This parental guidance of child's media use is in turn influenced by the environmental context, including the number of people in household, types of screen media available in the home (home screen media environment), and availability of time for parents to spend with children. Parent characteristics (attitudes and behaviors) concerning media use by their children at home are influenced by personal characteristics, including culture/ethnicity, media attitudes and knowledge, locus of control and self-efficacy for media selection and regulation. Parental guidance of a child's media use is influenced by parental perception that media is influential in the child's health and the parent's efficacy and locus of control in regard to both the child's health and the child's use of media. Parents may be expected to engage in guidance of their children's media use to the extent that they perceive that they are able to do so and to the extent that they perceive that such actions would have a positive bearing on the child's health.

To focus more explicitly on parents' behavior vis-à-vis their children's use of media, parental guidance of preschool children's media use at home may take various forms. It is also likely to be a function of the home media environment, the situation as perceived by the parent, and the parent's beliefs about media and their child. These situational and personal factors will be associated (or not) with the preschool child's overweight and obesity to the extent that they are related to the child's energy expenditure. The expenditure of energy (as related to media use) may be defined by the child's physical activity while using media and/ or the child's use of activity-promoting media.

As seen in Figure I-1, the general construct of parental beliefs has been decomposed into components: beliefs about the importance of home screen media use, self-efficacy to guide their child's use of TV, and parent's health locus of control beliefs. These beliefs, along with the construct of "home media environment," contribute to effective parental guidance of the child's media use: setting limits on time and content, offering media that is age appropriate, discussing media while the child is using it, providing sufficient space for movement around the TV, and encouraging the child to dance or move while using media. To the degree that the child's use of media such as TV, DVDs, and videogames at home is consistent with a "healthy home screen media diet," the association of media use with childhood obesity can be ameliorated or prevented.

Using a health-promoting model provides a structure that allows for the consideration of factors that have previously been shown to influence child weight status, as well as the inclusion of constructs such as home media environment, situation, parental health locus of control (DeVellis, DeVellis, Blanchard, & Klotz, 1993; R. F. DeVellis et al., 1993), and self-efficacy (Bandura, 1986, 1995). Perhaps more important, Christensen's (2004) model emphasizes the health-promoting agency of the family and thus offers the option to consider that the family members, including children, may use media in ways that are health-promoting, rather than problem-causing.

Extent of media use by preschoolers: types and amount.

Studies with preschool children have found that by the time they reach school age, children are heavy users of television and other electronic media at home. For example, Wright, Huston et al.,(2001) found that in 1997, children aged three to five were watching TV almost two hours a day, and that boys of this age were using video games for almost one hour and girls, almost half an hour. In a cross-sectional analysis of a national dataset on early child development, Lumeng and colleagues (2006) found that for children born in 1991, two-thirds of those below age three had watched more than two hours of TV a day, and during the years 1990 through 1998, four year olds were reported to be watching almost three hours of television per day (Certain & Kahn, 2002). A report on a parent survey conducted by the Kaiser Family Foundation (Rideout et al., 2003) discusses the use of media, including video games, by very young children (aged six months through six years). Among the findings of the survey were that 83% of the children in the families surveyed used screen media in a typical day, with an average screen time of almost two hours; 73% of infants and children in this age group watched videos or DVD's in a typical day; nearly half (48%) of the children aged six and under had used a computer, and 30% had played video games. About 5% of children under age two had played video games.

More recently, other researchers (Anand & Krosnick, 2005) found that peak video game usage among preschoolers occurred for 4-and 5-year-olds. Such patterns are of concern from a developmental perspective because the period between four and six years of age represents a peak time for physical activity play (Pellegrini & Smith, 1998a, 1998b), in which children spontaneously engage in vigorous activities. This

developmental stage also corresponds with the period of adiposity rebound, in which young children's body fatness normally reaches a low point and begins to rise.

Increases in body fat at an earlier age have been associated with obesity in adulthood (Whitaker, Pepe, Wright, Seidel, & Dietz, 1998).

Overweight and Obesity in Preschoolers

Weight in general has been found to be a factor of the relationship between energy intake (diet) and energy expenditure (physical activity in particular) (Anderson, Bandini, Dietz, & Must, 2004). In young children weight gain is a normal development because children are growing, but excessive weight gain may be associated with factors that include a lack of vigorous physical activity (Bogaert, Steinbeck, Baur, Brock, & Bermingham, 2003). Addressing adiposity for preschool-aged children may be especially important in preventing later obesity, because the age when body fatness reaches its low point after infancy (between 4 and 6 years of age) is a critical risk period for the development of obesity later in life (Anderson, Bandini, Spadano, Dietz, & Must, 2001; Janz et al., 2002; Moore, Gao, Bradlee, Cupples, Sundarajan-Ramamurti et al., 2003). Compounding the potential risk for later obesity, the preschool years may also be a time when children's spontaneous physical activity or exercise play has peaked and begins to decline (Pellegrini & Smith, 1998a, 1998b).

Childhood obesity has been defined in different ways. As noted by Must and Strauss (1999) and Troiano and Flegal (1999), there is no uniform definition. All of the measures that are in use correlate fairly well with body fat and agree in their categorization of children over 24 months old with BMI (Body Mass Index, a weight/height ratio) greater than the 85th or 95th percentiles as overweight or obese.

According to the United States Centers for Disease Control and Prevention (CDC), ("BMI — Body Mass Index: About BMI for Children and Teens," 2006), BMI for children is calculated using weight and height measurements applied to the CDC BMI-for-age growth charts. Thus, the BMI for a particular weight and height may vary according to the age and gender of the child because the amount of body fat varies by age and is different for girls and boys. The CDC has also used the growth charts to determine percentile rankings for children under age two; these percentiles are based on the ratio of the child's weight to length (or height). The WIC program does not use the term "obesity" in referring to children, but follows the protocol provided by the CDC that defines "overweight" in reference to a BMI that is above the 95th percentile for a child's age group; children are deemed "at risk" of overweight if their BMI falls between the 85th and 95th percentiles. In this research, the child's weight risk category was determined by applying the CDC age-and gender-specific growth chart percentiles to weight and height information obtained from WIC clinical records. The resulting weight and height percentiles were assigned to categories that correspond to the risk assignments used in WIC.

Association between home media use and obesity in preschool children

Public health researchers (Gortmaker, Dietz, & Cheung, 1990) began noting rapid increases in obesity and the associations between TV viewing and obesity in American children and adolescents during the 1980's. Dietz and Gortmaker (1985) and Pate and Ross (1987) found strong associations between obesity and extended periods of television viewing in national child surveys. Gortmaker, Must, and associates (1996) found a dose-response relationship between overweight and hours

of television watched per day, for school-aged children. They reported odds ratios associated with various amounts of TV viewing time, and reported an adjusted odds ratio of 8.3 (95% confidence interval of 2.6 to 26.5) for the increased incidence of overweight associated with watching more than 5 hours of TV per day, compared with children who watched 0 to two hours.

In 1995, the Committee on Communications of the American Academy of Pediatrics (AAP) issued recommendations that parents select, limit, and supervise television viewing, and, in 1999, the Public Education Committee of the AAP recommended that children under age two not be exposed to television and reiterated that children spend no more than two hours a day watching TV. The United States Surgeon General (Carmona, 2005) issued a “call to action” to prevent overweight and obesity for both adults and children and echoed the time restrictions for television previously recommended by the American Academy of Pediatrics. Although a number of researchers have used “two hours” as a break point for assessing the time spent watching television (TV), the basis for this specificity in public health recommendations is not clearly supported by research findings, at least for preschool-aged children.

Some researchers have found positive relationships between TV and overweight for preschoolers. For example, Janz and colleagues (2002) studied associations among fatness, leanness, and physical activity in 467 children (range 4-6 years) and found that body fat percentages for children with the highest reported TV viewing were higher than for children whose parents reported less TV. More recently, Lumeng, Rahnama et al., (2006) found that children’s overweight status at 36 months

was significantly correlated with exposure to two or more hours of TV per day (versus children exposed to fewer than two hours,) although television exposure was not significantly correlated with child overweight at 54 months.

Other researchers have not found associations between children's home screen media use and their weight status, or have found that the association varies according to the age of the child or the way that media is being used by the family. Burdette and Whitaker (2005) found that TV viewing was not significantly correlated to children's BMI for preschool-aged children. Saelens, Sallis, and colleagues (2002) found that TV hours were significantly related to the children's BMI when children were about 36 months old, but the correlation between children's BMI and TV hours was not significant when children were about 54 months old. Other studies (Vandewater & Huang, 2006; Vandewater, Shim, & Caplovitz, 2004) have not found significant associations between children's overweight and the use of TV and video games, or have found that the associations were mediated by parents' weight status.

Particularly in view of studies that have reported different results according to the age group, demographics, or data source for the media-obesity relationship, a meta-analysis conducted by Marshall and associates (2004) is instructive. These authors examined data from studies involving 52 independent samples of children, with the ages represented in the samples ranging from zero to 18 years. Their overall findings were that although there is a statistically significant relationship between TV viewing and body fatness, the relationship is small and accounts for only a small proportion of the variance in body fatness among children (99% of the variance is accounted for by other factors). Fewer studies had considered the relationship of video game playing to

body fatness in children, but the authors found that the effect size is close to zero. With regard to physical activity, only vigorous physical activity showed a significant (negative) relationship to TV viewing and video game/computer use. The effect size for the relationship between TV viewing, video game/computer use (using a composite measure including all three types of media) and physical activity for children aged zero to six was found to be zero. Among the studies in the analysis, 90% were cross-sectional, providing “Category C” evidence, restricting conclusions that can be drawn from the research evidence.

Association of home media use with physical activity levels

Following the premise that the association of TV and video game use with child obesity is due to children’s inactivity, some researchers have focused on children’s activity during television viewing. For example, Borzekowski and Robinson (1999) found great variation among families, as well as great variation in daily viewing time and activity by individual children. They indicate that their findings, even with limitations, point out the need for improved methods and a decreased emphasis on “number of hours watched” as a predictive independent variable.

In contrast with survey research that relies on parental reports of children’s media use and physical activity, observational studies offer the opportunity to perform direct assessment of the behavior of children and their parents as related to the use of media at home and to consider other family or environmental factors. For example, in research that used direct observation, Palmer (1986) found that children engaged in a wide variety of play and other activities while viewing television at home. Another group of researchers (Schmitt, Woolf, & Anderson, 2003) who coded videotapes of

family TV rooms found that for two-year olds, 61% of the total viewing time was spent doing some activity in addition to looking at the screen; this age group was coded as being physically active while viewing television for 34% of their total viewing time. Social interactions were also coded, and the videotapes were analyzed to identify with whom viewers were interacting. When other children were present in the viewing area, most social interaction occurred with them. The results are qualified by the authors, to the extent that the original data were collected in 1980 and 1981. Although changes in television programming via expansion of channels, placement of TV's in children's bedrooms, and technology have changed substantially since the videotapes were made, the authors suggest that families still engage in activities other than "sitting quietly" while viewing television.

Even when researchers have used public health databases to analyze the specific causal path, they have concluded that the effect of TV exposure on children's weight status is likely to be a result of multiple factors (Lumeng et al., 2006; Marshall et al., 2004). Australian researchers (Wake et al., 2003) who investigated the relationships between children's BMI (ratio of height to weight) and parent reports of children's television and video game/computer habits, controlling for other potential risk factors for childhood obesity (parental BMI, parents' education, number of siblings, food intake, organized exercise, and general activity level) found that although child BMI was significantly related to television viewing and not video game or computer time, the differences in BMI ceased to be significant after the other variables listed were included in the logistic regression analysis. Their conclusion was that causal pathways for childhood obesity are complex and likely to be interrelated;

measures to simply “ban” TV would not have a great impact on children’s BMI without the addition of interventions aimed at the child, the family, and the community. Similarly, Vandewater and colleagues (2004) examined TV and video game use and reading as related to weight status for a group of children and parents involved in a longitudinal study and found either no relationship or an inverse relationship between children’s weight and TV use, with a curvilinear relationship for video game use. Conversely, Jago, Baranowski, and colleagues (2005) found in a longitudinal study that minutes of TV viewing per hour were negatively associated with physical activity and positively associated with observed sedentary behavior.

Parent characteristics: relationship to media use and obesity

Characteristics of parents and families have been considered in terms of their relationship to both media use and obesity in children. Parental obesity has been found to be strongly associated with children’s overweight and obesity by a number of researchers. For example, Fogelholm and colleagues (1999) found that parent obesity (BMI greater than or equal to 30 kg/m²) was a strong predictor of child obesity (odds ratio 2.38 -3.50, p= 0.01). In a study that included Mexican-American and Anglo children (Sherman, Liao, Alexander, & Kim, 1995) Mexican-American children were heavier and were more likely to live in single parent families than Anglo children. Mothers of Mexican American children were more overweight, less educated, and had lower family income than the mothers of Anglo children. The family factors of socioeconomic status, marital status, and BMI were associated with obesity in children.

A study of Mexican school-aged children (Brewis, 2003) found that overweight was associated with boys, from small households with few or no other children, who

had more permissive, less authoritarian parents. This researcher also found that parents in the study valued child fatness as a sign of health. Gable and Lutz (2000) conducted logistic regression analyses on the results of parent surveys and parent/child BMI assessments from a small sample. The relationship between parent-reported authoritative beliefs and attitudes and higher reported levels of child activity approached significance ($r = .22, p=.08$). Lower household income and the presence of only one parent in the home were significantly associated with obesity in children.

Trost and colleagues (2003) found a strong association between childhood overweight status and parental obesity, but no significant differences were observed for the hypothesized parental influences on physical activity behavior. In a study of Hispanic children enrolled in WIC (Melgar-Quinonez & Kaiser, 2004), mothers' BMI over 30 was significantly associated with children's at-risk or overweight status.

Family characteristics

Family characteristics considered in this research were family size, including the number of adults and children living in the home, and the birth order of the preschool-aged child for whom parental responses were provided. Family size has been associated with obesity in children (Dietz & Gortmaker, 1985). The presence of other adults and children in the home was considered as a factor that influences parent-child interactions around the selection and use of media (Schmitt et al., 2003).

Parsons and associates (1999) noted that little research has considered the relationship of childhood obesity and family size. In a study of micro-environmental factors associated with childhood overweight in Spain, Moreno and colleagues (2004) considered family size but did not find that it had a significant impact upon children's

weight status. In a study that surveyed Native-American and African-American three-generation families, Polley and colleagues (2005) examined relationships among family characteristics and the individual variables of BMI, television hours, and activity levels. Significant correlations were observed between parent and child BMI and television hours, grandparent and child BMI, and grandparent and parent activity with child television hours. Similarly, Australian researchers (Bagley, Salmon, & Crawford, 2006; Salmon et al., 2005) found in research using both surveys and direct measurement that both television and physical activity were related to family structure, specifically the presence of one or both parents and of siblings. For preschoolers, there were differences in gender (boys with no siblings watched most TV, and girls with siblings were more physically active). Additionally, the researchers found that there were significant associations of children's physical activity and television viewing with parents' use of home screen media, family TV viewing patterns, and socioeconomic status.

Home screen media environment

Meszaros (2004) reports on how information technologies (e.g., computers and the Internet) may be affecting families: 51% of American households had one or more computers in home in 2000, and 174 million people in US had access to a computer. Children and teenagers use computers and internet more than any other age group-90% between ages 5 and 17. Gentile and Walch (2002) reported on a random national sample (mail, with telephone follow up) survey of parents of children aged 2-17. A stratified sample was selected to ensure inclusion of low-income households. Parents were surveyed with a questionnaire, comprised of indices for media use, monitoring,

consistency (rules for usage), media effects, media knowledge, and alternative activities. In this sample, 79% of families had cable or satellite TV, and 41% had Internet connections (with higher percentages for higher incomes in this study.) Parents surveyed reported that their children play computer/video games about one hour per day. Of the parents surveyed, 51% had seen positive effects of media on children, and 54% had seen negative effects. The researchers found that families who use electronic and print media carefully also monitor children's use, are more consistent in rule applications, and know more about media and media effects. Forty percent of parents looked at industry ratings before purchasing or renting video games.

The home media environment has also been examined in terms of its relationship to children's weight status. Barkin and associates (2006) examined parental mediation (guidance) of young children's media use, noting that providing a TV in the child's bedroom was associated with allowing unlimited access, a strategy that was most often employed by Hispanic and African-American parents. The location of home screen media can also be associated with child overweight or obesity. For example, Dennison and associates (2002) found that the odds ratio of having a BMI >85th percentile was 1.31 (95% CI: 1.01-1.69) among those with a TV in their bedroom versus those without a TV, after statistical adjustment for the child's age, sex, TV/video viewing hours per week, maternal BMI, maternal education, and race/ethnicity. Jordan and colleagues (2006) noted in a qualitative study that nearly two-thirds of the low-income children in her sample had TVs in their bedrooms, and found that parents' own viewing practices and time demands made TV a "safe and affordable" distraction for children when parents needed to carry out other activities.

Activity-promoting media

Innovations in children's programming and video games add the possibility that "screen time" can involve physical activity for children. Trout and Christie (2007) describe a number of electronic games specifically designed to promote physical activity and improve health. For example, the Sony Playstation™ has several activity-promoting games with game controllers that are driven by the feet, using music and dance moves to advance in the games. Some games employ USB cameras that show the player on the TV screen as he or she moves to play the games. The potential for the use of activity-promoting video games in school physical education classes has not gone unnoticed; at least one educator (Mohnsen, 2005) has developed lesson plans and instructions for the use of the Dance Dance Revolution (DDR) game in a public school setting. As the technology required for such games continues to evolve, game developers are involved in using the technological innovations to create enhanced opportunities for activity-promoting media (Sivak, DeAngelis, McKinley, Hipple, & Morgan, 2008). Although activity-promoting video games are not as widely available for preschoolers, they are available. For example, Konami Corporation, which produces DDR, markets several "dance mat" games for preschoolers, and Fisher-Price markets the Smart Cycle™, a video game connected to the television, which the toddler plays by pedaling a stationary bicycle.

Environmental influences: physical activity and home screen media

Researchers focusing on the health behavioral aspects of physical activity

(Sallis, Prochaska, & Taylor, 2000; Wisemandle, Maynard, Guo, & Siervogel, 2000) have stressed that multiple ecological levels will need to be considered in exploring “why” children may be physically active. For example, Bauman, Sallis et al., (2002) provide a conceptual framework for physical activity that supports the use of multi-ecological level models of causality. Multiple levels of influence and causality have also been suggested with regard to the effects of home media. In a review article summarizing research on media uses and effects with children, Jordan (2004) uses an ecological perspective to define media roles in various contexts of children’s lives. Using the concept of “nested environments,” she frames the review in the areas of media and children’s eating patterns, anti or prosocial behavior, and school achievement. She places a specific focus on the role of media in children’s physical development: media may promote increased caloric intake rather than only increasing sedentary behavior. Jordan also discusses research findings concerning a media role in promoting prosocial behavior – the critical issue is to account for the context in which media is received, including the presence of an adult to help process content. Jordan notes prior findings that very young children (3-4 year olds) only responded to prosocial programming when an adult was available to engage the child and give immediate feedback. She provides recommendations for parents: help young children find educational television programs; remove televisions, internet-accessible computer, and videogame system from the child’s bedroom; limit children’s television viewing time; watch age-appropriate programs, surf the internet or play videogames together with children.

Southwell and Doyle (2004) also proposed a multi-level approach to address gaps in prior findings and develop a richer knowledge base about video game effects. In supporting the notion that games should be a part of educational reform in the US, the authors note that games can promote learning and expand competencies such as improved learning capacity. As with adverse effects, benefits are likely to occur because of a combination of game and player attributes. They recommend that communication research focused on electronic media should be addressed as a multi-level phenomenon (including the individual, aspects of the games themselves, demographic group, culture/era, and cultural/social contexts of game playing). The authors propose the notion of perceived user control as a variable that is approached from a multi-level (ecological) perspective.

Weight risks for children enrolled in WIC

Low-income children are more vulnerable to issues that may threaten good health, particularly overweight. Children from low-income families (Mei et al., 1998b) and those belonging to racial and ethnic minority groups, particularly Hispanics (Ogden et al., 1997; Whitaker & Orzol, 2006), have shown high prevalence and large increases in the proportion of children who are overweight. This trend appears in statistics from national surveys that begin to classify children as overweight at the age of two.

There may be high rates of overweight for children enrolled in WIC. For example, Nelson and associates (2004) found that, in a New York WIC program, 40% of the children were overweight or at risk for overweight. Compared with other racial or ethnic groups combined, Hispanic children were more than twice as likely (odds

ratio = 2.6; 95% confidence interval = 1.8, 3.8) to be overweight or at risk for overweight. Other researchers (A. E. Baughcum, Chamberlin, Deeks, Powers, & Whitaker, 2000) who surveyed women in WIC clinics found that 79% of mothers whose children were over the 90th percentile in weight failed to perceive their overweight child as overweight. Among the mothers with overweight children, low maternal education was significantly associated with a failure to perceive their children as overweight, after adjusting for low family income (less than or equal to 185% of poverty), maternal obesity, age, and smoking, along with the child's age, race, and gender (adjusted odds ratio: 6.2; 95% confidence interval: 1.7-2.5). Other researchers who surveyed parents enrolled in WIC (Dennison et al., 2002) found that almost 40% of the children had a TV set in their bedroom; they were more likely to be overweight and spent more time (4.6 hours per week) watching TV/video than children without a TV in their bedroom.

Participants in the WIC program are below certain income levels (family gross income below 185% of the federal poverty level) and have been found to be at nutritional risk in order to become enrolled in the program (USDA, 2006). There are a number of nutritionally-related "risk conditions" that can determine program eligibility, but BMI ratings at or above the 85th percentile categorize children as being "at risk of overweight" (85th to 95th percentile) or "overweight" (above the 95th percentile). McGarvey and colleagues (2004) reported that, nationally, 26% of the children enrolled in WIC were in the "overweight" category. Nutrition risk reports for children aged one through five participating in the Texas WIC program appear on the WIC website, <http://www.dshs.state.tx.us/wichd/nut/riskreport06-nut.shtm>. In Texas,

program statistics for 2006 reflect that 10.2% of children aged one through five received risk code assignments denoting they were at risk of overweight (above the 85th percentile for their ages) and 10.0% received risk code assignments denoting overweight (above the 95th percentile for their ages). These percentages are notable for two reasons, the large number of children represented and the ethnic composition of the at-risk and overweight group. The total number of WIC participating at risk or overweight children in Texas for the 2006 fiscal year was 95,318, representing 20.1% of the total children enrolled in WIC. Of those at- risk and overweight children, 78,483 or 82% were Hispanic (compared to the 79% of the total WIC child enrollment represented by Hispanic children).

WIC parent perceptions of children's health status

Despite the health risks of overweight in children, some researchers (Jain, Chamberlin, Carter, Powers, & Whitaker, 2001) have found that mothers of overweight preschoolers enrolled in the WIC program may not view their children's weight status as a concern so long as the children are eating a healthy diet and being physically active. In other studies involving WIC mothers, Baughcum and colleagues (1998; 2000; 2001) noted that mothers believed that being heavy was an indicator of good health in their infants and that these WIC mothers did not perceive their preschool-aged children as being overweight even when the children's weights were above the 90th percentile. Researchers (Rich et al., 2005) who focused on Hispanic mothers of overweight children enrolled in WIC similarly found that the mothers viewed their children's overweight status as being healthy.

As noted above, statistics from the Texas WIC program show that over 20% of the children currently enrolled in the program are at risk of overweight or overweight. Parents of children enrolled in WIC may not perceive their children's overweight status as a health concern. Heavy media use may be a factor in the occurrence of overweight for preschoolers in general, but it is not clear that this is the case for children enrolled in WIC.

WIC clients and home media use

Few, if any, studies have directly assessed relationships between parents' mediation (guidance) styles with home media and children's weight, and there is a dearth of information about WIC clients and home media use. Two media-related studies involving WIC clients were associated with interventions geared to television viewing time (Johnson, Birkett, Evens, & Pickering, 2005; McGarvey et al., 2004). Neither study included assessment of WIC participants' weight status or collected data about children's media use or weight.

One study (Nelson, Carpenter, & Chiasson, 2006) which did collect information about children's media use (television viewing or computer time) as related to overweight status among children enrolled in WIC did not find a significant relationship between TV viewing and children's overweight, although the relationship was significant when TV viewing time and physical activity time were considered together. Data were collected via a paper survey provided in three languages (English, Spanish, or Russian) that was distributed to caregivers attending a WIC clinic in New York City. Respondents were primarily mothers; the survey consisted of a one- page questionnaire, and WIC clinic staff added parent and child height and weight

measurements from WIC administrative records. For parents whose children were overweight or at risk of overweight, 93% and 95%, respectively, reported that their children were just the right size or underweight. Parents who reported that they were from the US or Puerto Rico reported heavier (34% with more than two hours per day) use of home screen media than parents who reported that they were from outside the US (24% with more than two hours per day); this difference was significant. These researchers did not address parental guidance or regulation of children's media use.

Opportunities for using media to promote physical activity with WIC children

Programs such as WIC engage parents of preschoolers in education settings are in a unique position to support parents in promoting physical activity for their children (Spaulding, Gottlieb, & Jensen, 2008). In Texas, the WIC program has offered physical activity DVDs for parents to use with their children at home. Since preliminary client evaluations have indicated that children are active while viewing the video and that parents use the video multiple times (Gottlieb et al., 2006), the program is developing additional videos of this nature. In order for such interventions to be successful, they must address parental perceptions about media and children's weight status.

WIC parents' attitudes about media and child weight

WIC parents may have unique perceptions about the importance of media for their children, their assessment of the amount of time their children spend using media at home, and their children's weight. For example, one group of researchers (S. S. Rich et al., 2005) conducted and analyzed interviews regarding health status and play patterns with 76 predominantly Hispanic mothers of over-weight toddlers and

preschoolers served by WIC in Dallas, Texas. Most of the participants believed their children were healthy and half were unconcerned about their children's weight. Most parents reported having a safe place to play and access to a playground, although gender differences were found. Access to an outside play area was related to the amount of active play activities. These children watched an average of 1.7 hours per day of television. Burdette and associates (2003) found that children of WIC mothers who had symptoms of depression or who were overweight were more likely to spend three hours or more per day with television.

Parent guidance of preschool children's media use

Early research on parent guidance (Desmond, J L Singer, D G Singer, Calam, & Colimore, 1985) was focused on how certain environmental conditions may facilitate the learning of attitudes, knowledge and behaviors from television by preschool-aged children. This study centered on how a child's learning from television might be affected by mediation by family members and peers. They defined mediation as "some form of active effort by parents and others to translate the complexities of the physical and social environment, as well as the television medium, into terms capable of comprehension by children at various levels of cognitive development" (p. 463). They discuss prior studies of communication relevant to mediation, which have considered the forms that discussions about television might take: criticism, interpretation, and rule-making and disciplinary intervention. The participants were 91 children and their parents, who were recruited through schools and invited to participate in the study. Parental mediation was measured by responses to a questionnaire and by direct observation of parents and children viewing TV at the research lab. Factor analysis of

the parent questionnaire resulted in the identification of a bi-polar construct labeled Discussion versus Prescription. TV mediation was measured by having parents indicate how often they assisted their children in making program choices and the frequency of discussions about content, viewing restrictions, or monitoring program choices. Children were tested on measures of imaginativeness, ability to identify fantasy versus reality, general TV knowledge and comprehension, and the child's value of television and other activities. The children were also asked to assess the types of parental mediation employed in their homes, and were asked specific questions about TV viewing rules. Results indicated that children's comprehension of television (with a possible-impossible test of the perception of reality used as dependent variable) was predicted by the child's IQ, TV rules, lower amount of weekly viewing, and power assertive discipline. When IQ was partialled out, family and television variables were still predictive of TV comprehension and use.

Is it reasonable to expect that parents will take action to reduce their children's viewing time? In 1991, St. Peters and colleagues noted that the family context is central to the socialization of young children's television use. These authors found that although parental control is a powerful influence on television viewing for young children, relatively few parents of the three to five-year-olds in the study set time limits on their children's viewing. A subsequent study (Vandewater, Park et al., 2005) examined the relationships among parents' rules for children's television, in terms of time and program/content restrictions, parents' educational levels and income, parental perceptions that children imitated behavior seen on TV, and the amount of time spent watching TV by children. Noting that research findings have been mixed in regard to

the proportion of parents who regulate children's media use and the factors associated with such regulation, the authors analyzed data collected from a random-digit dialing telephone survey of 1,065 parents of preschoolers. Parents provided information about family income and other sociodemographic characteristics, parents' rules and attitudes about TV, parental reports of seeing children imitate behavior seen on TV, and parents' estimates of the amount of time their children spent watching television, reading, or playing outside. Among other findings, the researchers noted significant differences between parents who reported time and/or content rules for their children and those who did not, with higher family income and educational levels associated with parents who reported rules. The study differentiated between rules about programs (parents regulated which programs children watched) and rules about time (parents regulated the amount or period of time that children were allowed to watch). Almost ninety percent of the parents in the sample reported that they had program rules, with 67% reporting time rules. Having rules about time influenced the amount of time parents reported their children as watching television.

Valkenburg, Kremer and associates (1999) assessed the styles of parents' mediation of children's television use, and determined that a 15-item scale could be used to categorize parents' guidance of their children's television use as either "instructive," "restrictive" or "social co-viewing." Instructive mediation items on the scale referred to parents' explanation or discussion of some aspects of TV programs, restrictive mediation referred to parental rule-setting or prohibition of viewing, and social co-viewing items referred to parents' watching along with their children. For the

Dutch parents in the study, social co-viewing was most frequently used by all parents, and mothers used restrictive and instructive mediation more than fathers.

Later, a Belgian study (Van den Bulck & Van den Bergh, 2000) explored the effects of parental guidance (by both fathers and mothers) on boys' and girls' media use; video games were included. The authors describe prior research that assessed parental mediation of children's television use, which could be categorized as restrictive, unfocused, or evaluative. Noting that the prior research had addressed only the medium of television, they noted several other areas of interest: a lack of attention to the potential impact of mediation styles on children's media consumption, the degree of relevance of displacement theory (does restriction of TV viewing lead to reductions in the use of other media?) and how children perceive and respond to parental regulation of TV. This study focused on media such as video games in addition to television, examined the effects of parental guidance on the use of different media, and gathered data from children, in addition to distinguishing between guidance from fathers and mothers and boys and girls. Children's media use (TV, video games, books, and comic books) was measured by a parent survey, and the children responded to a questionnaire about parental guidance of media use. These researchers had hypothesized that parental guidance would tend to restrict children's use of media, but found that this was not always the case. For example, parents were found to offer guidance other than restriction of media use. The authors also found that children's use of a medium (computer game play) is likely to increase when another medium (TV use) has been restricted.

Context of parent media guidance

From parents' perspectives, guidance of children's media use may be affected by the context of parents' other activities, such as employment outside the home or the need to carry out household chores. Focusing on preschoolers, Warren (2003; 2005) examined parents' mediation of children's viewing using an ecological approach. He used the types of mediation identified by Valkenburg, Krcmar, and associates (1999)—instructive, restrictive, or covieing—as the basis for categorizing parents' mediation of their children's use of television. Warren (2003) developed four hypotheses: (1) that parents of preschoolers would use restrictive mediation most often and covieing least often, (2) that parental engagement (defined as degree of shared activities and communication) would positively predict all three types of parents' television mediation, (3) that parents' negative attitudes about television's negative effects on their children would predict more frequent use of all three types of mediation of children's viewing, and (4) that parental accessibility, as related to gender and employment, would also predict all three types of mediation.

Questionnaire items measured time spent viewing television, degree to which parents used restrictive, instructive, or covieing mediation, parents' television attitudes (concerns about potential negative effects of viewing violent, sexual, or profane content), and an assessment of parental involvement, consisting of responses on scaled items measuring parental access and parental engagement. Results of the survey provided support for the first and third hypotheses above, and partial support for the second and fourth. These results are discussed in terms of the application of Becker's model; for example, parents' mediation of children's television use might be

regarded as a worthwhile investment of time and energy, depending upon parents' attitudes about the effects of television on their children, and parents' perception of their children's level of maturity. Since time is viewed as a resource, parental mediation styles that require the least time would be used most frequently.

The study results, that restrictive viewing was used most frequently by parents, support this notion; Warren notes that "a consistent rule can save parents time for cooking, laundry, or unfinished business from their workplace" (p. 409). Consistent with other studies, Warren found that some child demographic variables, especially age, were significant predictors of parental mediation (with mediation increasing as children aged). He noted the concern that covieing was used infrequently, representing a missed opportunity for parents to assist their children during a developmentally sensitive time in deciphering television codes and answering questions about content and narratives. Warren's (2003) study represented survey respondents who were primarily Caucasian, female, and married, thus limiting the generalization of survey findings.

Media guidance among Hispanic and low-income parents

In a qualitative study, reports of television guidance among Hispanic parents, Kennedy (2000) reports on a study of media use, family and child characteristics, and parental guidance of television viewing with a sample of 90 mothers and children recruited from a primary care pediatric practice in San Francisco. The sample contained primarily Hispanic (about 65%) and African-American (25%) families, with most reporting incomes placing them below poverty or at a "working poor" income level. Children and their mothers were interviewed, and parents completed two

television use questionnaires that were available in Spanish as well as English. In addition to the amount and content of media use for themselves and their children, parents described the degree to which they encouraged or regulated the types of shows or the amount of time spent by their children watching television. The researchers administered two questionnaires that were designed to measure children's risk-taking and sensation-seeking. Parents also completed a short acculturation scale. The researcher found that these preschool-aged children watched between 3 and 4 hours of television per day, with only small differences between boys' and girls' viewing time. Although the parents reported co-viewing with their children, they did not appear to endorse particular types of programs. Based on the scores on the television parenting practices scale items, parents were categorized as more "regulatory" or more "encouraging". The results were that parents only "some of the time" placed restrictions or encouraged viewing at certain times of day or encouraged certain programs. A high percentage of the families scored low on the acculturation scale, and the correlation between acculturation and TV viewing was significant, with more highly acculturated children viewing more child informative, sports, and adult comedy and viewing more shows with parents.

Jordan (2004; 2005) uses the ecological systems approach to explore low-income parents' use of and views on media at home with their children. Her qualitative and descriptive analysis of a project undertaken with teachers and parents in an inner city child care program illustrates some important parallels between parents' involvement with media (television and video tapes) for their children and the early

literacy activities (reading books to children) that are also undertaken by parents (primarily mothers) of preschoolers.

Promotive media guidance

The roles of parents and the home environment in development of “early literacy” and “media literacy” for their children may be similar. This review will not attempt a point-by-point comparison, but the studies that have addressed parents’ mediation of their children’s television use (e.g., Desmond, Singer et al., 1985) have found that parental co-viewing and discussion of media content facilitates children’s comprehension, much as joint reading activities facilitate children’s development of literacy in text (e.g., Bus et al., 1995; Bennett et al., 2002; and Jordan, Snow et al., 2002.) In fact, one study (Sanders, Zacur, Haecker, & Klass, 2004) that considered “health literacy” for parents of preschoolers used the construct of home literacy environment and found that the number of children’s books in the home was a strong proxy measure for parents’ health literacy. Tyner (1991) and Jordan (2006) both delineate parental actions for home screen media that are consistent with the associations of joint reading with children’s early literacy development for written media.

Tyner (2006) suggests 12 positive actions that parents can take with regard to guidance of children’s media experiences. These include selection of age-appropriate media, planning media choices and using media with the child, discussing and criticizing media content, limiting the amount of time spent with media, discouraging eating in front of the TV or computer, and placing media outside the space where other family functions occur. These recommendations, along with those made by Jordan

(2006), contrast with the restrictive guidance outlined by Valkenburg, Kremer and associates (1999) and others in that they identify actions that acknowledge the importance and benefits of media rather than focusing solely on potential negatives effects. They will thus be adapted for preschool parents to serve as the basis for parent guidance of children's media use in the present study.

Parent attitudes and beliefs: locus of control and self-efficacy

Parents of preschoolers have been shown to be influential in both their children's media use and in factors that affect children's weight status. Implicit in parents' roles in guiding preschool children's use of media are the constructs of locus of control and self-efficacy. Parents' perceptions of their own agency are also related to parental actions that might be seen as influential on their children's health. These perceptions are particularly important in view of the connection between children's media use and childhood overweight and obesity, because parental actions and beliefs are a common element in both media use and overweight in the preschool population. This section will address research findings that have addressed parental locus of control and self-efficacy as related to children's media use and children's health.

Perceived control, especially pertaining to children's health, has been found to be a determinant in a number of studies that examined parental behaviors and decisions concerning their children's health. Parent locus of control has been considered in terms of parental adherence to medical recommendations (MacNaughton & Rodrigue, 2001), parental actions related to toddler safety and injury prevention (Morrongiello & House, 2004) and general beliefs about children's health (Bates, Fitzgerald, & Wolinsky, 1994; Pachter, Sheehan, & Cloutier, 2000). Ford-Gilboe (1997) considered

parent health locus of control from a health promotion perspective, finding it to be one factor, along with self-efficacy, that determined family strengths in seeking and carrying out healthy lifestyles for themselves and their children.

The Parent Health Locus of Control scales (PHLOC) (DeVellis et al., 1993) were designed to measure parents' beliefs about influences on their children's health. Principal component analysis from preschool samples resulted in five-item sets that produced high loading on five factors; Divine Influence, Professional Influence, Parent Influence, Media Influence, and Fate Influence. Later researchers (Kraft & Loeb, 1996) administered the PHLOC to two groups of parents of two-year-olds in Norway, in an attempt to determine replicability of the scale and socio-demographic correlates for parents outside the US. Their findings did result in the factor structure, with acceptable internal consistency. These authors noted significant differences of scores among parents with different educational levels, with more educated parents scoring higher on the Media Influence scale and lower scores on the Fate Influence items. Although the PHLOC has been used in studies associated with children's health, it has not been used to examine parents' perceptions about the influence of media on children's health.

Researchers who have studied parental perceived control in terms of media have tended to focus on parents' perceptions in regard to negative media effects on children. For example, Cho and Cheon (2005) hypothesized a theoretical model to examine the effect of family context factors (family cohesion, shared Web activities, parents' Internet skill, and parents' perceived control) on children's exposure to negative Internet content. Parents' perceived control, as measured by shared Web

activities and family cohesion, was determined to reduce children's exposure to negative Internet content.

Jones and Prinz (2005) conducted a review of the research findings concerning the roles of parental self-efficacy (PSE) in parent and child adjustment and behaviors. They describe various perspectives from which PSE can be viewed (for example, it may denote a general attitude or it may be defined in a task-specific way), and they note that some research has considered parental self-efficacy as a mediator which serves as a link between ecological variables and parenting competence. Although PSE has been defined and thus measured in a number of ways, the review indicates that there has been extensive research support for the association of parental self-efficacy with positive parenting behaviors and child outcomes.

Machida, Taylor, and Kim (2002) used a learning model to explore the effects of parental self-efficacy and perceived control on home learning activities in low-income families with preschoolers. The participants in this study were a group of 120 families participating in the Head Start program in California, with a predominately Hispanic makeup. Using a conceptual model that was tested using structural equation modeling, the authors considered parental self-efficacy and perceived control as direct influences on home learning activities, finding that self-efficacy was associated with more frequent parent involvement in home learning activities with the child. In this study, parent perceived control was not related to the quality of the home learning environment (defined as scores on a scale of home learning experiences and practices). Ethnicity did not serve as a moderator of the expected relationships between parental self-efficacy and the home learning experiences. Maternal education and child

temperament significantly predicted parent self-efficacy, which in turn predicted home learning activities.

As in the case of perceived control, parent self-efficacy for media guidance has been considered from the perspective of parents' roles in protecting their children from negative media effects. For example, Nathanson and associates (2002) assessed parent mediation in terms of parental actions concerning media content containing sex or violence, for which parents were asked to identify their perceptions of adverse effects on their children and to categorize their own actions. Self-efficacy for parent mediation of children's media use was measured by items categorized as comprising restrictive or active mediation, which parents assessed using a 7-point scale that ranged from "*extremely capable of ...*" (carrying out the action) to "*not at all capable...*" Parents' use of a mediation technique (restrictive or active) varied according to their assessment of the threat posed by the TV content and their self-efficacy to mediate the child's viewing.

Chapter summary

This chapter has described the complex set of issues associated with preschool children's media use, their weight status, and the roles that parents play in guiding young children's use of screen media at home. The studies cited relate to the conceptual model as follows: For preschoolers, parents guide children's use of and learning from media. In turn, parental attitudes about the influences upon their children's health may influence when and how parents employ this guidance. Factors such as parent characteristics (for example, parent age, gender, and ethnicity) and family size (for example, the number of children in the home) may affect parents' self-

efficacy and perceived control in guiding media use. Context (for example, parents' usual activity while children are using media) may be related to parent guidance, along with parental attitudes and beliefs. To the extent that parents view themselves as efficacious in directing their children's use of media, and perceive that they are influential in their children's health, parental guidance has the potential to mediate the relationship between media use and children's overweight.

Chapter II: Media channels and activity-promoting media use for a group of preschool-aged children

ABSTRACT

Information about parent, child, and home characteristics related to young children's use of media can be useful in reducing sedentary behavior and preventing childhood obesity. The use of media that promote physical activity may be associated with characteristics different from those associated with the use of other media.

A group of parents ($n = 316$) of children aged two to 72 months reported children's media use, child and family characteristics, and the home media environment. Almost all of the children in the sample used television, and over 70% used DVD's. Fewer children used activity-promoting genres. Child's age category ($\beta = .495, p = .000$) and the location of a TV or game console in the child's room ($\beta = .68, p = .000$) predicted the number of media channels used by the child. Child's age category and total media channels used by the child were significant predictors of the child's use of activity-promoting media. The likelihood of activity-promoting media use was highest for children aged 24 to 35 months ([OR], 7.45, 95% confidence interval [CI] 2.01-27.3) and children aged 36 to 47 months (OR, 7.31, 95% CI 1.93-27.6).

Study results imply that children from low-income families use a relatively wide array of media channels as well as activity-promoting media. The media use patterns reported for the study sample imply that home screen media can be used to encourage children to be active at home.

BACKGROUND AND SIGNIFICANCE

This study examined the home screen media environment and activity-promoting media for a group of low-income infants and preschool aged children. Early media use has been associated with improved cognitive development, but has also been associated with slower development of gross motor skills in preschoolers(Li & Atkins, 2004) From a health perspective, home media genres that promote physical activity offer the potential to increase children's activity while they are using media. While media and health researchers have focused on the associations of demographic characteristics with media use in young children, little consideration has been given to activity-promoting media.

Extent of and potential health effect of media use by preschoolers

Children's use and comprehension of home media such as television is affected by child and parent characteristics as well as the home screen media environment (Bone, 2004; Hake, 2003; Jordan, 2005; Warren, 2003; Warren, Gerke, & Kelly, 2002.). Child age is a strong predictor of media use for preschoolers, with the use of media such as television and computers increasing from age six months to five years (Anand & Krosnick, 2005). Studies with preschool children have consistently found that by the time they reach school age, children are heavy users of television and other electronic media at home (Certain & Kahn, 2002; Lumeng et al., 2006; Wright et al., 2001). Rideout and associates (2003) noted the extensive use of media, including video games, by very young children (aged six months through six years). More recently, other researchers

(Anand & Krosnick, 2005) found that peak video game usage among preschoolers occurred for 4-and 5-year-olds. Such patterns are of concern from a developmental perspective because the period between four and six years of age represents a peak time for physical activity play (Pellegrini & Smith, 1998a, 1998b) in which children spontaneously engage in vigorous activities.

Preschool physical activity: parent and environmental determinants

Preschoolers' physical activity has been found to account for a significant amount of variance in children's motor ability and school readiness overall (Oja & Jurimae, 2002), and children who are more physically active during the preschool years are less likely to become overweight or obese later in childhood.(Moore, Gao, Bradlee, Cupples, & Sundarajan-Ramamurti, 2003). National health objectives (2000) related to physical activity and childhood obesity recommend increased physical activity and decreased media time for children aged six and over but do not address the preschool age group.

Parents' perceptions and practices concerning physical activity play a large role in guiding physical activity for preschool-aged children (Harvey-Berino, 2001) For example, parents may believe that boys are supposed to be more active than girls or that children's active play is beyond parental control (Harvey-Berino, 2001). Additionally, environmental barriers such as weather, safety of play spaces, or transportation to parks, can make it difficult for parents to offer opportunities for preschoolers to be active (Kumanyika & Grier, 2006). Preschoolers may spend part or all of the day indoors, or they may be in day care centers, Head Start, or other settings outside the home. Policies, practices, and facilities in such settings can impact physical activity (Dowda, Pate, Trost,

Almeida, & Sirard, 2004), and the availability of space has been found to be a strong predictor of physical activity for preschoolers in daycare (Finn, Johannsen, & Specker, 2002).

Activity-promoting media

Extensive use of media by young children and innovations in technology, particularly interactive media, have broadened opportunities and challenges in media instruction and literacy (Tyner, 2003). Home screen media that promote physical activity introduce the possibility that media use may not equate to sedentary activity, complicating research that attempts to link home media use with children's inactivity (Salmon, 2005). Since young children begin to respond to media components such as music at an early age, even health professionals may offer such media in their offices to encourage children to be physically active (Gentile et al., 2004). Although researchers have begun to explore potential effects of media that promote play and physical activity (Shin, 2005), the extent of the use of these media by preschoolers has not been widely explored.

Children's media use in low-income families

Low-income parents and those of racial/ethnic minorities may have unique perceptions about the importance of media for their children and their assessment of the amount of time their children spend using media at home. Children in Hispanic families have been found to have less access to computers and use of the Internet (Calvert, Rideout, Woolard, Barr, & Strouse, 2005), and parents may see computer technology as less important for the child's later success (Clark, Demont-Heinrich, &

Webber, 2005). Hispanic or Latino parents who score higher on acculturation measures may engage in more regulation of their children's television viewing, including time and content, and direct children toward more educational and informative programming (Kennedy, 2000). Parents' educational level has also been shown to influence children's home media use; very young children of parents with lower educational levels may spend more time with television (Anand & Krosnick, 2005).

WIC clients and home media use

The federal Supplemental Nutrition Program for Women, Infants, and Children (WIC) provides nutritious foods, counseling, and nutrition education to low-income women and their children up to age five. In addition to income below 185% of poverty, program eligibility is determined by parents' childbearing status (pregnant, lactating or postpartum), children's ages (birth to age five), and a certification of nutritional risk. The WIC program serves a large population, with over 8 million participants nationally (United States Department of Agriculture, 2008) and almost 1 million women, infants, and children participants in Texas alone (Department of State Health Services, 2008). There is a dearth of information about WIC clients and home media use. Media-related research involving WIC participants has been associated with interventions geared to television viewing time (Johnson et al., 2005; McGarvey et al., 2004), but may not have collected specific information about children's media use.

This study had two aims: (1) to examine the use of media channels and activity-promoting media among a group of infants and preschool-aged children enrolled in WIC, and (2) to determine the parent, child, and family characteristics and the media

context associated with the children's use of media channels and activity-promoting media.

METHODS

Participants and setting

A convenience sample ($n = 316$) of WIC clients at four clinics of a large metropolitan health district in Central Texas participated in the study. Study participants were recruited from nutrition education classes held during March and April 2008. Class attendees were eligible to participate if they were parents or guardians of infants and children enrolled in WIC; all were low-income (less than 185% of the federal poverty level, adjusting for family size). Responses from an additional 20 parents were not included because the participant did not have children or because the child was over six years old. The ethnic/racial composition of the 316 parents was 85% Hispanic, 7% White, 5% Black, 1% Asian, and 3% Native American or other ethnicities. The ethnic distribution and educational levels for the sample were comparable to those reported elsewhere for the WIC clients in the same county (Texas Department of State Health Services, 2008), with a higher proportion of Hispanic clients (85% versus 76%). Parents who participated in the survey completed consent documents. The Texas Department of State Health Services and the University of Texas at Austin provided Institutional Review Board (IRB) approval. Table II-1 summarizes characteristics of the children, parents, and families represented in the survey.

Table II-1. *Description of Study Participants and Families*

Demographic characteristics	(N =316)		
	Percent	Mean	± SD
<hr/>			
Child			
<hr/>			
Male gender	51.3%		
Age in months at survey		31.7	± 17.6
Attends preschool, daycare, or Head Start	23.7%		
Daily hours in preschool program if attending		6.7	±2.0
First or only child in family	46.5%		
Birth order		1.8	± 1.0
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Parent			
<hr/>			
Female gender	98.0%		
Age		27.5	± 6.6
Married	49.7%		
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Family			
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Children under 18 in household		2.3	± 1.2
People in household		4.3	± 1.4
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Children's ages ranged from two to 72 months, with a mean age of 32 months. Child age was categorized by year, resulting in the following frequencies: under 12 months: 62 (20%); 12 - 23.99 months: 42 (13%); 24 - 35.99 months: 82 (26%); 36- 47.99 months: 64 (20%); 48 – 59.99 months: 48 (15%); and 60 months or over: 18 (6%). As seen in Table II-1, most (76.3%) of the children represented in the survey did not attend preschool, Head Start, Early Head Start, or daycare programs, but the average stay for those who did attend was over six hours. Almost half of the children were the first-born or only child in the family.

Almost half (49.3%) of the 296 parents responding to the question concerning employment reported that they were not employed outside the home. Of those who reported their employment status, 15.2% reported working part-time up to 20 hours per week, 11.5% reported 21 to 35 hours per week, and 25.3% reported working 35 or more hours per week. Concerning the highest level of school they had attended, 255 parents reported their education, with 61 or 19.2 % not reporting this item. Parents who did indicate educational levels reported as follows: 6th grade or less, 11.8%; 7th to 9th grade, 6.7%; grade 10 to grade 12, 17.3%; high school graduate or GED, 27.5%; trade or technical school, 8.2%; some college, 21.2%; all of college, 7.5%. In summary, about half of the parents responding to the survey indicated that they worked outside the home at least part time, and over 18% indicated that they had not attended school past the ninth grade. The proportion of parents in the study sample reporting education levels of 12th grade or less (35.8%) was almost identical to that of all WIC participants (36%) in the large urban area where the study was conducted (Texas Department of State Health Services, 2008).

Measures

Preschool child characteristics

Characteristics of the children represented in parents' survey responses included survey items concerning the child's age, gender, birth order, and participation in preschool programs such as Early Head Start, Head Start, preschool or daycare. For children who attended such preschool programs, an open-ended item asked parents to list how many hours per day the child spent at the program or preschool. A dichotomous variable was established for child's birth order, with values of zero for no older siblings and one for older siblings.

Parent assessment of the child's activity level was measured by the item, "*Would you describe your child as being more active, about the same, or less active, as other children the same age?*" Response categories were "*more active,*" "*about the same,*" and "*less active,*" with the lowest score for "*less active.*" Responses for this item were dichotomized, with a score of one for "same" or "less active" responses, and two for "more active" responses.

Parent and family characteristics

Parent characteristics were measured by parents' reported age, educational level, marital status, weekly hours of employment outside the home, and ethnicity. Additional variables categorized the survey language version (English, Spanish, or English/Spanish) that parents completed and Hispanic/ Latino or non-Hispanic ethnicity.

Media channels and media use context

Media channel items were adapted from (Rideout et al., 2003) and (Linver, Brooks-Gunn, & Cabrera, 2004). Parents provided yes/no responses to the question, “*Does your child use these kinds of media at home?*” for the following items: TV, DVDs on a DVD player, electronic books, video games, computer, Internet, and videos and movies on a VCR. The sum of “Yes” responses was the score for total media channels, with possible values ranging from zero to seven. The context of children’s media use was measured by yes/no questions asking whether there is more than one TV in the home; whether there is a TV or game console in the child’s room; and whether there is space for the child to move around or dance in front of the TV or game console.

Activity-promoting media. Children’s use of activity-promoting media was measured by parent yes/no responses to the question, “*Does your child use any of these at home?*” using the following list: “exercise or activity DVDs or videos,” “active video games (child moves while playing),” “TV show that gets him/her moving,” and a children’s activity DVD produced by the Texas WIC program. A dichotomous variable, “child uses activity-promoting media” was established, with a value of zero assigned for the absence of “yes” responses to any activity-promoting media, and one assigned for at least one “yes” response.

PROCEDURE

Field testing and pilot study

Survey items were field-tested in Texas WIC clinics. A Spanish-speaking researcher assisted with survey item testing and informal discussions with WIC clients who did not speak English. For potential survey items that had not been used in published research, the WIC clients were asked to read the question and explain how they understood and would go about answering it. Clients also provided their preferences and comments about words, phrases, and survey items for the Spanish-language version of the survey. A pilot study tested the survey design, questions, and protocol in five WIC clinics of another metropolitan area.

Full study procedure

The researcher attended nutrition class sessions and invited attendees to participate in the research project. The researcher explained the purpose of the study and the content of the consent form and conducted a brief (less than five minutes) educational discussion. The WIC staff provided translation of the verbal recruitment and introduction for classes that were scheduled for Spanish speakers or in instances when an attendee at a class spoke only Spanish.

Parents were informed that their participation in the study was voluntary and that the decision not to participate would not affect their WIC enrollment or benefits. WIC clients who wished to participate received a class credit; those who did not wish to do so completed an alternate class. Approximately 93% of all invited class attendees opted to participate in the study.

Parents provided survey responses for their child who was closest to their third birthday. If parents had twins who were both close to age three, they completed the survey for the older twin. The English version of survey was completed by 24.2% of the parents, the Spanish version by 18.7%, and the English/Spanish combined version by 57.1%. Classes at the WIC clinics lasted one hour. All of the participants completed the surveys within the one-hour class time, with the time for completion ranging from nine to 45 minutes. Following their completion of the survey, participants were thanked for their participation and returned to the waiting room to receive their WIC vouchers. Survey responses were entered into SPSS files for analysis.

RESULTS AND ANALYSIS

Parent assessment of child activity level

With regard to their child's activity level compared to other children the same age, 53 % of the parents described the child as being more active, and 47 % described their child as being about the same or less active. Only four parents (1%) described their child as being less active than other children the same age are; these responses were included in the dichotomized variable as "about the same" values.

Media use

Screen media channels

The number of media channels used by the children ranged from zero to seven, with a mean of 3.13 channels ($SD = 1.71$). Responses to the yes/no survey items concerning the types of screen media used at home reflected that television was the most common, with 91% of the parents reporting that their child used TV. Concerning other

media, 71% of the parents reported that their child used a DVD player; 57% used a VCR; 43% of the children used electronic books; 23% reported the child's use of video games; 19% reported that their child used a computer; and 9% responded that their child used the Internet.

Media use context

Almost all (93.7%) of the parents responded that there is space in the home for their child to move around or dance in front of TV, DVD player, or game console. A large majority (86.7%) of the parents reported that there is more than one TV in their homes, and 46.9% reported that there is a TV or video game console in the child's bedroom.

Activity-promoting media

The number of active media genres reported ranged from none to four ($M = 1.12$, $SD = .93$). The most common activity-promoting media genre reported by parents was "a TV show that gets him/her moving" (62.7% of those responding). Parents also reported that their child used exercise or activity DVDs or videos (23.6 %), active video games (20.4 %), and 5.1% reported that their child used a physical activity DVD distributed by WIC. Table II-2 highlights the types of home screen media channels used and the activity-promoting media reported by age categories for the children in the sample.

Table II-2. *Child Media Use by Age Category*

	Age category in months (Total N: 316)					
	Under 12 (n=62)	12-23 (n=42)	24-35 (n=82)	36-47 (n=64)	48-59 (n=48)	60 + (n=18)
Media channels	Percent “Yes” responses within age category: child uses media					
TV	67.2	85.7	97.6	100.0	100.0	100.0
DVD player	33.3	66.7	75.6	90.5	91.5	72.2
VCR	27.9	38.1	58.5	78.1	80.4	61.1
Electronic books	27.9	35.7	46.3	46.0	59.6	44.4
Video games	4.9	9.5	17.1	33.3	48.9	44.4
Computer	4.9	4.8	14.6	25.8	34.0	61.1
Internet	1.6	0.0	6.1	12.7	12.8	52.9
Activity-promoting media						
TV show that gets child moving	26.2	59.5	75.6	79.7	70.8	52.9
Exercise/activity DVD	11.5	28.7	33.3	42.2	27.1	22.2
Active video games	6.6	23.8	21.0	21.9	29.2	27.0

The top section of the table illustrates that all of the channels were used by at least some of the children represented in the survey. TV was the screen media channel most commonly used by all age groups. Two-thirds of the parents reported TV use for children before their first birthday, and all reported TV use for children aged three and over. DVD players were also used frequently, with use by over 70% of the children in each category age two and above. Electronic books were most often used by two-year-olds; almost 76% of the parents of children aged 24 to 35 months reported that their children used electronic books. Videogame use was less common, but almost one-fourth of the children in the sample did use video games at home, with most frequent use reported for children aged 48-59 months. About one-third of the four-year-olds and 60% of the children aged five and older used computers, and over half of the five year olds used the Internet.

Proportionally fewer children used activity-promoting screen media at home. For example, the highest proportion of children using TV programs that promote movement was 79.7%, in the three-year-old age category, while 100% of this age group used TV. Two and three-year-olds were the most frequent users of TV shows that promote movement and exercise or activity DVD's and videos (over 75% use in both two- and three-year-old age categories), with active videogames most often reported for children over 12 months old. Children aged 36 to 59 months (three and four-year-olds) were the most frequent users of the array of activity-promoting media. For all of these genres, smaller percentages of five year olds used the activity-promoting media.

Table II-3 presents the use of TV, videogames, computers, and two types of activity-promoting media by children under age two and two years or older, according to

parents' education (less than high school or high school or greater). Chi-square differences for these media are reported by parent educational level, child age (under two or two and older), and by child age category for parents with less than high school education.

Table II-3. *Media Used by Children by Age and Parent Educational Level*

Media used by child, percent "Yes" responses	Parent educational level (total n =255)				Chi-square differences (df =1)		
	Less than high school (n=91)		High school or greater (n=164)		Parent educational level	Child age category	Parent ed less than high school: child under two/two and older
	Child age category (under two n =87, two and older n =168)						
	Under two	Two and older	Under two	Two and older			
TV	83.3	100.0	71.9	98.1	2.1	50.5***	10.8***
Videogames	6.7	30.0	8.8	34.0	.3	23.5***	6.3**
Computer	0.0	16.7	8.8	31.4	5.7*	20.5***	5.6*
Activity-promoting TV	43.3	70.0	38.6	77.6	.2	34.5***	6.0*
Exercise/activity DVDs	3.3	31.1	19.3	25.5	.1	8.5**	9.1**

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

Children aged two and over were more likely to use each of the media types. Parents with less than a high school education reported significantly higher children's use of TV, videogames, and exercise/activity DVDs for children over age two. Parents reporting educational levels of high school or greater were more likely to report their children's use of a computer at home, and were significantly more likely (chi-square values all significant at $p < .000$, not shown in table) to report the use of all of the media types except exercise/activity DVDs for children over age two. Table III-4 illustrates media use by children according to their attendance or non-attendance in Head Start, Early Head Start, preschool, or daycare.

Table II-4. *Media Use for Children by Head Start, Early Head Start, Preschool, or Daycare Attendance*

Media	Child attends Head Start, Early Head Start, preschool, or daycare		Chi-square (<i>df</i> =1)
	Attends (<i>n</i> = 75)	Does not attend (<i>n</i> = 216)	
TV	94.7	89.8	1.6
Videogames	34.7	19.2	7.4**
Computer	29.3	17.0	5.2*
Activity-promoting TV	58.1	64.2	.87
Exercise/activity DVD or video	22.7	24.8	.13

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

The use of TV, activity-promoting TV programs, and exercise/activity DVDs was similar for children who did and did not attend preschool programs. Children who did attend such programs were more likely to use videogames and computers at home.

Analysis

The study aims were to identify children's media use and to examine parent, child, family, and media context characteristics associated with children's use of media channels and activity-promoting media. The distributions and missing values were first analyzed. All of the variables other than ethnicity were normally distributed, with acceptable values for skewness and kurtosis. Missing values were also within acceptable limits for analysis, with the exception of reported parent education; approximately 19% of the parents did not respond to this item. This pattern was addressed by coding the missing values with the mean education category for the study sample, and conducting subsequent analyses with both the substituted values and the cases for which parent education information was not reported.

The analysis consisted of two steps: first, bivariate correlations were used to determine the relationships of parent, child, and family characteristics and media context items (TV or game console in child's room, space to dance or move around, and more than one TV in the household) with the variables denoting total media channels and child activity-promoting media use. Next, regression analyses were conducted to examine the significant predictors of the number of media channels and child use of activity-promoting media. The following sections will describe these analyses.

Correlations

Bi-variate, non-parametric (Kendall's tau B) correlations were computed for total media channels and use of activity-promoting media. With α of .05, a Bonferroni correction to adjust for the number of correlations resulted in the criterion of $p < .002$ for correlation significance and inclusion of correlated variables in the regression analyses.

The number of media channels used by the child was significantly positively correlated with the following child characteristics: child's age category ($p < .000$), number of children in the home ($p < .000$), and the child's participation in a preschool program ($p < .002$). Parent age was the only parental characteristic significantly (positively) correlated ($p < .000$) with the total number of media channels used by the child. Child gender, parent marital status, educational level (with both substituted and missing values), ethnicity, survey language, child activity level, the number of people living in the home and presence of older siblings were not significantly associated with the number of media channels used by the child. The home media context variable of TV or game console in the child's room ($p < .000$) was positively correlated with the number of media channels used by the child, but space to move around in front of the TV or game console was not.

Children's use of activity-promoting media was positively associated with the child's age ($p < .000$), presence of older siblings ($p < .002$), number of media channels used ($p < .000$), and location of a TV or game console in the child's room ($p < .002$). Child use of activity-promoting media was not significantly correlated with ethnicity or with Hispanic or Latino/non-Hispanic or Latino ethnic categorization, or survey language version. Parent assessment of the child's activity level, child gender, birth order, parent age, marital status, education, and employment status, presence of more than one TV in the home, and space to move around were not significantly associated with child use of activity-promoting media.

Regression analyses

Total media channels

For the first analysis, a linear regression model used the total number of media channels used by the child as the dependent variable. The model specified child age category, location of TV or game console in the child's room, parent age, child participation in preschool or day care, and older siblings in the home as independent variables. All independent variables were entered into the regression as a block. These five predictors accounted for 32% of the variance in the total media channels used by the child ($R^2 = .32$), which was significant, $F(5, n=276) = 25.5, p=.000$. The Hosmer and Lemeshow test was not significant, implying that the model estimates fit the data at an acceptable level, and tests for multicollinearity were within acceptable levels. Child's age category ($\beta = .49, p=.000$) and the location of a TV or game console in the child's room ($\beta=.68, p = .000$) demonstrated significant association with the number of media channels used by the child. Parent age, child participation in preschool, and the number of children in the home were not significant individual predictors of the total media channels used by the child.

Child use of activity-promoting media

The second analysis used a binary logistic regression model, with a dichotomized variable for child's use of activity-promoting media use as the dependent variable. The model used child age category, TV or game console in child's room, and presence of older siblings as categorical predictors, with total media channels used by the child as a covariate. Because age was likely to be related to the presence of older siblings for the children in the sample (all of the children were under six, and half were only children), the model also specified an interaction between child age and presence of older siblings.

Child's age category and total media channels used by the child were significant predictors of the child's use of activity-promoting media, while the presence of older siblings and location of TV or game console in the child's room were not significant. The likelihood of activity-promoting media use was highest for children aged 24 to 35 months (Wald test = 8.34, $p < .002$, odds ratio [OR], 17.32, 95% confidence interval [CI] 2.50 - 120.01) and children aged 36 to 47 months (Wald test = 6.21, $p < .01$, OR, 12.12, 95% CI 1.70 – 86.32). The independent variables, taken together, significantly predicted child use of activity-promoting media, with chi square (14, $n=302$, $p < .000$) of 48.4. The Hosmer and Lemeshow test was not significant, implying an acceptable level of fit for the model. Overall, the model correctly classified 79.8% of the cases, with 93.0% correct classification of child's use of activity-promoting media and 45.5% correct classification of non-use.

A second regression analysis was conducted to identify child and family characteristics associated with the use of activity-promoting media apart from the total number of media channels. This analysis excluded cases for children with no media use reported, resulting in $n = 289$. Child age category, presence of older siblings, the interaction of age with older siblings, and presence of TV or game console in child's room were the independent variables. The results for this regression analysis were significant, with chi square (12, $n = 289$, $p < .000$) of 36.5. The Hosmer and Lemeshow was not significant, indicating an acceptable fit for the model with the media channels variable omitted. The reduced model correctly classified 77.1% of the cases, with 95.3% correctly classified for child use of activity-promoting media and 23.6% correctly classified for non-use. Only child age category was significantly associated with use of activity-promoting media in this model.

DISCUSSION

This study contributed to findings about children's media use by focusing on a group of low-income, primarily Hispanic families, and by considering children's use of activity-promoting media genres. The results concerning media channel use were similar to those found by other researchers who did not include substantial numbers of low-income children and did not include Spanish-speaking parents (Zimmerman, Christakis, & Meltzoff, 2007). The pattern of media channel use was also similar to that reported by Anand and Krosnik (2005) for infants, toddlers, and preschoolers' time with media, which found a decline in time with television after age four. In contrast with previous research that found the presence of older siblings to be an influence on media use for children under two (Zimmerman et al., 2007), the presence of older siblings was not associated with total media channels or use of activity-promoting media for this sample.

Participation in Head Start or preschool was not a significant predictor of total media channels, but the differences in videogame and computer use for children attending these programs suggest that children who spend time away from home at least part of the day may have a somewhat different media environment at home. The significant association between computer use and parent education also implies that education influences parents' decisions about which media they will provide to their children.

Strengths and Limitations

The results offer additional knowledge of media use by a population of low-income children and parents. Previous studies have not examined activity-promoting media use by preschoolers, so the results concerning children's use of such genres provides new information about children's engagement with these media. Although the group was a convenience sample, survey responses showed patterns similar to those identified for other population groups in terms of parents' reports of their children's media use. The participation rate offered the opportunity to obtain parent reports of children's media use from a high percentage (93%) of the WIC clients receiving services at the study sites during the survey period. However, a survey instrument cannot fully capture the complex environments in which children and their families use screen media at home. The child media use patterns came from parental reports and thus should be interpreted with caution.

IMPLICATIONS

The study findings suggest that parents of preschoolers may be offering their children the opportunity to be physically active while using media. Using a health-promoting perspective on child media use allows the consideration of factors that contribute to positive child developmental outcomes. For example, interventions to reduce children's screen time might differ to the extent that watching TV, using DVDs or playing video games at home is sedentary or non-sedentary. If media use is associated with physical activity, intervention to encourage preschoolers' use of these media would have the potential to make a positive impact in increasing physical activity and potentially preventing or ameliorating childhood overweight and obesity.

Preschool children are certainly capable of directing their own behavior in many ways, but they are at a developmental level when most if not all of their daily activities are directed by adults. This immature stage can be both facilitative of physical activity (i.e., active play is normal for this developmental stage, and children will do it if they have the chance) and can prove a deterrent as well: adults may not permit children to be physically active in all settings, or may discourage physical activity if they are not willing or able to supervise or accompany their children. The physical environment plays a major role in either promoting or inhibiting physical activity, whether the “environment” means space in a day care center, room to be physically active in the home, or the presence of adult caregivers who are familiar with young children’s developmental capabilities and needs.

To the extent that parents’ educational levels and the child’s involvement in preschool programs outside the home may affect child media use, intervention efforts can focus on programs that provide educational opportunities for parents. Campaigns targeted to reduce children’s time with media or to encourage their use of activity-promoting media should also focus on collaboration between programs such as WIC and Head Start which may serve the same groups of children and families (Spaulding et al., 2008). Activity-promoting media can be targeted toward Hispanic children, and the results of this study imply that such media will be used by provided by parents of both lower and higher educational levels.

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Chapter III: Parent media attitudes and children's time with TV, DVDs and videogames for a group of Hispanic preschool-aged children

ABSTRACT

This study used parent surveys to examine preschool children's time with television, DVD players, and videogames, along with time spent using activity-promoting programs or genres associated with each channel, for a group of Hispanic children. Participants ($n = 237$) were mothers of children aged six to 60 months. Surveys in Spanish and English assessed the total number of screen media channels and activity-promoting media genres used by the children. Child time with three media channels and three activity-promoting genres served as outcome measures in a structural equation model.

Structural equation modeling reflected relationships between parent media attitudes, media density and children's media time on the previous day. Children's total time with media was associated with parent media attitudes, while children's time with activity-promoting media was associated with media density. Media attitudes were not significantly related to parent education, child gender, or parents' description of the child as more active than other children. The model R^2 was .74 for time with TV, DVDs, and

videogames and .24 for time with activity-promoting media, suggesting that there are additional factors influencing activity-promoting media use.

Activity-promoting media offer potential benefits to the extent that they may increase the time that children are physically active. Study results provide new information about time spent with activity-promoting media for a group of low-income urban children; children's time with media may not be sedentary.

BACKGROUND AND SIGNIFICANCE

Preschool children's time with home screen media

Children's time with media, particularly television (TV), has been associated with childhood obesity both because of its potential to affect both children's dietary practices and physical activity (Proctor et al. 2003) For this reason, health professionals including the United States Surgeon General (2005) have called upon parents to limit children's time with use of television, with specific recommendations that children under age two not watch TV at all ("American Academy of Pediatrics: TV and Toddlers," 2006).

Health-related interventions for school-aged children concerning media use have generally focused on reducing the amount of time spent using media such as TV and videogames (Robinson, 1999). The relationship between time spent with TV and videogames and children's weight status is more complex for preschoolers. Researchers who have studied preschool-aged children have found that media-obesity relationships for this age group do not track with those for older children. For example, preschoolers whose families have the TV on during meals may have a lower energy intake (Campbell,

Crawford, & Ball, 2006). Vandewater, Bickham and Lee found that time with TV and videogames may not be associated with less active playtime (2006), and Vandewater, Shim and Caplovitz (2004) noted that videogame use may be associated with either overweight or underweight. The introduction of activity-promoting genres such as exercise and activity DVDs and active videogames further offers the potential that time with home screen media may enhance physical activity for children (Lanningham-Foster et al., 2006) and thus may be a part of the solution in preventing childhood obesity.

Home screen media environment

The home environment has been examined extensively as a determinant of optimal child development (Linver et al. 2004). The present study considered the home screen media environment in terms of the density of media: the number of channels, such as television, DVDs, and videogames; the programs or genres provided by these channels, and the location or placement of a TV or game console in the child's room. Location of media in the home has been examined in terms of both its relationship to children's weight status and to parental guidance of children's media use (Barkin et al. 2006; Dennison et al. 2002), with the location of a TV in the child's bedroom associated with a higher incidence of overweight and less parental guidance. Research has focused on the types of TV and DVD programs (Zimmerman et al. 2007) and the types of media channels (Vandewater, Rideout, Wartella, & Shim, 2007) used by preschoolers, but has tended to quantify media use in terms of time spent rather than channels and types of programs used. Hispanic parents may have been either underrepresented or excluded from such studies.

Parent attitudes about children's media use

Parent attitudes about children's media use may vary among ethnic and socioeconomic groups. Hispanic and low-income parents may have unique beliefs about the importance of both physical activity and media for their children (McGarvey, 2006). Hispanic mothers may regard their children as being healthy as long as the child is active (Rich et al. 2005), and Hispanic parents may engage in fewer restrictions on children's use of home media such as television or may encourage different types of programming according to the family's acculturation (Kennedy, 2000). Limiting children's media time may be seen as more difficult when mothers have limited resources or do not view home media as being important themselves (Warren, 2005; Warren et al. 2002).

Study aims and conceptual model

The study first aimed to examine the relationships of home media density and parent media attitudes to preschool children's time with TV, DVDs, and videogames. Home media density was defined to include the number of media channels and activity-promoting programming or genres the child uses at home, and the location of a TV or game console in the child's room. Parent media attitudes included perceived difficulty with time limits, perceived importance of media for the child, and assessment of the amount of time child spends with media. The second aim of the study was to examine the effects of media density and parent media attitudes on children's time with activity-promoting genres for each of the three channels, TV, DVDs, and videogames. Four hypotheses were considered:

H1: Higher media density at home will be associated with parent attitudes concerning media for their children and with more time spent by the child with TV, DVDs, and videogames.

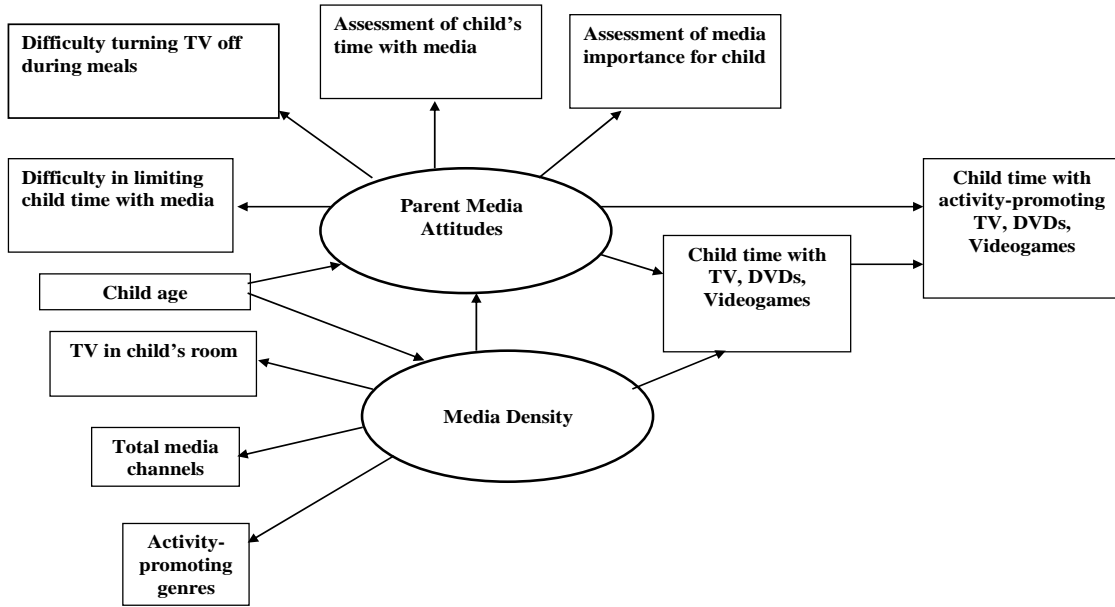
H2: Parent attitudes about media for their children will contribute to children's total time with media and with activity-promoting programs.

H3: Child age will be associated with parent attitudes and media density.

H4: Children's time with activity-promoting media will be associated with time spent with television, DVDs, and videogames.

Figure III-1 provides a conceptual model for parent media attitudes, home media density, child age, and children's total time and time with activity-promoting TV programs, DVDs, and videogames.

Figure III- 1. Conceptual model for media density, parent media attitudes, and children’s time with TV, DVD’s and videogames and activity-promoting TV, DVDs, and videogames



METHODS

Participants

Participants were 237 Hispanic women who participated in a larger survey of WIC parents in a large urban public health district in the Southwestern United States. The mothers' ages ranged from 16 to 47, with a mean of 27.9 years. Of the 225 participants who provided their marital status, 56% reported that they were married and 44% reported that they were not married. Among the 196 parents who reported their educational levels, 14.8% indicated an education of 6th grade or less, 25.0% had completed less than high school, 38.3% had completed high school or the equivalent, and 21.9% had completed at least some college. For 225 parents reporting their employment status, 49% indicated that they were not employed outside the home. About half (49%) of those who were employed reported employment of less than 35 hours per week.

Children represented in the study ranged in age from six to 60 months, with a mean age of 31.6 months and a standard deviation (*SD*) of 15.0 months. Children's ages at the time of the survey were distributed within the following categories: (1) ages six to 11.99 months, 14.8%; (2) 12 to 23.99 months, 15.6%; (3) 24-35.99 months, 30.4%; (4) 36-47.99 months, 20.7%; (5) 48-59.99 months, 18.6%. Slightly over half (52.3 %) of the children were males. Of 218 responses, 22.4% of the parents indicated that their child attended daycare, preschool, Early Head Start, or Head Start. Children's birth order ranged from first to sixth, with 42.6% of the parents responding indicating that their child was the first-born.

The Texas Department of State Health Services and the University of Texas at Austin provided Institutional Review Board (IRB) approval. Participants received informed consent

documents in both Spanish and English. Parents' participation in the study was voluntary and did not affect their enrollment, participation or WIC benefits.

Power analysis and sample size

A model-based method (Kline, 2005, pp 157-158) was used to determine power and sample size. Using the formula and tables from MacCallum and associates (1996), the size of the study sample was sufficient to accommodate the planned analyses, accounting for treatment of incomplete surveys and outliers.

Procedure

A convenience sample of four urban WIC clinics in South Central Texas served as sites. The researcher invited parents who were attending nutrition education classes to participate in the research project. The WIC staff provided translation for classes that were scheduled for Spanish speakers or in instances when an attendee at a class scheduled for English speakers spoke only Spanish. WIC clients who wished to participate received a class credit; those who did not wish to do so had the opportunity to complete an alternate class. Approximately 93% of all invited class attendees opted to participate in the study.

Study participants completed a paper survey that was available in English, Spanish, or English/Spanish combined versions. Fifty-four (22.8%) of the participants completed the English language version, 47 (19.8%) completed the Spanish version, and 136 (57.4%) completed the combined English/Spanish version. All of the participants completed the surveys within the one-hour class time, with the time for completion

ranging from 9 minutes to 45 minutes. Survey responses were entered into SPSS files for analysis.

Measures

Media density

A latent variable, media density, was assessed by three indicators: the total media channels used by the child at home, the total of activity-promoting media programs or genres used by the child, and the location of a TV or videogame console in the child's room.

Total media channels

A score for the total media channels used by the child at home was indicated by the total "yes" responses to a list of items adapted from Rideout et al. (2003) and Linver, Brooks-Gunn and Cabrera (2004). The question, "*does your child use any of these at home?*" preceded the list: TV, VCR, electronic books, DVDs on a DVD player, videogames, computer, and Internet. Each "yes" answer received a score of one. Possible scores ranged from zero to seven; the mean score was 3.1 and the standard deviation (*SD*) was 1.6.

Total activity-promoting media genres

A total for activity-promoting media genres was measured by summing "yes" responses to a list of items that included activity-promoting TV programs ("*TV show that gets him/her moving,*") activity-promoting videogames "*active videogames (child*

moves while playing),” exercise/activity DVDs “*exercise and activity DVDs*” and a child movement DVD distributed by WIC. “Yes” responses received a score of one. Possible scores ranged from zero to four. The mean score for activity-promoting media was 1.2 and the *SD* was .95.

Location of TV or game console in child’s room

This item was measured by assigning a value of one for “yes” responses to a question asking whether there is a TV or game console in the child’s room. There were 109 (47% of 232 item responses) “yes” responses.

Parent attitudes

A second latent variable, parent attitudes, was comprised of four indicators associated with parents’ attitudes about their children’s use of media at home. Parents’ perceived difficulty in limiting children’s time with media was measured by two items, the statements, “*I limit the amount of time my child watches TV or plays videogames,*” and “*I turn off the TV during my child’s meals.*” The items were preceded by instructions to “*...mark how easy or hard it is for you to do each item below*” using a four-point difficult-easy scale, as follows: “*Very hard, very difficult for me,*” “*Fairly hard, fairly difficult for me;*” “*Fairly easy for me;*” or “*Very easy for me.*” Items were scored from one to four, with a higher score denoting greater difficulty. The mean scores were 1.6 (*SD* .87) for the “limit the amount of time” item and 1.7 (*SD* .99) for the “turn off TV during meals” item.

The item measuring mothers’ assessment of the importance of media for their child stated, “*How do you rate the importance of TV, DVD’s and electronic games for*

your child?" (choices were, “*extremely unimportant,*” “*not very important,*” “*very important,*” and “*extremely important.*”) The item was scored from one (extremely unimportant) to four (extremely important), with a mean of 2.4 and SD of .75. Assessment of the amount of time spent by their child was measured by the item, “*Would you say your child watches too much, just the right amount, or too little, of TV, Videos, and DVD’s?*” with three choice options, too much, just the right amount, or too little. The item was scored from one to three, resulting in a mean of 2.0 and SD of .58.

Total media time: child time with television, DVDs, and videogames

Total media time was assessed by summing parent responses for items preceded by the statement, “*Thinking about yesterday, please mark how long your child spent using each of these at home,*” for television, DVDs, and videogames. (In all cases, the previous day was a weekday). The five choices ranged from “*Did not use*” to “*Used more than 45 minutes,*” for each screen media channel (TV, video games, and DVDs). The items were scored from one (did not use) to five (used over 45 minutes). The total media time scores thus had a possible range from zero (no time with any of the three channels) to 15 (over 45 minutes with all three channels). Scores for this measure ranged from zero to 11, with a mean of 3.5 (corresponding to total time of 30-45 minutes) and SD of 2.6.

Child time with activity-promoting TV programs, DVDs, and videogames

The time children spent with activity-promoting program genres was measured by summing time responses for the child’s time spent with activity-promoting TV programs, active videogames, and exercise/activity DVDs on the previous day, again preceded by the statement, “*Thinking about yesterday, please mark how long your child spent using each of these at home.*” Time choices ranged from “*Did not use*” to “*Used more than 45*

minutes.” The items were scored from one (did not use) to five (used over 45 minutes). Possible scores for this measure ranged from zero (no use of any of the activity-promoting genres) to 15 (over 45 minutes with all three). Scores for this measure ranged from zero to 12, with a mean of 1.9 (corresponding to 15 to 30 minutes) and *SD* of 2.2.

RESULTS AND ANALYSIS

The study aimed to examine children’s time with TV, DVDs, and videogames and with activity-promoting genres for these channels. Home media density, child age, and parent media attitudes were expected to contribute to children’s time with the media channels of TV, DVDs, and videogames and their time with activity-promoting programming or genres for each of these channels. The following sections describe the results and analysis of the survey data.

Distribution of data and missing data

Descriptive statistics (mean, standard deviations skewness, and kurtosis) were prepared for the responses. The scores for normality of distribution (skewness and kurtosis) were within acceptable ranges for all of the variables, but analysis of missing values indicated that data for parent education had a higher non-reporting rate (17%) than other survey items. To address this pattern, an approach suggested by Acock (2005) was employed during structural model estimation. The analyses were conducted using an estimator (WLSMV) that is appropriate for categorical data and uses all available data to provide model estimates.

Parents completed surveys in English (22.8%), Spanish (19.8%), or English/Spanish combined (57.4%) versions. Chi square tests examined potential

differences in the distribution of parent responses that may have been associated with survey language. A Bonferroni correction was applied to adjust for the number of tests conducted, resulting in $p = .008$ for significance at $\alpha = .05$. First, the scores for the two outcome variables, time with TV, DVDs, and videogames (total media time), and time with activity-promoting TV, DVDs and videogames (active media time) were compared for the three survey versions (English, Spanish, or English/Spanish combined). Scores for total media time [$X^2(22, N = 225) = 21.69, p = .48$] and active media time [$X^2(20, N = 232) = 18.02, p = .59$] did not differ significantly according to survey language. A similar process compared responses for the four parent attitude indicators (difficulty in limiting child's time with media, difficulty in turning off the TV during the child's meals, parent assessment of the child's time with media, and parent assessment of the importance of media for the child) according to survey language. Chi square tests for these items yielded no significant differences in response according to survey language.

The distribution of parent education according to survey language was examined to assess the possibility that survey language may have been associated with parents' educational level. Because of the high level of non-reporting for education in this sample (17%), the education item was coded to include a category for non-reporting. Table II - 1 shows parent educational categories according to survey language.

Table III-1. *Parent education by survey language (N = 237)*

Parent educational level	Survey language and percent of surveys			Total N	(%)
	English <i>n</i> (%)	Spanish <i>n</i> (%)	English and Spanish <i>n</i> (%)		
Did not report	6 (14.6%)	7 (17.1%)	28 (68.3%)	41	(100.0%)
6th grade or less	2 (6.9%)	9 (31.0%)	18 (62.1%)	29	(100.0%)
Grades 7-11	10 (20.4%)	11 (22.4%)	28 (57.1%)	49	(100.0%)
High school, trade, or technical	23 (30.7%)	16 (21.3%)	36 (48.0%)	75	(100.0%)
At least some college	13 (30.2%)	4 (9.3%)	26 (60.5%)	43	(100.0%)

As seen in Table III – 1., the majority of the participants chose to complete the combined English/Spanish version of the survey, and the majority (68.3%) of parents who did not report education were using the English/Spanish version. The frequencies show that 31% of the participants reporting education of sixth grade or less completed the Spanish version of the survey, compared with 6.9% at this educational level completing the English version and 62.1% completing the combined English/Spanish version. Among participants reporting the attainment of at least some college, only 9.3% of the parents completed the Spanish version of the survey. A one-way analysis of variance compared educational levels (including only those parents who did report education), among the three survey languages. The overall difference in educational level for the three survey versions was significant, with $F(2,193) = 3.20, p \leq .04$. The mean

educational level for mothers completing the English version of the survey was 4.27 (representing completion of high school), and the means for the Spanish and combined language versions were 3.32, and 3.82, respectively, representing an educational level of 10-12th grade. A Bonferroni post hoc t-test reflected significantly higher mean educational levels for parents completing the English version of the survey compared to the Spanish version ($p < .037$), but reported education did not differ significantly between the Spanish version and the English/Spanish combined version ($p < .374$) or between the English version and the combined version ($p < .427$). Structural modeling included parent education as a characteristic potentially associated with total media time and active media time for children.

Tests of model fit

Using criteria from Hu and Bentler (1999) the current data structure required the use of measures of model fit in addition to the chi square test in order to evaluate the fit of the structural model. Based upon these criteria, the following measures of model fit and cutoff criteria for accepting the factor and structural models were selected: non-significant ($p > .05$) chi-square (χ^2) value, Comparative Fit Index (CFI) and Tucker-Lewis Index (TLI) values $> .95$, a Root Mean Square Error of Approximation (RMSEA) value of $< .05$, and a Weighted Root Mean Square Residual (WRMR) or Standardized Root Mean Square Residual (SRMR) of < 1.0 . With a significant chi-square value, the cutoff values for at least four of the other measures were used as the criteria for model fit.

Analyses

The analyses consisted of three steps: first, zero-order correlations were prepared for all of the indicators in the model. Next, exploratory and confirmatory factor analyses were conducted for the two latent variables, media density and parent attitudes. Last, structural equation modeling was used to identify the influences of media density, parent attitudes, and child characteristics upon children's total time with media and time with activity-promoting media.

Correlations

Zero-order correlations, means, and standard deviations for the variables used in the model appear in Table III-2.

Table III-2. *Means, Standard Deviations, and Zero-Order Correlations for all Variables in the Model (N=237)*

Variables	1.	2.	3.	4.	5.	6.	7.	8.
1. Time with TV, DVD's videogames	---							
2. Time with activity-promoting TV, DVDs, videogames	.37***	---						
3. TV or game console in child's room	.31***	.19**	---					
4. Child male	-.05	.09	.00	---				
5. Child age category	.42***	.22**	.31***	.01	---			
6. Assessment of child's time with home media	.53***	.28***	.18**	.03	.25***	---		
7. Importance of home screen media for child	.30***	.16**	.24***	.08	.18**	.24***	---	
8. Child more or less active than other children	-.01	-.07	-.03	-.05	-.03	.18**	.01	---

Table III -2, Continued

Variables	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.
9. Difficulty in limiting amount of media for child	.19**	.10	.08	.17**	.01	.14*	.09	.06	---				
10. Difficulty with turning off TV during meals	.18**	.02	.10	.00	.02	.15*	.07	-.02	.54***	---			
11. Parent education	-.02	-.07	.02	-.08	-.12*	.11	-.02	-.02	-.14*	-.03	---		
12. Total media channels child uses at home	.45***	.43***	.31***	.06	.49***	.37***	.29***	-.09	.09	.10	-.01	---	
13. Total active media genres child uses at home	.18***	.64***	.18**	.13*	.24***	.17**	.18**	-.11	.09	-.07	-.04	.50***	---
<i>M</i>	3.51	1.85	.47	1.48	2.13	2.05	2.37	1.55	1.58	1.73	2.73	3.14	1.16
<i>SD</i>	2.58	2.15	.50	.50	1.30	.58	.75	.50	.87	.99	.90	1.59	.95

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

Overall, parents reported that children's time with activity-promoting TV programs, DVDs and videogames was about half of that spent with those media channels ($M = 1.85$ for activity-promoting media time and $M = 3.51$ for total time with TV, DVDs, and videogames). A Bonferroni adjustment was applied to account for the number of correlational relationships examined. With $\alpha = .05$, a value of $p < .0003$ was established for the significance of correlations. Variables significantly (positively) correlated with the two outcome indicators, time with TV, DVDs, and videogames and time with activity-promoting TV, DVD, and videogames were child age category, number of media channels used by the child, and location of a TV or game console in the child's room. Parent attitudes were also correlated with total media time and active media time, with parental assessment of the child's time with media and the importance of media positively correlated with both total media time and activity-promoting time, and importance of media associated with activity-promoting media time.

Exploratory factor analyses

An exploratory factor analysis was conducted using the variables associated with media density (total media channels child uses, active media genres child uses, location of TV or game console in child's room) using the Mplus 5.1 (Muthen & Muthen, 1997-2008) statistical program. This analysis tested one and two-factor solutions, but the results indicated that only a one-factor solution was appropriate (an Eigenvalue greater than one was produced only for a one-factor solution). The tests of model fit indicated an excellent fit for one factor using the three variables [$\chi^2(3), N = 237 = 0.0$, CFI = 1.00, TLI = 1.0, RMSEA = 0.0]. A confirmatory analysis produced the same model fit. Factor scores for the latent variable, media density, were used in the final structural model.

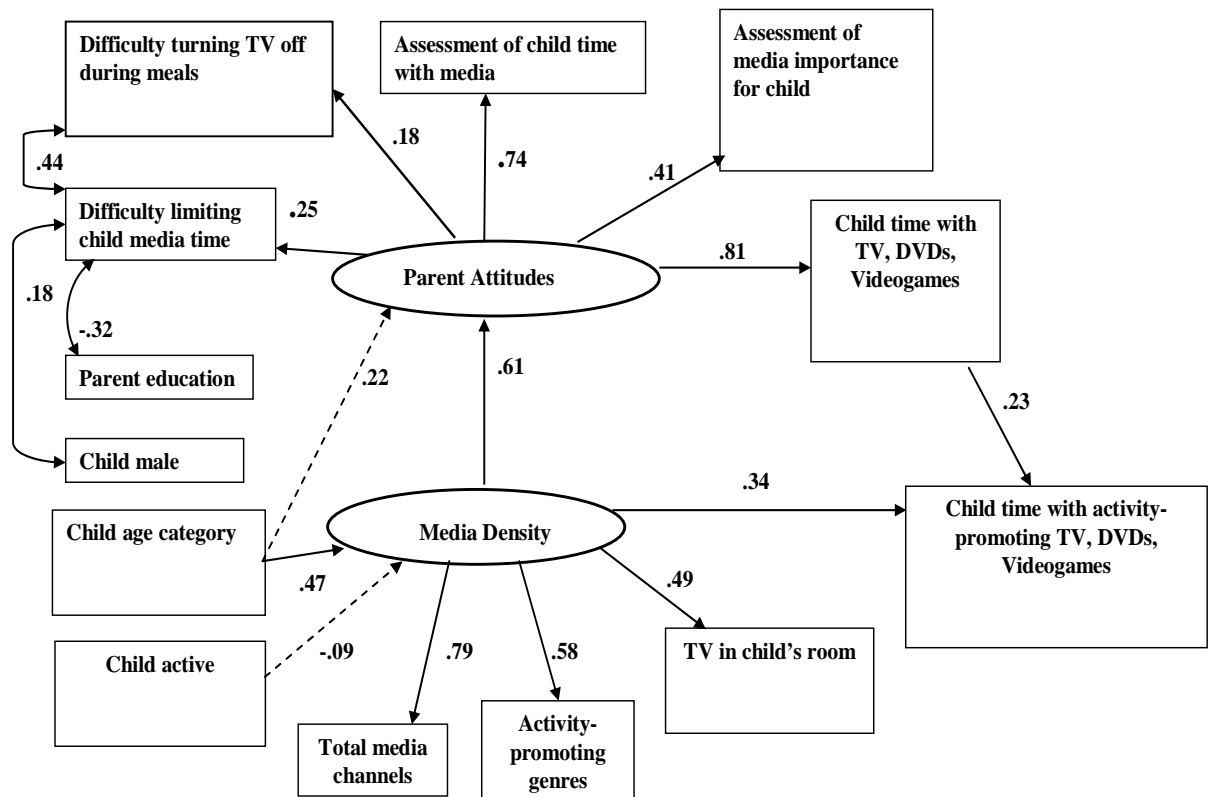
The second exploratory factor analysis used the parent media attitude indicator variables, assessment of child's time with home media, perceived importance of home media, perceived difficulty of limiting child's media time, and perceived difficulty turning off the TV during the child's meals. The exploratory analysis was conducted testing one or two factors for these variables. The results indicated that a one factor solution was appropriate (an Eigenvalue of greater than one was produced only for a one-factor solution) but the tests of model fit did not indicate a good fit [$\chi^2(2), N=237) = 19.9, p < 0.000, CFI = .90, TLI = .71, RMSEA = .20$]. A scaling correction of $-.75$ was applied to the scores for the time assessment indicator because it was reverse coded and used a three-point scale (the other factor indicators used a four-point scale). The confirmatory factor analysis for parent media attitudes was included in the estimation of the final structural model.

Structural equation modeling

The study hypotheses were (H1) that higher media density would be associated with parent attitudes and child time with TV, DVDs, and videogames; (H2) parent attitudes would contribute to child's time with media and time with activity-promoting media; (H3) child age would be associated with parent attitudes and media density; and (H4) child's time with activity-promoting media would be associated with time spent with TV, DVDs, and videogames (total media time). Mplus 5.1 was used to test the structural model shown in Figure III-1. Outcome variables were child time with TV, DVDs, and videogames (total media time) and child time with activity-promoting media genres (time with activity-promoting media). Based on the conceptual model, the structural model was first tested with attitude dependent upon media density (H1), time with TV, DVDs, and videogames dependent upon media density (H1) and parent

attitudes (H2;) and media density dependent upon child age category (H3). The model used activity-promoting media time as an outcome variable dependent upon parent attitudes (H2) and total media time (H4). The model incorporated the confirmatory factor analyses for the latent variables for parent attitudes and media density. A robust estimator was (WLSMV) appropriate for the data structure (missing values and categorical variables). The model failed to converge, so it was re-estimated to include correlations between child gender, parent education, and difficulty in limiting time, and the path from media density to total media time was removed. The respecified model indicated an excellent fit [$\chi^2(33, N=237) = 36.53, p = .30, RMSEA = .02, CFI = .96, TLI = .96, WRMR = .76$] to the data. The criterion for significance of regression path coefficients for the model was $p < .05$. Figure III-2 presents the full structural equation model with standardized coefficients.

Figure III-2. Structural equation model for parent attitudes, media density and child age category related to child's total time and time with activity-promoting TV, DVDs, and videogames.



Solid lines $p < .05$, dashed lines $p > .05$

1

Figure III-2 provides information about the relationships among parent media attitudes, media density, and children's time with TV, DVDs, and videogames on the previous day. As hypothesized (H1), greater media density was associated with more child time with media

(TV, DVD's and videogames), although the association between media density and child time with media was not significant. Parent attitudes significantly contributed to children's total time with TV, DVDs, and videogames. The contribution of parent attitudes to children's time with activity-promoting media was not significant (H2). Child age was associated with media density (H3), with but the association of child age with parent attitudes was not significant. Children's time spent with the associated media channels was significantly associated with time spent using activity-promoting TV programs, exercise/activity DVDs, and active videogames (H4). Parent education, and male child gender were associated with parental difficulty in limiting the child's time with media. The parent's assessment of the child as more or less active than other children was not significantly associated with the media density in the home. The model R^2 (the proportion of variance in the outcomes accounted for by the predictors) was .74 for time with TV, DVDs, and videogames and .24 for time with activity-promoting media.

The model results suggest that child time with parent attitudes might mediate the associations between media density and total media time. The results also suggest that parent attitudes, media density, and total time might mediate the relationships between child age and time with activity-promoting media, and that attitudes might mediate the association of media density with total media time. Before considering model support for the four hypotheses, indirect effects were estimated.

Specification of indirect paths from media density and parent attitudes to total media time resulted in a significant coefficient for this path. The standardized coefficient for an indirect path from media density to total media time was .39 ($p = .000$), supporting the consideration of parent attitudes as a mediator of the relationship of media density to total media time. The standardized coefficient of .20 for an indirect path from parent attitudes to

time with activity-promoting media was not significant ($p = .08$). The standardized path coefficient (.24) for the total indirect effects of media density, parent attitudes, and total media time on the relationship of child age to time with activity promoting media was significant ($p < .000$), with a significant indirect path through media density (standardized coefficient = .16, $p < .000$), providing support for media density as a mediator of the relationship of child age to child's time with activity-promoting media.

Considering the direct and indirect paths estimated from the structural equation model, model results provided support for H1, in that parent attitudes were directly associated with media density, and total media time was indirectly associated with media density (mediated by parent attitudes). H2 was partially supported by the model results; total media time was strongly influenced by parent attitudes, and but child's time with activity-promoting media was not significantly associated with parent attitudes. The model results provided partial support for H3: child age was significantly associated with media density (older children used more media channels), but was not significantly associated with parent media attitudes in this model. The model did not provide support for H4: the associations of total media time and parent attitudes with child time with activity-promoting media were not statistically significant in the model.

DISCUSSION AND CONCLUSIONS

This study examined preschool children's time with three home media channels and three types of activity-promoting media genres reported by a group of low-income Hispanic mothers. The study contributes to research by providing a model for parent

media attitudes, media density, and children's time with media reported by a group of Hispanic mothers, with a range of educational backgrounds, who had the opportunity to provide study responses in three language formats. Additionally, the study provides new information about the use of three types of activity-promoting media reported for a group of low-income urban Hispanic children. The study built upon prior research by considering both parent media attitudes and attributes of the home media environment as potential contributors to children's time with home screen media.

These results were consistent with the recommendations of Holbert and Stephenson (2003) to consider mediation effects in media research. The study finding of a non-significant relationship between total media time and activity-promoting media time was somewhat counter-intuitive, since by definition, children's time with activity-promoting media as characterized in this study was mediated by children's total time with the parallel genres. Possible reasons for this finding may be that children who spent much greater amounts of time with TV, DVDs, and videogames did not also spend greater amounts of time with activity-promoting media, and that the parent media attitudes that predict total media time are different from the specific media attitudes related to the use of activity-promoting genres.

Although the establishment of parent media attitudes as dependent upon media density in the structural model was based on the premise that environment influences attitudes, the relationship between home media density for children and parent media attitudes is also likely to be bi-directional, since parents' attitudes about media are likely to have influenced the types of media in the home. However, the study model provided an excellent fit with the survey results, which underscore the complex relationships that exist among parent attitudes, child characteristics, and home screen media use.

Researchers (Barkin et al. 2006) have noted that Hispanic parents were more likely to allow children unrestricted use of television, and that parents who scored lower on acculturation scales made less effort to limit time and provide educational programs (Kennedy, 2000), perhaps because of less authoritarian parenting styles. In contrast, this group of low-income Hispanic parents of preschoolers reported low perceived difficulty of limiting children's time with media and had relatively accurate perceptions about their children's time with home screen media. Although mothers may have underestimated their children's time with media, characterization of their children's media time as "too much, just right, or too little," was significantly correlated with the length of time spent with media on the previous day. Parents' assessments of the child's time with media as "too much" and of the importance of media for their child were the strongest determinants of parent media attitudes.

Study limitations included the use of a convenience sample and reliance on parent survey responses to assess children's time with media and with activity-promoting genres. The parents may not have accurately reported upon the amount of time their children spent using media and may have provided socially desirable responses about their attitudes concerning media and difficulty in establishing time limits. However, the primary purpose of the study was to gauge categorically time spent with media and to determine the effects of parent attitudes and the density of the home media environment upon children's time with media. Previous studies with preschoolers have not considered time spent with activity-promoting media. The parents reported that their children were using these media genres; future studies may build upon this finding by examining the use of activity-promoting media by preschool-aged children in more detail. Additionally, interventions that are geared toward parents' reducing the amount of time their children

spend with media should consider underlying parent attitudes as well as the types and locations of media children may be using.

Another limitation of the study is that it lacked a measure of acculturation. This research did not aim to examine cultural differences in preschool children's media use and parent attitudes and behaviors, but it is possible that cultural factors play a role in the home media environment and children's use of media at home. This study used survey language selected by respondents as a proxy measure. The survey sites were located in a city with a population that is almost 60% Hispanic. Although Hispanics comprise a majority of the population, first-generation immigrants from Mexico may constitute a sub-population that is more likely than other Hispanics in the city to prefer to speak Spanish rather than English, to have lower household incomes than the city as a whole, and to have less than a high school education (Jones, 2007). Examination of parent responses according to survey language in this study did not reflect significant differences, but there were differences according to parent educational level. Future research related to Hispanic children's media use should consider the possibility that Hispanic populations may be multi-cultural, and that parent characteristics such as education are more likely to influence home media use than language alone. A better measure of cultural status might have been more sensitive to variations in culture and to the relationship of culture to media use and parental attitudes.

The focus on mothers of Hispanic children provides an interesting perspective on determinants of media use for Hispanic preschoolers. Parent media attitudes for this group were most strongly represented by parental assessments of the amount of time spent with media by their child. Parent attitudes had a strong effect on children's time

with the media channels, but media density had a stronger relationship than attitudes in terms of children's time with activity-promoting media. Considering the high percentage of children who had a TV or game console in their room, there are implications for the finding concerning media density. For example, parental attitudes may have an effect on the amount of time children use media, but the content of media used by children is more likely to be determined by the presence and location of media in the home. If children have TV in their rooms, parent attitudes may be less influential.

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Chapter IV: Parent attitudes associated with media guidance, child age and child weight risk category for preschool-aged children

ABSTRACT

This study examined the relationships among parent media attitudes, guidance and preschool children's age and weight status. Surveys of 257 low-income, primarily Hispanic, parents of children aged 12 to 72 months were matched with children's weight measurements. Confirmatory factor analyses identified promotive and restrictive components of parent media guidance, perceived guidance difficulty, parent health locus of control, and perceived media health influence. Structural equation modeling examined the relationships among parent media guidance, attitudes, and beliefs, and child weight and age categories.

Greater frequency of parent media guidance was associated with less frequent parental occupation with activities during the child's media use. Increased difficulty was associated with less frequency of guidance. Greater parental perceived health locus of control was associated with higher frequency of restrictive media guidance. The child age and weight risk categories were associated with more promotive parent media guidance, and child weight was negatively associated with parents' health locus of control beliefs.

Parent attitudes, beliefs, and child characteristics did not influence the two guidance components equally. Interventions geared to encourage parents to reduce children's time with media as part of obesity prevention efforts should build on locus of control beliefs concerning media and their children's health.

BACKGROUND AND SIGNIFICANCE

Children's use of home screen media such as television has been implicated as a factor in the growing epidemic of childhood obesity. For preschool-aged children, parents have a strong influence on energy intake and energy expenditure, the two processes that determine weight (Campbell et al., 2006; Dietz, 2004a; Temple, Giacomelli, Kent, Roemmich, & Epstein, 2007). Parents also play a key role in mediating, or guiding, young children's use of home screen media (Warren, 2003).

Parent guidance of preschool children's media use

A central question with preschoolers is whether and to what degree parents might be able to enhance television's potentially positive effects and minimize opportunities for negative effects with children. Researchers have examined parent media guidance primarily in terms of restrictions that parents place on television program content and the amount of time children spend watching TV (Buijzen & Valkenburg, 2005; Warren, 2003; Warren, 2005), and have found that parental styles of mediation (i.e., unlimited access, restrictive mediation, instructive mediation) varied according to the age of the child (Barkin et al., 2006).

Having rules about time has been shown to influence the amount of time children spend with television, and higher family income and educational levels have been associated with parents who report media rules such as time and program or content restrictions (Vandewater, Park et al., 2005). Parent media guidance in terms of promoting children's health and learning experiences has received relatively little attention (Jordan, Schmitt, & Woodard, 2002). Tyner (2006) suggests 12 positive actions that parents can take with regard to guidance of children's media experiences. These

include the selection of age-appropriate media, planning media choices and using media with the child, discussing and criticizing media content, limiting the amount of time spent with media, discouraging eating in front of the TV or computer, and placing media outside the space where other family functions occur. These recommendations, along with those made by Jordan (2006), identify actions that acknowledge the importance and benefits of media rather than focusing only on potential negative effects.

Parent media attitudes and beliefs

Children's use and comprehension of home media such as television is affected by parental attitudes and beliefs (Bone, 2004; Hake, 2003; Jordan, 2005; Pasquier, 2001; Trawick-Smith, 2003; Warren, 2003; Warren et al., 2002). Low-income parents and those who are of racial/ethnic minorities may have unique perceptions about the importance of media for their children at home, either based on their own attitudes about media importance for their child or because parents have limited resources (Warren, 2003). Hispanic parents who score higher on acculturation measures may engage in more regulation of their children's television viewing, including time and content, and direct children toward more educational and informative programming (Kennedy, 2000). Such parental direction may be more promotive than restrictive, implying that parent media guidance may have both promotive and restrictive components.

Perceived control has been found to be a determinant in parental behaviors and decisions concerning their children's health. Parent locus of control has been considered in terms of parental adherence to medical recommendations (MacNaughton & Rodrigue, 2001), parental actions related to toddler safety and injury prevention (Morrongiello & House, 2004) and general beliefs about children's health (Pachter et al., 2000). The

Parent Health Locus of Control (PHLOC) scales (DeVellis et al., 1993) measure parents' beliefs about various influences, including media, on their children's health. Researchers (Kraft & Loeb, 1996) have noted significant differences of PHLOC scores among parents with different educational levels, with more educated parents scoring higher on the Media Influence scale (the degree to which parents perceive media as influencing their child's health). Ford-Gilboe (1997) considered parent health locus of control from a health promotion perspective, finding it to be one factor, along with self-efficacy, that determined family strengths in seeking and carrying out healthy lifestyles for themselves and their children. Studies of parental perceived control in terms of media have often focused on parents' perceptions about negative media effects on children. For example, Cho and Cheon (2005) determined that higher levels of parents' perceived control reduced children's exposure to negative Internet content.

Parental self efficacy (considered here as parents' perceived difficulty in guiding their children's use of media at home) has been associated with positive parenting behaviors and child outcomes (Coleman & Karraker, 1998; Jones & Prinz, 2005), and parent self-efficacy and perceived control have been associated with more frequent parent involvement in home learning activities with children (Machida et al., 2002). Parent self-efficacy for media guidance (categorized as either restrictive or active) has been considered from the perspective of parents' roles in protecting their children from negative media effects (Nathanson et al., 2002), but self-efficacy for media guidance does not appear to have been addressed otherwise.

Weight risks for children enrolled in WIC

WIC, the Special Supplemental Feeding Program for Women, Infants, and Children, serves large numbers of children, and a high percentage of the children enrolled are classified as overweight or at risk of being overweight, with high weight for height (Bartlett, Bobronnikov, & Mendelson, 2006). WIC guidelines consider children over age one with a weight/height percentile or BMI over the 85th percentile to be at risk of overweight, and children with a weight/height percentile or BMI over the 95th percentile are considered overweight. In Texas alone, 109,681 children (21.1% of the total enrolled) participating in WIC during the second quarter of 2008 were at risk or overweight (*State of Texas WIC Program August 2008 Quarterly Nutrition Risk Report*, 2008). Of those children, 92,123 (84%) were Hispanic (compared to 79% of the total WIC child enrollment represented by Hispanic children). Of the children enrolled in WIC in Bexar County, the location for this study, 10.6 % were assigned risk codes denoting overweight (weight/height above the 95th percentile), and 10.7% received risk codes indicating they were at risk of being overweight (85th to 95th percentile),

WIC clients and home media use

Few, if any, studies have directly assessed relationships between U.S. parents' mediation (guidance) styles with home media and children's weight, and there is a dearth of information about WIC clients and home media use. Studies which have involved WIC clients have been associated with interventions geared to reducing television viewing time (Johnson et al., 2005; McGarvey et al., 2004) but may not have collected data about children's media use or weight. One study (Nelson et al., 2006) that did address children's media use (television viewing or computer time) related to

overweight status among children enrolled in WIC did not find a significant relationship between TV viewing and children's overweight. In that study, the relationship of TV and overweight status was significant when TV viewing time and physical activity time were considered together. These researchers did not address parental guidance of children's media use.

Study aims and conceptual model

The present study focused on media guidance behaviors, attitudes, and beliefs for a group of low-income, primarily Hispanic, parents enrolled in WIC. Four hypotheses were generated:

H1: Parent media guidance is comprised of promotive and restrictive behaviors.

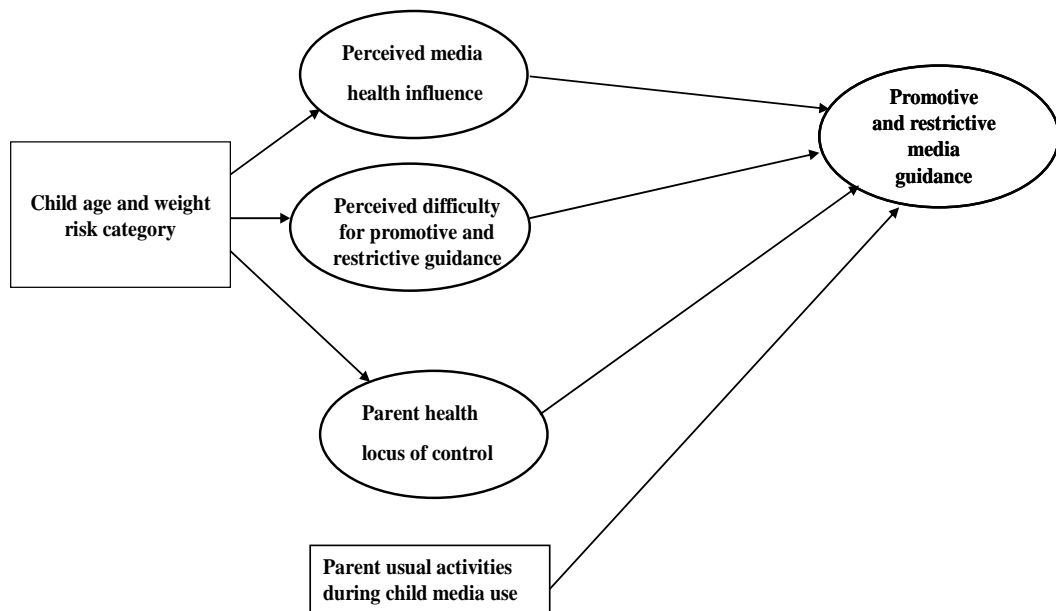
H2: More frequent parent media guidance is associated with lower frequencies of parents' activities other than watching with the child during children's media use at home.

H3: Parent media guidance is associated with less perceived difficulty of guidance and greater parent perceptions of themselves and media as influential upon their children's health.

H4: Parent media guidance, attitudes, and beliefs are associated with child's age and weight status.

A conceptual model for the study relationships appears in Figure IV-1.

Figure IV-1. Conceptual model: child characteristics, parent attitudes and media guidance



METHODS

Participants

WIC clients of a large urban public health district in the Southwestern United States completed surveys and allowed access to their children's height and weight measurements. The study group was comprised of 257 parents or caregivers, 236 (95.2%) of whom were females. Their ages ranged from 18 to 49, with a mean age of 28.8 years ($SD= 6.96$). Of the 244 participants who provided their marital status, 54.5% reported that they were married. Ethnicity for the parents was 219 or 86.2% Hispanic, 6.2% White, 4.3% Black, 1.7% Asian, and 2.7% other ethnicities. Of the 207 parents who reported their educational level, 19.8% had completed less than high school, 43.5% had completed high school, and 36.7% reported at least some post-high school education.

Parents completed surveys for their child closest to age three. Children's ages at the time of the survey ranged from 12 to 72 months ($M=37.8$, $SD = 14.06$); and 134 (52.1%) of the children were males. Child age categories and distribution were as follows: 12 to 23 months, 43 (16.7%); 25-35 months, 83 (32.3%); 36-47 months, 64 (24.9%); and 48 to 72 months, 67 (26.1%).

The Texas Department of State Health Services and the University of Texas at Austin provided Institutional Review Board (IRB) approval. Informed consent forms were provided in both Spanish and English. Parent participation in the study was voluntary and did not affect enrollment, participation or WIC benefits.

Power analysis and sample size

A model-based method for determining power and sample size (MacCallum, Browne, & Sugawara, 1996) was chosen because it provides an analysis of the power that can be expected from a given sample size using an expected number of model degrees of freedom. Using the formulas and tables from these researchers, a sample size of 231 would be required for a test of close model fit with power of .80. The sample size of 257 was determined to be adequate for this purpose.

Procedure

A convenience sample of four WIC clinics in a large urban city in South Central Texas served as sites. The researcher attended WIC nutrition classes and asked attendees to participate in a survey about their children and media. The WIC staff provided translation for classes with members who spoke only Spanish. Approximately 93% of the recruited attendees opted to participate in the study. Study participants completed a paper survey that was available in English (54 or 21.0 %), Spanish (18.8 %), or English/Spanish combined (60.3%) versions. After the surveys were completed, the researcher collected child height and weight measurements from individual clinic records and matched them to the corresponding survey responses. Survey responses and child height and weight data were entered into SPSS files for analysis.

Measures

Parent media guidance

Survey items asked parents about the frequency of seven specific behaviors comprising parental guidance, or rules, concerning their child's media use at home, measured parent media guidance. Guidance domain components were adapted from a

national children's media survey (Rideout et al., 2003) and recommendations from Tyner (2006), with the addition of one item (“*I encourage my child to move ...*”) relevant to activity-promoting media. A four-point frequency scale provided the response options, with choices of “*Never,*” “*Sometimes,*” “*Most of the time,*” or “*Always.*” Responses were scored from one to four, with higher scores denoting guidance that is more frequent.

The seven items included : “*I pick the programs or video games my child watches and plays at home;*” “*I only let my child watch TV or play videos and videogames at certain times of the day;*” “*I only let my child watch TV or videos that are for children his/her age*” “*I limit the amount of time my child watches TV or plays video games;*” “*I turn off the TV during my child's meals;*” “*I discuss what is showing on the screen with my child, while he/she is watching or playing;*” and “*I encourage my child to move around or dance while watching TV.*” The mean score for all seven items was 2.99 (with a score of three representing “almost always” carrying out the guidance activity), and the standard deviation was .67. The Cronbach's alpha for the seven media guidance items was .81.

Parent usual activities while child is using media

Parents provided responses to a list of yes/no questions about their usual activities while their child is using media at home , with the majority (80.9%) reporting that they usually watch with their child when the child is watching TV or playing a video or video game. A score for parent usual activities was calculated by summing parent responses to the remainder of the usual activity items (“cooking, cleaning, or doing laundry,” “in the same room but not watching,” “watching my own show,” “talking on the phone,” “taking

a shower,” and “visiting with friends or family.” Possible scores ranged from zero to six. The mean score for parent usual activities was 2.0, and the *SD* was 1.4.

Perceived difficulty for media guidance

Seven items corresponding to the “guidance” question stems listed earlier measured parental perceived difficulty in guiding children’s media use. For example, the item related to turning off the TV during meals asked parents to rate the difficulty for them to “*Turn off the TV during my child’s meals.*” The seven items measuring perceived difficulty were preceded by instructions to “...mark how easy or hard it is for you to do each item below:” using a four-point difficult-easy scale, as follows: “*Very hard, very difficult for me;*” “*Fairly hard, fairly difficult for me;*” “*Fairly easy for me;*” or “*Very easy for me.*” Items were scored from one to four, with higher scores denoting greater difficulty. Cronbach’s alpha for the perceived difficulty items was .84, with an item mean of 1.6 (one representing the lowest degree of difficulty) and *SD* of .57.

Parent health locus of control and perceived media health influence

Three items from the Parent Influence scale and three items from the Media Influence scale of the Parent Health Locus of Control Scales (R F DeVellis et al., 1993; R. F. DeVellis et al., 1993; Kraft & Loeb, 1996) were used for the present study. The Parent Influence scale items were, “*I can do a lot to help my child be strong and healthy;*” “*The things I do at home with my child are an important part of my child’s well being;*” and “*I can do a lot to help my child stay well.*” The Media Influence items substituted videogames for comic books. The Media Influence items were, “*Some video games can affect my child’s health;*” “*What my child sees in TV programs*

can affect my child's health;” and “What my child sees in TV commercials can affect my child's health.”

The original scale items used a six-point agree-disagree scale. Response choices for the present study used a four-point scale ranging from “*I do not believe this at all*” to “*I believe this completely*,” such that the least agreement with the statement appeared first. These items were scored from one to four, with higher scores denoting greater belief. The mean score for the Parent Health Influence items was 3.8 ($SD = .42$), with Cronbach’s alpha .74. The mean score for the Media Health Influence items was 2.9 ($SD = .88$), Cronbach’s alpha was .81 for the Media Health Influence items. Latent factors for these items were identified as parent health locus of control and perceived media health influence.

Child weight risk category

The most recent height and weight measurement information for the child was obtained from WIC clinical records. Using the child’s age in months at the time of measurement and the weight/height measurements, a statistical program was used to generate weight/height percentiles using the growth charts for children from the Centers for Disease Control and Prevention (“U.S. Centers for Disease Control and Prevention,” 2009). The resulting percentile scores were categorized, with the following scoring and distributions: weight/height measured below the 85th percentile (scored as one), 65.5%; weight/height between the 85th and 94.99th percentiles (scored as two), 14.0%; and percentiles at or above the 95th (scored as three), 18.3%. Children’s ages at the time of weight and height measurement ranged from 11 to 61 months ($M = 33.90$, $SD = 12.78$).

The mean time difference between measurement and survey was 2.65 months, with a median of 2.15 months, *SD* of 2.64 months, and a range of 13.23 months.

RESULTS AND ANALYSIS

Distribution of data and missing data

Means, standard deviations, variances, skewness, and kurtosis for all of the measures were analyzed for normality. Some items had missing values, and the item scores for media guidance and perceived difficulty were skewed. The guidance-related items showed high frequency and low difficulty for the guidance behaviors (means of 3.01 and 1.55, respectively). The parent health locus of control items reflected kurtosis (10.2) with 70.8% of the responses for the items in the “believe completely” category. This distribution was addressed by the use of an appropriate estimator (MLM, robust for non-normality and missing data) in conducting the structural equation modeling.

Because the survey was administered in three versions (English, Spanish, or English/Spanish combined), the researcher also examined distribution of survey responses for outcome and attitude indicators according to the survey version completed by the participant. Chi square tests did not reflect significant differences according to survey version for mean scores on the guidance, perceived difficulty, parent health locus of control, or perceived media health influence indicators.

Tests of model fit

Based upon criteria from Hu and Bentler (1999), the following measures of model fit and cutoff criteria for accepting the measurement and structural models were selected: non-significant ($p > .05$) chi-square (χ^2) value, Comparative Fit Index (CFI) or

Tucker-Lewis Index (TLI) values $> .95$, a Root Mean Square Error of Approximation (RMSEA) value of $< .08$, and a Weighted Root Mean Square Residual (WRMR) or Standardized Root Mean Square Residual (SRMR) of < 1.0 . With significant χ^2 cutoff criteria for the remaining tests of model fit were used.

Analysis

The study aims were to identify factors comprising parent media guidance, to determine whether guidance was related to parents' attitudes and beliefs, and to determine whether the child's age and weight categories were related to parent media guidance, attitudes, and beliefs. The first hypothesis was that parent media guidance is comprised of promotive and restrictive behaviors.

The first step in the analysis was to conduct an exploratory factor analysis for the seven parent media guidance items using the Mplus version 5.1 statistical program (Muthen and Muthen, 1998-2008). The exploratory analysis was estimated for one to three factors, but Eigenvalues greater than one were produced only for one and two-factor solutions. The one-factor solution did not meet the cutoff values described earlier. For the two-factor solution, $\chi^2(8, N= 257) = 16.7, p= .02$ was significant, but the CFI was $.97$ and the RMSEA was $.07$, with SRMSR of $.03$, supporting two factors for parent media guidance. Geomin rotated loadings for a factor containing the five items related to time and content rules ranged from $.55$ to $.73$. Loadings for a second factor were $.61$ and $.67$ for the two items "discuss" and "encourage child to move around." Examination of the rotated loadings divided by standard error (a rough approximation of z-scores) suggested that the "discuss" and "move" items should be considered as loading on one factor and the remainder of the guidance items as loading on a second factor. This division was logical from a theoretical perspective, since the

“move” and “discuss” items represented promotive actions regarding media and the remainder of the items represented time or content restrictive actions.

A confirmatory factor analysis was conducted to test two factors. The confirmatory factor model specified two latent factors, labeled “promotive” and “restrictive” to denote two types of parent media guidance. Two items (“I discuss what is showing on the screen with my child, while he/she is watching or playing ”and“ I encourage my child to move around or dance while watching TV”) indicated the promotive factor. Five items (“*I pick the programs or video games my child watches and plays at home;*” “*I only let my child watch TV or play videos and videogames at certain times of the day;*” “*I only let my child watch TV or videos that are for children his/her age*” “*I limit the amount of time my child watches TV or plays video games;*” and “*I turn off the TV during my child’s meals*”) indicated the restrictive guidance factor. The model was estimated by Mplus 5.1 using a WLSMV estimator appropriate for categorical data and robust for non-normality and theta parameterization appropriate for categorical dependent variables. Three cases were eliminated due to missing data. Examination of the model showed that all items loaded significantly on the appropriate latent factor. Moreover, item loadings were .57 and .71 for the two promotive factor indicators and varied from a low of .61 to .86 for the restrictive factor items. The model results [$\chi^2(10, n = 253) = 18.2, p > .05$; CFI = .98, RMSEA = .06; and WRMR = .65] were determined to be acceptable for consideration of the two parent media guidance factors, promotive and restrictive. These results supported the first study hypothesis (H1), that parent media guidance is comprised of promotive and restrictive behaviors. The scores for the two promotive guidance items and the five restrictive items were averaged to produce values for promotive and restrictive parent media guidance in the structural model.

Exploratory and confirmatory factor analyses for the items representing perceived difficulty for media guidance used a parallel process. Exploratory factor analysis for the seven perceived difficulty items also produced Eigenvalues of greater than one for a two-factor solution (using items parallel to the media guidance restrictive and promotive latent factors), with $\chi^2 (11, n = 253) = 3.56, p = .88$. Confirmatory factor analysis indicated that the items loaded significantly ($p = .000$) on the appropriate latent variables, and the model results for the two factors comprising perceived difficulty of media guidance indicated an acceptable fit [$\chi^2 (9, n = 253) = 32.4, p = .00, CFI = .96, TLD = .97, RMSEA = .08$; and $WRMR = .81$.] For final modeling, the perceived difficulty items were averaged to provide scores for the latent variables.

Confirmatory factor analysis for parent health locus of control and media health influence items supported two latent factors for these items [$\chi^2 (6, n=247) = 14.4, p = .02, CFI = .99, TLD = .99, RMSEA = .08$; and $WRMR = .60$], with each item loading significantly ($p = .000$) on the appropriate factor. The mean scores for the three parent health locus of control items and the three perceived media health influence scale items were used in the structural model analysis.

The next questions addressed in the analysis involved the relationship of parent media guidance to parents' attitudes, beliefs, and other activities while their children were using media at home. More frequent parent media guidance of children's media use was hypothesized to be associated with lower frequencies of parents' usual activities during child media use (H2), and with less perceived difficulty of guidance and greater parent perceptions of themselves and media as influential upon their children's health (H3). The study also aimed to examine how parent media guidance, activities, attitudes, and beliefs were related to the child's age and weight category (H4). Correlations were prepared for

the factors considered in the structural model. The zero-order correlations, means, and standard deviations for all of the measured variables appear in Table IV-1.

Table IV-1. Means, Standard Deviations, and Zero-Order Correlations for all Variables in the Model (N=257)

Parent media guidance, attitudes, and child characteristics	1.	2.	3.	4.	5.	6.	7.	8.	9.
1. Restrictive media guidance	---								
2. Promotive media guidance	.36 ^{***}	---							
3. Parent usual activities during child media use	-.25 ^{***}	-.38 ^{***}	---						
4. Perceived difficulty restrictive	-.47 ^{***}	-.22 ^{**}	.16*	---					
5. Perceived difficulty promotive	-.18 ^{**}	-.43 ^{***}	.17*	.52 ^{***}	---				
6. Perceived media health influence	.31 ^{***}	.15 [*]	.04	-.17 ^{**}	-.07	---			
7. Parent health locus of control	.22 ^{**}	.23 ^{***}	.03	-.24 ^{***}	-.16 ^{**}	.29 ^{***}	---		
8. Child age category	-.03	-.23 ^{***}	.15 ^{**}	.10	.09	-.06	-.07	---	
9. Child weight risk category	-.14 ^{**}	-.02	.07	.04	.10	-.11	-.16 ^{**}	-.09	---
<i>M</i>	3.00	2.86	2.00	1.55	1.53	2.96	3.81	2.34	1.50
<i>SD</i>	.74	.85	1.34	.62	.68	.88	.44	1.12	.79

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

As seen from the mean scores reported in Table IV-1, parents reported relatively high frequencies of both restrictive and promotive media guidance and viewed themselves as highly influential upon their children's health. The mean score for media perceived health influence was lower than that of parent health locus of control. The mean frequencies of parent restrictive and promotive media guidance were similar, and the two types of media guidance were positively correlated. Both restrictive and promotive parent media guidance were negatively associated with parents' usual activities while children are using media. Both types of guidance were negatively correlated with the perceived difficulty for that type of guidance; the more difficult the parents' perceptions of the guidance behavior, the less frequent the use of the behavior. Overall, the parents reported frequent guidance of their children's media use, and relatively low difficulty in carrying out this guidance. The perceived influence of media on children's health was significantly positively correlated with both restrictive and promotive media guidance. Parents who reported a greater number of usual activities during their child's media use were less likely to use promotive media guidance, and the child's age was negatively associated with the number of parent usual activities other than watching with the child. Child's weight risk category was negatively associated with restrictive media guidance (time and content rules) and with parent health locus of control. Child age category was negatively correlated with promotive media guidance (parents of children in higher age categories reported lower frequencies of promotive media guidance).

Structural model

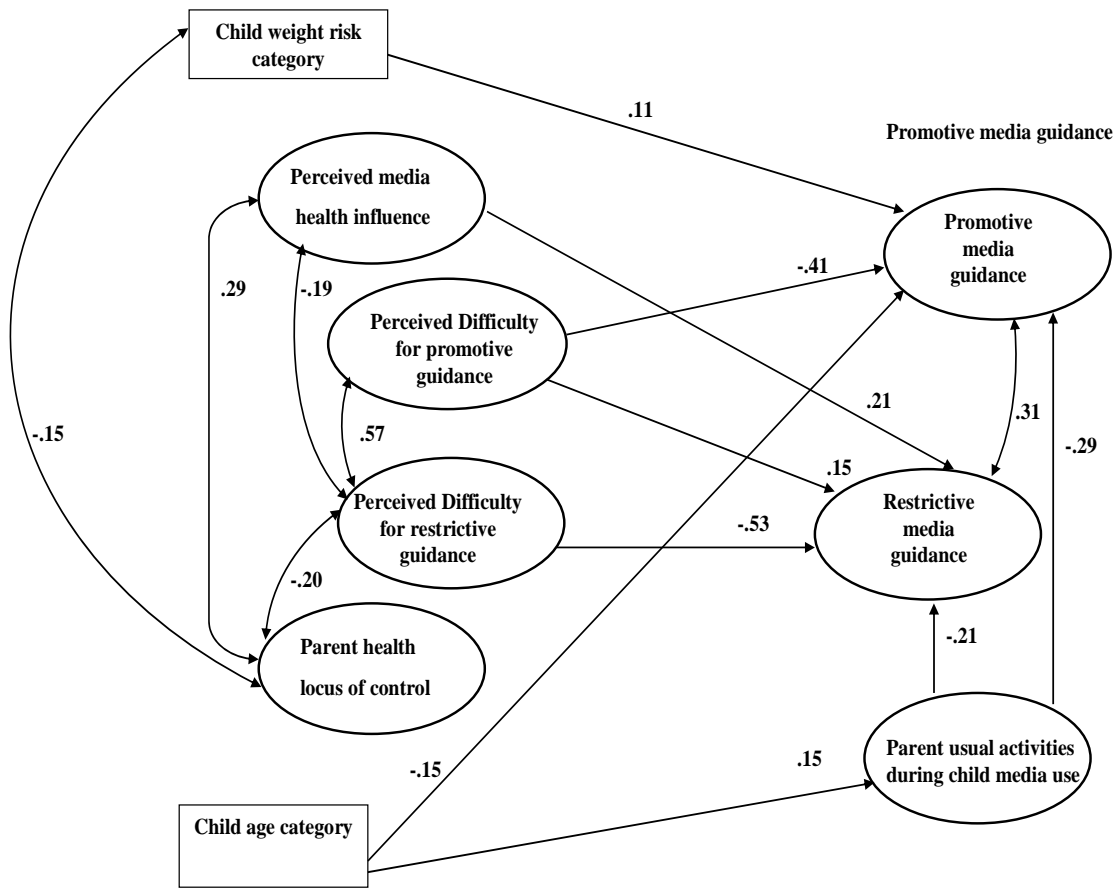
Mplus5.1 was next used to estimate two structural equation models. The first structural model related to the study hypotheses (H2 and H3) that more frequent parent media guidance would be associated with lower frequency of parent usual activities during children's media use, and that parent media guidance would be associated with less perceived difficulty, greater parent health locus of control, and greater perceptions of media as influential upon their child's health. In the first model, restrictive and promotive media guidance were dependent measures, and a correlation was specified between the two types of guidance. Perceived difficulty for media guidance (promotive and restrictive) parent health locus of control, perceived media health influence, and parent usual activities were modeled as factors contributing to perceived difficulty for promotive and restrictive media guidance, with child age correlated with promotive difficulty, promotive guidance, and parent usual activities (H4). The analysis used an estimator (ML) that is robust for non-normality and appropriate for data which contain missing values.

Standardized regression coefficients for the model reflected that a lower frequency of parent usual activities during child media use associated with greater parent restrictive ($-0.51, p = .000$) and promotive ($-0.28, p = .000$) media guidance. The frequency of both promotive and restrictive media guidance decreased as the perceived difficulty for that type of guidance increased (respective standardized coefficients of -0.62 and $-0.50, p = .000$). Restrictive parent media guidance was significantly associated with greater parental perception of media as influential upon the child's health ($0.16, p = .000$) but was not significantly associated with parent health locus of control ($0.14, p = .17$). Conversely, parent promotive media guidance was not significantly associated with perceived media

health influence (.08, $p = .14$) and parent health locus of control (.10, $p = .07$). Younger child age was associated with greater frequency of promotive parent media guidance (parents reported less media guidance of this type for children in older age categories), with a standardized coefficient of $-.15$, $p = .002$. Child age category was not significantly associated with restrictive parent media guidance (.08, $p = .12$). Results for this model [χ^2 (2, $n = 257$) = 2.77, $p = .25$, CFI = .99] indicated an acceptable fit, providing support for H2 and partial support for H3 and H4.

To address the study aim of examining the relationship of child weight category to parent media guidance, attitudes, and usual activities (H4), the second model added child weight category as an independent variable associated with the dependent variables, promotive and restrictive media guidance. The score for parent usual activities during child media use was also estimated as an outcome measure. Results for this model indicated a good fit [χ^2 (3, $n = 257$) = 3.23, $p > .35$, CFI = .99,] but there was a high residual variance (1.25) for restrictive guidance. Using modification indices and theoretical considerations, the model was re-specified and simplified. The simplified model removed the non-significant paths from the attitude-related factors (parent health locus of control, perceived media health influence, perceived promotive difficulty and perceived restrictive difficulty) to parent usual activities. The non-significant paths from parent health locus of control and child weight risk category to restrictive media guidance were also removed. The full structural equation model with standardized regression coefficients appears in Figure 3.2 All of the paths except the correlation of child weight risk category with parent health locus of control ($p = .04$) were significant at $p < .01$. For simplicity, the model shows the standardized coefficients for paths that were significant at $p < .05$.

Figure IV-2. Structural equation model for parent attitudes, promotive and restrictive media guidance and child age and weight risk category



* $p < .05$ for all paths shown; Coefficients are standardized

As shown in Figure IV-2, the two types of media guidance were correlated, but parent attitudes and beliefs and child characteristics did not influence the two guidance components equally. Perceived difficulty was the strongest predictor of both restrictive and promotive guidance in the study sample; greater difficulty was associated with less frequent guidance of the corresponding type (restrictive or promotive). However, parents who perceived more difficulty in promoting movement and discussing media with their child reported more frequent restrictive guidance. Parents who perceived media as having a greater influence upon their children's health showed more frequent restrictive guidance, but perceived media health influence was not a significant factor affecting promotive guidance. Parents who saw themselves and media as more influential upon their children's health perceived less difficulty in restricting media time and content. Parent health locus of control was not a significant factor related to parent media guidance but was negatively correlated with guidance difficulty. Parents who reported greater numbers of activities during children's media use reported less frequent promotive and restrictive media guidance.

Child age category was negatively associated with promotive guidance and positively associated with the number of parent usual activities during the child's media use. In the structural equation model, child weight category was not associated with greater restrictive guidance but was associated with a greater degree of promotive media guidance and was negatively correlated with parent health locus of control.

The re-specified model [$\chi^2 (9, N = 257) = 8.07, p = .53, CFI = 1.00$] resulted in a higher χ^2 value but indicated an excellent fit of the model to the data. The model accounted for 33% of the variance in promotive guidance ($R^2 = .33$) and 34% of the variance in restrictive guidance ($R^2 = .34$). The results of the confirmatory factor analyses provided support for H1, that parent media guidance is comprised of restrictive and promotive behaviors. The first structural equation model supported H2, that more frequent parent media guidance is associated with lower frequencies of parents' activities other than watching with the child during children's media use at home. The first structural model also provided partial support of H3: more frequent parent media guidance was associated with less perceived difficulty of guidance, and restrictive guidance was associated with greater perception of media as influential upon the child's health. The final model allowed partial acceptance of the hypothesis (H4), that parent media guidance is associated with child age and weight risk categories.

DISCUSSION AND CONCLUSIONS

This study extends research by considering parent media guidance as an outcome related to parents' attitudes and health beliefs as well as child age and weight risk categories. Consistent with previous research, parent media guidance was found to consist of both restrictive (time and content restrictions) and promotive (discussion and encouragement of movement) factors. These two media guidance components are consistent with those identified by other research (e.g., Valkenburg et al., 1999; Janz et al., 2006) for television and video game playing. Parent promotive guidance of the child's

media use was lower with older children in this preschool-aged group, similar to the findings of Barkin et al., (2006) that parents reported more active mediation strategies for younger children. Parents' reports of their own activities while their children were using home screen media reflected that higher numbers of activities not involving "watching with" the child, were associated with less frequent guidance, consistent with findings (Jordan et al., 2006; Ron Warren, 2003) that other time demands within the family may influence parent media guidance behavior.

Survey responses reflected that parents regarded themselves as having high influence over their children's health, consistent with the preschool parent group with which the Parent Health Locus of Control Scale was developed (DeVellis et al., 1993). Parents also perceived media to have a relatively high influence on their children's health, consistent with DeVellis and colleagues (1993) and with Kraft and Loeb (1998). A high proportion (32%) of the children represented in this study were overweight or at risk for overweight, with 18% above the 95th percentile. The model results raise questions about possible reasons for the associations of child weight risk with more frequent promotive guidance and with less parent health locus of control. The reasons for these associations are unknown, but they do point out the need to examine in more detail the possibility that children's overweight weight status may be associated with parental beliefs that they do not have a strong influence on their children's health and that children are healthy if they are active, no matter the child's weight status.

Strengths and Limitations

The study offered an examination of media use patterns and parent media guidance for a group of low-income, primarily Hispanic parents. Although the group was

a convenience sample, survey responses showed patterns similar to those identified for other population groups in terms of parents' attitudes and beliefs concerning the influences of their own actions, and media, on their children's health. The media guidance scale used in the survey incorporated health-promoting concepts along with restrictive actions related to parents' guidance of children's media use.

The relatively high frequencies of both restrictive and promotive guidance do not appear to be consistent with the number of other household activities reported by parents while their children are using media, so it may be that social desirability influenced parents' responses about their guidance of children's media use.

Conclusions

The relationship of parental roles to preschool children's media use is of concern from a public health perspective because of the increasing prevalence of overweight in low-income children in general (Mei et al., 1998a) and within the WIC population specifically (Cole, 2001). Using a health-promoting perspective allows the consideration of factors previously shown to have a positive relationship with parenting behaviors and child developmental outcomes. Parents of preschoolers may not perceive their children's overweight status as a health concern, but may view themselves as influential over the child's health. To the extent that watching TV, using DVDs or playing video games at home represents affects energy intake, effective parental guidance in preschoolers' use of these media has the potential to make a positive impact in preventing later obesity.

Since a high degree of perceived parent health locus of control may be typical for parents of preschoolers, health-related interventions should capitalize on such beliefs. Interventions geared toward having parents reduce their children's screen time should

address parental attitudes and beliefs concerning media and their children's health in addition to supporting parental perceptions of their own efficacy in setting such limits.

Low-income parents such as those enrolled in WIC face particular challenges in providing a "healthy home screen media diet" –one that provides for beneficial uses and appropriate amounts of home media for their children - just as they are encouraged to provide healthy types and amounts of food. With the advent of home screen media that encourage children to be physically active, the media-obesity connection may become more tenuous, and factors such as the home media environment (for example, the types, numbers and location of media) and parents' guidance of children's media use may be seen as influential. From a health-promoting perspective, the amplitude of the childhood obesity problem and its emergence during the preschool years make it important to clarify ways in which home screen media might serve as a positive influence on children's health and the roles that parents may play in this influence.

Studies that have addressed parents' guidance of children's television use have found that parental co-viewing and discussion of media content facilitates children's comprehension and skills development (Liebes, 1992), much as joint reading activities facilitate children's development of literacy in text (Bennett, Weigel, & Martin, 2002; Bus, van Ijzendoorn, & Pellegrini, 1995; Jordan, Snow, & Porche, 2000). Child development tools to assess the home environment (Linver, Martin, & Brooks-Gunn, 2004) consider the emotional support and cognitive stimulation that children are receiving through the actions of parents in addition to concrete items and occurrences within the home. Common elements in these media, child development

and early literacy studies are the characteristics of the physical environment (in this case, the media environment), and the importance of parent guidance and support.

The parents in this study reported frequent guidance of their children's media use and in general saw themselves as influential actors to keep their children healthy. Of the guidance behaviors, turning off the TV during meals, encouraging children to move around or dance while using media and discussing media with the child were the least frequent. These behaviors have the most obvious potential impact on the two determinants of weight, energy intake and energy expenditure. Parents should be encouraged to capitalize on the developmental tendency of preschoolers to be active by encouraging them to dance, move, or jump when they are using media, and to provide guidance in children's use and understanding of media by discussing it with them. Interventions to educate parents about the benefits of these behaviors for their children's healthy development should build on parental beliefs that they play a large role in their child's health. In this group, there was a significant association between child's weight risk category and lower parental perceptions of their own influence over their child's health.

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Chapter V: Conclusions and Implications

The present research involved three studies to examine parents' roles in media use by preschool-aged children. All three focused on parents of children enrolled in the Supplemental Feeding Program for Women, Infants, and Children (WIC) program in Texas. The first study examined the parent and child characteristics associated with the media channels and activity-promoting media used by children aged two to 72 months. The second study examined Hispanic mothers' attitudes concerning children's media use as factors affecting the amount of time children spent with TV, DVDs, and videogames. In the third study, WIC parents' attitudes and behaviors concerning their one-to-six-year-old child's media use were matched with child clinical records in order to examine potential relationships among parent media attitudes, media guidance behavior, and the child's age and weight risk category. The three studies all had a particular focus on children's use of activity-promoting media. The findings have implications for parents of young children, for community programs such as WIC and Head Start that serve large numbers of preschoolers, for public health programs, future research in this area, and for policy. This chapter briefly highlights some of those implications.

Implications for parents and children

Increasingly, parents must balance the opportunities for education and entertainment with the potential adverse outcomes that might be associated with television and other home media use for their preschool children. Parental guidance in helping their children use TV and other media at home may be an important

component of optimal development and overall health for the child. The roles of parents and the home environment in development of healthy media use may be similar to the important roles that parents and home environment play in early literacy development for children.

Studies that have addressed parents' guidance of children's television use have found that parental co-viewing and discussion of media content facilitates children's comprehension and skills development (Liebes, 1992), much as joint reading activities facilitate children's development of literacy in text (Bennett, Weigel, & Martin, 2002; Bus, van Ijzendoorn, & Pellegrini, 1995; Jordan, Snow, & Porche, 2000). Child development tools to assess the home environment (Linver, Martin, & Brooks-Gunn, 2004) consider the emotional support and cognitive stimulation that children are receiving through the actions of parents in addition to concrete items and occurrences within the home. Common elements in these media, child development and early literacy studies are the characteristics of the physical environment (in this case, the media environment), and the importance of parent guidance and support.

The parents in the study reported frequent guidance of their children's media use and in general saw themselves as influential actors to keep their children healthy. Of the guidance behaviors, turning off the TV during meals, encouraging children to move around or dance while using media and discussing media with the child were the least frequent. These behaviors have the most obvious potential impact on the two determinants of weight, energy intake and energy expenditure. Parents should be encouraged to capitalize on the developmental tendency of preschoolers to be active by encouraging them to dance, move, or jump when they are using media, and to provide guidance in children's use and understanding of media by discussing it with them.

Interventions to educate parents about the benefits of these behaviors for their children's healthy development should build on parental beliefs that they play a large role in their child's health. In this group, there was a significant association between children's weight risk category and lower parental perceptions that they were influential over their children's health.

A key implication from this research is that children should be encouraged to continue (or start) using activity-promoting media past age three. In the study group, children's use of these media began to decline at age four, consistent with other research involving preschoolers' use of media as they approach kindergarten and first grade. This period of decline corresponds to a developmental decrease in children's active play, as well as to the period of adiposity rebound, a critical time for later development of childhood obesity. Keeping children active at home with media that they enjoy using is a positive approach to encouraging physical activity for preschoolers.

Implications for community programs that serve families

Child-serving programs such as WIC and Head Start have the opportunity to engage parents in educational settings about the use of media. The influence of such programs is suggested by the finding that children enrolled in Head Start, Early Head Start, and preschool programs were using computers and the Internet more frequently than children who did not attend such programs.

Promotive media guidance was associated with children's weight risk. In this primarily Hispanic group of parents, it may be that parents held the belief that their children were healthy as long as they were active, and that parents of children who were

overweight were making more effort to encourage their children to be active at home. Based on this possibility, interventions with parents of preschoolers should work to enhance and reinforce parents' roles and beliefs about themselves as guardians of their child's health. Parents may already be encouraging children to use activity-promoting media, so intervention and prevention efforts can build on this behavior by making such media more easily available.

Implications for public health programs

Although this research did not aim to examine cultural differences in preschool children's media use and parent attitudes and behaviors, it is possible that cultural factors other than language play a role in the home media environment and children's use of media at home. The survey sites were located in a city with a population that is almost 60% Hispanic. Although Hispanics comprise a majority of the population, first-generation immigrants from Mexico may constitute a sub-population that is more likely than the city as a whole to prefer to speak Spanish rather than English, to have lower household incomes, and to have less than a high school education (Jones, 2007). Public health programs that operate in such multi-cultural settings should provide programs and services in ways that capitalize on family strengths and do not contribute to isolation of parents and children who may belong to such sub-groups. In these studies, children of parents who reported less than a high school education were not as likely to use all of the media channels reported by parents with a higher level of education. In the study involving Hispanic mothers, media attitudes were most strongly represented by parental assessments of the amount of time spent with media by their child. Parental attitudes about media had a strong effect on children's time with the media channels, but media density had a stronger relationship than attitudes in terms of children's time with activity-promoting media. Considering the high percentage of children who had a TV or game

console in their room, there are implications for the finding concerning media density. For example, parental attitudes may have an effect on the amount of time children use media, but the content of media used by children is more likely to be determined by the presence of media in the home.

From a health-promoting perspective, the presence of activity media may serve to mitigate “time effects” of media used, which have been associated with the development of childhood obesity. For programs such as WIC, the implication is strong: send an activity-promoting DVD home with children, and it is likely to be used. As in the first study, children’s age category was also a significant influence upon the amount of time spent with media. Activity-promoting media that is appealing to four-year-olds would help to enhance physical activity for that age group.

Implications for future research

This research provides an interesting perspective on determinants of media use for Hispanic preschoolers and has implications for future research. Most obviously, survey responses may not accurately capture the home media environment, children’s media use, or parents’ actual behaviors in guiding media use for their children at home. The number of personal or household activities reported by parents implies that guidance, for example, may represent “multi-tasking” for parents who are occupied with other activities. Observational research would help to confirm and clarify child and parent media use patterns, particularly concerning parent-child interactions around media use.

Parent media attitudes for this group were most strongly represented by parental assessments of the amount of time spent with media by their child. Parental media

attitudes significantly influenced children's time with the media channels, but media density had a stronger relationship than attitudes in terms of children's time with activity-promoting media. Considering the high percentage of children who had a TV or game console in their room, there are strong implications for the finding concerning media density. For example, parental attitudes may have an effect on the amount of time children use media, but future research should examine whether the content of media used by children is more likely to be determined by the number and location of media in the home.

The third study added parent behavior, media guidance, to the constellation of factors that may affect preschoolers' use of media at home. Additionally, children's weight risk category was considered as a factor related to parental locus of control and media-related attitudes. Children in the at-risk and overweight categories represented a high proportion of the study group, so the study findings are important in terms of their implications for possible interventions to prevent or ameliorate childhood obesity as children enter the school years. Future research should consider the relationships among media time, child weight risk, and parent guidance.

Finally, future research related to Hispanic children's media use should consider the possibility that Hispanic populations may be multi-cultural, and that parent characteristics such as education are more likely to influence home media use than language alone. This dissertation did not examine generation status of the survey participants so it was not possible to directly examine the degree of their Mexican, American, and bicultural identity. Language of survey completed (Spanish, English, both) served as a proxy and covaried with education as expected. A better measure of

cultural status might have been more sensitive to variations in culture and to the relationship of culture to media use and parental attitudes.

Implications for policy

Child media use has been implicated as a factor contributing to childhood overweight and obesity, and the American Academy of Pediatrics (2006) has recommended that children's media use be limited. In the US, childhood overweight has been associated with alarming increases in the rate of childhood Type II diabetes and risk factors for cardiovascular disease risk factors, and it is predicted to result in long term adverse health effects (Dietz & Gortmaker, 2001; Must & Strauss, 1999). Media use by preschoolers takes place under circumstances different from those for older children. For example, Campbell, Crawford and Ball (2006) found that having TV on during meals was negatively associated with energy intake for preschoolers, contrary to findings with older children. A meta-analysis by Marshall et al., (2004) found that the relationship between television and body fatness was too small to be of clinical significance. From a policy perspective, such findings may be of concern because of the national recommendations (Carmona, 2005) to limit the amount of time children spend with television, which may not be either realistic or relevant in preventing or ameliorating childhood obesity.

Almost half of the children represented in this research had a TV or game console in their rooms at home. Given this prevalence in a low-income population, it seems unlikely that families will take steps to remove children's televisions or significantly restrict the use of other media, despite parents' reports that they frequently provide time and content limits on their children's media use. Health policies that provide parents and

families with guidance in using media in beneficial ways would be more influential and helpful than recommendations to simply avoid media use.

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Appendix A: Parent Survey

WIC Parents Media Survey

Cuestionario sobre los medios de comunicacion para padres del programa WIC

Please answer the questions for your child who is closest to their third birthday. If you have twins who are close to three, answer for the older twin.

Por favor conteste las siguientes preguntas pensando en su hijo que esta más cercano a los tres años de edad. Si usted tiene gemelos cercanos a los tres años de edad, por favor conteste la preguntas para el gemelo que nació primero/ más grande.

1. Please print the name of this child.
Imprima por favor el nombre de este niño.

2. Please write this child's birth date.
Por favor escriba la fecha de nacimiento de su hijo(a).

MM / DD / YYYY

3. Is this child a: Este niño es: Boy niño Girl niña

4. Would you describe your child as being more active, about the same, or less active, as other children the same age?

¿Usted describiría a su niño como un niño más activo, casi igual, o menos activo, que los otros niños de su misma edad?

More active / más activo About the same / casi igual Less active / menos activo

5. How does your child's weight compare with other children who are the same age?

¿Cómo el peso de su niño compara con otros niños que sean la misma edad?

Weights less / Peso menos About the same / Casi egal Don't know / No se Weights more / Peso más

6. Does your child attend day care, preschool or Head Start/Early Head Start?
Su hijo atiende (o va a) una guardería, preescolar, o HeadStart/Early Head Start?

a. Yes Si No No

b. If yes, how many hours does your child attend each day?
Si, si ¿Cuántas horas por día? (pasa en la guardería preescolar, o HeadStart/Early Head Start?)

Hours (if less than one, write 0)
Horas (si menos de uno, introduce 0)

7. Does your child use these kinds of media at home? (Please answer the questions for your child who is closest to their third birthday.)

¿Su niño utiliza este tipo de medios de comunicacion en casa? (Por favor conteste las siguientes preguntas para su niño que esté más cercano a los tres años.)

	Yes Si	No No
a. TV La TV (televisión)	<input type="radio"/>	<input type="radio"/>
b. Videos and Movies on a VCR Videos y películas en una video casetera	<input type="radio"/>	<input type="radio"/>
c. Electronic Books (like Leap Pad™) Libros electrónicos como "Leap Pad™"	<input type="radio"/>	<input type="radio"/>
d. Video Games Video Juegos	<input type="radio"/>	<input type="radio"/>
e. Computer Computadora	<input type="radio"/>	<input type="radio"/>
f. Internet Internet	<input type="radio"/>	<input type="radio"/>
g. DVDs on a DVD player DVDs en un aparato de DVD	<input type="radio"/>	<input type="radio"/>

8. Thinking about yesterday, please mark how long your child spent using each of these at home:

Pensando en el día de ayer, marque por favor cuánto tiempo su niño pasó con cada uno de éstos en casa:

	Did not use <i>No Usó</i>	Used 1-15 min. <i>Usó 1-15 minutos</i>	Used 16 to 30 min. <i>Usó 16-30 minutos</i>	Used 31-45 min. <i>Usó 31-45 minutos</i>	Used more than 45 min. <i>Usó más de 45 minutos</i>
a. TV <i>La TV (televisión)</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. Videos and Movies on a VCR <i>Videos y películas en una video casetera</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. Electronic Books (like Leap Pad™) <i>Libros electrónicos como "Leap Pad™"</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. Video Games <i>Video Juegos</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. Computer <i>Computadora</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e. Internet <i>Internet</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f. DVD's on a DVD Player <i>DVDs en un aparato de DVD</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

9. Does your child use any of these at home? (mark yes or no)
¿Su niño utiliza alguno de éstos en casa? (marque sí o no)

	Yes <i>Sí</i>	No <i>No</i>
a. Music DVD or videos/ <i>Música en DVD o videos</i>	<input type="radio"/>	<input type="radio"/>
b. Exercise or activity DVD or videos/ <i>DVDs o videos para ejercicio o que promueven actividad física</i>	<input type="radio"/>	<input type="radio"/>
c. Active video games (Child moves while playing)/ <i>Video juegos activos (donde el niño se mueve mientras juega)</i>	<input type="radio"/>	<input type="radio"/>
d. TV show that gets him/her moving/ <i>TV que hacen que se mueva su hijo(a)</i>	<input type="radio"/>	<input type="radio"/>
e. Zovrzo or Zobey DVD from WIC/ <i>DVD de Zovrzo o Zobey de WIC</i>	<input type="radio"/>	<input type="radio"/>

10. Thinking about yesterday, please mark how long your child spent using each of these at home:
Pensando en el día de ayer, marque por favor cuánto tiempo su niño pasó con cada uno de éstos en casa:

	Did not use No usó	Used 1-15 min. Usó 1-15 minutos	Used 16 to 30 min. Usó 16-30 minutos	Used 31-45 min. Usó 31-45 minutos	Used more than 45 min. Usó más de 45 minutos
a. Music DVD or videos/ <i>Música en DVD o videos</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. Exercise or activity DVD or videos/ DVDs o videos para ejercicio o que promueven actividad física	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. Active video games (Child moves while playing)/ Video juegos activos (donde el niño se mueve mientras juega)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. TV show that gets him/her moving/ TV que hacen que se mueva su hijo(a)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e. Zowzoo or Zobey DVD from WIC/ DVD de Zowzoo o Zobey de WIC	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

11. How many hours did your child spend with home media yesterday--including TV, videos, DVD's, video games, computer, and electronic books?

¿Cuántas horas su niño pasó con los medios caseros ayer -- incluyendo la TV, videos, DVD, los juegos video, la computadora, y los libros electrónicos?

Number of hours (if less than one, enter 0)
 Horas (si menos de uno, introduce 0)

12. Please mark yes or no for these statements about your home:
Por favor marque si o no a las siguientes declaraciones acerca de su hogar:

	Yes si	No no
a. There is enough space for my child to dance or jump around in front of the TV, DVD player, or game console. <i>Hay bastante espacio para que mi niño se mueva enfrente de la TV, del aparato de DVD, o de la consola de juegos.</i>	<input type="radio"/>	<input type="radio"/>
b. There is more than one TV in my house. <i>Hay más de una televisión en mi casa.</i>	<input type="radio"/>	<input type="radio"/>
c. My child has a TV, DVD, or game console in his/her room. <i>Mi hijo/a tiene una televisión, DVD o consola de juegos en su cuarto.</i>	<input type="radio"/>	<input type="radio"/>

14. Would you say your child watches too much, just the right amount, or too little, of TV, Videos, and DVD's?
 ¿Usted diría que su niño ve demasiada, la cantidad adecuada, o muy poca, TV, Videos, y DVD's?

Too much/ Demasiada Just the right amount/ La cantidad adecuada Too little/ Muy poca

15. How do you rate the importance of TV, DVD's and electronic games for your child?
 ¿Como clasificaría usted la importancia de la TV, los DVDs y los juegos electrónicos para su hijo?

Extremely Unimportant/ extremadamente poco importante Not Very Important/ no muy importante Very Important/ muy importante Extremely Important/ extremadamente importante

16. What are you usually doing when your child is watching TV?
 ¿Que hace usted normalmente mientras su niño está viendo la TV?

	Yes/ Sí	No/ No
a. Watching with them / viendo con ellos.	<input type="checkbox"/>	<input type="checkbox"/>
b. In the same room, not watching / en el mismo cuarto pero no viendo la TV	<input type="checkbox"/>	<input type="checkbox"/>
c. Talking on the phone / hablando por telefono	<input type="checkbox"/>	<input type="checkbox"/>
d. Cooking, doing laundry, or cleaning / cocinando, lavando ropa o limpiando	<input type="checkbox"/>	<input type="checkbox"/>
e. Visiting with my friends or family / visitando con amigos o familia	<input type="checkbox"/>	<input type="checkbox"/>
f. Watching my own show / viendo su propio programa de television	<input type="checkbox"/>	<input type="checkbox"/>
g. Taking a shower / bañandose	<input type="checkbox"/>	<input type="checkbox"/>

13. This next section asks about rules you may have for your child using TV or other media on a screen at home. Please mark the answer on each line that is true for you.

-- La siguiente sección pregunta acerca de las reglas que usted puede tener para su niño cuando usa la TV o otros medios en una pantalla en su casa. Marque por favor las respuestas que son ciertas para usted.

	Never Nunca	Sometimes A Vezes	Most of the Time Casi todo el tiempo	Always Siempre
a. I pick the programs or video games my child watches and plays at home. Yo elijo los programas y video juegos que ve y juega mi hijo en casa.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. I only let my child watch TV or play videos and games at certain times of the day. Solo permito que mi hijo vea la TV o videos y juegue videos, juegos a ciertas horas del día	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. I only let my child watch TV or videos that are for children his/her age. Solo permito que mi hijo vea TV y videos que son apropiados para su edad.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. I limit the amount of time my child watches TV or plays video games. Limito la cantidad de tiempo que mi hijo ve la TV o juega video juegos.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. I turn off the TV during meals. Apago la TV mientras mi hijo come su comida.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. I discuss what is showing on the screen with my child, while he/she is watching or playing. Platico con mi hijo acerca de lo que esta pasando en la pantalla mientras el esta viendo o jugando.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. I encourage my child to move around or dance while watching TV. Animo a mi hijo se mueva o que baile mientras ve la TV.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

17. Please mark one answer to show how much you believe each statement below:
 Por favor marque para demostrar cuánto cree en cada una de las siguientes declaraciones:

	I do not believe this at all Para nada creo en esto	I mostly do not believe this Por lo general no creo en esto	I mostly believe this Por lo general creo en esto	I believe this completely Creo en esto totalmente
a. I can do a lot to help my child be strong and healthy. <i>Puedo hacer mucho para ayudar a mi niño a ser fuerte y sano.</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. Some video games can affect my child's health. <i>Algunos video juegos pueden afectar la salud de mi hijo.</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. What my child sees in TV programs can affect my child's health. <i>Lo que mi niño ve en los programas de la TV puede afectar su salud.</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. The things I do at home with my child are an important part of my child's well being. <i>Las cosas que hago en casa con mi niño son una parte importante del bienestar de mi hijo.</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e. I can do a lot to help my child stay well. <i>Puedo hacer mucho para ayudar a que mi hijo permanezca sano.</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f. What my child sees in TV commercials can affect my child's health. <i>Lo que mi niño ve en los anuncios de la TV puede afectar su salud.</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

18. For these next questions, please mark how difficult (hard) or easy it is for you to do each item:
 Por favor marque que tan difícil o fácil es para usted hacer cada una de las siguientes cosas:

	Very hard, very difficult for me Muy difícil para mi	Fairly hard, fairly difficult for me Un poco difícil para mi	Fairly easy for me Un poco fácil para mi	Very easy for me Muy fácil para mi
a. Only let my child watch or play TV shows, videos and video games that are for children my child's age. <i>Solamente dejar que mi hijo vea o juegue programas de TV, videos o video juegos apropiados para niños de su edad.</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. Discuss TV, DVD's and video games while my child is watching and playing. <i>Platicar con mi hijo acerca de lo que esta viendo en la TV, en los DVD's y en los video juegos mientras los ve o juega.</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. Turn off the TV when my child is eating a meal. <i>Apagar la TV mientras mi hijo come su comida.</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. Only allow my child to watch TV or play videos at certain times of the day. <i>Solamente permitir ver o jugar TV o videos a ciertas horas del día.</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e. Encourage my child to jump around or dance while watching TV or playing videos. <i>Dejar que mi hijo este brincando o bailando mientras ve la TV o juega videos.</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f. Limit how long my child can watch TV or play DVD's or video games. <i>Limitar el tiempo que mi niño puede ver la TV, DVDs o video juegos.</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
g. Pick the TV programs, videos, or electronic games my child watches and plays at home. <i>Escoger lo programas de TV, videos o juegos electronicos que mi hijo ve y juega en la casa.</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

You are almost done! This last section asks a few questions about you and your family.
 ¡Ya casi termina! Esta es la última sección que contiene preguntas acerca de usted y su familia.

19. What is your age? ¿Cuántos años tiene usted? age/años

20. What is your gender? ¿Cuál es su género? Female/Mujer Male/Hombre

21. Are you married? / ¿está usted casada? Yes/ sí No/no

22. How old were you when your first child was born? ¿Cuántos años tenía usted cuando nació su primer bebé? age/años

23. Including yourself, how many persons are in your household? Incluyendose usted, ¿Cuántas personas viven en su hogar?

24. How many children under the age of 18 are in your household? ¿Cuántos niños menores de 18 años viven en su casa?

25. What order is the child you described in this survey? (1 is oldest, 2 is second oldest, 3 is third oldest) ¿Qué lugar ocupa en su familia el hijo que usted nos describió en esta encuesta? (1 el más grande, 2 es el segundo, 3 es el tercero)

26. Please mark the item that is closest to the last year of school you completed: Por favor marque la opción que mejor describe el último año escolar que usted terminó

<input type="radio"/> 1 st to 6 th grade 1 ^o a 6 ^o año	<input type="radio"/> 7 th grade to 9 th grade 7 ^o a 9 ^o año	<input type="radio"/> Grade 10 to Grade 12 10 ^o a 12 ^o año	<input type="radio"/> High School graduate or GED escuela preparatoria u el GED	<input type="radio"/> Trade or technical school/ escuela comercial o técnica	<input type="radio"/> Some College/ algo de universidad	<input type="radio"/> All of college/ toda de universidad
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27. Please check the number of hours that you work each week outside the home: Por favor marque el número de horas que usted trabaja fuera de su hogar cada semana

<input checked="" type="checkbox"/> None/ Ninguna	<input type="checkbox"/> 1 to 10 hours 1 a 10 horas	<input type="checkbox"/> 11 to 20 hours 11 a 20 horas	<input type="checkbox"/> 21 to 35 hours 21 a 35 horas	<input type="checkbox"/> 36 or more hours 36 horas o mas
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28. How do you describe your race or ethnic group? Como describiría la raza or el grupo étnico al que pertenece?

<input type="radio"/> White Blanco	<input type="radio"/> Hispanic or Latino Hispano o Latino	<input type="radio"/> Black Negro	<input type="radio"/> Asian Asiático	<input type="radio"/> Native American/ Nativo Americano	<input type="radio"/> Other Otro
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Thank you very much for participating in this survey. ¡Muchas Gracias por participar en esta encuesta!

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