MOTHERS' COGNITIONS AND STRUCTURAL LIFE CIRCUMSTANCES AS PREDICTORS OF INFANTS' AND TODDLERS' TELEVISION AND VIDEO EXPOSURE

Sarah E. Vaala

A DISSERTATION

in

Communication

Presented to the Faculties of the University of Pennsylvania

in Partial Fulfillment of the Requirements for the

Degree of Doctor of Philosophy

2012

Supervisor of Dissertation

____
Robert C. Hornik, Ph.D.
Wilbur Schramm Professor of Communication

Graduate Group Chairperson

____
Joseph Turow, Ph.D.
Robert Lewis Shayon Professor of Communication

Dissertation Committee:

Joseph N. Cappella, Ph.D.
Gerald R. Miller Professor of Communication
Amy B. Jordan, Ph.D.
Senior Research Investigator, Annenberg Public Policy Center
Deborah L. Linebarger, Ph.D.
Associate Professor, University of Iowa College of Education
Paul Messaris, Ph.D.
Lev Kuleshov Professor of Communication

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ACKNOWLEDGMENTS

I am pleased to have the opportunity to express my gratitude to the many people who have helped me to complete this research. This finished dissertation would not have been possible without their support. These individuals have played a number of different roles, each of which helped me immeasurably along the way.

To my parents, Allen and Susan Vaala – my role models – thank you for your unwavering love and support. In so many ways, you both have made it possible for me to pursue and complete this degree. Through your words and your actions you have taught me to have faith in myself and go after my dreams. I am inspired everyday by your integrity, work ethic, and passion for improving the world.

Thanks also to my cheerleaders, Lindsey Vaala, David Vaala, and Karl Richardson. Not only did you each tirelessly cheer me on during my years of graduate school, but you also cheered me up when I was feeling discouraged. I have watched you each complete graduate school and embark on your own careers and you have truly inspired me. I hope I have provided even a fraction of the support that you all have shown me.

The friendship and support of my fellow Annenberg graduate students – my comrades – have enriched my journey and helped me along the way. Providing particular guidance and camaraderie were Jessica Piotrowski, Matt Lapierre, Laura Gibson, Katie McMenamin, and the other members of the “kids and media” team. I want to thank my other Annenberg comrades as well, including my great friends and officemates Emily Thorson and Tara Liss Marino, as well as Piotr Szpunar, Jeffrey

Gottfried, Sarah Parvanta, Rebekah Nagler, Seth Goldman, Shawnika Hull, Jocelyn Landau, Mike Serazio, Lee Shaker, Adrienne Shaw, Jason Tocci, and Robin Stevens. You all provided much sage advice, and whether it was in celebration, commiseration, or just plain fun, I have greatly enjoyed spending time with each of you during my Annenberg years.

I would like to also thank Dr. Amy Jordan and Dr. Deborah Wainwright – my two mentors. The Annenberg graduate council could not have chosen more aptly when they selected Deb Wainwright as my student mentor. I am honored to call her a close friend, as well as an inspiring mentor, wise counselor, and meticulous editor.

I could not have chosen more aptly when I requested a teaching assistantship with Dr. Amy Jordan. You have become an invaluable mentor, and have consistently modeled what it means to be a great scholar and dedicated teacher. Thanks too for helping me formulate and refine my research ideas, providing rich feedback, and encouraging me throughout the dissertation process.

My committee members, including Dr. Deborah Linebarger, Dr. Joseph Cappella, and Dr. Paul Messaris served as the supportive critics I needed to challenge me and improve the conceptualization, execution, and interpretation behind this dissertation project. I am grateful to each of you for the time and insight you dedicated to my study. Thank you for the tough questions, suggestions, and encouragement along the way.

Finally, I extend my deepest gratitude to my advisor, Dr. Robert Hornik, who has aided me by serving in each of these roles. In addition to providing encouragement, mentorship, supportive criticism, and a model for what it means to be a world-class scholar, he has served as the ultimate editor, teacher, and advocate. I have been honored and humbled to be able to work with and learn from you. Thank you for guiding me through the dissertation process and helping me to complete a project of which I am truly proud.

ABSTRACT

MOTHERS' COGNITIONS AND STRUCTURAL LIFE CIRCUMSTANCES AS PREDICTORS OF INFANTS' AND TODDLERS' TELEVISION AND VIDEO EXPOSURE

Sarah E. Vaala

Robert C. Hornik

Recently, the American Academy of Pediatrics reaffirmed their official policy discouraging screen media use with children under two (AAP, 2011). Their statement counters the normative use of TV/ video products with infants and toddlers, as parent surveys indicate the majority of these children watch TV/videos regularly. This dissertation research was designed with the underlying premise that the majority of existing research links heavy infant/toddler television and video exposure to disadvantageous health and developmental outcomes and many clinicians and child advocates seek to reduce that exposure. As little is known about the factors associated with more or less screen media use with infants and toddlers, this study examines in-depth the maternal cognitive and structural life circumstance factors predictive of TV/video exposure rates among very young children.

Guided by the Integrative Model of Behavioral Prediction (Fishbein & Ajzen, 2010), this survey study examines the relationships between children's estimated rates of foreground and background TV/video exposure and their mothers' demographics (e.g., race/ethnicity), structural life circumstances (e.g., number of children in the home; employment), and cognitions (e.g., attitudes; norms). Thus, this study essentially tests two competing explanations for infants' and toddlers' TV/video exposure: (1) that mothers base their children's TV/video exposure on their own psycho-social cognitions about that exposure; and (2) that mothers are more or less apt to allow their child to be exposed to TV/video based on unalterable realities of their lives, regardless of TV/video-related cognitions.

The results suggest that mothers' structural circumstances and cognitions (i.e., attitudes, normative pressure, and perceived behavioral control) respectively contribute independent explanatory power to the prediction of children's background and foreground TV/video exposure, though demographic factors explain very little variance in each case. Mothers' attitudes as well as their own TV/video viewing behavior were particularly strong predictors of each type of child media exposure. With regards to foreground TV/video exposure, mothers' regulatory focus orientation and beliefs about early childhood brain development moderated relationships between discrete beliefs regarding infant/toddler TV/video exposure and broader integrative model constructs in notable ways. Implications of these findings for behavioral prediction theory and for future campaigns to reduce infant/toddler TV/video exposure are discussed.

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Chapter One

Introduction

In May, 2010, Michelle Obama and the White House Task Force on Childhood Obesity released an action plan aimed at reducing the incidence of childhood overweight and obesity in the United States (White House, 2010). The plan lays out targeted initiatives for parents, health care providers, government organizations, industries, schools and childcare facilities to help lower the exploding rate of childhood obesity. The first chapter of the First Lady's action plan, titled "Early Childhood," focuses on children under the age of two. Among the five initiatives she recommends to aid infants and toddlers in the fight against obesity is "reducing screen time."

Mrs. Obama and her task force are not the first to express concern about the use of screen media with children under two. In fact, their action plan urges increased dissemination of the American Academy of Pediatrics' (AAP) 1999 advisory against screen media for children under the age of two and limited exposure there-after (reaffirmed in 2001). Advocacy groups such as the Campaign for a Commercial-Free Childhood have echoed this charge, and have even made official complaints to the Federal Trade Commission regarding unsubstantiated claims of educational benefit made by baby media producers to market their products (CCFC, 2006).

Warnings against media use with infants and toddlers seem to be largely unnoticed or unheeded by the majority of parents, however. The most recent surveys indicate that approximately 60% of children under two watch television programming at least several times a week, and 43% watch videos as frequently (Rideout & Hamel, 2006; Vandewater et al., 2007). Over a quarter of those under age two have a television set in their bedroom (26%; Rideout, Vandewater & Wartella, 2003). Surveys of parents suggest a wide variation in the screen media diets of infants and toddlers in the United States. Specifically, one recent survey indicates that approximately 40% of children under 30 months of age do not watch the screen at all on a typical day, while 11% are watching over 3 hours daily (Linebarger, Piotrowski & Lapierre, unpublished data; see also Anderson & Pempek, 2005).

Furthermore, the existing research regarding infants' and toddlers' learning from television programs and videos suggests that children glean very little educational information from these sources before their second birthday (see Courage & Setliff, 2010; DeLoache & Chiong, 2009; Krcmar, 2010a). This "video deficit" in young children's learning exists despite the fact that many parents believe television and videos are of educational benefit for their infants and toddlers (Rideout, Vandewater & Wartella, 2003; Zimmerman, Christakis & Meltzoff, 2007). Of greater concern are findings which suggest associations between babies' media use and disruptions in healthy activities such as sleep (Evans & Linebarger, 2010; Taveras et al., 2008), interaction with caregivers (Courage, Murphy, Goulding & Setliff, 2010; Christakis et al., 2009), and focused play behavior (Courage et al., 2010; Masur & Flynn, 2008).

Surprisingly little is known, however, about the underlying factors associated with more or less screen media use with infants and toddlers. Research has indicated that young Black children spend more time watching screen media than their White and Hispanic counterparts, and that children of less educated parents also spend more time viewing (Barr, Lauricella, Zack & Calvert, 2010; Certain & Kahn, 2002; Zimmerman, Christakis & Meltzoff, 2007). Across groups, time spent with screen media increases steadily between 6 months and three years of age, and then levels off and declines as children begin formal schooling (Anand & Krosnick, 2005; Certain & Kahn, 2002). No currently available studies have examined potential mediators operating between these general predictors and babies' media exposure, however. Nor have they investigated many potential factors associated with more or less viewing among children two and younger. This may be due in part to the lack of any theoretical framework driving the design and interpretation of research in this area.

The present dissertation study investigates the influence of various parent- and family-level factors on the use of screen media with infants and toddlers. This study examines the principles of the Integrative Model of Behavioral Prediction (Fishbein & Ajzen, 2010) and the unalterable "structural circumstances" of mothers' lives as competing predictors of the use of foreground media with their infants and toddlers. Of further interest are the direct and moderating influences of mothers' conceptions of early childhood brain development and chronic regulatory focus. This study examines the influence of each of these features on mothers' reported use of foreground television and video programming with their infants and toddlers, as well as the psycho-social and structural circumstantial predictors of children's exposure to background programming.

Chapter Two

Background

The debate over viewers in diapers

Screen media have become commonplace in the lives of American infants and toddlers. The amount of programming created solely for this age group is booming, and the majority of parents report that their baby or toddler spends at least some time watching television or videos (e.g., Rideout & Hamel, 2006; Vandewater et al., 2007; Weber & Singer, 2004; Zimmerman, Christakis & Meltzoff, 2007). In fact, by the age of 6 months the average child has at least four “baby videos” to view in the home (e.g., *Baby Einstein*; *Baby Genius*; *Sesame Beginnings*; Barr, Danziger, Hilliard, Andolina & Ruskis, 2009). The typical 18-month-old has more than seven such videos. Recent parent surveys indicate that the typical child under two spends between forty minutes (Courage, Murphy, Goulding & Setliff, 2010; Linebarger, Lapierre & Vaala, 2009) and eighty minutes each day in front of the screen (Rideout & Hamel, 2006; Vandewater et al., 2007; Weber & Singer, 2004); and when considering only those children who watch, the average time viewing television and videos rises to over two hours daily (Rideout, Vandewater & Wartella, 2003).

Recently, scholars have drawn a distinction between babies’ exposure to foreground versus background screen media. Background exposure occurs when a child happens to be in the room while programming directed at older children or adults is on. Presumably infants and toddlers pay very little attention to this programming since it is both not intended for them and likely incomprehensible to them, rendering this type of content merely something happening in the background as they engage in other activities (Anderson & Evans, 2001; Courage and Setliff, 2010; Valkenburg & Vroone, 2004). Conversely, television or video programming that is produced for young children and turned on with an intent that the child will watch is considered foreground screen media (see Anderson & Evans, 2001; Courage & Setliff, 2010).

Though scholars believe young children have been exposed to background television since the rise of television as the “new hearth” in the 1950s, infant foreground television viewing is a relatively recent phenomenon (Wartella, Richert & Robb, 2010). While many parents start intentionally showing screen media to their children when they are between the ages of 3 and 6 months (Rideout & Hamel, 2006; Weber & Singer, 2004; Zimmerman, Christakis & Meltzoff, 2007), children in the 1970s did not begin viewing until approximately 30 months of age (Anderson & Levin, 1976; see also DeLoache & Chiong, 2009). Furthermore, the first published survey with data from the 2000’s (Rideout, Vandewater & Wartella, 2003) indicates a dramatic increase in infants’ and toddlers’ time with television and video from data collected in the 1980’s and 1990’s (Anderson & Pempek, 2005; Certain & Kahn, 2002; Christakis, Zimmerman, DiGiuseppe & McCarty, 2004). Anderson and Pempek (2005) contend that the lower rates of infant and toddler viewing in earlier decades are due to the lack of programming made specifically for children under two during that time, as well as babies’ lack of interest in programming for older children and adults.

Indeed, the current pervasiveness of screen media in young children’s lives mirrors the ever-increasing number of television programs and videos produced specifically for infants and toddlers. In 1997, entrepreneurial stay-at-home mom, Julie Aigner-Clark began producing the *Baby Einstein* series, and the "baby video" phenomenon was born (Wartella, Richert & Robb, 2010). The series of videos was first filmed in Aigner-Clark's basement with music, puppets and toys as a means to "provide fun, interactive ways to expose her own babies to the arts and humanities" (Disney, 2010). By 2000, *Baby Einstein* was bringing in over $12 million a year in sales (Dunn, 2001). With the blossoming popularity of *Baby Einstein*, the Disney Corporation purchased the series in 2001, and dozens of similar lines of videos began popping up (DeLoache & Chiong, 2009). In 2006, *BabyFirstTV* became available to cable and satellite subscribers as a premium channel; offering 24 hours a day of programming for children between 6 months and 3 years of age (Itzkoff, 2006).

What is more, the vast majority of media programs and videos produced for children two and younger make a variety of implicit or direct claims of educational benefit for young viewers (Garrison & Christakis, 2005; Fenstermacher et al., 2010). These claims are featured on video packaging, product websites, and in the opening segments of the programs themselves. The website for the *Baby Genius* line of videos, for example, says "Research studies have linked music with enhanced brain development as well as increased language, memory, coordination and social skills… All *Baby Genius* products feature music as the central core to the discovery and learning process." The cover of a *Baby Einstein* DVD claims that it "playfully taps into your little one's natural curiosity and introduces 30 words from around the home – both spoken and in sign language" (*Baby Wordsworth)*. Unfortunately, however, the vast majority of these seductive claims are made without the any publicly available research to support them (Garrison & Christakis, 2005).

Given the lack of confirmatory research, as well as a concern that time with media would supplant babies' time spent in other beneficial activities (e.g., playing, reading and interacting with caregivers), the American Academy of Pediatrics (AAP) issued a statement in 1999 (re-issued in 2001), advising parents to avoid showing their child any screen media before the age of two (AAP 1999; 2001). Similarly, child advocacy groups, such as the Campaign for a Commercial-Free Childhood (CCFC) have voiced complaints regarding the marketing of baby media products. They worry that baby videos may be harmful to young children's development, and that parents are being misled by unfounded marketing claims (CCFC, 2006). In 2006, the organization urged the Federal Trade Commission to crack down on media producers for unsubstantiated claims associated with baby videos (CCFC, 2006). Thus far, the FTC has taken no official action against baby video producers, though pressure from the CCFC and others has led to some self-censorship in the form of more implicit claims and the increased use of parent testimonials in the place of explicit statements of educational benefit (Engle, 2007).

What we know about media effects on infants and toddlers

The body of literature regarding effects of screen media on children under two is still limited, though media and child development scholars have begun to focus significant research efforts on this area. As such, our current lack of a concrete understanding of how media exposure can, and does affect young children in the short- and long-term precludes a decisive resolution to the debate over infants' and toddlers' exposure. The majority of scholarly research regarding young children's learning from screen media has indicated what Anderson and Pempek (2005) have titled the "video deficit effect." That is, before the age of two, children do not seem to learn information or skills as readily from video sources as they do from live presentations of the same information. This "video deficit" has been found across a number of domains, including behavioral imitation (e.g., Barr & Hayne, 1999, Hayne, Herbert & Simcock, 2003; Meltzoff, 1988; Muentener, Price, Garcis, & Barr, 2004), problem-solving (e.g., Richert, 2007; Schmitt & Anderson, 2002; Troseth & DeLoache, 1998), and language development (i.e., vocabulary and syntax; e.g., DeLoache et al., 2010; Kuhl, Tsao & Liu, 2003; Krcmar, Grela & Lin, 2007; Richert, 2007; Robb, Richert & Wartella, 2009; see Linebarger & Vaala, 2010 for a review).

Notably, however, research suggests that several content and contextual features help to mitigate the video deficit effect. For example, repeated exposure to video content has been found to help infants and toddlers to learn and imitate information from video sources (Barr, Muentener & Garcia, 2007; Barr et al., 2007; Krcmar, 2010b; Linebarger & Vaala, 2008; Linebarger & Vaala, 2010). The inclusion of social relevance cues (e.g., talking directly to the viewer; conversational turn-taking) also seems to aid babies' learning (Cleveland & Striano, 2008; Houston-Price, Plunkett & Duffy, 2006; Krcmar, 2010b; Krcmar, Grela & Lin, 2007; Lauricella, Gola & Calvert, 2011; Linebarger & Vaala, 2010; Linebarger & Walker, 2005; Troseth, Saylor & Archer, 2006). Some research suggests that co-viewing with parents who interact with children in ways that scaffold the video content can yield better learning outcomes as well (Fender, Richert, Robb & Wartella, 2010; Mendelsohn et al., 2010). Additionally, even when considering children under two, relative age appears to make a significant difference in the ability to glean information from the screen. In particular, studies indicate that children over the age of 18 months are more able to imitate and learn from screen media than younger babies, and those abilities improve throughout the next year (Cleveland & Striano, 2008; Courage & Howe, 2010; Barr & Hayne, 1999; Krcmar, Grela & Lin, 2007).

Unfortunately, however, the literature indicates a gap between what young children *can* learn, versus what they *do* learn from video sources. The studies that have evidenced the greatest learning among children under two have used video content created by the researchers (e.g., Barr, Muentener & Garcia, 2007; Barr et al., 2007; Houston-Price, Plunkett & Duffy, 2006; Troseth, Saylor & Archer, 2006). These videos are typically characterized by simple subject matter and context (e.g., an adult holding an object and repeating its name), and lack the fancy production elements found in videos produced and marketed for babies (e.g., cuts, pans, zooms, and sound effects; Goodrich, Pempek & Calvert, 2009). Conversely, the majority of studies examining infants' and toddlers' learning from commercially available videos have shown substantial video deficit effects (e.g., DeLoache et al., 2010; Krcmar, 2010a; Krcmar, Grela & Lin, 2007; Richert, 2007; Robb, Richert & Wartella, 2009), suggesting that babies likely glean very little from currently available programming.

In addition to research on direct learning from video, other studies have focused on the potential influence of media on young children's concurrent interaction with toys and caregivers. To date, this line of inquiry has indicated generally that the quality and quantity of infants' and toddlers' engagement in play and social interaction is reduced in the presence of television. While the television is on, that is, young children show less focused, sustained and complex individual play behaviors (Courage, Murphy, Goulding & Setliff, 2010; Masur & Flynn, 2008; Schmidt et al., 2008; Setliff & Courage, 2011), as well as fewer and less complex interactions with their caregivers (Christakis et al., 2009; Courage et al., 2010; Kirkorian et al., 2009; Masur & Flynn, 2008; Nathanson & Rasmussen, 2011). It should be noted that most of these studies were conducted with adult-directed background television, or made no distinction between adult- or child-directed programming (see Courage et al., 2010 for an exception). Still, scholars and advocates fear that the patterns of interrupted focus and interaction associated with television exposure likely have harmful repercussions for children's cognitive and social development (Courage & Setliff, 2010; Masur & Flynn, 2008), though longitudinal research is needed to confirm these concerns.

Other research has examined broader cognitive and health-related media effects as well, though largely through non-experimental frameworks. One heated debate has focused on a possible role of infant's screen media exposure on the incidence of Attention Deficit Hyperactivity Disorder (ADHD) in later childhood. Christakis and colleagues (2004) analyzed data from the National Longitudinal Survey of Youth-Child (NLSY) and found that children who watched more television at ages one and three were more likely to show symptoms of ADHD at age seven. A recent reanalysis of the same data, however, showed an association only for children who watched seven or more hours of screen media a day, and that the relationship disappeared completely when mother's education level and family income-level were added to the model (Foster & Watkins, 2010). Similarly, other research has not indicated a relationship between child-directed media exposure during early childhood and later cognitive deficits (e.g., Barr, Lauricella, Zack & Calvert, 2010; Obel et al., 2004; Schmidt et al., 2009).

Scholars in health and media studies have also explored the relationship between young children's television use and sleep patterns. The findings of one recent survey showed that television and video use before bedtime was associated with a later bedtime among 8- to 48-month-old children, as well as fewer total hours of sleep (Evans & Linebarger, 2010). In a longitudinal design, Taveras and colleagues (2008) surveyed parents when their children were 6, 12, 24 and 36 months of age. In bi-variate analyses the authors found that more television viewing during infancy and toddlerhood was associated with less total sleep, and was also predictive of childhood overweight status at age three. They found further that the combination of television and sleep worked synergistically. Specifically, children who watched high amounts of television and slept fewer hours as babies had substantially higher BMIs and skin-fold thickness, and elevated odds of being classified as overweight at age three, even after controlling for a number of covariates like maternal education, race/ethnicity, marital status and child's BMI at 6 months.

Literature gap: What influences parents' media use with infants and toddlers?

Although Michelle Obama and organizations such as the AAP, CCFC and others have begun campaigning for reduced or eliminated screen time for infants and toddlers, very little is understood about the underlying factors involved in parents' decision-making and ultimate behavior regarding their young children's media use. Surveys have indicated wide variation in American babies' time with television and videos, ranging from absolutely no screen time among 39% of children under two, to 40% of babies whose homes have at least one television on "most" or all of the day (i.e., with a mix of "foreground" and "background" television; Anderson & Pempek, 2005; Rideout, Vandewater & Wartella, 2003). Much less is understood about which families fall along different points of this spectrum, or why. Advancing our knowledge of the demographic, structural, and cognitive factors associated with varying infant and toddler media diets should be of foremost priority, particularly in advance of campaigns aimed at changing associated behaviors.

The majority of existing parent survey findings offer descriptions of the "average baby's" media exposure, without detailed examination of factors such as family structure, parents' media- and child development-related beliefs, or parent personality dimensions that may mediate or moderate relationships. One study by Zimmerman, Christakis & Meltzoff (2007) did incorporate socio-economic and family structure as predictors of young children's time with media, as reported by parents. These authors found that having one or more siblings was associated with higher odds viewing of children's non-educational (i.e., entertainment) programming among infants and toddlers, and lower odds of watching baby videos and adult programming, compared to children with no siblings. Babies with two or more siblings spent less total time viewing the screen, however. Additionally, babies whose mothers had not finished high school were more likely to watch child-directed non-educational programming, and spent more time viewing baby videos. Having a father without a high school degree was associated with more overall time viewing. Conversely, those whose mothers had some post-college education were less likely to watch children's educational programs or baby videos compared to other maternal education levels. Finally, African American infants and toddlers were more likely than their white peers to watch children's educational and non-educational programming. Lacking from this and other studies, however, is an exploration of *why* families with these structural and demographic characteristics have different patterns of infant and toddler media use.

Additionally, several studies have queried parents about beliefs related to young children's media, particularly their educational value (Rideout, Vandewater & Wartella, 2003; Vandewater et al., 2007; Zimmerman, Christakis & Meltzoff, 2007) These surveys do indicate that many parents consider baby media products to be educational for young viewers. One Kaiser Family Foundation study found that 58% of parents surveyed felt that educational television programs were important for the intellectual development of children under age six, and 49% felt this way about educational videos (Rideout, Vandewater, & Wartella, 2003). In additional research, over 70% of parents of 6- and 18-month-olds felt that baby videos had the "potential to stimulate brain development" in another study, while more than half felt that baby videos “teach concepts” to their children (Courage, Murphy, Goulding & Setliff, 2010).

Zimmerman and colleagues’ survey (2007) indicated similar results. Nearly a third of parents in this study felt that the television programs and videos they showed their child “teach him/her something or are good for his/her brain,” and rated this belief as the most important reason for using screen media with their child. Additionally, Vandewater and colleagues (2007) found that those parents who believed that “television mostly helps children’s learning” were more than two times more likely to show television or videos to their child under two than those who did not endorse this belief, though differences in the actual viewing rates were not reported. It is important to note, however, that parents in both studies were given limited response options from which to choose. Indeed 13% of parents surveyed by Zimmerman, Christakis and Meltzoff (2007) listed “other reasons” as the most important basis for using screen media with their baby.

Results of previous parent surveys do not give a full picture of the reasons certain babies watch more screen media than others, due to several shortcomings. First, the authors of these surveys did not elicit relevant beliefs from parents of infants and toddlers. Instead, they polled parents about beliefs chosen a priori by the investigators. As such, crucial determinant beliefs underlying screen media use with babies may have been left out. Second, these studies have not examined the distribution of various beliefs among various subgroups of parents, or whether different beliefs or factors vary in their predictive power of media use across parents.

Exploring these things would go a long way towards expanding our understanding of which parents are using what kinds of screen media with their infants and toddlers, for how much time, and why.

Of additional concern is the fact that parent surveys involving perceptions and behaviors surrounding media use with infants and toddlers were conducted prior to recent events which may have changed wide-spread opinions of "educational" baby videos and programs. Most notably, Disney made headlines in September, 2009 when they announced they would offer refunds for parents dissatisfied with any *Baby Einstein* videos or DVDs (Lewin, 2009). This news may have been interpreted by parents as an admission that *Baby Einstein*, and perhaps other baby programs, were not in fact educational for infants and toddlers. As such, the distribution of beliefs in the educational value of screen media for babies may have shifted since the administration of previous surveys, particularly among certain groups of parents (i.e., those who read the news). Further, if perceived educational value was in fact the most predictive belief associated with media use with children under two, this belief may have been supplanted by other more predictive beliefs since the administration of previous studies.

This dissertation study

Given the debate currently raging among scholars, child advocates, clinicians, parents and content producers regarding young children's media use, as well as the wide range in infants' and toddlers' exposure to media, a more detailed understanding of the factors that influence the nature and extent of young children's screen media exposure is needed. The present dissertation study is intended to fill substantial gaps in our knowledge of the maternal and family factors that influence the use of television and video programming[1] with infants and toddlers. Using the Integrative Model of Behavioral Prediction (Fishbein & Ajzen, 2010) as a theoretical framework, this study explores cognitive predictors of variations in mothers' use of foreground media with their infants and toddlers.

The role of mothers' structural life circumstances is investigated here as a competing explanation for variations in young children's TV/video exposure. Specifically, special attention is given to the possible associations between of family and parental factors which may impact media availability and mothers' control and need for TV/video use with their infants and toddlers (e.g., employment status; number of televisions in the home). Analyses explore whether the relationships between these factors and young children's TV/video exposure rates are mediated by constructs of the integrative model, or if they have direct influence on mothers' TV/video use behavior which is unaccounted for by the model.

It is also likely that mothers' beliefs about young children's TV/video use are not devoid of influence from dimensions of their personalities, or from their more general beliefs about childhood development. In fact, such factors may impact the formation of their beliefs regarding infant/toddler foreground TV/video-viewing or the extent to which they rely on certain types of beliefs when deciding on the appropriate

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[1] While this study addresses only television and video programming, "video," as operationalized here, encompasses DVD content as well as video content viewed on a computer.

TV/video diet for their children. As such, this study also examines the possible determining and moderating influence of mothers' perceptions of the nature of brain and intellectual development and their regulatory focus orientations on their cognitions, intentions, and reported use of foreground TV/videos with babies and toddlers.

Finally, given the recent distinction between foreground and background media exposure and the paucity of research regarding young children's exposure to background screen media, the present dissertation research also examines the ability of the integrative model to account for children's background television and video exposure. Attention is paid to the model's overall efficiency in predicting parents' exposure of infants and toddlers to each type of media (i.e., background and foreground), the relative predictive strength of each of the theory's components for each media exposure behavior, as well as the extent to which these components may mediate relationships with mothers' structural life circumstances.

Theoretical Model

Well-established as a powerful model for predicting behavior in a vast number of fields, the Integrative Model of Behavioral Prediction (Fishbein, 2008; Fishbein & Ajzen, 2010) combines the major principles of several separate frameworks: the theory of reasoned action (Fishbein & Ajzen, 1975), the theory of planned behavior (Ajzen, 1991), the health belief model (Janz & Becker, 1984; Rosenstock, 1974), and social cognitive theory (Bandura, 1977; 2001). The integrative model contends that the best way to predict people's behavior is to first understand their intentions to perform or not perform that behavior. Intention, in turn, is determined by an individual's attitudes, perceived social normative pressure and/or perceived behavioral control regarding the behavior in question (Fishbein, 2008; Fishbein & Ajzen, 2010). One's attitudes, perceived normative pressure, and perceptions of behavioral control are respectively shaped by their underlying beliefs regarding the expected outcomes from performing the behavior, the perceived expectations of influential social figures regarding the behavior, and the perceived ability or insurmountable obstacles to performing the behavior. Based on the integrative model, an individual's underlying behavioral, normative and self-efficacy beliefs can be constructed and altered via a number of situational factors or experiences, including cultural and mass media influence.

The Integrative Model provides a good theoretical model for examining predictors of parents' use of television and video programming with infants and toddlers for several reasons. First, the theory offers a useful framework for comparing the predictive value of numerous beliefs in the determination of mothers' use of foreground media with their infants and toddlers. Because the theory contends that the relevant beliefs must be first elicited from the target population prior to conducting a large-scale survey, this study will be less likely than previous investigations to omit important determinant beliefs. Second, grounding the study in the integrative model also enables examination of how various exogenous factors may impact the behavior (e.g., SES; family structure). The theory contends that such factors could influence underlying beliefs, which would affect broader constructs, leading to differences in intentions and behaviors. As such, the integrative model lays out a method for examining the specific route of influence of each factor on a behavior of interest within a given population.

The extent to which analyses indicate residual impact of various family or parental factors (e.g., mother's working status; childcare arrangements; number of children in the home) on young children's TV/video exposure not accounted for by the constructs of the integrative model will point to the level of actual efficacy mothers have in controlling their children's exposure. Thus, using the integrative model of behavioral prediction as theoretical and analytical framework allows the determination of the degree to which various factors may influence mothers' TV/video use with infants and toddlers via cognitive factors (i.e., affecting their attitudes, perceived normative pressure, perceived behavioral control and intentions) compared to mothers' level of actual behavioral control. Due to these added strengths, the results of this study will indicate not only how different mothers are behaving in regards to infant and toddler foreground and background television and video exposure, but offer insights regarding why they behave as they do.

Finally, this study adds to existing knowledge regarding the reach of the theory's predictive capacity. While its application has been well-supported in other domains, such as health- and consumer-related behaviors, the functioning of the integrative model of behavioral prediction has not been studied in the context of parents' use of screen media with their young children. As such, results of the present study contribute to our knowledge regarding the relationships influencing infant and toddler media exposure, as well as our understanding of the extent of the theory's application.

Overview of dissertation analyses

The next chapter (i.e., Chapter Three) describes the preliminary elicitation study under-taken to inform survey construction and the formation of main hypotheses and research questions. Following this interview study, several survey instruments were constructed and piloted with a small sample of mothers with infants and toddlers. This pilot study is described in Chapter Four, including the procedure, results, and implications for the main dissertation survey. The subsequent chapter (i.e., Chapter Five) contains the methodology used in the main dissertation study.

The next seven chapters comprise the main dissertation analyses; each chapter containing a separate set of analyses organized around a particular goal. The first analysis chapter (i.e., Chapter Six) examines which of mothers' demographic and structural life circumstance factors are related to their infants' and toddlers' weekly foreground television and video-viewing. Analyses contained in the second analysis chapter (i.e., Chapter Seven) evaluate the general operation of integrative model constructs in accounting for mothers' use of TV/videos with infants and toddlers. Additionally, analyses in this chapter are aimed at determining whether the relationships between structural life circumstance factors with children's foreground exposure can be accounted for by the cognitive constructs laid out by the integrative model (i.e., extent of mediation). In the third dissertation analysis chapter (i.e., Chapter Eight) mothers' discrete behavioral beliefs about infant/toddler television and video use are examined, including their respective distributions, potential multi-dimensional structure, and efficiency in predicting mothers' attitudes, intentions, and estimates of their children's foreground TV/video exposure.

The next two analysis chapters address the influence of two maternal factors: (1) belief in a "critical window" of children's brain development (Chapter Nine) and (2) regulatory focus orientation (Chapter Ten). Each of the chapters assesses the influence of one of these factors on the nature of mothers' behavioral beliefs regarding infant/toddler television and video viewing, as well as their impact on relationships between behavioral beliefs and attitudes, intentions, and children's foreground TV/video exposure.

In the final two analysis chapters the focus changes to children's exposure to background television and video programming. Mirroring the approach to foreground exposure taken in Chapters Six, the analyses in Chapter Eleven examine the maternal demographic and structural life circumstance variables related to infants' and toddlers' background TV/video exposure. The seventh and final analysis chapter evaluates the efficiency of the integrative model, as it relates to mothers' cognitions, in explaining infants and toddlers exposure to background screen media. The relative predictive value of each model construct will be examined, as will the possible mediation of predictive structural life circumstance factors through the model.

The final dissertation chapter draws general conclusions from the various sets of findings as well as the potential implications of those findings. This chapter ends with some consideration of the present study's limitations and what future research might be conducted to fill gaps in our understanding of the factors related to more or less TV/video exposure among infants and toddlers.

Chapter Three

Preliminary Study: Elicitation interviews of mothers with infants and toddlers

An open-ended interview study with mothers of infants and toddlers was conducted to elicit salient beliefs about foreground media use with infants and toddlers to be included on the closed-ended dissertation survey. This study was also intended as a means for preliminary exploration of the variation in children's foreground media and background media exposure, as well as the cognitive constructs of interest among parents (i.e., attitudes, perceived norms, perceived behavioral control, beliefs in the critical window of brain development). The elicitation interview design was based primarily on the standard format used by Fishbein & Ajzen (2010).

Methods

Individual, open-ended interviews were conducted with 37 mothers of children between 2 months and 32 months of age, following approval from the Institutional Review Board from the University of Pennsylvania. All interviews were conducted between May and September of 2010. Most interviews (81.1%) were conducted over the phone, and the remainders were conducted in person. Participant recruitment consisted of several different strategies: (1) individuals in the researcher's social network asked their own friends and family members with young children to participate; (2) mothers with young children were approached in public and asked to participate; (3) two facilities serving young, low-income mothers agreed to let the investigator recruit mothers from their sites; (4) ads were placed on Craigslist; and (5) following their respective interviews, some mothers recruited their own friends to participate.

All interviews were audio-recorded and transcribed. The interviews lasted 36 minutes on average (*SD* = 12.7 minutes), not including demographic questions which were not recorded. Interviews were semi-structured, such that each participant was asked the same set of questions but were often probed for more information based on the amount or clarity of information in their original responses. Mothers with more than one child in the target age-range (n = 4) were asked to respond separately for each child when applicable. Participants were given a $10 gift card as compensation for their time.

Interview Instrument

Demographic information. Participants were asked a number of standard demographic questions, including their own and their spouse/partner's age, race/ethnicity, education level, and employment status, as well as combined income. Residential zip codes were also collected from participants in order to track regional diversity of the sample. Finally, participants provided the target child's date of birth, birth order and gender, as well as the age and gender of any other children in the home.

Foreground media exposure. Participants were first asked if their child watched video content on any type of a screen. Those who said that their child did watch video content were asked if they put on programs or videos/DVDs with the intention that the target child would watch. Those who answered affirmatively to that question were asked to list the DVDs/videos and television programs the child had watched most in the past month, and the amount of time the child spent viewing on a typical weekday and a typical weekend day.

Background media exposure. In order to collect information about children's background media exposure, participants were also asked how often the target child is in the room while someone else is watching television or video content directed at adults or older children, as well as how often the television is on in their home when no one is watching at all.

Behavioral beliefs and attitudes. Participants were asked several questions aimed at eliciting behavioral beliefs and attitudes related to their child's foreground media exposure. They were first asked "What factors or considerations influence your decision-making about your child's television and video use, including what you put on and the amount of time?" Later, mothers were asked about perceived advantages and disadvantages of foreground media use with their child. Specifically: "What do you see as advantages or good things that would happen if you put on television or videos for your child to watch? (And that could be good things for you, or good things for your child)"; and "What do you see as disadvantages or bad things that would happen if you put on television or videos for your child to watch?"

Injunctive normative pressure. Mothers were asked to list individuals or groups who would approve or support using television and videos with their child, as well as individuals or groups who would disapprove or not support the behavior. In addition, each participant was asked whether each of 13 sources (e.g., pediatrician;

parenting books; other parents) had "guided or influenced [their] decision-making when it comes to television or videos for [their] child."

Perceived descriptive norms. Mothers were asked to give an estimation of the percentage of parents that they knew who used television and videos with their children 2 years old or younger.

Perceived behavioral control. In order to collect information regarding perceived behavioral control over their young child's television and video viewing, participants were asked "if you decided you wanted to cut back or eliminate your child's television/video viewing, what are some of the factors or circumstances that would make it difficult or keep you from limiting his/her viewing?" A follow-up question was also asked: "What are some of the factors or circumstances that would make it easy or help you to cut back or eliminate your child's viewing?" Mothers' who had indicated their child did not view any television/videos were asked what factors/circumstances made it difficult to keep their child from viewing.

Conceptions regarding early childhood development. Finally, participants were queried about their conceptions of children's development between birth and three. Specifically, they were asked "To what extent do you believe that the *experiences* children have while they are babies and toddlers impacts what they will be like when they are older?" Respondents who offered responses like "a huge impact" or "a large extent" were asked probing follow-up questions such as "do you think experiences are more influential than genes?" and "do you think experiences under three are more, less or equally important as later childhood experiences?"

Results

Sample. Table 3.1 conveys the demographic distributions of the mothers in this sample. The age of participants ranged from 19 to 45, though the average age was just under 30. Over-all, they represented 12 different states. The majority of participants had at least a bachelor's degree (64.9%), though nearly a quarter (24.3%) had not attended any college. Their working status also varied, as 18 were not employed, 16 were employed outside the home (i.e., 11 full-time; 5 part-time), and 3 participants were self-employed.

***Table 3.1*. Characteristics of the interview sample (N = 37)**

Age mean ± SD, years	29.8 ± 6.0
Race/ethnicity, n (%)	
Caucasian	26 (70.3)
African American	10 (27.0)
Asian	1 (2.7)
Marital Status	
Married/Living as married	28 (75.7)
Separated/Divorced/Single	9 (24.3)
Education, n (%)	
No high school diploma	1 (2.7)
High school diploma/GED	8 (21.6)
Some college/Associate's	4 (10.8)
Four-year college degree	12 (32.4)
Graduate school	12 (32.4)
Income, n (%)	
Less than $10,000	5 (13.5)
$10,000 - $39,000	5 (13.5)
$40,000 - $74,000	10 (27.0)
$75,000 – $99,000	8 (21.6)
$100,000+	5 (13.5)
Refused	4 (10.8)

Likewise, there was a relatively high degree of diversity among the target children of the participants in this sample. As shown in Table 3.2, target children in this sample were slightly more likely to be male (51.2%), and first-born children (58.5%), and just over a third of them (32.4%) attended outside-the-home childcare. They also had a wide range of daily exposure to both foreground and background screen media (see Table 3.2). Most commonly viewed videos/DVDs included: *Elmo/Sesame Street* (i.e, 18.9% of mothers mentioned this video), *Baby Einstein* (16.2%), *Dora the Explorer* (10.8%) and *Barney* (8.1%). The most common television programs watched by children in this sample were: *Sesame Street* (32.4% of mothers reported their children viewed this program), *Dora the Explorer* (27.0%), *Spongebob Squarepants* (13.5%), *Barney* (13.5%), *Mickey Mouse Clubhouse* (10.8%), *Superwhy* (10.8%), *Caillou* (8.1%), *Word World* (8.1%), and *Yo Gabba Gabba* (8.1%).

***Table 3.2*. Characteristics of participants' children (N = 41)**

Age mean ± SD, months	13.9 ± 8.5
Gender, n (%)	
Male	21 (51.2)
Female	20 (48.8)
Birth order, n (%)	
First-born	25 (61.0)*
3rd child or later	8 (19.5)
In outside childcare, n (%)	14 (34.1)
Foreground media per weekday, n (%)	
None	7 (17.1)
Less than 1 hour	12 (29.3)
1 hours to under 2 hours	9 (22.0)
2 hours to under 3 hours	4 (9.8)
3 hours or more	9 (22.0)
Background media per weekday, n (%)	
None	8 (19.5)
Less than 1 hour	13 (31.7)
1 hours to under 2 hours	9 (22.0)
2 hours to under 3 hours	7 (17.1)
3 hours or more	4 (9.8)

*Includes 1 set of twins

Behavioral beliefs regarding foreground screen media. Transcriptions were reviewed for positive behavioral beliefs (i.e., perceived advantages) of infant/toddler foreground screen media use, and similar beliefs were grouped together under one theme. For example, the responses, "*it gives me time to clean, or maybe study, or cook*," and "*A good thing for me sometimes is that it gives me a little bit of a break*" were both grouped under the broader belief that "screen media keeps a child busy so the parent can have a break or get things done." Table 3.3 shows the positive behavioral beliefs mentioned by each least two mothers in this study, as well as quotations illustrating each belief.

As found in other survey research with parents of young children, many of the mothers in this study (78.4%) did cite a belief in learning/educational benefits as an advantage of screen media (Courage et al., 2010; Rideout, Vandewater & Wartella, 2003; Wartella, Richert & Robb, 2010; see also Zimmerman, Christakis & Meltzoff, 2007). Occupying the child so that the parent could have a break or complete chores around the house was also a commonly reported advantage (59.5% of mothers; Zimmerman, Christakis & Meltzoff, 2007). In addition, there were several positive behavioral beliefs revealed in this study that have not been studied in other research, including the beliefs that screen media (1) can teach the child specific skills/knowledge that the parent cannot teach; (2) inspires the child's creativity and play; (3) stimulates the child's vision and/or hearing; and (4) helps to structure the day or establish a daily routine.

Transcriptions were also reviewed for negative behavioral beliefs (i.e., perceived disadvantages) of infant/toddler foreground screen media use reported by participants. Highly similar beliefs were again grouped together under one belief "theme". Previous surveys of parents with infants and toddlers have queried parents how much they felt television and videos "hurt children's learning" (Rideout & Hamel, 2006; Rideout, Vandewater & Wartella, 2003), without any further examinations of parents' potential negative behavioral beliefs about infant/toddler media use. As such, the majority of disadvantages mentioned by participants in this study have not previously been explored. As shown in Table 3.4, several negative behavioral beliefs cited by participants reflected the more general theme that screen media exposure may "hurt children's learning." Specifically, several mothers (8.1%) feared that watching television and videos may cause their child to miss out on learning opportunities, while others felt that screen media hinders children's intellectual or brain development (8.1%). Of interest is the fact that neither of these beliefs was the most commonly cited negative behavioral belief in this sample. In fact, the two most frequently reported perceived disadvantages of infant/toddler screen media use were (1) the lack of physical activity and unhealthy repercussions of the sedentary behavior (24.3%), and (2) the possibility of children forming a media-use habit or dependence (24.3%). Furthermore, seven mothers in this study (18.9%) reported no perceived disadvantages associated with infant/toddler screen media use.

These elicited positive and negative behavioral beliefs will be included in the proposed dissertation survey. The distributions and influence of these beliefs among mothers on their general attitudes, intentions and use of television and video programming with infants and toddlers will be examined more comprehensively through the proposed dissertation project via analyses contained in Chapter Eight. Additionally, the possible moderating influence of mothers' perceptions of children's brain/intellectual development and mothers' regulatory focus orientations on relationships between behavioral beliefs and attitudes, intentions, and estimates of children's foreground TV/video exposure will be assessed in Chapters Nine and Ten.

Table 3.3. Mothers' most common positive behavioral beliefs regarding infant/toddler media use (N = 37).

Belief	**% (n)**	**Example quotation (respondent #)**
Help child learn "academic" skills	78.4% (29)	*"I think watching those shows helps him learn his numbers, and his ABCs and all his… what he needs, you know?"* (1); *"if he's viewing educational programs from this early on, I feel like he will know this content that I'm showing him – like ABCs and numbers and stuff – earlier on…"*(37)
Keep child busy so parent can get things done	59.5% (22)	*"Sometimes I need a little bit of time where I know they're safe, and they're contained, and they're reasonably happy for a certain chunk of time so that I can put on dinner or change the laundry"* (15)
Calm child; distract from crying	35.1% (13)	*"If she's like crying and upset and I put on like Barney then she'll sit there and just be quiet and watch it."* (28); *"Sometimes he just needs it because if he's all wound up and there's nothing that relaxes him except for Baby Einstein."* (9)
Engages/entertains child	27.0% (10)	*"Children's television sometimes, it's like they're talking their language, even though they fully don't understand everything that's going on."* (21)
Child responds to music; interacts with program	24.3% (9)	*"They do like music... so they just love the songs and all the kids singing and they kind of like dance and play around, and I guess that counts."* (30)
Exposes child to new things in the world	13.5% (5)	*"I think she could learn about other types of families, or other types of people through TV… So equipping her for a more worldly experience, outside the little one she lives in right now…"* (31)
Teach child things parent cannot teach	10.8% (4)	"*There might be something on the video that I wouldn't know to teach her… a video with specific content I wasn't familiar with would be helpful because I wouldn't know about it*." (10); *it would be longer and less effective if I did it, compared to like a video. A video's a video - I can't top that."* (37)
Help stimulate child's "focus"	10.8% (4)	*"It might be an hour to an hour and a half per day I try to do it for him, to try to get him acclimated to sounds, and colors, and help his focus"* (36)
Part of daily routine/structures day	10.8% (4)	*"When you have kids, everything has to be planned and scheduled and if one thing falls out of sorts then it wrecks the whole day and ultimately it affects bedtime, and if it affects bedtime then it affects the next day."* (9); *"it's very strongly part of her routine."* (15)
Help child learn social-emotional skills	5.4% (2)	*"Also just kind of the morals of some of those little kids shows are pretty good…I think it's helped him see human emotion a little bit more."* (23)
Inspire creativity/play	5.4% (2)	*"It's not unusual for her to act out something she saw [on TV]. She had a really good time doing Miss Muffet for the longest time*." (15)
Way for parent to spend time with child	5.4% (2)	*"When I'm watching TV and he's in the room, even though it may not be the most age appropriate for him, it's time we're spending together."* (21)
Stimulates vision and/or hearing	5.6% (2)	*"almost like the colors, the sounds, different things, like it's just it was almost like a visual thing – that it was good to stimulate like their eyes. Like their vision, almost like a stimulation thing."* (33)

Table 3.4. Mothers' most common negative behavioral beliefs regarding infant/toddler media use (N = 37).

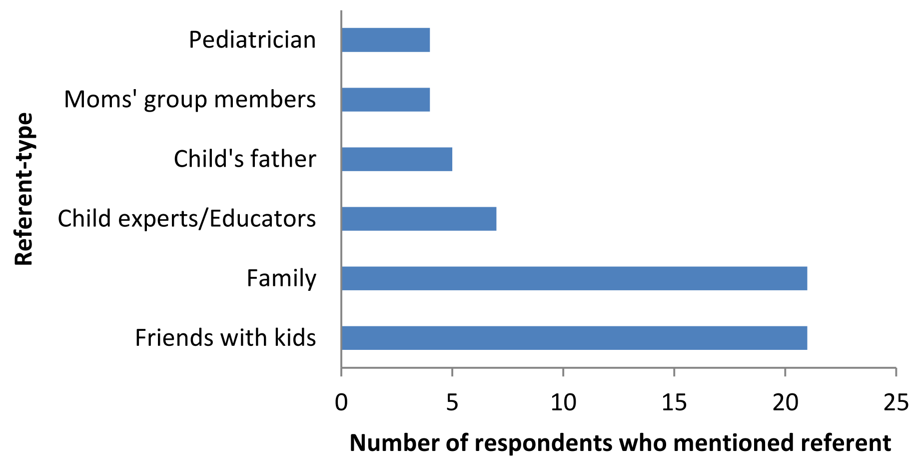
Belief	% (n)	Example quotation (respondent #)
Lack of physical activity/unhealthy	24.3% (9)	*"Just like the health factor… I want him to get enough exercise and be outside and do those things. I don't want him to lose that"* (23); *"It encourages them to have a more sedentary lifestyle - instead of getting up and playing they're watching a show"* (15)
Dependence/habit-forming	24.3% (9)	*"I think if you let it go it could become an addiction, for sure…"(25); "Kids get used to… behaving in a certain way, and if that behavior is sit there and absorb then they're going to spend the rest of their lives sitting there and absorbing."* (26)
Miss out on social interaction	18.9% (7)	*"Instead of learning to interact with people, he's interacting with the TV"* (16); *"The biggest disadvantage is the lack of interaction, and playing and family time."* (5)
None	18.9% (7)	*"No, not really, because the shows he watches helps him"* (1); *"No, because he don't watch it that much, and it's not like he be cryin and stuff when he in front of it."* (6)
Negative effects of violence/sex	16.2% (6)	*"[there are disadvantages] just if there's sex on there really. And curses."* (3); *"I don't want her learning about certain things from TV, and not from me I guess. Like violence or sex or something like that."* (32)
Hypnotizing effect on child	13.5% (5)	*"it's a little scary to see how hypnotized he becomes. I mean I think that, when you see that it makes you think 'maybe I should turn the TV off…'" (9)*
Begging/tantrums when turn off	13.5% (5)	*"She'll pick up the remote and beg for it" (17); "Like she'll yell in the mornings for Sesame Street. And she yells about her Tinkerbell, and she wants to watch them and gets upset."* (8)
Bad for vision and/or hearing	10.8% (4)	*"We have a very small living room, so the unmodulated sound levels of television will be harder on her little ears than the much more modulated sounds of normal human voices."* (26)
Stifle creativity/play	10.8% (4)	*"I think it stunts imagination - you don't have to create worlds if you are sitting passively observing worlds created for you"* (5); *"I also think sometimes it inhibits their playing skills."* (16)
Certain things parent would rather teach to child	8.1% (3)	*"I don't want him to learn about animals through TV. I would want him to go to the zoo, and actually see and feel an animal, like this is what a giraffe looks like… I would not really want him to just learn it from the screen." (36)*
Miss out on learning opportunities	8.1% (3)	*"[TV would take time away from us sitting down and reading books."* (30); *"In a perfect world Charlie would be reading books with Mommy and doing quiet art activities…they're not getting as much language stimulation."* (15)
Waste of time/just "zone out"	8.1% (3)	*"I'm sort of afraid of just the like tune out, like just look at something and not really being engaged or learning, just kind of having like sort of wasted sedentary time" (10)*
Hinders IQ/brain development	8.1% (3)	*"I don't know for sure, but I have seen that kids who watch before 2 have lower IQs"* (5); *"There's a lot of flash and change on TV in particular that could help cement her brain into much shorter brainwave patterns…"*(26)

Table 3.4 Continued. Mothers' most common negative behavioral beliefs regarding infant/toddler media use (N = 37).

Belief	**% (n)**	**Example quotation (respondent #)**
Child will have less interest in reading	5.4% (2)	*"Well if they get too hooked on the TV then they're not going to start reading - don't think, I mean, that's what I found with the boys"* (22)
Under-stimulating for child/boring	5.4% (2)	*It's underestimating their capabilities. I mean 6 year olds 100 years ago could take care of a herd of cows. Now we have them watching "Yo Gabba Gabba"* (26)
Relying on TV as a "babysitter"	5.4% (2)	*"I think sometimes it can become a babysitter"* (16); *"I think it would be a waste of time, and more of just a babysitter if I let her watch it right now."* (20)
Distracting to child	5.4% (2)	*"He also gets very distracted, like if the TV's on when he's eating then he won't eat. Or if you're trying to get his attention to do something he's distracted by watching a commercial." (9)*

Injunctive normative pressure. Results of this study indicated a range of amount and sources of perceived injunctive normative pressure among mothers with infants and toddlers. The sources of perceived injunctive normative pressure (i.e., individuals or groups who would be supportive or unsupportive of the behavior) mentioned by mothers fell into six different categories. As shown in Figure 3.1, friends with children and family members were the most commonly cited injunctive social referents (53.8% of participants mentioned each referent). There was some variation in the type of family members referenced; 25.6% of participants cited other family members who also had children, 28.2% mentioned the support or disapproval of parents or parents-in-law, and 20.5% referenced “family members” broadly in their interviews. Numerous mothers in this study also felt approval or disapproval regarding television/video use with their infants and toddlers from child experts or educators (15.4%; e.g., childcare directors; teachers), their child’s father (12.8%), members of moms’ groups (10.3%), and pediatricians (10.3%). Appendix A contains illustrative quotations regarding perceived approval, neutrality and disapproval from various groups or individuals.

Figure 3.1. Injunctive social referents cited by mothers (N = 39).



Participants were also asked to indicate whether each of a list of 13 sources had “guided or influenced their decision-making when it comes to television or videos for [their] child.” Table 3.5 contains the percentage of respondents who mentioned each source as an influence. The most commonly cited sources of influence were: (1) experience with older children (i.e., 87.5% of parents whose target child was 2nd born or later), (2) the child’s preferences or requests (81.1%), (3) other parents of infants/toddlers (70.3%), and (4) parents, in-laws or other family members (64.9%).

Table 3.5. Sources of influence on decision-making about child's media use.

Information source	Percent of respondents (n)
Social source	
Other parents you know	70.3 (26)
Parents, in-laws, other family members	64.9 (24)
Parenting blogs	27.0 (10)
Pediatrician	24.3 (9)
Childcare provider[a]	53.8 (7)
Media source	
Video/DVD packaging/websites	51.4 (19)
Parenting magazines/websites	48.5 (18)
Parenting books	35.1 (13)
News Reports	32.4 (12)
Television programming website	29.7 (11)
American Academy of Pediatrics	21.6 (8)
Personal experience	
What child seems to prefer/request	81.1 (30)
Experience with child's siblings	87.5% (14)[b]

Note: [a] Percentage of parents of children in outside childcare (n = 13) who listed this source as an influence; [b] Percentage of parents with more than one child (n = 16) who listed this source as an influence

Perceived descriptive norms. Similarly, mothers' commentary indicated a range in perceived descriptive norms (i.e., how many other parents of infants and toddlers use television and videos with their children). Appendix B contains response themes to the question "what percentage of parents you know show television or videos to their children 2 years old or younger?", with illustrative quotations. The most common perception was that most or all other mothers used television and videos with their infants and toddlers (i.e., this perspective was held by 66.7% of mothers). Some participants did feel that only some or half of other mothers used television and video programming with their young children (10.3%), and several others believed that very few other parents used TV/videos with their infants and toddlers (5.1%). On the other hand, some participants felt that whether or not other mothers used television and videos with their young children depended on the age of the child, such that those with very young infants likely used TV/videos much less than those with older toddlers (7.8%). The remaining mothers were uncertain how many other mothers used television and videos with their infants and toddlers because they either knew few other mothers personally, or it was not something they discussed with other parents (10.3%). Although it is unclear from this study whether and how much these perceived descriptive norms may influence parents' actual media use behavior, these results do indicate variation in the amount of normative pressure experienced by mothers of infants and toddlers. Participants' perceptions of descriptive norms coupled with responses regarding injunctive norms suggest that normative pressure broadly does impact mothers' foreground TV/video use. The nature of that influence will be explored more thoroughly in the larger dissertation survey through analyses contained in Chapter Seven.

Perceived Behavioral Control. Mothers' perceptions of their behavioral control over their infants' and toddlers' media use also indicated a relatively high amount of variability. Table 3.6 contains the six barriers that were mentioned by at least two participants, as well as quotations illustrating each obstacle. Only four mothers in this study stated that there would be no obstacles for eliminating their child's television and video viewing. Several of the barriers cited by other mothers in this study clearly reflected with the conception of perceived behavioral control laid-out by the Integrative Model, including: (1) others would show the child media anyway, and (2) difficulty keeping the child away from his/her older siblings while they view.

Other obstacles mentioned by participants could also be conceptualized as behavioral beliefs, including: (1) difficulty finding other activities to teach their child, (2) difficulty finding other activities to entertain the child, and (3) the child would get upset if not permitted to view television and videos. These perceived obstacles are similar to those elicited from parents of older children in a previous study of the barriers to reducing screen time (Jordan et al., 2006). It is not clear whether mothers truly feel they cannot reduce or eliminate their child's time with television and videos for these reasons, or whether these obstacles more accurately reflect behavioral beliefs about the benefits of their child's TV/video use. Still, participants seemed to feel a varying degree of control over their child's TV/video exposure, indicating that the general perceived behavioral control construct may contribute to the prediction of intentions and behavior among parents in the larger dissertation study.

Table 3.6. Mothers' most common perceived obstacles to reducing or eliminating media use with their infants/toddlers.

Belief	% (n)	Example quotation (respondent #)
Difficult to find other activities to entertain	48.7(19)	*"I can just turn off the TV and he would be fine. But then Mommy would have to figure out sing along songs…there still has to be a form of entertainment to replace the sing along songs."* (36)
Child would be too upset	23.1(9)	*"I can't do it, she'd be crying.*" (3); *"Probably the fact that the 2 year old would complain because she likes her princess movies…I would get a lot of 'bad mommy' stuff"* (22)
Other caregivers would show media to child	15.4(6)	*"The biggest obstacle would be even if you told people I don't want them to watch, you know, they wouldn't necessarily listen."*(13)
No perceived obstacles	12.8(5)	*"I could just turn it off. And that would be it." (25); "I don't think anything – I'd just turn it off. Or stop doing it."* (29)
Difficult to keep child away when siblings watch	10.3(4)	*"She's not at the point where she you knows its 7:00, and knows that Sesame Street is on, but if she caught somebody else watching it…if she wants to she gets into it, so I'd pretty much have to cut from everyone, which would be a little bit more difficult."* (27)
Difficult to find other activities to teach same skills	5.1(2)	*"I guess I would just have to buy more, you know, stuff to interact with him. Cuz I have toys, but it's not necessarily stuff like to teach him his ABCs and stuff like that, or his numbers, like what the videos are doing right now for him."* (37)

(N = 39)

Conceptions of early childhood brain development. Finally, mothers in this study had a wide range of beliefs regarding the impact of experiences between birth and age three on individuals' brain development and intelligence. As conveyed in Appendix C, participants' responses reflected five general conceptions: (1) a person's experiences as an infant/toddler mold their brain structure and/or function; (2) experience as an infant/toddler establish learning-related behavior patterns, though not necessarily brain structure or function; (3) the impact of children's genes is stronger than experiences between birth and three; (4) experiences during later childhood are more impactful than those during the birth to three period; and (5) uncertainty about the influence of experiences between birth and age three. The range of mothers' perceptions of early childhood brain development in this study suggest that there is likely to be enough variability among parents in the larger dissertation study to detect potential direct and moderating effects of "critical window" beliefs on mothers' cognitions and use of TV/videos with their babies and toddlers.

Conclusion

This interview study uncovered a number of positive and negative behavioral beliefs regarding infant/toddler television- and video-viewing, the influence of which will be examined in-depth through the dissertation survey project. Participants reported a wide range in their children's daily foreground and background television and video exposure. Mothers' commentary also suggested relatively large variation in perceived normative pressure, perceived behavioral control, and conceptions of early childhood brain/intellectual development, and provided some support for the possible influence of these constructs on parents' intentions and subsequent behavior related to foreground TV/video use with infants and toddlers. Overall, the findings of this study suggest sufficient variability in the cognitions and behaviors of interest to move forward with the larger dissertation project, and that the integrative model is an appropriate framework to employ for examining relationships between cognitive constructs and TV/video use with young children among a larger sample of mothers.

Chapter Four

Pilot Study

The aim of this dissertation study is to examine the maternal psycho-social cognitions and structural life circumstances that predict the extent of infants' and toddlers' exposure to foreground and background television and videos. The results of the elicitation interview study, described in the previous chapter, suggest that there is sufficient population variance in the relevant behaviors and cognitions to proceed with the larger survey study. Specifically, the outcomes indicated considerable variability among mothers with infants and toddlers in regards to the independent and dependent integrative model variables of interest (e.g., behavior; behavioral beliefs; attitudes; perceived norms; perceived behavioral control), particularly for children's foreground TV/video exposure. Mothers in the interview study also expressed a wide range of beliefs pertaining to early childhood cognitive development, suggesting variability in perceptions of the existence and nature of a critical window of brain development.

Informed by the outcomes of the qualitative elicitation study, two pilot survey instruments were constructed to determine the design of the final dissertation survey. Each of the two survey versions operationalized the target behaviors (i.e., infant/toddler foreground and background TV/video exposure) in a different way. The integrative model of behavioral prediction posits that a discrete behavior is comprised of four elements: the (1) action performed; (2) target of the action; (3) context of the action; and (4) time-frame for performing the action (Fishbein & Ajzen, 2010). Effectively measuring and efficiently predicting a behavior is dependent upon defining these elements of the target behavior as clearly as possible. Furthermore, any change in even one of these four elements may define a different behavior with different influences. Due to various theoretical, policy and practical implications regarding young children's television and video exposure, two distinct conceptualizations of the behavioral action element were of interest. And thus, two operationalizations of target behaviors were developed; one for each of the two pilot survey versions.

The first survey, "survey A", operationalized the target behaviors and associated integrative model items in terms of keeping the child from being exposed to each form of media (i.e., foreground; background TV/videos) *at all*. This first behavior operationalization was chosen due largely to the fact that relevant policy discussions have already framed the behavior in this way. That is, the AAP and others advocate no screen media exposure at all for children before the age of two years (AAP, 2001). Measuring integrative model constructs in this way (i.e., framed around keeping the child from any exposure at all) would allow examination of the maternal cognitive and structural factors that predict infants' and toddlers' exposure to some foreground and background TV/videos versus none at all.

The second survey, "survey B", operationalized the target behaviors in terms of letting the child be exposed to more than an hour a day of television and videos (foreground; background) on at least several days each week. Wording items in this format should discriminate more between mothers whose children are exposed to only "some" of each type of media, and mothers whose children are exposed to "a lot" of the media. This second conceptualization of the target behaviors was of interest because of the large range in young children's exposure indicated by the elicitation study and previous studies (e.g., Anderson & Pempek, 2005; Courage, Murphy, Goulding & Setliff, 2010; Rideout, Vandewater & Wartella, 2003; Weber & Singer, 2004). "More than an hour a day on at least several days each week" was chosen as an action time-frame because this amount of weekly foreground viewing represented the median in the elicitation study, and approximates the mean reported in previous studies (e.g., Vandewater et al., 2007). This behavioral operationalization was also of interest because the AAP's recommendation is a particularly conservative policy. That is, there is no research indicating that all exposure to television and videos is inherently harmful for children under two, and avoiding all such exposure may not be feasible for the majority of parents. In this case, understanding what makes mothers expose their infants and toddlers to *some* television and video content instead of *a lot* may have more practical value.

While each conceptualization of children's television and video exposure was of interest, preliminary survey piloting indicated that including both behaviors in a single survey was not feasible. Because this study includes two distinct types of media exposure (i.e., foreground and background TV/video exposure), a survey with both operationalizations of both exposure-types would contain IM questions for four separate models. Such a survey was both too confusing and excessively time-consuming for respondents. Thus, two separate pilot surveys were fielded for this study, each using a different operationalization of children's foreground and background TV/video exposure. To make the necessary comparisons, the wording of integrative model items pertaining to attitudes, descriptive norms and injunctive norms varied between surveys, and all other items were identical.

Thus, this pilot study was conducted in order to make an informed choice between the two behavioral operationalizations of children's background and foreground TV/video exposure IM items for the final instrument. The operationalization which yields the highest correlations between hypothesized constructs and accounts for the most variance in mothers' intentions regarding their children's background and foreground TV/video exposure will be chosen for the larger dissertation survey. Secondary goals of the pilot study were to confirm that survey questions for the chosen survey version were clear, there was adequate variation in responses, and internal consistencies of scales were sufficiently high to retain them for the final survey.

Methods

Design and Procedure

The pilot study consisted of a cross-sectional survey of mothers with children between 2 months and 24 months old of age. The survey was conducted online with measures reflecting the survey design outlined by Fishbein & Ajzen (2010). Participants were recruited through Survey Sampling International (SSI), which has a national panel of nearly one million US members. SSI recruits its members through various techniques online (e.g., banner ads; email invitations), and provides participants with compensation for study completion in the form of lottery drawings or points which can be cashed in for money. SSI sent emails to panel members who potentially fit the criteria for participation in this study (i.e., women over age 18 living in the United States and parenting children between 2 and 24 months of age). Each email contained a link to the survey site. The first survey item asked respondents: "Are you the mother of at least one child who is between 3 months and 24 months old?"[2] Those who indicated that they were not the mother of a child in this age range were directed out of the study due to ineligibility. Respondents who did have at least one child in this age range were given more information about the study and asked if they would like to participate. Eligible respondents who agreed to participate were then directed to one of the two full surveys (i.e., randomly assigned to survey A or B). Data collection took place over four days in early February, 2011.

Sample

In total, 154 respondents clicked on the survey link, were eligible to participate, and agreed to take the survey.[3] Of this group, 26 respondents did not complete the survey and their data was omitted from analyses. An additional 28 respondents who did complete the survey were not included in the final sample because they spent less than 12 minutes taking the survey. Based on formative piloting and survey link testing, it was determined unlikely that respondents could complete

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[2] The intended age-range for target children in this study was 3 months to 24 months, but the survey was not constructed to evaluate eligibility after the first screener question. Thus, some mothers who indicated that their child was younger than 3 months or older than 24 months were included in the study.

[3] Information about how many SSI panelists received a participation email is not available.

the survey in less than 12 minutes if they read the majority of the questions. Finally, two additional respondents were excluded from analyses because their target children were older than 30 months. Thus, the final sample for this study included 98 participants (i.e., 53 participants completed survey version A; 45 participants completed survey version B).

Measures[4]

Target child information. Participants were asked how many children they had between 3 months and 24 months of age. Those who indicated they had more than one child in this age range were then prompted to think of the child between 3 and 24 months "whose name comes first in the alphabet". Next, participants were asked to type the target child's first name into a given space, so that the computer could generate the child's name into all subsequent questions. This was done to encourage respondents to answer questions in regards to only the target child if they had additional children. Next, each participant was asked to report the target child's gender, date of birth, and birth order, as well as her own birth month and year, and specific relationship to the child (e.g., mother; step-mother; grandmother or aunt).

Foreground TV/video exposure. Six survey items were included to measure the target child's total weekly exposure to foreground television and videos, broken up by weekday and weekend viewing. Prior to the foreground TV/video exposure questions, the following statement was displayed on the screen:

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[4] Only measures used in the present analyses are described here. The pilot surveys contained additional items, which were identical between the two versions.

> "The following questions are about your child's television/video viewing – that is, television programs and videos made for children that you or someone else turn on with the intention that your child will watch it at least a little. Your child may watch these programs or videos on any type of a screen- such as a television, computer or portable DVD player."

First, respondents were asked on how many weekdays (0 – 5) the child typically watches at least some television or videos (those who answered "0 days" skipped to the weekend day section and not answer the remaining questions regarding amount of weekday exposure). Next, participants were asked to think of a typical weekday when their child watches *at least some* television/videos, and to indicate how much time in a typical weekday the child spends viewing. Here, respondents chose one of five response options, broken up in 2 hour increments between "less than 2 hours" and "8 hours or more." Based on her response to this question, each participant was then directed to a follow-up question where she was asked to choose one of four response categories to indicate a more detailed range of exposure time in a typical day (e.g., "less than 30 minutes;" "at least 30 minutes but less than 1 hour"). This series of three questions (i.e., number of days; broad exposure amount per day; narrow exposure amount per day) was then repeated to assess children's weekend exposure.[5]

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[5] A more detailed media use recall measure was considered to assess media exposure in this study. However, this measure could only capture media use on "the previous day," and elicitation interview responses indicated it would be important to measure exposure on both weekdays and weekend days particularly given potential differences between working and non-working mothers. In addition this

Following data collection, the number of weekdays that the child watches television was multiplied by the midpoint of the more specific chosen category of typical daily exposure (i.e., 45 minutes for the category "at least 30 minutes but less than 1 hour). Then, the number of weekend days the child watches was multiplied by the midpoint of the category of weekend day exposure amount. These two figures was then added together to represent the child's average weekly foreground TV/video exposure. The range of possible weekly exposure estimates was from 0 minutes to "3,990 minutes or more" per week (i.e., if the participant indicates the child watches 9.5 hours of television/videos or more on all seven days of a typical week). Weekly time estimates was also recoded into two different dichotomous measures: (1) Less than an hour of foreground television/video exposure per week vs. some weekly foreground exposure;[6] (2) more than 3 hours of foreground TV/video exposure a week vs. less than three hours of foreground exposure a week.

Childcare. Next, respondents were asked if the target child "is currently in any type of childcare, either in the home or out of the home." Those who responded that their child was not in childcare were directed to the next set of questions, instead of receiving more questions about childcare. Those whose children were currently in

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measure was extremely long and time-consuming and would have taken up survey space required for other measures.

[6] Nine mothers reported that their children were exposed to no foreground TV/videos at all in a typical week. Though they constituted nearly ten percent of the sample (9.1%), it seemed this figure might not be large enough to detect differences that may exist. Thus, children who viewed less than an hour per week were considered to have "no weekly foreground viewing" for these analyses

childcare were asked what specific type of childcare they used; amount of time per week the child spent in childcare; and whether the child ever watched TV/videos while in childcare.

Background TV/video exposure. Children's background television and video exposure was measured in the same format as the questions used to assess weekday and weekend foreground TV/video exposure. Before answering any questions regarding background TV/videos, participants were shown the following statement:

> "The following questions are about **background** television/video in your child's life. These are programs that you or others maybe watch that are not turned on with the intention that your child will watch, but are merely on "in the background" for him/her. Examples include programs like Hannah Montana, American Idol, or the news. (Background television/videos **do not** include cable music channels that show only the album cover or a picture of the artist on the screen)."

Respondents were then asked to indicate the number of days their child was in the room with background TV/videos, the broad amount per day and the narrow amount per day of weekday background TV/video exposure, followed by weekend background exposure. Typical weekly amount of background television and video exposure was calculated in the same manner as foreground exposure estimate construction, following data collection. Three values were constructed for each participant: (1) an continuous estimate of weekly background TV/video exposure; (2) a dichotomous estimate of whether the child is exposed to more vs. less than an hour of background TV/video exposure per week (i.e., No weekly background media exposure vs. some weekly background exposure); (3) a dichotomous value representing whether or not the child exposed to more than three hours of background TV/videos per week.

Foreground TV/video intention. Two items were included to assess participants' intention to let their target children watch foreground television and videos in the subsequent week. On a 7-point response scale (ranging from 1: "unlikely" to 7: "likely"), respondents were asked to respond to the following items: (1) "I will keep [child's name] from watching any television or videos during the next month"; (2) "I will let [child's name] watch television or videos for more than an hour a day on at least several days in the next week during the next month."[7] Much consideration was given to a number of different wordings and operationalizations for these two forms of intentions, and consequently, the rest of the IM items. In order to avoid leading respondents toward perceived socially desirable responses, every attempt was made to word both items as neutral- or positive-sounding behaviors (i.e., such that it does not appear the survey is anti-TV/videos). Unfortunately, a positively worded item could not be formulated to assess mothers' intentions to show their children no TV/videos at all. Thus, this item, as well as the background TV/video

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[7] One hour or more of daily exposure was chosen as it was determined to be the closest approximation of the mean and median of infants' and toddlers' viewing across previous parent surveys (e.g., Anand & Kosnick, 2005; Linebarger & Walker, 2005; Rideout & Hamel, 2006; Zimmerman, Christakis & Meltzoff, 2007).

exposure intention item and all corresponding IM questions, is worded in a negative format (i.e., "keep child from"). Conversely, the other intention operationalization is worded in a positive format (i.e., "let child").

Foreground TV/video beliefs. Each positive and negative behavioral belief mentioned by at least two mothers in the elicitation interview study was included in both survey versions, framed in terms of viewing "more than an hour a day on at least several days each week". Each item was accompanied by a 7-point response scale ranging from 1: "unlikely" to 7: "likely." The survey contained 13 positive behavioral belief items (e.g., "Viewing television programs and/or videos for more than an hour a day on at least several days each week could expose my child to different things in the world") and 17 negative behavioral belief items (e.g., "Viewing television programs and/or videos for more than an hour a day on at least several days each week could hurt my child's vision and/or hearing"). The order of the 30 behavioral belief items was randomized across participants.

Foreground TV/video attitude. Mothers' attitudes toward infant/toddler foreground television/video viewing was assessed by three 7-point semantic differential items on each survey version (i.e., good/bad; wise/foolish; harmful/beneficial). For survey version A, the items addressed the participant's attitude toward keeping the target child from viewing TV/videos at all in the next week. The foreground screen media attitude items on survey version B addressed respondents' attitudes regarding the target child viewing television or videos "for more than an hour a day on at least several days each week during the next month."

Foreground TV/video perceived descriptive norms. Two survey items on each of the two survey versions addressed perceived descriptive norms regarding foreground television and video use with children who are two years old and younger. On survey A, the items asked participants' estimations of the extent to which other parents keep their young children from watching any TV/videos at all: (1) Most people like me with children 2 and under keep their children from watching any television or videos (7-point scale from "likely" to "unlikely"); (2) How many of the people who are most similar to you with children 2 and under keep their children from watching any television or videos? (5-point scale from "None or very few" to "Almost all or all"). On survey version B these same two questions were asked in regards to children's viewing for more than an hour on several days each week.

Foreground TV/video perceived injunctive norms. Perceived injunctive norms regarding foreground TV/video use were assessed through two survey questions on each survey version. Specifically, items on survey A were: (1) Most people who are important to me think I should keep [child's name] from watching any television programs or videos during the next month" (7-point scale from "true" to "false"); and (2) "Most people whose opinions I value think that I should keep [child's name] from watching any television or videos during the next month" (unlikely/likely). On survey B these same two questions were asked in regards to letting the child watch television or videos for more than an hour a day on at least several days each week during the next month.

Foreground TV/video perceived behavioral control. Two survey items, identical across surveys, addressed mothers' perceived behavioral control over their children's foreground TV/video viewing: (1) "I am confident that I can control how much television- and video-watching [child's name] does during the next month" (7-point scale from "true" to "false"); and (2) "The amount my child watches television and videos during the next month is under my control" (7-point scale from "not at all" to "completely").

Background TV/video intention. Background television and video intention items were largely identical to the foreground intention questions. On a 7-point response scale (ranging from "unlikely" to "likely") participants indicated how likely it was that: (1) the child will be in the room with background television or videos at least once in the next week; and (2) the child will be in a room with background television or videos for an hour or more on at least several days in the next week.

Background TV/video attitude. The background TV/video attitude items were identical to those measuring foreground attitude; except that these questions will ask about participants' perceptions (i.e., good/bad; wise/foolish; harmful/beneficial) of their child "being in the room with background television or videos." Again, the three items on survey A framed these questions in terms of keeping the child from spending any time in the room with background television/videos during the next month. The three items on survey B framed the items in regards to the child spending time in a room with background television/videos for an hour or more for several days each week.

Background TV/video perceived descriptive norms. The items addressing perceived descriptive normative pressure regarding exposure to background television and videos were also identical to their foreground TV/video counter-parts. Two items on survey A asked about keeping the child from spending any time in a room with background television/videos in the next month, and the two items on survey B asked about the child spending time in a room with background television/videos for an hour or more a day on several days a week.

Background TV/video perceived injunctive norms. Questions regarding background TV/video perceived injunctive normative pressure also mirrored those pertaining to foreground TV/video. Participants who received survey A were asked whether others like them and whose opinions they value think that they should keep their child from spending any time in a room with background television and videos in the next month. Those who received survey B were asked whether these same referents thought they should let their child spend more than an hour a day in a room with background TV/videos on at least several days each week in the next month.

Background TV/video perceived behavioral control. Two survey items, identical across survey versions, assessed participants' feelings of control over their children's exposure to background television and videos: (1) I am confident that I can control how much my child is in a room with background television or videos (7-point scale from "true" to "false"); and (2) The amount of time my child is in a room with background television or videos is under my control (7-point scale from "not at all" to "completely").

Perception of a "critical window" of brain development. Ten survey items were included in both survey versions to address participants' beliefs in a "critical window" of brain development. These items were created based on responses from mothers in the preliminary elicitation interview study. Despite a concern among scholars about the influence of the "critical window" discourse in the media on both parents and policy-makers (e.g., Barinaga, 2000; Bruer, 1999a,b; Thompson & Nelson, 2001), there is no currently available instrument that measures this construct. As such, the "belief in the critical window" scale will be developed and validated through this dissertation study.

Each of the ten critical window belief items was on a 7-point response scale from 1: "strongly disagree" to 7: "strongly agree." Broadly, the items reflect the extent of belief in 3 general ideas: (1) the 0-3 years are particularly crucial time for brain development; (2) early brain development determines children's lifelong intellectual potential; and (3) children's experiences (i.e., as opposed to genes) determine the nature of their brain development.

Regulatory focus. Each participant's chronic regulatory focus was assessed using the 11-items from Higgins' and colleagues (2001) Regulatory Focus Questionnaire (RFQ). This measure consists of two distinct subscales; six items comprise the "promotion subscale," and five items make up the "prevention subscale." Higgins and colleagues (2001) argue that an individual's chronic regulatory orientation (i.e., prevention or promotion) is formed through socialization and his or her own subjective personal history of promotion success (i.e. attaining desired goals) and prevention success (i.e., avoiding unfavorable outcomes). As such, the items on the RFQ address the respondent's own sense of his/her personal history of prevention and promotion goal attainment.

Four of the items address childhood behaviors and outcomes (e.g., "How often did you obey rules and regulations that were established by your parents?"), and the remaining seven items reflect past life experiences more generally (e.g., "Not being careful enough has gotten me into trouble sometimes."). Six items comprise the promotion subscale, and five make up the prevention subscale. The 11 RFQ items are on a five-point scale (i.e., response options are from 1: "never or seldom" or "certainly false", to 5: "very often" or "certainly true").

While the RFQ emerged as the strongest existing regulatory focus measure in a recent study comparing the five most commonly used regulatory focus measures (Haws, Dholakia & Bearden, 2010), the authors found that a composite measure of items from the RFQ, BIS/BAS scale (Carver & White, 1994) and Lockwood scale (Lockwood, Jordan & Kunda, 2002) was an even stronger measure. Specifically, they found that ten items pulled from the three different measures formed promotion and prevention subscales with stronger internal consistency, factor loadings, test-retest stability and predictive validity than those from any of the existing regulatory focus measures alone. Due to these findings, the six additional items (i.e., two from the BIS/BAS; four from the Lockwood measure) were added to the pilot test survey to determine whether using the RFQ or the composite measure constructed by Haws and colleagues would be best for the final study.

The two BIS/BAS items (i.e., "When I see an opportunity for something I like, I get excited right away"; "I worry about making mistakes.") had four-point response scales ranging from (1) "strongly agree," to (4) "strongly disagree." The four Lockwood items (e.g., "I frequently imagine how I will achieve my hopes and aspirations"; "I frequently think about how I can prevent failures in my life") were on a nine-point response scale from (1) "not at all true of me," to (9) "very true of me."

Respondent's own TV/video use. Participants were asked the number of weekdays they usually watched some TV or videos in a typical week. Those who indicated they watched TV/videos on at least one weekday were asked how much time on a typical weekday they usually spent watching. They were given seven response options with time estimates ranging from "less than 30 minutes" to "6 hours or more." These two questions were then repeated in terms of weekend viewing to capture total estimated time spent viewing in a typical week.

Demographics and family structure. Finally, respondents were asked about their own and their partner's (when applicable) demographic information, including race/ethnicity; language spoken in the home; last grade or degree completed in school; employment status; and marital status. Those who indicated they had a spouse/partner were asked to indicate their partner's age (i.e., month and year of birth). Participants were also asked to estimate their combined household yearly income (within ranges).

Data Analysis

The shape of distribution of individual items responses was examined to verify sufficient variability and normality. These analyses primarily included the following descriptive statistics: means, standard deviations, skew coefficients, and kurtosis coefficients. Frequency tables were also visually examined to assess the response option coverage. The internal consistency of each scale was examined using Cronbach's alpha, and confirmatory factor analyses were conducted where applicable (i.e., critical window; regulatory focus).

For each of the four behavioral prediction models, anticipated relationships were first explored using correlational analyses (e.g., between the foreground TV/video behavioral belief index and attitude) to assess binary relationship strength. Ordinary least squares (OLS) regression models were then be used to examine the predictive strength of integrative model constructs on behavioral intentions. The overall amount of variance accounted for by the model (R^2) was evaluated, and standardized coefficients (i.e., Betas) were examined to determine predictive relationships.

Results

Sample. Table 4.1 contains the demographic information for the 98 mothers included in this study. The age of participants ranged from 19 to 52 years, with an average age of 28.9 years (*SD* = 6.3). The majority of respondents were White (71.4%), and 82.6% reported that they were living with a partner (i.e., 68.4% married; 14.3% living as married). Nearly 40% had obtained a Bachelors degree or more education (37.8%). More than 40% of respondents were employed (i.e., 32.7% fulltime; 11.2% part-time), and 60.2% reported total household incomes of $40,000 or more per year. Respondents watched an average of 18.8 hours of TV and videos per week (*SD* = 12.6). The mean survey duration time was 37.8 minutes (*SD* = 92.1), and the median duration time was 18.0 minutes.

Table 4.1. Characteristics of the interview sample (*N* = 98).

Age mean ± SD, years	28.9 ± 6.3
Race/ethnicity, n (%)	
White/Caucasian	66 (67.3)
White/Hispanic	4 (4.1)
Black/African American	6 (6.1)
Asian	9 (9.2)
Other	13 (13.3)
Marital Status	
Married/Living as married	81 (82.7)
Separated/Divorced/Single	17 (17.3)
Education, n (%)	
No high school diploma	2 (2.0)
High school diploma/GED	17 (17.3)
Some college/Associate's	42 (42.9)
Four-year college degree	25 (25.5)
Graduate school	12 (12.2)
Income, n (%)	
Less than $10,000	3 (3.1)
$10,000 - $39,000	35 (35.7)
$40,000 - $74,000	36 (36.7)
$75,000 – $99,000	18 (18.4)
$100,000+	5 (5.1)
Refused	1 (1.0)

Table 4.2 contains the descriptive information regarding the target children of the mothers in this study. The children ranged in age from 1.9 months to 27.0 months, with a mean age of 13.8 months (*SD* = 6.0). Nearly half of target children were the first child in their family (48.0%), and 89% of the first-borns had no younger siblings.

Target children were relatively evenly divided between genders (45.9% girls). Just over one third attended childcare (33.7%).

Table 4.2. Characteristics of participants' target children.

Age mean ± SD, months	13.8 ± 6.0
Gender, n (%)	
Male	53 (54.1)
Female	45 (45.9)
Birth order, n (%)	
First-born	47 (48.0)
Second-born	26 (26.5)
3rd child or later	25 (25.5)
In outside childcare, n (%)	33 (33.7)
Foreground TV/video per week, n (%)	
None	9 (9.2)
Less than 3 hours	19 (19.4)
3 hours to under 10 hours	22 (22.4)
10 hours to under 20 hours	25 (25.5)
20 hours or more	23 (23.5)
Background TV/video per week, n (%)	
None	5 (5.1)
Less than 3 hours	12 (12.2)
3 hours to under 10 hours	25 (25.5)
10 hours to under 20 hours	17 (17.3)
20 hours or more	39 (39.8)

Foreground and background TV/video exposure. Children in this study were exposed to an average of 12.3 hours per week of foreground TV/videos (*SD* = 11.5). Nine children (9.2%) had no foreground TV/video exposure (i.e., 0 hours per week), while 23 (23.5%) viewed over 20 hours weekly. The target children were exposed to nearly twice as much background TV/video per week on average (*M* = 21.3 hours; *SD*

= 20.2). Though this amount ranged from 0 hours (n = 5) to more than 50 hours per week (n = 11). Table 4.2 contains the quintile ranges of children's estimated weekly exposure to both types of media. [8]

Individual item and scale analyses

Foreground TV/video behavioral beliefs. Means, standard deviations, and skew and kurtosis coefficients for the 30 belief items are presented in Table 4.3, as are their individual correlations with each of the two foreground TV/video intention measures. Results indicated relatively strong variability across belief items. All seven response options were represented across items, though several of the item distributions were slightly skewed towards a higher perceived likelihood and several were slightly platykurtic (i.e., negative kurtosis coefficient). The majority of items were significantly correlated with one or both of the foreground TV/video intention measures in expected directions (see Table 4.3). Overally, the belief items tended to have stronger bivariate relationships with the measure of mothers' intention to let their children view TV/videos for more than an hour a day at least several days each week,

[8] There were no significant differences in mean responses between respondents who took survey versions A and B on the following variables: survey duration time, number of children in the home, target child's age, child's estimated foreground exposure, child's estimated background exposure, respondent's age, respondent's income, and respondent's education level. Chi square analyses indicated no differences between the groups in distributions of the following variables: child's birth order, child's gender, use of childcare for the target child, respondent's employment status, respondent's marital status, and respondent's race/ethnicity. Respondents who were assigned survey version A had a higher mean estimate of their own TV/video viewing (*M* = 21.27; *SD* = 13.67), compared to those assigned survey B (*M* = 15.76 hrs, SD = 10.39; $t(96) = 2.21$, $p < .05$).

though correlations with mothers' intention to keep the child from viewing at all were higher among some negative belief items.

Table 4.3. Individual item analyses for behavioral belief items.

Behavioral Belief	Mean (SD)	Skew[a]	Kurtosis[b]	Intention: keep child from viewing at all (r)	Intention: let child watch >1 hr/day (r)
Positive					
Help child learn	5.23(1.42)	-0.45	-0.32	-0.28**	0.50***
Keep child busy/let me get things done	5.22(1.68)	-0.88***	0.13	-0.13	0.18
Engage/entertain child	5.15(1.34)	-0.66*	0.11	-0.29**	0.24
Expose child to things in outside world	5.02(1.42)	-0.41	-0.06	-0.14	0.13
Can teach child things better than I can	4.02(1.84)	-0.23	-0.93	-0.09	0.30**
Calm child/distract from crying	4.56(1.71)	-0.45	-0.45	-0.07	0.24*
Stimulate child's vision/hearing	4.22(1.67)	-0.31	-0.63	-0.17†	0.45***
Stimulate child's attention/ability to focus	4.43(1.67)	-0.27	-0.58	-0.27**	0.43***
Help to structure day/establish a routine	4.21(1.69)	0.03	-0.81	-0.19†	0.35***
Help child learn social/emotional skills	4.74(1.74)	-0.52*	-0.44	-0.28**	0.30**
Stimulate child's creativity	4.46(1.73)	-0.17	-0.80	-0.18†	0.38***
Good way to spend time with child	4.12(1.90)	0.01	-1.03*	-0.18†	0.45***
Child is actively involved in program/music	5.21(1.42)	-0.48	-0.17	-0.21*	0.26*

Table 4.3 Continued. Individual item analyses for behavioral belief items.

Behavioral Belief	Mean (SD)	Skew[a]	Kurtosis[b]	Intention: keep child from viewing at all (r)	Intention: let child watch >1 hr/day (r)
Negative					
Take away from healthy physical activity	4.45(2.0)	-0.31	-1.12*	0.35***	-0.37***
Could become habit-forming	4.77(1.75)	-0.55*	-0.54	0.24*	-0.30**
Make child less able to self-entertain	4.94(1.94)	0.02	-1.31**	0.27**	-0.16
Takes away from time in social interaction	4.12(1.92)	-0.22	-0.97*	0.34**	-0.25*
Child distracted/hypnotized by the screen	4.26(2.00)	-0.19	-1.09*	0.13	-0.23*
Child will throw tantrums when TV is off	3.83(2.05)	0.03	-1.25**	0.30**	-0.32**
Bad for child's vision/hearing	3.74(1.99)	0.14	-1.08*	0.37***	-0.19†
Hurt child's creativity	3.36(1.92)	0.37	-0.89	0.38***	-0.15
Teach child aggressive behaviors	3.22(1.96)	0.47	-1.00*	0.48***	-0.07
Detract from time spent in learning activities	3.87(1.85)	0.07	-0.91	0.36***	-0.29**
Hurt brain development	3.33(1.86)	0.41	-0.88	0.33**	-0.28**
Hurt later intelligence	3.31(1.85)	0.49*	-0.83	0.38***	-0.27**
Make child less interested in reading	3.62(1.98)	0.30	-1.04*	0.26**	-0.23*

Following individual item analysis, the 17 negative behavioral beliefs were reverse-coded such that a “1” represented an anti-TV/video stance, and a “7” represented a pro-TV/video stance for each belief. Next, the internal consistency of the behavioral belief items was examined to verify the appropriateness of creating a combined index of these items. Cronbach’s alpha for the 30 behavioral belief items was high at $\alpha = 0.92$. Thus, the 30 behavioral belief items were averaged to create one behavioral belief index score for each participant.

Foreground TV/video IM constructs. Table 4.4 contains the means, skew coefficients and kurtosis coefficients for foreground intentions, attitudes, injunctive normative pressure, descriptive normative pressure, and behavioral control items for both survey conditions (i.e., version A; version B). Across items, all response options were chosen by at least one respondent, with two exceptions. Response options “1” and “2” were not chosen by any respondents for either of the foreground perceived behavioral control items.

The three survey A attitude items had a Cronbach’s alpha of 0.95. The three items were averaged together to create an estimate of each respondent’s general attitude toward keeping her child from viewing any foreground television and videos in the next month. The three attitude items from survey B also had high internal consistency (Cronbach’s $\alpha = 0.98$). The value of these three items was averaged to create an estimate of participants’ general attitudes toward letting the target children watch more than an hour of TV/videos a day for at least several days each week.

The two injunctive normative pressure items from survey A were correlated at r = .92 ($p < .001$). They were averaged together to form an estimate of each participant's perceived injunctive normative pressure to keep their child from watching any foreground TV/videos in the next month. The counter-part items on survey B had a correlation of r = .97 ($p < .001$). These two items were averaged together to create an estimate of participants' perceived injunctive normative pressure to let their child watch more than an hour a day of TV/videos on at least several days each week.

The two descriptive normative pressure items on survey A were correlated at r = .80 ($p < .001$). These items were standardized due to varying response scales, and then averaged together to form one estimate of perceived descriptive normative pressure to keep target children from watching any TV/videos. The descriptive normative pressure items from survey B were correlated at r = .78 ($p < .001$). These items were also standardized, and then averaged together to form a single estimate of descriptive normative pressure to allow children to watch more than an hour a day of TV/videos at least several days each week.

Two items, identical across surveys, assessed mothers' perceived behavioral control over the target child's foreground TV/video exposure. These items were correlated at r = .77 ($p < .001$). They were averaged together to create a single estimate of mothers' perceived behavioral control over their children's foreground television and video exposure.

Table 4.4. Foreground TV/video integrative model item analysis.

Construct	Item	Mean (SD)	Skew (SE)	Kurtosis (SE)
	Full sample (N = 98)			
Intention	I will keep child from watching any TV/videos	2.91(2.08)	0.66(.24)*	-0.98(.48)*
Intention	I will let child watch more than an hour a day at least several days a week	4.14(2.25)	-0.20(.24)	-1.42(.48)**
PBC	I am confident that I can control how much television- and video-watching my child does during the next month	6.31(1.08)	-1.50(.24)***	1.88(.48)*
PBC	The amount my child watches television and videos during the next month us up to me	6.26(1.18)	-1.44(.24)***	0.89(.48)
	Survey A sample (n = 53)			
Attitude	Keeping my child from watching any television/videos during the next month would be:	4.36(1.74)	-0.01(.33)	-0.58(.64)
Attitude	Keeping my child from watching any television/videos during the next month would be:	4.19(1.85)	-0.03(.33)	-0.71(.64)
Attitude	Keeping my child from watching any television/videos during the next month would be:	4.58(1.54)	0.18(.33)	-0.59(.64)
Injunctive norms	Most people who are important to me think that I should keep my child from watching any television/videos during the next month	2.92(1.87)	0.54(.33)	-0.85(.64)
Injunctive norms	Most people whose opinions I value think that I should keep my child from watching any television/videos during the next month	3.17(2.06)	0.38(.33)	-1.23(.64)
Descriptive norms	Most people like me with children 2 and under keep their children from watching any television or videos.	3.13(1.88)	0.32(.33)	-1.15(.64)
Descriptive norms[a]	How many of the people who are most similar to you with children 2 and under keep their children from watching any television or videos?	2.11(1.07)	0.55(.33)	-0.53(.64)
	Survey B sample (n = 45)			
Attitude	Letting my child watch TV/videos for more than an hour a day on at least several days each week would be:	3.96(1.92)	0.11(.35)	-0.91(.70)
Attitude	Letting my child watch TV/videos for more than an hour a day on at least several days each week would be:	4.02(1.89)	-0.03(.35)	-0.88(.70)
Attitude	Letting my child watch TV/videos for more than an hour a day on at least several days each week would be:	4.27(1.76)	0.09(.35)	-0.73(.70)

Table continues on next page

Table 4.4 Continued. Foreground TV/video integrative model item analysis.

Construct	Item	Mean (SD)	Skew (SE)	Kurtosis (SE)
Injunctive norms	Most people who are important to me think that I should let my child watch television/videos for more than an hour a day on at least several days each week during the next month.	3.60(2.25)	0.23(.35)	-1.34(.70)
Injunctive norms	Most people whose opinions I value think that I should let my child watch television/videos for more than an hour a day on at least several days each week during the next month.	3.53(2.23)	0.25(.35)	-1.27(.70)
Descriptive norms	Most people like me with children 2 and under let their children watch television/videos for more than an hour a day on at least several days each week.	4.62(1.76	-0.59(.35)	-0.59(.70)
Descriptive norms[a]	More specifically, how many of the people who are most similar to you with children 2 and under let their children watch television/videos for more than an hour a day on at least several days each week?	3.29(1.14)	-0.41(35)	-0.42(.70)

N = 98. [a]Response scale is from 1: none/very few, to 5: almost all/all. All other scales are from 1 – 7.

Background TV/video IM constructs. Table 4.5 contains the means, skew coefficients and kurtosis coefficients for the background IM items (i.e., intentions, attitudes, injunctive normative pressure, descriptive normative pressure, and behavioral control) for both survey conditions. All response options were represented in participants' responses across items.

Responses to the three background TV/video attitude items on survey A had a Cronbach's alpha of 0.90. The three items were averaged together to create an estimate of each respondent's general attitude toward keeping her child from spending any time in a room with background TV/videos in the next month. The attitude items on survey B also had high internal consistency, as Cronbach's alpha was 0.98. These three items were averaged together to create an estimate of participants' attitudes toward letting the target children spend time in a room with background TV/video for more than an hour a day on at least several days each week.

The two background TV/video injunctive normative pressure items on survey A were highly correlated with each other ($r = .81$, $p < .001$). The counterpart injunctive norm items on survey B had an even higher positive correlation, at $r = .95$ ($p < .001$). In both cases, the two respective items were averaged together to create combined injunctive normative pressure scales.

Likewise, descriptive normative pressure items from survey A were highly correlated with each other ($r = .80$, $p < .001$), as were the two counterparts to these items on survey B ($r = .79$, $p <. 001$). Again, the respective items were averaged together to form descriptive normative pressure scales.

The two background TV/video perceived behavioral control items were given to all 98 participants. These two items had a high correlation with each other ($r = .89$, $p < .001$), and were averaged together to form a scale of mothers' perceived control over the target children's background television and video exposure.

Table 4.5. Background TV/video integrative model item analysis.

Construct	Item	Mean (SD)	Skew (SE)	Kurtosis (SE)
	Full Sample (N = 98)			
Intention	Will keep child from spending time in a room with background TV/videos in the next month	2.98(2.00)	0.57(.24)	-0.99(.48)*
Intention	Will let child spend time in a room with background TV/videos for more than an hour a day at least several days a week	4.60(1.93)	-0.31(.24)	-.97(.48)*
PBC	I am confident that I can control how much my child is in a room with background TV/videos during the next month	5.74(1.50)	-0.93(.24)**	-0.04(.48)
PBC	The amount my child is in a room with background TV/videos during the next month us up to me	5.70(1.47)	-0.93(.24)**	0.12(.48)
	Survey sample A (n = 53)			
Attitude	Keeping my child from spending any time in a room with background television/videos during the next month would be:	4.72(1.71)	-0.18(.33)	-0.55(.64)
Attitude	Keeping my child from spending any time in a room with background television/videos during the next month would be:	4.55(1.95)	-0.30(.33)	-0.84(.64)
Attitude	Keeping my child from spending any time in a room with background television/videos during the next month would be:	4.92(1.36)	0.29(.33)	-0.92(.64)
Injunctive norms	Most people who are important to me think that I should keep my child from spending any time in a room with background television/videos during the next month	2.91(1.72)	0.27(.33)	-1.32(.64)*
Injunctive norms	Most people whose opinions I value think that I should keep my child from spending any time in a room with background television/videos during the next month	3.17(1.88)	0.23(.33)	-1.15(.64)
Descriptive norms	Most people like me with children 2 and under keep their children from spending any time in a room with background television/ videos.	3.08(1.83)	0.24(.33)	-1.27(.64)*
Descriptive norms[a]	How many of the people who are most similar to you with children 2 and under keep their children from spending any time in a room with background television/ videos?	2.13(1.13)	0.48(.33)	-0.86(.64)

Table 4.5 continued. Background TV/video integrative model item analysis.

Construct	Item	Mean (SD)	Skew (SE)	Kurtosis (SE)
	Survey sample B (n = 45)			
Attitude	Letting my child spend time in a room with background TV/videos for more than an hour a day on at least several days each week would be:	4.02(1.63)	0.09(.35)	-0.49(.70)
Attitude	Letting my child spend time in a room with background TV/videos for more than an hour a day on at least several days each week would be:	4.04(1.65)	0.31(.35)	-0.31(.70)
Attitude	Letting my child spend time in a room with background TV/videos for more than an hour a day on at least several days each week would be:	4.11(1.66)	0.23(.35)	-0.35(.70)
Injunctive norms	Most people who are important to me think that I should let my child spend time in a room with background television/videos for more than an hour a day on at least several days each week during the next month.	3.91(2.02)	-0.12(.35)	-1.10(.70)
Injunctive norms	Most people whose opinions I value think that I should let my child spend time in a room with background television/videos for more than an hour a day on at least several days each week during the next month.	4.02(1.97)	-0.20(.35)	-0.99(.70)
Descriptive norms	Most people like me with children 2 and under let their children spend time in a room with background television/videos for more than an hour a day on at least several days each week.	5.07(1.64)	-0.37(.35)	-0.85(.70)
Descriptive norms[a]	More specifically, how many of the people who are most similar to you with children 2 and under let their children spend time in a room with background television/videos for more than an hour a day on at least several days each week?	3.62(1.07)	-0.45(.35)	-0.11(.70)

N = 98. [a] Response scale is from 1: none/very few, to 5: almost all/all. All other scales are from 1 – 7.

Critical window beliefs. Individual item analyses, including means, standard deviations, skew coefficients and kurtosis coefficients, for the ten critical window belief items are contained in Table 4.6. All negatively worded items were reverse-coded so that higher values for each item represented stronger belief in a critical window of brain development. The responses to several of the items were substantially skewed towards a stronger belief in the critical window, particularly items 1, 2, 5, and 10. Additionally, items 1 and 2 had particularly high positive kurtosis coefficients, indicating a high percentage of responses were concentrated across only a few response options on the scale. Internal consistency for the ten items was relatively low at $\alpha = .62$.[9]

A principal components factor analysis with varimax rotation and a forced single-factor solution was conducted to examine the appropriateness of a single-factor structure for the full scale. The single extracted factor accounted for 28.8% of variance in the items. Item factor loadings (portrayed in Table 4.6) were relatively high, with the exception of items 8 and 10. Another factor analysis was then conducted with these two items removed. The single factor in this solution accounted for 35.5% of variance in the items, and the lowest individual factor loading was .29.

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[9] The reliability for the five negative (i.e., reverse-coded) items was $\alpha = 0.73$, and the reliability for the five positive items was $\alpha = .58$. Without items 8 and 10, the reliability of the three positively worded items was $\alpha = 0.81$. Thus, the relatively low internal consistency of the full hypothesized scale cannot be explained merely by the mix of positively and negatively worded items (which can often show a "direction of wording" artifact).

The Cronbach's alpha for this 8 item scale was $\alpha = .72$. These 8 items were selected for inclusion on the official survey.

Table 4.6. Critical window item and scale analysis (α = .63).

Item	Mean (SD)	Skew (SE)	Kurtosis (SE)	Factor loading[a]	Reliability if removed (α)
The first 3 years of a child's life are most crucial for brain development	6.52(0.93)	-2.31(.24)***	5.97(.48)***	.68	.59
Experiences children have in the first 3 years build pathways in their brains	6.32(1.22)	-2.29(.24)***	6.18(.48)***	.58	.60
Brain development is determined mostly by a person's genes[R]	4.10(1.68)	-0.04(.24)	-0.49(.48)	.52	.59
How smart a child is depends mostly on genes[R]	4.41(1.74)	-0.17(.24)	-0.81(.48)	.57	.68
How smart a child is depends a lot on the learning experiences they have early on	6.07(1.03)	-1.02(.24)***	1.13(.48)*	.55	.58
The majority of brain development happens after age 3[R]	4.51(1.73)	-0.09(.24)	-0.83(.48)	.70	.58
Experiences children have between birth and 3 are not as crucial to their intelligence as experience in later years[R]	4.89(2.03)	-0.51(.24)*	-1.04(.48)*	.74	.54
Educational stimulation during infancy/toddlerhood determines how capable a person is of learning	5.00(1.35)	-0.31(.24)	0.06(.48)	-.24	.55
My child's brain and intellect will develop appropriately through play/ interaction children experience automatically[R]	3.05(1.54)	0.56(.24)*	-0.18(.48)	.31	.62
I am very concerned with making sure my child receives the brain stimulation he/she needs to reach his/her full potential	5.40(1.70)	-1.04(.24)***	0.36(.48)	.04	.65

N = 98. [R] These items were reverse-coded such that higher values represent stronger belief in the critical window of brain development.
[a] Values are derived from a principal components analysis with varimax oblique rotation (forced 1 factor solution). *p < .05; **p < .01; ****p* <.001.

Regulatory focus orientation. First, the properties of the Regulatory Focus Questionnaire (Higgins et al., 2001) were examined. The means and standard deviations of each of the eleven items are presented in Table 4.7. The promotion subscale had moderate reliability (Cronbach's $\alpha = .68$), and the prevention subscale had high reliability (Cronbach's $\alpha = .84$). A principal components factor analysis with varimax rotation and a forced two-factor solution was conducted to confirm the appropriateness of a two-factor structure. Together, the extracted factors accounted for 52.2% of variance in the eleven items. As conveyed in Table 7, all items loaded more highly on the appropriate subscale factor (i.e., prevention and promotion) than the inappropriate subscale factor. All but one item had a factor loading of .40 or higher on its appropriate subscale, and the lowest factor loading was .39.

Table 4.7. Regulatory Focus Questionnaire subscale analysis.

Item		Mean (SD)	Factor loading own factor[a]	Factor loading other factor[a]
	Promotion sub-scale (α = .68)			
1	Compared to most people, are you typically unable to get what you want out of life?[R]	3.31(1.13)	.50	.44
2	How often have you accomplished somethings that got you psyched to work even harder?	3.37(0.91)	.72	-.04
3	Do you often do well at different things that you try?	3.90(0.81)	.74	-.09
4	When it comes to achieving things that are important to me, I find that I don't perform as well as I ideally would like to do.[R]	3.47(1.03)	.58	.46
5	I feel like I have made progress toward being successful in my life.	3.97(0.92)	.66	-.07
6	I have found very few hobbies or activities in my life that capture my interest or motivate me to put effort into them. [R]	3.07(1.25)	.39	.32
	Prevention sub-scale(α =.84)			
1	Growing up, would you ever "cross the line" by doing things your parents would not tolerate? [R]	3.06(1.23)	.85	.06
2	Did you get on your parents' nerves often when you were growing up?[R]	2.94(1.38)	.82	.07
3	How often did you obey rules and regulations that were established by your parents?	3.93(1.01)	.49	-.08
4	Growing up, did you ever act in ways that your parents thought were objectionable?[R]	3.03(1.18)	.89	.04
5	Not being careful enough has gotten me into trouble at times.[R]	3.23(1.11)	.73	.10

N = 98. [R]Item is reverse-coded such that a higher value represents a higher score on the respective attribute.
[a]Values are derived from a principal components analysis with varimax oblique rotation (forced 2 factor solution).

Next, the properties of the regulatory focus composite measure (Haws, Dholakia & Bearden, 2010) were examined. The means and standard deviations of each of the ten items are presented in Table 4.8. The 5-item promotion subscale had particularly low internal consistency (Cronbach's α = .13), and the prevention subscale had moderate reliability (Cronbach's α = .68). Another principal components factor analysis with varimax rotation and a forced two-factor solution was conducted to examine the appropriateness of a two-factor structure for these items. Together, the extracted factors accounted for 46.7% of variance in the eleven items. The individual factor loadings, conveyed in Table 4.8, were not consistently higher on the appropriate subscale factors (i.e., prevention; promotion), particularly among the prevention items. Furthermore, three loadings were below the .40 threshold. Thus, the Regulatory Focus Questionnaire measure was selected for inclusion on the final dissertation survey, and the BIS/BAS and Lockwood scale items were removed.

Table 4.8. Regulatory focus composite measure subscale analysis.

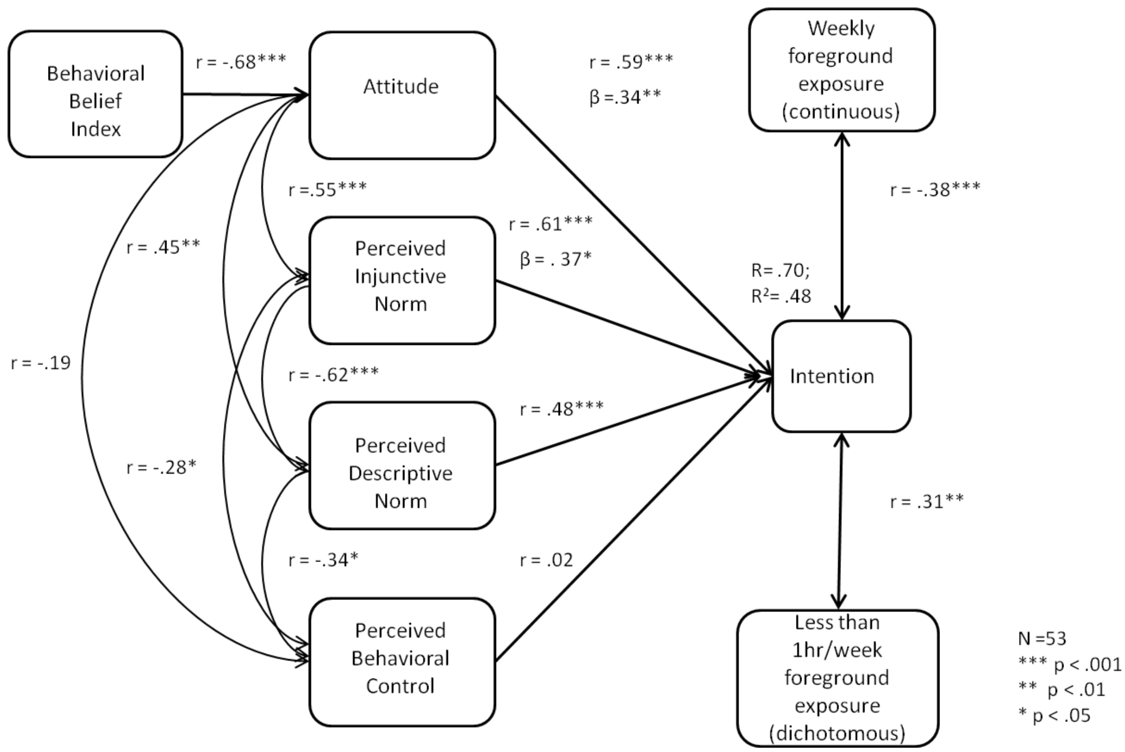
Item	Mean (SD)	Factor loading own factor[a]	Factor loading other factor[a]
Promotion sub-scale (α = .13)			
When it comes to achieving things that are important to me, I find that I don't perform as well as I ideally would like to do.[b,R]	3.47(1.03)	.16	.70
I feel like I have made progress toward being successful in my life.[b]	3.97(0.93)	.46	.40
When I see an opportunity for something I like, I get excited right away.[c]	3.48(0.63)	.63	.22
I frequently imagine how I will achieve my hopes and aspirations.[d]	6.80(1.68)	.87	.09
I see myself as someone who is primarily striving to reach my "ideal self" – to fulfill my hopes, wishes, and aspirations.[d]	6.88(1.71)	.76	-.05
Prevention sub-scale(α =.68)			
How often did you obey rules and regulations that were established by your parents?[b]	3.93(1.01)	.13	.26
Not being careful enough has gotten me into trouble at times.[b,R]	3.23(1.11)	.75	-.10
I worry about making mistakes.[c]	2.90(0.95)	-.65	-.04
I frequently think about how I can prevent failures in my life.[d]	5.88(2.05)	-.44	.59
I see myself as someone who is primarily striving to become the self I "ought" to be – fulfill my duties, responsibilities, and obligations.[d]	6.34(2.05)	-.27	.57

N = 98. [R]Item is reverse-coded such that a higher value represents a higher score on the respective attribute. [a] Values are derived from a principal components analysis with varimax oblique rotation (forced 2 factor solution). [b] Items are from the RFQ (Higgins et al., 2001); [c] Items are from the BIS/BAS (Carver & White, 1994); [d] Items are from the Lockwood scale (Lockwood, Jordan & Kunda, 2002).

IM model comparisons

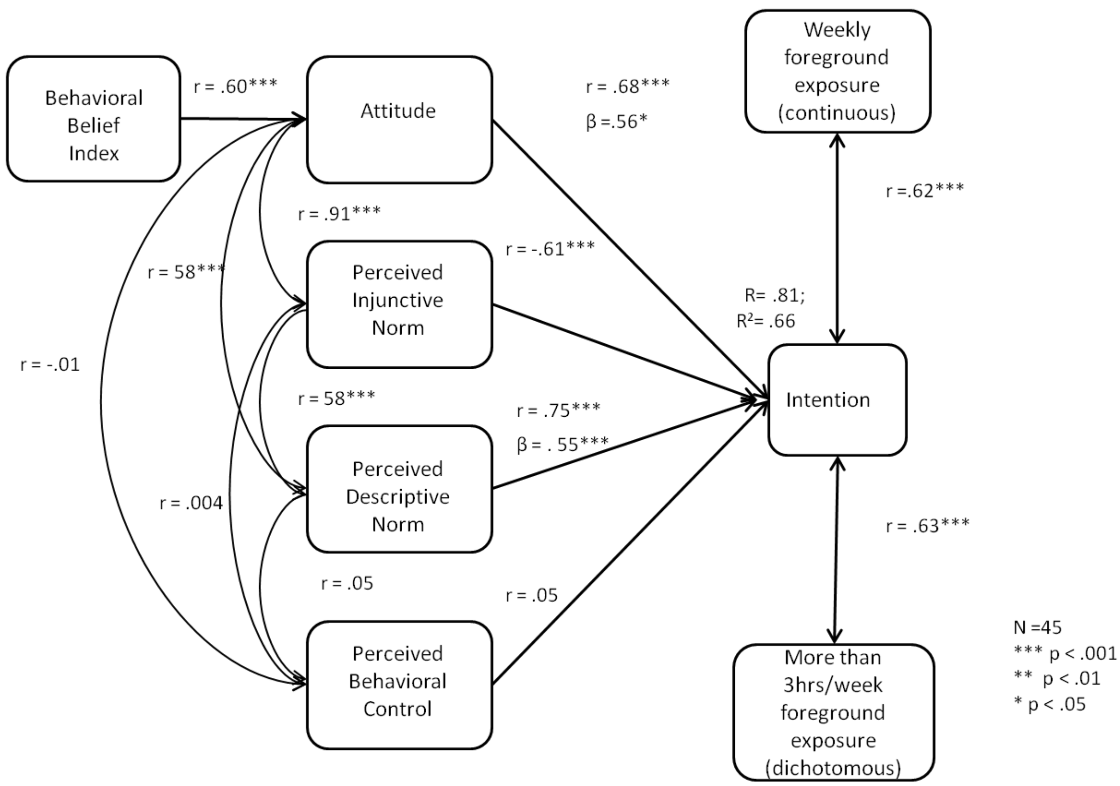
Bivariate correlation analyses were conducted between the constructs in the each of the foreground and background TV/video exposure models. The correlations between constructs in the foreground exposure model which predicts keeping the target child away from any foreground exposure (i.e., survey A) are also presented in Figure 4.1. Notably, mothers' intentions to keep their children from viewing TV/videos had only moderate correlations with the continuous estimate of children's typical weekly exposure ($r = -0.38$, $p < .001$) as well as the dichotomous variable representing whether they typically watched an hour or more a week or not ($r = -0.31$, $p < .01$). An OLS multiple linear regression analysis was conducted for this model, using the attitude, injunctive normative pressure, descriptive normative pressure, and perceived behavioral control constructs to predict intentions to keep the child away from any foreground TV/videos in the next month. This model was significant and accounted for 48% of the variance in mothers' intentions, $F(4,48) = 11.23$, $p < .001$. The beta values for the attitude and injunctive norm constructs, which were significantly predictive of intentions, are presented in Figure 4.1.

Figure 4.1. Survey A foreground exposure correlation and regression analyses.



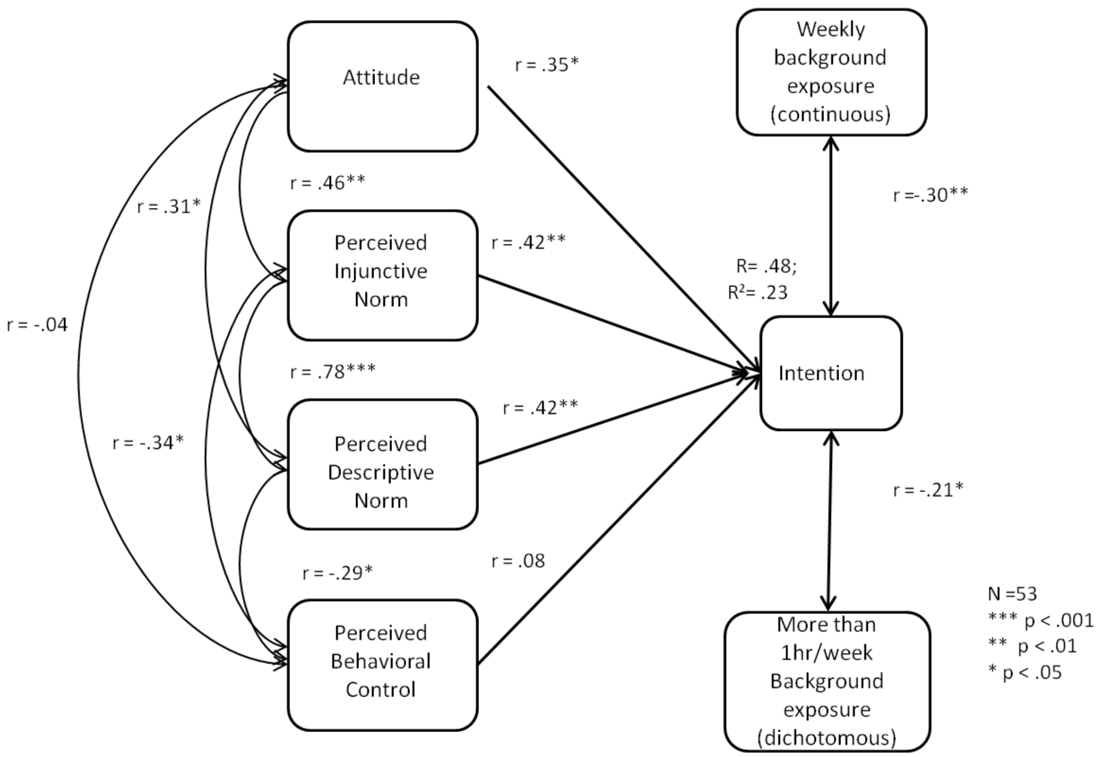
Correlations between constructs in the foreground exposure model which predicts letting the target child watch TV/videos for more than an hour on at least several days each week a day (i.e., survey B) are presented in Figure 4.2. Compared to the model above, these analyses indicated stronger associations between mothers' intentions and both the continuous estimate of children's weekly exposure ($r = 0.62$, $p < .001$) and the dichotomous variable representing whether the children watch more than 3 hours of foreground TV/videos in a typical week ($r = 0.63$, $p < .001$). A second multiple linear regression analysis was conducted for this model to test the predictive value of each IM construct on mothers' intentions. This model was also significant and accounted for 66% of the variance in intentions, $F(4,40) = 19.65$, $p < .001$. The beta values for attitudes and descriptive norms, both significantly predictive of intentions, are presented in Figure 4.2.

Figure 4.2. Survey B foreground exposure correlation and regression analyses.



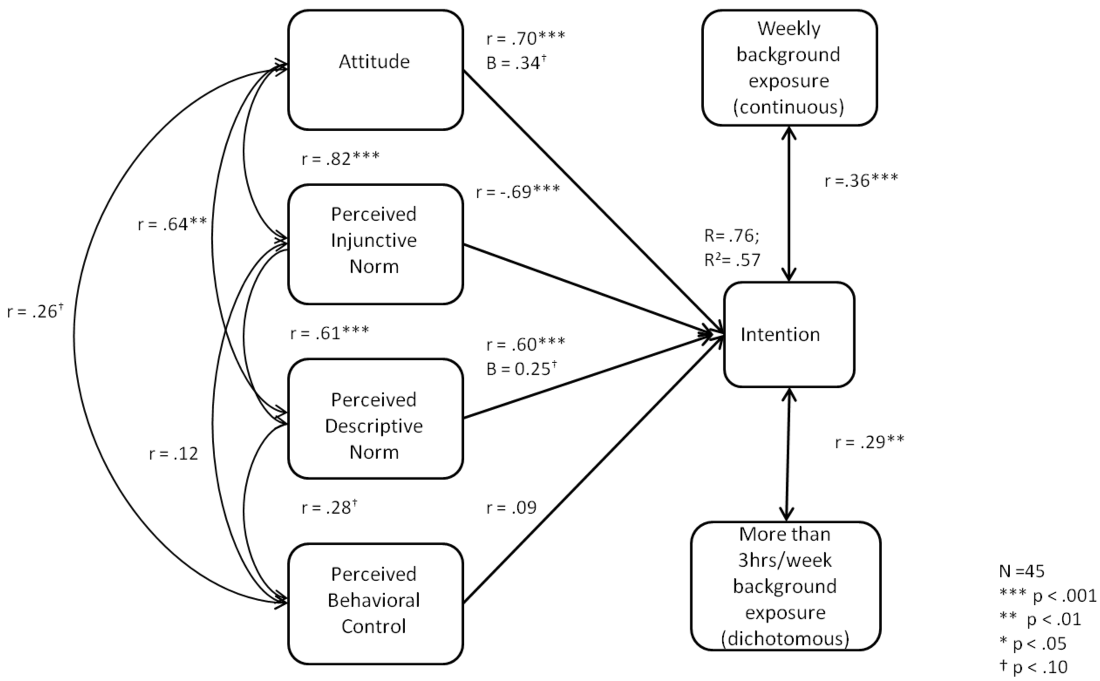
Next, correlational and regression analyses were conducted for the background exposure model from survey A (i.e., keeping the child from spending any time in a room with background TV/videos). The correlations between model constructs are presented in Figure 4.3. Again, correlations were weak to moderate between mothers' intentions and the continuous estimate of their children's background TV/video exposure (r = -0.30, p < .01) and the dichotomous variable regarding whether the children were typically exposed to less than one hour per week (r = -0.21, p < .05). The regression model was significant, and accounted for 23% of variance in participants' intentions to keep their child from being exposed to any background television or videos in the next month, $F(4,48) = 3.64$, $p <. 05$.

Figure 4.3. Survey A background exposure correlation and regression analyses.



The final analyses pertained to the constructs predicting mothers' intentions to let their child be exposed to more than an hour a day of background TV/videos on at least several days each week (i.e., survey B). All correlations between the IM constructs and the exposure variables can be found in Figure 4.4. The correlations between the intention variable and the continuous and dichotomous measures of exposure were moderate (r = 0.36, p < .001; r = 0.29, p < .01; respectively) in this model. The OLS regression model was significant, and predicted 57% of variance in respondents' intentions, $F(4, 40) = 13.26$, $p < .001$.

Figure 4.4. Survey B background exposure correlation and regression analyses.



Thus, the constructs measured through survey B show stronger relationships and increased predictive ability over those of survey A. The integrative model constructs account for more variation in mothers' intentions to let their child be exposed to each type of TV/video for more than an hour a day on at least several days each week, compared to intentions to keep them from any exposure to each type of TV/videos. Additionally, the measurements of mothers' intentions to let their child view more than an hour a day on at least several days per week are more strongly related to both continuous and dichotomous measures of children's actual foreground and background television and video exposure. Because this study is cross-sectional, these constructs represent the mother's *future* intentions and the child's *past* exposure. Still, it is expected that these two constructs would be strongly related due to the tenets of the integrative model.

Conclusion

This pilot study was conducted to assess the shape and variability of responses to critical survey items, evaluate scale structures and reliabilities, and to compare the relative merits of integrative models based on two different operationalizations of young children's foreground and background TV/video exposure. The vast majority of survey items analyzed in this study showed sufficient response variability and normality. In addition, the hypothesized scales largely had high internal consistencies. Therefore, it was determined that items were clearly-worded, captured anticipated constructs, and well-represented the range of existing perceptions among mothers with infants and toddlers.

Given the high scale reliabilities across the temporal span of the survey, it also seems that a twelve-minute survey duration cut-off for inclusion in the final sample is appropriate. That is, this cut-off point is not so low that the resultant sample contained many participants who responded without reading the questions, as scales performed as anticipated with high internal consistencies. In fact, the median time to complete the survey was relatively brief at 18 minutes, even after removing those who took less than 12 minutes. The final sample will be analyzed following data collection to determine whether it may be preferable to retain participants who took less than 12 minutes on the official survey (e.g., include everyone who finished in the survey in 10 minutes or longer).

It was also determined that the integrative model constructs are better able to efficiently predict infants' and toddlers' exposure to more vs. less foreground and background TV/video, compared to some vs. none at all. Tests of the models were more robust for the behaviors measured in survey B, which were constructed around behaviors operationalized in terms of letting the child be exposed to each form of TV/videos for more than an hour a day on at least several days each week. The weaker relationships found in the survey A models were likely a function of the fact that so few mothers intended to keep their child from having any TV/video exposure, and that very few children were actually not exposed to any television or videos in a typical week. As such, to have enough power to detect more robust relationships, the proportion of these mothers (i.e., those who intend to not show their children any TV/video; those whose children are not exposed to TV/video) would have to be increased in the official sample if survey A was chosen.

While this dissertation study is not necessarily intended to be perfectly representative of the national population of mothers with infants/toddlers, purposefully over-recruiting this particular and rare subset of mothers would certainly decrease representativeness and generalizability of results.. As previously noted, it is not especially realistic, nor necessarily beneficial, for parents to completely prohibit their infants' and toddlers' exposure to all television and video programming absolutely. Thus, examining the psycho-social and structural life circumstances that influence mothers' use of some versus a lot of TV/videos with their infants and toddlers should yield findings with stronger practical and policy-related import.

The Regulatory Focus Questionnaire items had relatively strong psychometric properties in this pilot study as well. The internal consistencies of the two subscales were moderate to high, and items loaded on two factors as expected in a confirmatory factor analysis. Though the reliability of the promotion subscale was somewhat weaker than the prevention subscale, at $\alpha = .68$ it was quite close to the typical cut-off of .70. Further, it was substantially higher than the composite promotion scale proposed by Haws and colleagues (2010).

The critical window scale, developed for this dissertation study, also shows promising structure and reliability. Though two of the items were removed due to low shared variance with the other items, the remaining items hang together relatively well. As a scale, they seem to capture the extent of mothers' perceptions of a critical period between birth and age three, during which experiences are particularly crucial for optimal brain development. One of the remaining items shows somewhat lower shared variance with the other seven. This item will be included on the official dissertation survey, and will be re-analyzed in the larger sample to determine whether it is an appropriate addition to the final critical window scale.

Finally, there were relatively low proportions of Black, less-educated and single mothers in this pilot sample. Because these are sub-groups of particular interest, as outlined in the prior literature review and hypotheses, quotas for these demographic groups will be used when conducting the final dissertation sampling. That is, SSI will send more emails to mothers from these groups in order to increase their relative proportions in the sample, and better approximate their incidences in the national population.

Chapter Five

Dissertation Study Methods

Design and Procedure

This dissertation study consists of a cross-sectional survey of mothers with children between 2 months and 24 months old of age. The survey was conducted online with an instrument largely reflecting the integrative model survey design outlined by Fishbein & Ajzen (2010), with additional items to measure mothers' (1) structural life circumstances, (2) critical window beliefs, and (3) regulatory focus orientation. The survey instrument was constructed based on results of the elicitation interview study (see Chapter Three), and pilot tested for variability of responses and internal consistency of scales (see Chapter Four).

Participants were recruited through Survey Sampling International (SSI), which has a national panel of nearly one million US members. SSI recruits its members through various techniques online (e.g., banner ads; email invitations), and provides participants with compensation for study completion in the form of lottery drawings or points which can be cashed in for money. For this study, SSI sent recruitment emails to panel members who potentially fit the criteria for study participation (i.e., women over age 18 living in the United States and parenting children between 2 and 24 months of age). Sampling quotas were used to recruit subsamples of mothers who were (1) Black, (2) single, and (3) less educated (i.e., a high school diploma or less educations) approximating the incidences of these demographic groups in the national population based on data from the 2010 Census. That is, SSI sent a higher proportion of emails to panel members from these three demographic groups in an effort to achieve a final sample of mothers with the following sub-sample proportions: 14% Black, 27% single, and 30% high school educated or less.

Each email sent to potential participants contained a link to the survey site. The first survey item was a screening question, which asked respondents: "Are you the mother of at least one child who is between 3 months and 24 months old?"[10] Those who indicated that they were not the mother of a child in this age range were directed out of the study due to ineligibility. Respondents who did have at least one child in this age range were given more information about the study and asked if they would like to participate. Eligible respondents who agreed to participate were then directed to the full survey. Data collection took place over seven consecutive days in mid-March, 2011.

Sample

In total, 867 respondents clicked on the survey link, were eligible to participate, and agreed to take the survey.[11] Of this group, 137 respondents quit before completing the first 30 pages of the 38-page survey (i.e., 78.9% of the total survey) and their data was omitted from the final sample. It was determined that to be included in the final sample a participant must have completed the exposure,

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[10] The intended age-range for target children in this study was 3 months to 24 months, but the survey was not constructed to evaluate eligibility after the first screener question. Thus, some mothers who indicated that their child was younger than 3 months or older than 24 months were included in the study.

[11] Information about how many SSI panelists received a participation email is not available.

integrative model, and structural life circumstance items on the survey (i.e., the first 78.9% of the total survey), since without at least these items complete, an individual would not have enough data to be included in the analyses of any of the studies. Nine participants who did not finish the survey completed more than 78.9% of the survey and were retained at this step.

Based on formative survey testing and survey link testing, it was deemed unlikely that respondents could complete the survey in less than 12 minutes if they read the majority of the questions. However, results of the pilot study suggested that 12 minutes might be a particularly conservative cut-off for inclusion. Data from the 721 participants with completed data was analyzed to determine whether this cut-off should be lowered to include those who completed the survey in 10 minutes or longer. Chi square analyses indicated that respondents who took less than 12 minutes (n = 71) to complete the survey were less likely to have obtained a high school degree (χ^2 (3, N = 721) = 8.04, p = .05) or less or to be in the lower income brackets (χ^2(4, N = 686) = 9.60, p = .05) than those who took at least 12 minutes (n = 650). Respondents who took less than 12 minutes were also more likely to be employed full-time (χ^2 (4, N = 721) = 11.78, P < .05) and reported watching less television (χ^2 (3, N = 721) = 24.11, p < .001). IM, critical window, and regulatory focus scale reliabilities were also compared between groups, as were mean scores on the scales. These analyses indicated similarly high reliabilities across groups for each of the scales. T-tests indicated that were significant mean differences among some of the scales, however. Mothers who completed the survey in less than 12 minutes had less-positive beliefs about children's foreground TV/videos, more favorable attitudes toward background exposure, as well as higher perceived injunctive norms and lower perceived behavioral control for both foreground and background media exposure.[12]

Next, the subset of mothers who took less than 10 minutes to complete the survey (n = 31) were compared with those who took 10 minutes or more (n = 690), using the same criteria. While this subset of participants still showed significant differences in the same directions among the same demographic, exposure and IM variables, several of the scale reliabilities were substantially weaker. In particular, the internal consistencies of three scales from the end of the survey (i.e., critical window and prevention and promotion regulatory focus) were weaker than among participants who took at least 10 minutes to complete the survey.[13] What is more, the reverse-coded items on these three scales showed particularly low correspondence with the other items in the scales, which is consistent with participants using a response pattern

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[12] Mothers who took less than 12 minutes had lower scores on the behavioral belief index (M = 4.26, SD = 1.00) compared to mothers who took 12 minutes or longer (*M* = 4.61, *SD* = 1.06; *t*(720) = -2.67, p < .01). They also had higher scores on the background attitude scale (*M* = 4.58, *SD* = 1.55) compared to those who took 12 minutes or longer (*M* = 4.01, *SD* = 1.35, *t*(720) = 3.31, p < .01). Mothers who took less than 12 minutes had higher scores on the foreground injunctive norm scale (*M* = 4.12, *SD* = 1.99) and the background injunctive norm scale (*M* = 4.43, *SD* = 1.72) in comparison to mothers who spent at least 12 minutes on the survey (foreground injunctive *M* = 3.37, *SD* = 1.78; *t*(720) = 3.24, p < .01; background injunctive *M* = 3.80, *SD* = 1.78, t(720) = 2.84, p < .01). Finally, mothers who took less than 12 minutes on the survey had lower perceived behavioral control over foreground TV/videos (*M* = 5.77, *SD* = 1.33) and background TV/videos (*M* = 5.57, *SD* = 1.47), compared to mothers who took 12 minutes or longer (foreground PBC *M* = 6.41, *SD* = 1.00, *t*(720) = -4.91, p < .001; background PBC *M* = 6.12, *SD* = 1.27, *t*(720) = -3.39, p < .01).

[13] Mothers who took less than 10 minutes had lower critical window scale reliability (α = 0.54) compared to those who took at least 10 minutes on the survey (α = 0.67). Mothers whose duration was less than 10 minutes also had lower prevention scale reliability (α = 0.68) than mothers who took 10 minutes or more (α = 0.82). Both groups of mothers had the same reliability scores for the promotion scale (α = 0.61).

to answer items rather than reading the questions. Simply choosing the same response across items (e.g., all 5's) would result in high reliabilities among items which are all worded in the same direction, but weaker reliabilities for items worded in the reverse direction. Thus, it was determined that only those who completed the survey in 10 minutes or more would be included in the final sample.

The individual percentage of the survey completed for each of the participants who completed at least 78.9% but not 100% of the entire survey was divided by 10 in order to determine their individual cut-off duration time in minutes (i.e., the 10 minute time cutoff was not appropriate for participants who did not complete the full survey). This step eliminated one additional respondent. Thus, the final sample for this dissertation study included 698 participants.

Measures[14]

Target child information. Participants were asked how many children they had between 3 months and 24 months of age. Those who indicated they had more than one child in this age range were then prompted to think of the child between 3 and 24 months "whose name comes first in the alphabet". Next, participants were asked to type the target child's first name into a given space, so that the computer could generate the child's name into all subsequent questions. This was done to encourage respondents to answer questions in regards to only the target child if they had additional children. Next, each participant was asked to report the target child's

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[14] The dissertation instrument is identical to survey version B used in the pilot study (see previous chapter), except where noted. While the measures are described here, the full instrument can be also found in Appendix D.

gender, date of birth, and birth order, as well as her own birth month and year, and specific relationship to the child (e.g., mother; step-mother; grandmother or aunt). Finally, participants were asked the number of additional children living in the home as well as the number of additional adults.

Target child daily awake time. Following the pilot study, it was determined that items should be added to the official dissertation survey to assess the total amount of time target children were awake each day.[15] This time estimate was measured through five survey items: (1) the time of day the child typically wakes up (i.e., from 4:30 am or earlier to 11:30 am or later); (2) the time of day the child typically goes to sleep for the night (i.e., from 5:30 pm or earlier to 11:30 pm or later); (3) the number of times the child typically wakes in the night and needs re-settling; (4) the amount of time it takes for the child to fall back asleep when he/she wakes in the night; and (5) the amount of time the child spends napping in a typical day (i.e., "child does not nap" to "4.5 hours or more"). A sixth item in this section asked about the target child's sleeping arrangement (i.e., sleeps in a room with parents/guardians; sleeps in own room alone; sleeps in a room with one sibling; or sleeps in a room with several siblings).

Foreground TV/video exposure. Twelve survey items measured the target child's total weekly exposure to foreground television and videos, broken up by

[15] This measure was added to verify that any potential relationship between child's age and amount of media exposure was not merely due to differences in the amount of time they were awake on average (i.e., merely more time available to be exposed to media).

weekday and weekend viewing. Prior to the foreground TV/video exposure questions, the following statement was displayed on the screen:

> "The following questions are about your child's television/video viewing – that is, television programs and videos made for children that you or someone else turn on with the intention that your child will watch it at least a little. Your child may watch these programs or videos on any type of a screen- such as a television, computer or portable DVD player."

First, respondents were asked on how many weekdays (0 – 5) the child typically watches at least some television or videos (those who answered "0 days" skipped to the weekend day section and did not answer the remaining questions regarding amount of weekday exposure). Next, participants were asked to think of a typical weekday when their child watches *at least some* television/videos, and to indicate how much time in a typical weekday the child spends viewing. Here, respondents chose one of five response options, broken up in 2 hour increments between "less than 2 hours" and "8 hours or more." Based on her response to this question, each participant was then directed to a follow-up question where she was asked to choose one of four response categories to indicate a more detailed range of exposure time in a typical day (e.g., "less than 30 minutes;" "at least 30 minutes but less than 1 hour"). Finally, respondents were asked how much of their children's typical weekday viewing consisted of (1) videos created specifically for babies (i.e., from 1: "none of his/her viewing" to 5: "all of his/her viewing"); (2) children's educational programs or videos; and (3) children's entertainment programs or videos.

Examples were provided for each content-type. This series of six questions (i.e., number of days; broad exposure amount per day; narrow exposure amount per day; amount of viewing per content-type) was then repeated to assess children's weekend exposure.[16]

Following data collection, the number of weekdays that the child watches television was multiplied by the midpoint of the more specific chosen category of typical daily exposure (i.e., 45 minutes for the category "at least 30 minutes but less than 1 hour). Then, the number of weekend days the child watches was multiplied by the midpoint of the category of weekend day exposure amount. These two figures were then added together to represent the child's average weekly foreground media exposure. The range of possible weekly exposure estimates was from 0 minutes to 4,095 minutes or more per week (i.e., if the participant indicates the child watches 9.5 hours of television/videos or more on all seven days of a typical week). Weekly time estimates was also recoded into a dichotomous measure representing whether the child viewed more than 3 hours of foreground TV/video exposure a week vs. less than three hours of foreground exposure a week.[17]

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[16] A more detailed media use recall measure was considered to assess media exposure in this study. However, this measure could only capture media use on "the previous day," and elicitation interview responses indicated it would be important to measure exposure on both weekdays and weekend days particularly given potential differences between working and non-working mothers. In addition this measure was extremely long and time-consuming and would have taken up survey space required for other measures.

[17] Note the survey instrument also contains items regarding the estimated percentage of children's weekday and weekend day foreground TV/video viewing that falls in different content categories (i.e., baby videos; children's educational programming; and children's entertainment programming). Because this dissertation study includes hypotheses and research questions regarding only the

Childcare. Next, respondents were asked if the target child "is currently in any type of childcare, either in the home or out of the home." Those who responded that their child was not in childcare were directed to the next set of questions, instead of receiving more questions about childcare. Those whose children were currently in childcare were asked what specific type of childcare they used; amount of time per week the child spent in childcare; and whether the child ever watched TV/videos while in childcare.

Background TV/video exposure. Children's exposure to background television and video programming was measured in the same format as the questions used to assess weekday and weekend foreground TV/video exposure, without the content-type questions. Before answering any questions regarding background media, participants were shown the following statement:

> "The following questions are about **background** television/video in your child's life. These are programs that you or others may watch that are not turned on with the intention that your child will watch, but are merely on "in the background" for him/her. Examples include programs like Hannah Montana, American Idol, or the news. (Background television/videos **do not** include cable music channels that show only the album cover or a picture of the artist on the screen)."

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estimates of children's total foreground TV/video and background TV/video exposure, the content estimates were not used in this study.

Respondents were then asked to indicate the number of days their child was in the room with background TV/videos, the broad amount per day and the narrow amount per day of weekday background media exposure, followed by weekend background TV/video exposure. Typical weekly amount of background TV/video exposure was calculated in the same manner as foreground exposure estimate construction, following data collection. Two values were constructed for each participant: (1) a continuous estimate of weekly background TV/video exposure in hours; and (2) a dichotomous value representing whether or not the child exposed to more than three hours of background TV/video exposure per week.

Foreground TV/video intention. Two items were included to assess participants' intention to let their target children watch foreground television and video programming in the subsequent week. On a 7-point response scale (ranging from 1: "unlikely" to 7: "likely"), respondents were asked to respond to the following items: (1) "I will keep [child's name] from watching any television or videos during the next month"; (2) "I will let [child's name] watch television or videos for more than an hour a day on at least several days in the next week during the next month."[18]

Foreground TV/video beliefs. Each positive and negative behavioral belief mentioned by at least two mothers in the elicitation interview study was included in

[18] One hour or more of daily exposure was chosen as it was determined to be the closest approximation of the mean and median of infants' and toddlers' viewing across previous parent surveys (e.g., Anand & Kosnick, 2005; Linebarger & Walker, 2005; Rideout & Hamel, 2006; Zimmerman, Christakis & Meltzoff, 2007), and because the results of the pilot survey indicated good variability in responses and adequate performance of the IM constructs.

both survey versions, framed in terms of viewing “more than an hour a day on at least several days each week”. Each item was accompanied by a 7-point response scale ranging from 1: “unlikely” to 7: “likely.” The survey contained 13 positive behavioral belief items (e.g., “Viewing television programs and/or videos for more than an hour a day on at least several days each week could expose my child to different things in the world”) and 17 negative behavioral belief items (e.g., “Viewing television programs and/or videos for more than an hour a day on at least several days each week could hurt my child’s vision and/or hearing”). The order of the 30 behavioral belief items was randomized across participants.

Foreground screen media attitude. Foreground TV/video attitude was assessed by three 7-point semantic differential items. Specifically, they addressed respondents’ attitudes regarding the target child viewing television or videos “for more than an hour a day on at least several days each week during the next month” in terms of whether such exposure would be (1) bad/good; (2) foolish/wise; and (3) harmful/beneficial.

Foreground TV/video perceived descriptive norms. Two survey items were included to measure perceived descriptive norms regarding foreground television and video use with children who are two years old and younger: (1) Most people like me with children 2 and under let their children watch television or videos for more than an hour a day on at least several days each week (7-point scale from “likely” to “unlikely”); (2) How many of the people who are most similar to you with children 2 and under let their children watch television or videos for more than an hour a day on at least several days each week? (5-point scale from “None or very few” to “Almost all or all”).

Foreground TV/video perceived injunctive norms. Perceived injunctive norms regarding foreground television and video use were assessed through two survey items, including: (1) Most people who are important to me think I should let [child’s name] watch television programs or videos for more than an hour a day on at least several days a week during the next month” (7-point scale from “true” to “false”); and (2) “Most people whose opinions I value think that I should let [child’s name] watch television programs or videos for more than an hour a day on at least several days a week during the next month” (unlikely/likely).

Foreground TV/video perceived behavioral control. Two survey items measured mothers’ perceived behavioral control over their children’s foreground television and video use: (1) “I am confident that I can control how much television- and video-watching [child’s name] does during the next month” (7-point scale from “true” to “false”); and (2) “The amount my child watches television and videos during the next month is under my control” (7-point scale from “not at all” to “completely”).

Background TV/video intention. Background television and video exposure intention items were largely identical to the foreground intention questions. On a 7-point response scale (ranging from “unlikely” to “likely”) participants indicated how likely it was that: (1) the child will be in the room with background television or videos at least once in the next week; and (2) the child will be in a room with background television or videos for an hour or more on at least several days in the next week.

Background TV/video attitude. The background television and video attitude items were identical to those measuring foreground attitude; except that these questions inquired about participants' perceptions (i.e., good/bad; wise/foolish; harmful/beneficial) of letting their child "spend time in a room with background television or videos for more than an hour a day on at least several days each week during the next month."

Background TV/video perceived descriptive norms. The two items addressing perceived descriptive normative pressure regarding background TV/video exposure were also parallel to their foreground TV/video counter-parts (i.e., asked about participants' perceptions of the proportion of mothers similar to themselves who let their children spend time in a room with background TV/videos for more than an hour a day at least several days a week).

Background TV/video perceived injunctive norms. Questions regarding background TV/video exposure perceived injunctive normative pressure also mirrored those pertaining to foreground TV/video use. Participants were asked whether (1) people important to them and (2) people whose opinions they value thought they should let their child spend more than an hour a day in a room with background TV/videos on at least several days each week in the next month.

Background TV/video perceived behavioral control. Two survey items assessed participants' feelings of control over their children's background television and video exposure: (1) I am confident that I can control how much my child is in a room with background television or videos (7-point scale from "true" to "false"); and

(2) The amount of time my child is in a room with background television or videos is under my control (7-point scale from "not at all" to "completely").

Home environment and media access. Participants were given 18 items to assess the target child's home environment and access to various media. First, mothers were asked what kind of home they lived in (e.g., single-family house; apartment); and how many rooms their home contained not counting bathrooms (i.e., from 1-2 to 11 rooms or more). The following three items asked how many rooms contained television sets, whether there was a television in the target child's bedroom, and how often the television was on during the day "even if no one is actually watching it."

The next eight questions asked about the number of toys in various categories to which the target child had access, including: soft/cuddly toys; electronic toys; children's books; push/pull/ride on toys; toys that make noise; stackable/insertable toys; children's videos; and videos made specifically for babies. There were seven response options for each of these questions, ranging from "none" to "more than 20" toys in the given category. An additional question asked whether the child had access to at least one indoor toy that he or she could sit in (e.g., exersaucer; vibrating chair).

The final four questions in this section inquired about children's exposure to video content on non-television screens, including a screen built into the family car; a computer screen; a cellular telephone; and a portable DVD player. The final question in this section asked whether anyone ever recorded programs for the target child to watch via DVR or TiVo. The response options for each of these five questions were: "never"; "less than once a week"; "about once a week"; and "more than once a week".

Perception of a "critical window" of brain development. Despite a concern among scholars about the influence of the "critical window" discourse in the media on both parents and policy-makers (e.g., Barinaga, 2000; Bruer, 1999; Thompson & Nelson, 2001), there is no currently available instrument that measures this construct. As such, the "belief in the critical window" scale will be developed and validated through this dissertation study. Eight survey items were included in both survey versions to address participants' beliefs in a "critical window" of brain development. These items were created based on responses from mothers in the preliminary elicitation interview study. Of the ten items included in the pilot test described in the previous chapter, these eight items had particularly high internal consistency. Each of the critical window belief items was on a 7-point response scale from 1: "strongly disagree" to 7: "strongly agree." Broadly, the items reflect the extent of belief in 3 general ideas: (1) the 0-3 years are particularly crucial time for brain development; (2) early brain development determines children's lifelong intellectual potential; and (3) children's experiences (i.e., as opposed to genes) determine the nature of their brain development.

Regulatory focus. Each participant's chronic regulatory focus was assessed using the 11-items from Higgins' and colleagues (2001) Regulatory Focus Questionnaire (RFQ). The pilot study confirmed that this measure had higher internal consistency and a more appropriate two-factor structure, compared to the composite measure suggested by Haws, Dholakia and Bearden, (2010; see previous chapter). The RFQ consists of two distinct subscales; six items comprise the "promotion subscale," and five items make up the "prevention subscale." Higgins and colleagues

(2001) argue that an individual's chronic regulatory orientation (i.e., prevention or promotion) is formed through socialization and his or her own subjective personal history of promotion success (i.e. attaining desired goals) and prevention success (i.e., avoiding unfavorable outcomes). As such, the items on the RFQ address the respondent's own sense of his/her personal history of prevention and promotion goal attainment.

Four of the items address childhood behaviors and outcomes (e.g., "How often did you obey rules and regulations that were established by your parents?"), and the remaining seven items reflect past life experiences more generally (e.g., "Not being careful enough has gotten me into trouble sometimes."). Six items comprise the promotion subscale, and five make up the prevention subscale. The 11 RFQ items are on a five-point scale (i.e., response options are from 1: "never or seldom" or "certainly false", to 5: "very often" or "certainly true").

Respondent's media use. Participants were asked the number of weekdays they usually watched some TV or videos in a typical week. Those who indicated they watched TV/videos on at least one weekday were asked how much time on a typical weekday they usually spent watching. They were given seven response options with time estimates ranging from "less than 30 minutes" to "6 hours or more." These two questions were then repeated in terms of weekend viewing to capture total estimated time spent viewing in a typical week.

Demographics and family structure. Finally, respondents were asked about their own and their partner's (when applicable) demographic information, including race/ethnicity; language spoken in the home; last grade or degree completed in school;

employment status; combined income (within ranges); and marital status. Those who indicated they had a spouse/partner were also asked to indicate their partner's age (i.e., month and year of birth).

Analysis

Sample description. The final sample consisted of 698 mothers who completed at least the first 78.9% of the survey. Respondents in the final sample spent an average of 43.9 minutes taking the online survey (SD = 154.8), with a median duration of 21.0 minutes. Characteristics of participants in the final sample are displayed in Table 5.1. The majority of participants were White/non-Hispanic (67.9%), followed by Black/African American (13.6%). The mean age was 28.5 years, though participants ranged in age from 18 or younger[19] to 55. Most reported that they were married or living as married (74.8%). The vast majority of participants reported that they were the target child's mother (96.6%), while a few indicated they were the child's grandmother or aunt (2.6%), step-mother (0.4%) or other mother figure (0.4%). Most participants had at least one child living in their home in addition to the target child (64.2%), and 12.6% of the sample had three or more additional children. Nearly ten percent had more than one child between the ages of 3 months and 24 months (9.9%). Just over a third of respondents had obtained a high school diploma or less education (31.6%), whereas few had a graduate degree (6.3%). About a third of participants were employed (31.8%). Respondents represented a wide range

[19] Because SSI purportedly maintains a panel of members who are 18 years of age and up, the question pertaining to respondents age included "1992 or later" as the youngest birth-year response option.

of income levels, as 38.1% had a total income of less than $30,000 a year, and 30.1% made $50,000 or more annually. On average, they watched television or videos for 18.4 hours a week (*SD* = 12.3), with a median time of 16.5 hours and a range of 0 to 45 hours viewing weekly.

Table 5.1. Characteristics of the final sample.

Age mean ± SD, years	28.5 ± 6.6
Race/ethnicity, n (%)	
White/non-Hispanic	474 (67.9)
White/Hispanic	35 (5.0)
Black/African American	95 (13.6)
Asian	27 (3.9)
Other[a]	60 (8.6)
Refused/Missing	7 (1.0)
Marital Status, n (%)	
Married/Living as married	522 (74.8)
Separated/Divorced/Single	168 (24.1)
Refused/Missing	8 (1.1)
Employment, n (%)	
Full-time	134 (19.2)
Part-time	88 (12.6)
Homemaker	315 (45.1)
Student	49 (7.0)
Retired/Disabled/Unemployed	104 (14.9)
Refused/Missing	8 (1.1)
Education, n (%)	
No high school diploma	31 (4.4)
High school diploma/GED	190 (27.2)
Some college/Associate's	288 (41.2)
Four-year college degree	137 (19.6)
Graduate school	44 (6.3)
Refused/Missing	8 (1.1)
Income, n (%)	
Less than $10,000	74 (10.6)
$10,000 - $29,000	192 (27.5)
$30,000 - $49,000	179 (25.6)
$50,000 - $74,000	113 (16.2)
$75,000 +	97 (13.9)
Refused/Missing	43 (6.2)

N = 698; [a] includes participants of mixed race

Target children. Table 5.2 contains the descriptive information regarding the target children of the mothers in the final sample. The target children ranged in age from 3.9 months to 27.5 months, with a mean age of 14.6 months (*SD* = 6.1). Half of the children were girls (49.4%). Just over 40% were first-born children in their families (42.7%), and the majority of those children did not have younger siblings (89.6%). About 20% spent some time in childcare weekly (19.8%).

Target children were exposed to an average of 8.8 hours of foreground TV/videos each week (*SD* = 10.9), with a median time of 4.5 hours weekly. Fifteen percent of children (15.2%) had no foreground TV/video exposure (i.e., 0 hours per week), while twelve percent (12.5%) viewed 20 hours or more each week. The target children were exposed to more than twice as much background TV/video per week on average (*M* = 21.2 hours; *SD* = 16.25). Though this amount ranged from 0 hours (6.0%) to more than 50 hours per week (n = 11.9%). Table 5.2 contains the ranges of children's estimated weekly exposure to both types of media.

Table 5.2. Characteristics of participants' target children.

Age mean ± SD, months	14.6 ± 6.1
Gender, n (%)	
Male	353 (50.6)
Female	345 (49.4)
Birth order, n (%)	
First-born	298 (42.7)
Second-born	227 (32.5)
Third-born	99 (14.2)
Fourth child or later	74 (10.6)
In outside childcare, n (%)	138 (19.8)
Foreground media per week, n (%)	
None	106 (15.2)
Less than 3 hours	165 (23.6)
3 hours to under 10 hours	197 (28.2)
10 hours to under 20 hours	142 (20.3)
20 hours or more	87 (12.5)
Refused/Missing	1 (0.1)
Background media per week, n (%)	
None	42 (6.0)
Less than 3 hours	81 (11.6)
3 hours to under 10 hours	124 (17.8)
10 hours to under 20 hours	151 (21.6)
20 hours or more	299 (42.8)
Refused/Missing	1 (0.1)

N = 698.

Missing data. Of the 162 total survey items, 46 had some missing data. The greatest number of respondents with missing data on any one item was 43 (i.e., 6.2% of sample). This item was the question regarding household income. The income item contained a response option of "I don't know," which was selected by 34 respondents. The next highest number of respondents with missing data on a single question was 10 (i.e., 1.4% of sample; n = 6 items). Of the full sample of respondents, 648 (92.8%) had no missing data.

Conclusion

This dissertation study consists of a survey of 698 mothers with infants and toddlers. Sampling quotas were used to ensure a relatively high degree of diversity within the sample of mothers, and preliminary analyses indicate reasonably minimal missing data. The following seven chapters will include sets of analyses, as outlined in Chapter Two. These analysis chapters will examine whether and how aspects of mothers' infant/toddler TV/video perceptions, structural life circumstances, beliefs about young children's brain development, and regulatory focus orientations account for their intentions and estimates of children's exposure to foreground and background television and video programming.

Chapter Six

Accounting for children's foreground TV/video exposure:

The role of demographic and structural life circumstance factors

The first dissertation study, described in this chapter, examines the relationships between children's foreground TV/video exposure and their mothers' demographics (e.g., mother's race/ethnicity; education) and structural life circumstances (e.g., number of children in the home; employment). Under the tenets of the integrative model of behavioral prediction, these factors would be considered "distal variables." That is, they are expected to impact a given behavior only through their influence on beliefs, which would then influence the proximal cognitive constructs, and finally behavioral intentions and behavior. The degree to which predictive demographic and structural circumstance variables in this study are indeed mediated by the integrative model constructs will be examined in Chapter Seven.

Demographic factors

Several demographic factors, temporally prior to young children's foreground TV/video exposure, are particularly likely to be related to that exposure. One such factor is mother's race/ethnicity. In fact, a number of prior surveys of parents have indicated differential rates of children's TV/video-viewing based on their parents' race and ethnicity. Especially persistent are findings of more time spent viewing among African American children compared to their Caucasian peers, particularly among children who are preschool-age or older (e.g., Bickham et al., 2003; Gentile & Walsh, 2002; Roberts et al., 1999). Several studies of children under two also indicate that African American infants and toddlers tend to have higher rates of exposure compared to those that are White/non-Hispanic (Anand & Krosnick, 2005; Certain & Kahn, 2002; Zimmerman, Christakis & Meltzoff, 2007). Thus, it is anticipated that African American children in this study will have higher rates of exposure to foreground TV/videos compared to their Caucasian peers.

Hypothesis 1: African American infants and toddlers will have higher rates of exposure to foreground screen media compared to children from White families.[20]

Additionally, parents' educational attainment has also been related to children's time spent viewing television and videos in prior studies. A negative relationship between TV/video exposure and parents' education level has been found consistently across research involving different age groups of children, though income tends not to be a significant predictor when education level is controlled (e.g., Anand & Krosnick, 2005; Bickham et al., 2003; Certain & Kahn, 2002; Gentile & Walsh, 2002). Similar to predictions regarding the role of race/ethnicity, it is hypothesized that mothers' educational attainment in this study will be negatively related to their infants' and toddlers' weekly foreground TV/video exposure.

Hypothesis 2: Young children's total time viewing foreground screen TV/videos will vary with mothers' education level, such that children of less-educated mothers will watch the most and children of the most educated mothers will watch the least.

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[20] Originally this hypothesis included a comparison with Hispanic families as well, but the recruited sample did not ultimately contain a large enough sub-sample of this demographic group to enable this comparison (n = 35).

Although other studies have largely found that parents' income was not as predictive of infants' and toddlers' TV/video viewing as is their education level, it is possible that variables reflecting mothers' affluence (i.e., income; number of rooms in the home) may be associated with their young children's TV/video viewing in the present study. Though existing literature does not suggest different viewing rates based on mother's age or child's gender, these demographic variables too will be examined in the present analyses as research questions.

Research Question 1: Will children have different foreground TV/video-viewing rates based on mother's level of affluence (i.e., household income; number of rooms in the home), mother's age, or child's gender?

Mothers' structural life circumstances

Mothers' control and need for child TV/videos. A variety of factors regarding the household structure and the circumstances of mothers' lives may be related to infants' and toddlers' foreground television- and video-viewing. Specifically, these aspects could influence the amount of time that mothers have available to engage in non-TV/video activities with their children, as well as the actual control mothers have over their children's TV/video use. For example, mothers who are employed, single, and/or parenting numerous children may have less time and fewer resources available to limit their infants' and toddlers' time spent viewing television and videos compared to those who stay at home during the day, have a parenting partner, and have only one child in the home. On the other hand, the use of outside childcare may aid busy mothers, leading to less use of television and videos with young children.

Specifically, the use of outside childcare arrangements may enable mothers to devote more time and attention to their young children, reducing the need for television and videos to entertain them.

Children's age may also play a role in determining their television- and video-viewing. The existing literature regarding children's media habits suggests that children typically begin viewing foreground television and videos between the ages of 6 and 9 months, and their daily exposure increases steadily until they reach school-age (e.g., Anand & Krosnick, 2005; Rideout, Vandewater & Wartella, 2003). Parents may be aware of children's growing ability to comprehend video content (Anderson & Hanson, 2010; Anderson & Pempek, 2005), and accordingly let their toddlers spend more time viewing television and videos. It is also possible that potential differential exposure rates based on child's age are merely due to differences in mothers' abilities to limit their older children's TV/video use. Specifically, mothers may have a harder time keeping an older, more mobile and expressive toddler in one place and occupied without the use of television and videos compared to their younger infants.

TV/video availability/entertainment alternatives. Also predictive of children's television and video viewing may be factors regarding the availability of both media sources and sources of non-TV/video entertainment for children in the home. For example, having numerous television sets in the home, a television set in the child's bedroom, and/or a variety of sources for viewing video content beyond a traditional television set (e.g., a laptop; TV mounted in the car) may each lead to increased viewing among young children. Any of these factors may create extra opportunities for children to view video content across various settings. Similarly, attending a childcare facility which uses television and video programs could contribute to children's greater overall time spent watching foreground TV/videos.

On the other hand, having a large quantity of toys and books in the home for the child to play with could result in less weekly exposure to TV/videos. For some families, television may be used frequently to entertain babies and toddlers due to a lack of alternatives for occupying the children and keeping them in one place. Access to a variety of toys and books, then, may provide additional means for entertaining the baby and reduce mothers' reliance on television and videos.

Moreover, it is possible that the amount of time a mother spends watching television and videos each week may impact her infant's or toddler's foreground TV/video exposure as well, though it is not clear what the nature of this relationship might be. One possibility is that the more mothers view their own programming, the less their young children watch due to the limited amount of time available in the day (i.e., displacement). Conversely, it is also possible that many mothers may co-view children's programming with their infants and toddlers, and this shared viewing time would result in a positive relationship between mothers' and children's viewing. In addition, a mother's own television and video viewing may reflect her general attitude toward media, and these perceptions could also extend to her attitude regarding her child's media use. This too would likely result in a positive relationship between mothers' and young children's respective foreground TV/video viewing. In fact, one study by Woodard and Gridina (2000) found that preschool to teenaged children with parents who spent a lot of time watching television also had higher rates of television viewing. However, given very young children's unique developmental status and reliance on caregivers in order to view foreground TV/videos, it is difficult to predict whether this same pattern would be found among a cohort of infants and toddlers as well.

Research Question 2: Which variables regarding mothers' structural life circumstances (i.e., reflecting control and need for child TV/videos or TV/video availability/entertainment alternatives) will have the strongest associations with infants' and toddlers' foreground TV/video exposure?

Methods

Measures

This study uses the survey measures described in brief below, and they are the only ones described here. Chapter Five contains a full description of the design and procedure used for this dissertation study, as well as greater details about the survey instrument. Additionally, the full online survey can be found in Appendix D.

Target child information. Participants were asked how many children they had between 3 months and 24 months of age. Those with more than one child in this age range were then prompted to think of the child between 3 and 24 months "whose name comes first in the alphabet". Each participant reported the target child's date of birth and birth order.

Family composition. Respondents were asked how many children, besides the target child lived in their home, as well as how many adults, besides themselves, lived in the home.

Childcare. Respondents were asked if the target child was currently in any form of childcare. If the child was in childcare, mothers were asked additional questions, including whether or not the child ever watched television or videos while in childcare.

Foreground TV/video exposure. Respondents were asked on how many weekdays (0 – 5) the child typically watches at least some television or videos. Next, they indicated how much time in a typical weekday the child spends viewing within five response options broken up in 2 hour increments between "less than 2 hours" and "8 hours or more." Based on her response to this question, each participant was then directed to a follow-up question where she was asked to choose one of four response categories to indicate a more detailed range of exposure time in a typical day (e.g., "less than 30 minutes;" "at least 30 minutes but less than 1 hour"). This series of three questions was then repeated to assess children's weekend exposure.

Following data collection, the number of weekdays that the child watches television was multiplied by the midpoint of the more specific chosen category of typical daily exposure (i.e., 45 minutes for the category "at least 30 minutes but less than 1 hour). Then, the number of weekend days the child watches was multiplied by the midpoint of the category of weekend day exposure amount. These two figures were then added together to form an estimate of the number of minutes each child views foreground TV/videos per week. Next, that figure was divided by 60 (i.e., minutes per hour) to represent the child's average weekly foreground TV/video exposure in hours. The range of possible weekly exposure estimates was from 0 minutes to 68.25 hours or more per week (i.e., if the participant indicates the child watches 9.75 hours of television/videos or more on all seven days of a typical week).

Foreground TV/video intention. On a 7-point response scale (ranging from 1: "unlikely" to 7: "likely"), respondents were asked to respond to the following items: "I will let [child's name] watch television or videos for more than an hour a day on at least several days in the next week during the next month."

Mother's TV/video use. Four survey items assessed participants' own weekly TV/video viewing. The first two questions inquired about the (1) number of weekdays the participant typically watched some TV/videos, and (2) the typical amount per weekday (i.e., within thirty minute ranges between "less than 30 minutes" and "6 hours or more"). These two questions were then repeated for weekend days. The number of weekdays and weekend days were multiplied by the midpoint of the respective chosen viewing amount ranges, and then these two figures were added together for an estimate of mothers' amount of TV/video viewing per week.

Home environment and media access. Participants were given 18 items to assess the target child's home environment and access to various media. First, mothers were asked what kind of home they lived in (e.g., single-family house; apartment); and how many rooms their home contained not counting bathrooms (i.e., from 1-2 to 11 rooms or more). They also indicated how many rooms contained television sets and whether there was a television in the target child's bedroom.

Eight questions asked about the number of toys in various categories to which the target child had access, including: soft/cuddly toys; electronic toys; children's books; push/pull/ride on toys; toys that make noise; stackable/insertable toys; children's videos; and videos made specifically for babies. There were seven response options for each of these questions, ranging from "none" to "more than 20" toys in the given category. An additional question asked whether the child had access to at least one indoor toy that he or she could sit in (e.g., exersaucer; vibrating chair).

The following four questions in this section inquired about children's exposure to video content on non-television screens, including a screen built into the family car; a computer screen; a cellular telephone; and a portable DVD player. The final question in this section asked whether anyone ever recorded programs for the target child to watch via DVR or TiVo. The response options for each of these five questions were: "never"; "less than once a week"; "about once a week"; and "more than once a week". Each of these items was dichotomized to represent whether the child had any exposure to video content via each of the five sources (i.e., car TV; computer; cellphone; portable DVD player; and DVR/Tivo).

Demographics. Finally, respondents were asked for basic demographic information, including marital status, age, race and ethnicity, education level, and household income.

Data Analysis

Bivariate relationships between the demographic variables of interest and children's foreground TV/video exposure estimate were assessed first. For continuous variables, Pearson correlation analyses were used. In addition, continuous variables were transformed into ordinal-level variables (i.e., with 5 or 6 ordered categories) and then the linearity with the dependent variable (i.e., child's foreground TV/video exposure) was assessed using SPSS "means" analysis.[21] Relationships were deemed sufficiently linear when there was a negligible difference between the eta^2 and R^2 coefficients for these analyses. Separate ordinary least squares (OLS) regression analyses were used to determine relationships between children's exposure to foreground TV/videos and each of the nominal-level variables (i.e., with dummy variables). Finally, a multiple regression model was constructed containing all demographic variables (i.e., regardless of presence of significant bivariate relationships) to verify significant demographic predictors of children's foreground TV/video viewing. These steps were then repeated to assess bivariate relationships with continuous and nominal-level structural life circumstance variables.

Testing hypotheses and research questions. Hierarchical OLS regression analyses were conducted to assess hypotheses and research questions. Two separate analyses were conducted: one predicting behavior (i.e., transformed estimate of children's foreground TV/video exposure), and the other predicting mothers' intentions (i.e., to let their children watch more than one hour a day of foreground TV/videos on at least several days each week during the next month).[22] For each analysis, the demographic variables found to have a significant bivariate relationship with children's foreground media exposure were entered together in the first step of the model. In the second step of the model the structural life circumstances found to

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[21] Means analysis tests for significant differences in the means of a dependent variable across various levels of the independent variable.

[22] These two models were tested to verify that the predictors operate similarly in their prediction of both prior behavior as well as future intentions.

have bivariate relationships with the exposure estimate were added as predictors. Standardized beta coefficients were assessed to compare predictive power of independent variables in the models.

Results

Demographic and family structure variables. Nearly 40% of the target children in this study were first-born only children (38.3%), while less than 5% were first-born children with a younger sibling (4.4%). About a third of the children in the sample were second-born children (32.5%), and nearly a quarter were born third or later (24.8%). Children ranged in age from 3.9 months to 27.5 months, with a mean age of 14.6 months (SD = 6.11) and a median age of 14.5 months. Half of the target children were girls (50.6%).

The majority of mothers in this sample reported that their race was White/non-Hispanic (67.9%), while just under 14% of the sample was Black/African American (13.6%). The remaining participants reported that they were White/Hispanic (5.0%), Asian (3.9%), another race/ethnicity (8.6%), or declined to respond regarding their race/ethnicity (1.0%). About one third of the mothers in this study reported that they had a high school diploma or less education (31.6%), 40% had attended some college but did not obtain a four year degree (41.2%), about 20% had a bachelors degree (19.6%), and 6% had attended at least some graduate school (6.3%). Mothers in this study watched an average of 18.4 hours of television and videos each week (*SD* = 12.3). One third of participants reported watching 10.5 hours of TV/videos or less each week (33.3%), while just under a third watched 24 hours of TV/videos or more (31.2%).

Home environment and media access. Table 6.1 contains descriptive information about participants' homes. Most participants reported living in a single family house (62.3%), with 3-6 rooms (70.3%). Nearly all participants had at least one room containing at least one television set (98.7%), and almost half had three or more rooms with a television set (44.7%). Most children slept either in a bedroom with their parent(s) (47.7%) or alone in their own bedroom (39.4%), and more than a third slept in a room containing a television set (34.1%).

Few mothers reported that their child ever watched video content on a cell phone (14.2%) or television mounted in the car (15.6%). More than a fifth of children watched some video content on a portable DVD player (21.9%), while more than a third viewed such content on the computer (31.9%). Nearly forty percent of mothers reported that their child watched content recorded via DVR or TiVo (38.3%). A summative index was created of the number of reported sources of for viewing video content available to the target child described above (i.e., 0 – 5 sources). This variable was intended to represent children's access to non-traditional sources for viewing video content.[23] The mean score on this index was 1.21 sources (SD = 1.35).

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[23] This variable was considered a "structural circumstance" variable since it is feasible that one determining factor for the extent of children's viewing is the accessibility of various means for viewing. It may be that just having access to many different media technologies leads to more viewing. Several mothers in the elicitation study indicated that to eliminate their child's viewing they would literally have to break or remove the television set, suggesting that mere availability may influence extent of children's exposure.

Table 6.1. Participants' home and media environments.

Type of home, n (%)	
Single family house	435 (62.3)
Duplex/townhouse	72 (10.3)
Apartment/condo	137 (19.6)
Mobile home/trailer	48 (6.9)
Other	6 (0.9)
Number of rooms, n (%)	
1 - 2	87 (12.5)
3 - 4	312 (44.7)
5 - 6	179 (25.6)
7 - 8	90 (12.9)
9 or more	30 (4.3)
Number of rooms with a TV, n (%)	
0	9 (1.3)
1	134 (19.2)
2	243 (34.8)
3	193 (27.7)
4 or more	119 (17.0)
Child bedroom arrangement, n (%)	
In own room	275 (39.4)
In room with parent(s)/guardian(s)	333 (47.7)
In room with 1 sibling	80 (11.5)
In room with multiple siblings	10 (1.4)
Child has bedroom TV, n (%)	238 (34.1)

N = 698.

The distributions of responses to survey items regarding children's access to various types of toys are conveyed in Table 6.2 (i.e., soft/cuddly toys; non-TV electronic toys; children's books; push/pull/ride-on toys; noise-making toys; and stackable/insertable toys). Each response category was relatively well represented in participants' responses across items. Each item was recoded such that the value represented the midpoint of the range of toys a given response (i.e., "1-2" = 1.5; "5 – 10" = 7.5). This was done to create interval-level variables, which were then summed to create one index of children's toys across categories. The mean score on this index was 43.95 (SD = 22.36). Additionally, the majority of mothers reported that their child had at least one indoor toy that he/she could sit in (i.e., an exersaucer; vibrating chair; 68.5%). This variable was not included in the above toy index because it was not clear that having an apparatus to sit in would make it more or less likely that a child would watch television or videos, or that this type of toy would influence exposure in a manner similar to the other types of toys.

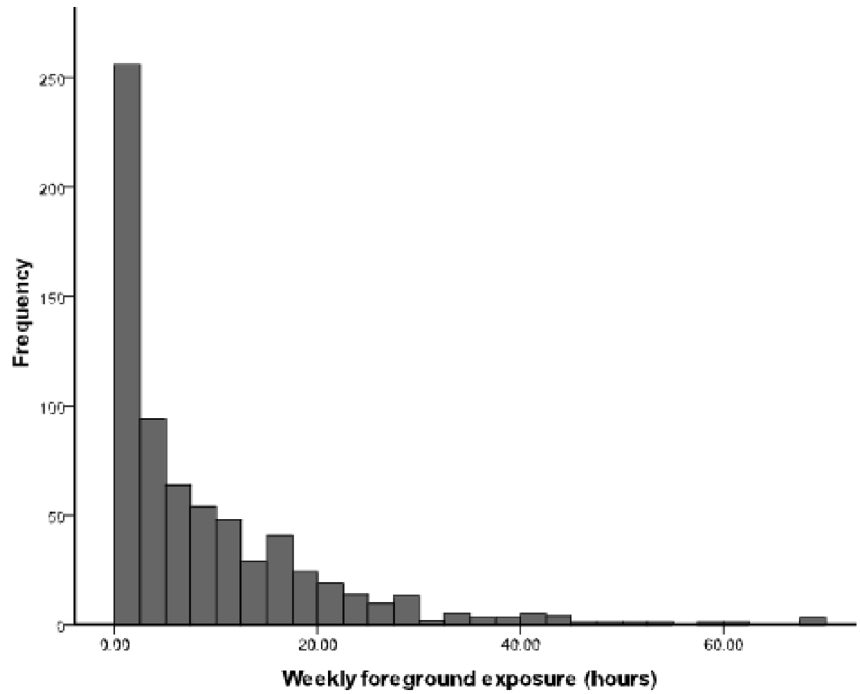
Table 6.2. Frequency distributions of children's toys and books in the home.

	Number of toys, n (%)						
Toy type	None	1 – 2	3 -5	5 – 10	10 – 15	15 – 20	20+
Soft toys	9(1.3)	69(9.9)	182(26.1)	205(29.4)	117(16.8)	55(7.9)	61(8.7)
Electronic toys	65(9.3)	136(19.5)	236(33.8)	156(22.3)	65(9.3)	24(3.4)	16(2.3)
Children's books	24 (3.4)	54(7.7)	104(14.9)	109(15.6)	84(12.0)	66(9.5)	257(36.8)
Push/pull/ ride toys	74(10.6)	168(24.1)	258(37.0)	140(20.1)	35(5.0)	13(1.9)	10(1.4)
Noise-making toys	13(1.9)	77(11.0)	238(34.1)	199(28.5)	94(13.5)	42(6.0)	35(5.0)
Stack/insert toys	65(9.3)	177(25.4)	265(38.0)	118(16.9)	34(4.9)	20(2.9)	19(2.7)

N = 698.

Children's foreground TV/video exposure. The estimates of children's weekly foreground television/video exposure ranged from 0 to 68.25 hours per week. The estimates of exposure had a mean of 8.82 hours per week (*SD* = 10.86), and a median of 4.50 hours per week. Figure 6.1 conveys the distribution of foreground media exposure among target children in this sample. Due to the lack of normality and the high skew (i.e., skew = 2.12, SE = 0.09) of the foreground exposure estimates, this variable was transformed by adding 1 and then taking the square root for subsequent analyses. This was done to avoid violations of linearity and normality in regression analyses.

Figure 6.1. Distribution of children's foreground TV/video exposure per week (untransformed).



Hypotheses 1-2 and research question 1. The bivariate relationships between child's weekly foreground TV/video exposure and each of the demographic variables of interest were assessed. Correlations were used to test associations with the four continuous or ordinal-level variables: (1) mother's education level; (2) annual household income (3) mother's age; and (4) number of rooms in the home. Only one relationship was significant. Mother's level of education was negatively associated with children's foreground exposure ($r = -0.08$, $p = 0.05$). Next, these four variables were transformed into ordinal-level variables containing five categories each. Means analyses were then conducted by testing for differences in mean exposure rates across levels of the collapsed variables, in order to assess potential non-linear relationships

These analyses were conducted using both the original and transformed versions of children's foreground TV/video exposure. The significant relationships suggested by the means analyses mirrored the correlational results, and indicated no substantial deviation from linearity.[24]

Individual ordinary least squares regression analyses were used to test for differences in children's viewing based on nominal-level demographic variables, including: (1) mother's race/ethnicity (i.e., using dummy variable for Black/non-Hispanic; and "other" compared to White/non-Hispanic[25]) (2) child's gender (i.e., dummy variable for female children). The results indicated no significant differences by race/ethnicity ($F(2, 689) = 1.47$, $p = 0.23$), or child's gender $F(1, 696) = 0.001$, $p = 0.98$).

Finally, a preliminary ordinary least squares regression analysis was conducted containing all potential demographic variables included as predictors of the transformed estimate of children's weekly foreground TV/video exposure (i.e., regardless of whether bivariate analyses indicated a significant relationship). This was

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[24] The largest difference between eta^2 and R^2 values across the means analyses was 0.012, suggesting that relationships with exposure were well captured with linear associations. The variable that had a difference of 0.012 between eta^2 and r^2 (i.e., household income) was entered into a preliminary regression analysis in the original continuous form together with a squared term to verify that the relationship was primarily linear. The squared term did not add any explanatory power to the model and was dropped from further analyses.

[25] The dummy variable for "other" race/ethnicity represented all mothers were not White/non-Hispanic or Black/African American (n = 122). This variable was included so that the viewing time of children with Black/African American mothers would be compared specifically to White/non-Hispanic mothers as conveyed in Hypothesis 1. Participants classified as "other" for this analysis were: (1) White/Hispanic (n = 35); (2) Asian (n = 27); (3) Native American (n = 3); mixed race (n = 26); or chose "other" on the survey (n = 31).

done to ensure that no significant predictors were omitted due to possible intercorrelations suppressing the bivariate relationships with exposure. The standardized and unstandardized coefficients from this analysis are contained in Table 6.3. The model was marginally significant and accounted for 1% of the variance in the transformed measure of children's TV/video exposure (adjusted $R^2 = 0.01$; $F(8, 652) = 1.88$, $p = .06$). Two variables were significant predictors: mother's education level ($\beta = -0.12$, $p < .01$) and mother's age ($\beta = 0.10$, $p < .05$). In addition, the number of rooms in the home was a marginally significant predictor of lower foreground TV/video exposure among children ($\beta = -0.08$, $p = 0.06$). Thus, these three variables will be entered into subsequent models as predictors.[26]

Table 6.3. Demographic variables predicting children's foreground TV/video exposure.

Variable	B (SE B)	β
Mother's education	-0.13(0.05)	-0.12*
Mother's age	0.02(0.01)	0.10*
Household income	0.05(0.04)	0.06
Number of rooms in the home	-0.12(0.06)	-0.08[†]
Child is a girl	0.01(0.12)	0.01
Mother is Black/non-Hispanic (dummy)[a]	0.16(0.18)	0.04
Mother is "other" race/ethnicity (dummy)[a]	0.04(0.12)	0.01
R	0.14	
Adj. R^2	0.01	

N = 652. [a]Omitted comparison group is mothers who are White/non-Hispanic. *p < .05; **p < .01; ***p < .001.

[26] An additional regression analysis was conducted using the same distal variables to predict mothers' intentions to let the target children watch TV/videos for more than an hour a day at least several days each week, to verify that the same independent variables were similarly predictive for both dependent variables. The model was significant and predicted more variance in intentions than the exposure model ($F(8, 653) = 4.80$, $p < 001$; adj. $R^2 = 0.04$). The significantly and marginally significantly predictive distal variables in this model were the same as those predicting behavior, and two were slightly stronger (mother's education $\beta = -0.16$, $p < .001$; respondent's age $\beta = 0.19$, $p < .001$; number of rooms $\beta = -0.07$, $p = .08$).

Research question 2. Bivariate analyses were conducted to determine the structural circumstance variables that were related to children's foreground media use and should be included in the regression analyses. First, correlational analyses were conducted between the continuous foreground exposure variable and (1) index of child's toys; (2) number of rooms with TVs; (3) index of non-traditional sources of video content; (4) number of additional children in the home; (5) number of additional adults; (6) child's age; and (7) mother's own time spent viewing TV/videos. The Pearson correlation coefficients for the bivariate relationship between each predictor and weekly foreground TV/video exposure are presented in Table 6.4. These analyses indicated positive significant relationships with the toy index ($r = 0.16$, $p < .001$), the number of rooms with TVs ($r = 0.11$, $p < .01$), the index of non-traditional sources for video-viewing ($r = 0.25$, $p < .001$), child's age ($r = 0.19$, $p < .001$), and mother's own TV/video-viewing time ($r = 0.27$, $p < .001$). The number of additional children in the home had a marginally significant positive association with the target children's foreground TV/video-viewing estimates ($r = 0.07$, $p = 0.06$).

Table 6.4. Correlations between ordinal- and interval-level structural circumstance variables and children's foreground TV/video exposure.

Variable	Foreground exposure (r)
Toy index	0.16***
Number of rooms with TVs	0.11**
Non-traditional video source index	0.25***
Number of additional children in the home	0.07†
Number of additional adults in the home	0.05
Mother's time spent viewing TV/videos	0.27***
Child's age	0.19***

***p < .001; **p < .01; *p < .05; †p < .10.

Next, each of these seven continuous variables was transformed into ordinal-level variables containing five categories each. Means analyses were then conducted to assess potential non-linear relationships with the transformed version of children's foreground TV/video exposure. The means analyses with collapsed ordinal-level structural variables mirrored the correlational results and indicated no substantial deviation from linearity.[27] Individual ordinary least squares regression analyses were then used to determine relationships between children's foreground TV/video exposure (i.e., the transformed estimate of children's exposure) and the nominal-level structural variables, including (1) whether the child was in childcare; (2) whether the child was in a childcare that used television/videos; (3) mother's employment status (i.e., employed dummy; unemployed dummy[28]); (4) whether there were no additional adults living in the home in addition to the respondent[29]; (5) child's birth order; (6) whether the mother was parenting an additional child 24 months of age or younger; (7) whether the child had his/her own bedroom; (8) whether the mother was single; and (9) whether there was a television set in the bedroom where the child slept.

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[27] The largest difference between eta^2 and R^2 values across the means analyses was 0.018. This variable, number of non-traditional sources of video content, was entered into a preliminary regression analysis in the original continuous form together with a squared term to verify that the relationship was primarily linear. The squared term did not add any explanatory power to the model suggesting that its relationship with exposure was well captured with linear associations.

[28] This analysis left out "homemaker" as the comparison category.

[29] This dummy variable was created because while the number of additional adults may not have a linear relationship with child's exposure, it is feasible that having at least one additional adult living in the home would be associated with how much time children are exposed to foreground screen media.

The standardized and unstandardized coefficients from each test are presented in Table 6.5. Results indicated that six relationships were significant, and one was marginally significant. Children who were in any type of outside childcare had higher reported weekly foreground TV/video use ($\beta = 0.08$; $F(1, 696) = 4.57$, $p < .03$), while attending childcare that used television/videos was associated with even greater exposure to television ($\beta = 0.22$; $F(1, 696) = 34.53$, $p < .001$). Having a TV set in the child's bedroom also predicted greater weekly TV/video exposure among children ($\beta = 0.17$, $F(1, 696) = 20.59$, $p < .001$). Compared to children of mothers who were homemakers, those with employed and unemployed mothers tended to watch more television/videos (employed $\beta = 0.10$; unemployed $\beta = 0.12$, $F(2, 688) = 5.59$, $p < .01$). Finally, children of mothers who had more than one child between 3 and 24 months of age also spent more time watching TV/videos in a given week ($\beta = 0.10$, $F(1, 696) = 7.23$, $p < .01$).

Table 6.5. Relationships between dichotomous structural circumstance variables and children's foreground TV/video exposure.

Variable	B (SE B)	β
Mother is employed[a]	0.30(0.13)	0.10*
Mother is unemployed[a]	0.52(0.17)	0.12**
Mother is single	0.22(0.14)	0.06
Child is first-born	0.06(0.12)	0.02
No additional adults in the home[b]	0.39(0.25)	0.06
More than 1 child 3-24 months	0.52(0.19)	0.10**
Child in childcare	0.31(0.15)	0.08*
Child has own bedroom	0.06(0.12)	0.02
Childcare uses TV/videos	1.10(0.19)	0.22***
Child has bedroom television	0.55(0.12)	0.17***

Note: values are from individual OLS regression models with only the respective dummy variable included unless otherwise noted; [a] These predictors were entered into a regression analysis together, homemakers were left out of the model as the comparison group; [b]compared to one or more additional adults. ***p < .001; **p < .01; *p < .05; †p < .10.

Next, a multiple linear regression model was conducted to determine which structural circumstance variables were significantly predictive of children's foreground media exposure when all other variables were included, and to generate an estimate of the predictive power of all structural variables as a set. All possible predictors were entered into this preliminary analysis to ensure that no significant predictors were omitted due to possible intercorrelations suppressing the bivariate relationships with exposure. Several interaction terms were also created and included in analyses. These interactions were included to examine whether differences in children's foreground TV/video exposure were compounded by the presence of several structural life circumstances (i.e., single parenting and multiple children in the home). These interaction terms included (1) marital status by unemployment status; (2) marital status by childcare status; (3) marital status by the presence of at least one additional adult in the home; (4) marital status by additional children in the home; (5) marital status by income; (6) income by education level, and (7) unemployment by childcare status.[30] All interaction terms were created by multiplying the two respective dummy variables (variables were centered to avoid multicollinearity).

The transformed continuous estimate of children's weekly foreground TV/video exposure was included in the model as the dependent variable and the 16

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[30] These interactions were included to further explore possible associations between children's foreground TV/video viewing and more complex structural circumstances in mothers' lives. Though simple bivariate analyses indicated not association between children's foreground exposure and mothers' marital status or income, or the presence of additional adults or additional children in the home, it is possible that these factors may interact in their association with exposure (i.e., several factors may need to be present in mothers' lives to influence children's exposure).

structural variables were entered simultaneously in the first step as predictors. The seven interaction terms were entered together in the second step. The results of each step are displayed in Table 6.6. The first step of the model was significant and accounted for 25% of the variance in children's weekly foreground TV/video exposure (adjusted $R^2 = 0.25$; $F(16, 677) = 14.86$, $p < .001$).[31] The addition of the interaction terms did not add significant explanatory power to the model ($\Delta R^2 = 0.003$, $p = 0.93$). Seven variables had a significant positive relationships with foreground exposure, including the number of toys the target child had to play with (i.e., higher score on the toy index; $\beta = 0.12$, $p < .01$); the number of non-traditional sources for the child's video-viewing ($\beta = 0.16$, $p < .001$); having a television in the child's bedroom ($\beta = 0.12$, $p < .01$); being unemployed ($\beta = 0.11$, $p < .01$); the target child's age ($\beta = 0.23$, $p < .001$); the amount of mother's own TV/video viewing ($\beta= 0.27$, $p < .001$); and having childcare that used television/videos ($\beta = 0.25$, $p < .001$). Only the dummy variable representing the use of outside childcare was significantly associated with less weekly foreground TV/video viewing for target children ($\beta = -0.17$, $p < .01$). This reversed the positive bivariate association between childcare and foreground viewing. Having an additional child 24 months of age or younger was also marginally associated with higher reported TV/video viewing for the target child ($\beta = 0.07$, p =

[31] The Durbin-Watson statistic for the full model was 2.08, indicating independence of errors. A histogram of residuals resembled a curve, and a normal probability plot of residuals showed only slight deviation from straight line, suggesting minimal deviation from normal distribution of residuals. A plot of the standardized predicted values and standardized residuals also indicated slightly more variance at the higher levels of the predicted values (i.e., some deviation from homoscedasticity). The highest variance inflation factor (VIF) value was 2.15, which is well below the standard multicollinearity indicator of 10.0 (Dielman, 2005).

0.07). No other structural circumstance variables or interactions were significantly predictive of children's TV/video exposure.

Table 6.6. Mothers' structural life circumstances as predictors of children's weekly time with foreground screen media.

	Model 1		Model 2	
	B(SE B)	β	B(SE B)	β
Child's age	0.06(0.01)	0.22***	0.06(0.01)	0.23***
Child has own bedroom (dummy)	0.01(0.12)	0.004	0.01(0.12)	0.004
Number of additional children	0.01 (0.06)	0.01	0.01(0.06)	0.01
Mother is single (dummy)	-0.11(0.14)	-0.03	-0.11(0.015)	-0.03
More than 1 child between 3-24 months (dummy)	0.34(0.19)	0.07†	0.34(0.19)	0.07†
Child is first born (dummy)	0.16(0.13)	0.05	0.17(0.13)	0.06
Mother is unemployed[a] (dummy)	0.47(0.17)	0.11**	0.47(0.17)	0.11**
Mother is employed[b] (dummy)	0.19(0.13)	0.06	0.19(0.13)	0.06
No additional adults in the home (dummy)	0.37 (0.25)	0.06	0.36(0.25)	0.05
Child is in childcare (dummy)	-0.64 (0.19)	-0.17**	-0.64(0.19)	-0.17**
Number of rooms with TV in the home	-0.04 (0.06)	-0.03	-0.04(0.06)	-0.02
Non-traditional video source index	0.18(0.04)	0.16***	0.18(0.04)	0.16***
Toy index	0.01 (0.002)	0.12**	0.01(0.002)	0.12**
Child is in childcare with TV (dummy)	1.23(0.23)	0.24***	1.24(0.14)	0.15***
Child has a bedroom TV (dummy)	0.40(0.13)	0.12**	0.38(0.13)	0.12**
Mother's TV/video time	0.04(0.004)	0.28***	0.03(0.004)	0.27***
Unemployment x childcare			-0.05(0.43)	-0.004
Unemployment x marital status			-0.27(0.28)	-0.03
Marital status x no additional adult			0.15(0.32)	0.02
Marital status x childcare			-0.08(0.30)	-0.01
Marital status x income			0.05(0.05)	0.03
Marital status x additional children			0.07(0.10)	0.03
Income x education level			-0.004(0.02)	-0.01
R	0.51		0.52	
Adj. R^2	0.25		0.24	

N = 677. ΔR^2 for Step 2 = 0.003 (p = 0.93). ***p < .001; **p < .01; *p < .05; †p < .10.

Two hierarchical ordinary least squares regression analyses were conducted to test the extent of variance in (1) children's foreground TV/video exposure and (2) mothers' intentions (i.e., to let their children watch more than an hour a day of TV/video at least several days each week) that was accounted for by the demographic and structural circumstance variables. The analysis predicting children's foreground exposure was conducted first. The three significant or marginally significant demographic variables were entered together in the first step, followed by the ten significant and marginally significant structural circumstance variables in the second step.

The regression coefficients for variables predicting children's weekly foreground TV/video exposure are contained in Table 6.7. Mother's education was a significant negative predictor in the first step of the model (β = -0.08, $p < .001$), and mother's age was a significant positive predictor (β = -0.09, $p < .05$). Number of rooms in the home was marginally and negatively related to estimated exposure (β = -0.07, $p = .08$). The structural circumstance variables in the second step significantly increased the variance accounted for by the model ($\Delta R^2 = 0.25$; $p < .001$).[32] Each of the structural circumstance variables was a significant or marginally significant predictor. Mother's own time spent viewing TV/videos was the strongest predictor of

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[32] The Durbin-Watson statistic for the full model was 2.08, indicating appropriate independence of errors. A histogram of residuals resembled a normal curve. The normal probability plot of residuals deviated only slightly from a straight diagonal line, indicating some slight deviation from normality. A plot of standardized predicted values and standardized residuals suggested somewhat higher variance in residuals in the higher levels of the predictors (i.e., some heteroscedasticity). The highest variance inflation factor (VIF) in the full model was 2.12, which is adequately below the standard convention of 10.0 as an indicator of multi-collinearity.

behavior in the full model ($\beta = 0.26$, $p < .001$), followed by having childcare that uses TV/videos ($\beta = 0.24$, $p < .001$), and child's age ($\beta = 0.23$, $p < .001$). While mother's education level and mother's age were lower and no longer significant following the second model step, the number of rooms in the home became a stronger predictor of exposure ($\beta = -0.08$, $p < .05$).

Table 6.7. Mothers' structural life circumstances as predictors of children's weekly time with foreground screen media.

	Model 1		Model 2	
	B(SE B)	β	B(SE B)	β
Mother's education	-0.10(0.04)	-0.08*	-0.06(0.04)	-0.06
Mother's age	0.02(0.01)	0.09*	0.004(0.01)	0.02
Number of rooms in the home	-0.10(0.06)	-0.07†	-0.12(0.06)	-0.08*
Child's age			0.06(0.01)	0.23***
Mother is unemployed[a] (dummy)			0.43(0.16)	0.10**
Mother is employed[b] (dummy)			0.23(0.12)	0.07†
More than 1 child between 3-24 months (dummy)			0.31(0.18)	0.06†
Child is in childcare (dummy)			-0.61(0.19)	-0.16**
Non-traditional video source index			0.19(0.04)	0.16***
Toy index			0.01 (0.002)	0.14***
Child is in childcare with TV (dummy)			1.23(0.23)	0.24***
Child has a bedroom TV (dummy)			0.27(0.11)	0.08*
Mother's TV/video time			0.03(0.004)	0.26***
R	0.12		0.52	
Adj. R^2	0.01		0.25	

N = 685. ΔR^2 for Step 2 = 0.25 ($p < .001$). ***p < .001; **p < .01; *p < .05; †p < .10.

Next, a second hierarchical regression assessed the ability of the demographic variables and structural circumstance variables to predict mothers' intentions to let their children watch more than an hour a day of foreground TV/videos on at least several days each week. Again, the three significant or marginally significant demographic variables were entered together in the first step of the model, followed by the ten structural circumstance variables in the second step. The standardized and unstandardized coefficients for both steps are displayed in Table 6.8. Together the demographic variables accounted for 4% of variance in mothers' intentions ($F(3, 686) = 9.07$, $p < .001$). Of the three variables, mother's age was the strongest predictor in this model ($\beta = 0.18$, $p < .001$), followed by mother's education level ($\beta = -0.13$, $p < .01$), and number of rooms in the home ($\beta = -0.07$, $p = .08$).

The full model accounted for 17% of the variance in mothers' intentions ($F(13, 686) = 11.93$, $p < .001$). Five structural circumstance variables were significant predictors in this model. Again, mother's own time spent viewing TV/videos was the strongest predictor ($\beta = 0.25$, $p < .001$), followed by the number of non-traditional video sources ($\beta = 0.18$, $p < .001$), child's age ($\beta = 0.13$, $p < .01$), and having childcare arrangements that use TV/videos ($\beta = 0.12$, $p < .05$). Mothers' education level and age remained relatively strong significant predictors in the full model (education $\beta = -0.11$, $p < 0.01$; age $\beta = 0.13$, $p < .01$).

[33]*Table 6.8.* Mothers' structural life circumstances as predictors of their intentions to let their children view foreground TV/videos for more than an hour a day at least several days each week.

	Model 1		Model 2	
	B(SE B)	β	B(SE B)	β
Mother's education	-0.20(0.06)	-0.13**	-0.18(0.06)	-0.11**
Mother's age	0.06(0.01)	0.18***	0.04(0.01)	0.13**
Number of rooms in the home	-0.15(0.08)	-0.07†	-0.13(0.08)	-0.06
Child's age			0.05(0.01)	0.13**
Mother is unemployed[a] (dummy)			0.32(0.23)	0.05
Mother is employed[b] (dummy)			0.46(0.18)	0.10*
More than 1 child between 3-24 months (dummy)			0.11(0.26)	0.02
Child is in childcare (dummy)			-0.45(0.28)	-0.08†
Non-traditional video source index			0.29(0.06)	0.18***
Toy index			0.01 (0.004)	0.05
Child is in childcare with TV (dummy)			0.84(0.35)	0.12*
Child has a bedroom TV (dummy)			0.15(0.17)	0.03
Mother's TV/video time			0.05(0.01)	0.25***
R	0.20		0.43	
Adj. R^2	0.03		0.17	

N = 685. ΔR^2 for Step 2 = 0.15 ($p < .001$). ***$p < .001$; **$p < .01$; *$p < .05$; †$p < .10$.

[33] The Durbin-Watson statistic for the full model was 1.94, indicating appropriate independence of errors. A histogram of residuals resembled a normal curve, and the normal probability plot of residuals resembled a straight diagonal line. A plot of standardized predicted values and standardized residuals suggested equivalent variance in residuals across levels of the predictors. The highest variance inflation factor (VIF) in the full model was 2.12, suggesting acceptably low threat of multi-collinearity (Dielman, 2005).

Discussion

This study examines differences in infants' and toddlers' weekly foreground media exposure based on demographic variables and mothers' structural life circumstance factors, each of which would be deemed "distal" factors in the context of the integrative model. The majority of previous studies of infants' and toddlers' TV/video exposure have largely reported the viewing patterns of the "average child," without careful examination of predictive child- or parent-level differences or the manner by which those differences might ultimately influence exposure. As such, the present study adds to our understanding which children may have higher or lower rates of exposure to foreground programming. Together, the "distal" variables studied in this chapter explained 25% of children's estimated foreground TV/video exposure and 17% of mothers' intentions regarding their future exposure. Almost all of the variance accounted for by the demographic variables appears to go through the structural variables, as the contribution of the demographic variables nearly disappears when the structural variables are included.

Thus, the present findings indicate that demographic factors account for much less variation in infants' and toddlers' foreground TV/video-viewing compared to the structural circumstances of their mothers' lives. Although younger mothers and those with higher levels of education tended to have children with lower reported weekly TV/video exposure, these variables were no longer significant predictors when the structural life circumstance variables were added to the model. Having more rooms in the home also predicted less viewing among children, and this variable did retain its predictive power in the full model. It may be that this variable serves as a proxy for the family's access to resources more generally, though income had no association with children's foreground TV/video viewing in any analyses. The number of rooms in the home may also reflect the amount of living space available for each occupant, though a variable representing the person to space ratio in the home is needed to clarify this possibility. Moreover, these three demographic variables combined accounted for only 1% of the variance in the estimates of children's weekly foreground TV/video exposure, suggesting that differences are not driven largely by these demographic factors.

Of further note are the hypothesized demographic variables that were not related to children's exposure in the present analyses. The foremost example is the lack of exposure differences between children of Caucasian and African American mothers, which was contrary to hypotheses and inconsistent with prior literature (e.g., Anand & Krosnick, 2005; Bickham et al., 2003; Certain & Kahn, 2002; Zimmerman, Christakis & Meltzoff, 2007). It is possible that the smaller sample size of Black mothers precluded the power to detect effects, though there were nearly one hundred Black/African American participants in this subsample. It is also possible that this particular study sample contained subsamples of White and/or Black mothers that were otherwise distinct from the general population and from samples from other studies. If this is the case, then these results may not reflect population-level relationships and contrary findings might have been found with a different study sample. A review of the methodology used in prior studies supports this possibility, as the majority of prior parent surveys have been conducted by phone (e.g., Anand & Krosnick; Bickham et al. 2003; Zimmerman, Christakis & Meltzoff, 2007), mail

(Gentile & Walsh, 2002), or in person (Certain & Kahn, 2002; Roberts et al., 1999). Conversely, this study was conducted online, and thus depended on respondents having access to a computer connected to the internet. Surveying only mothers with access to an internet-enabled computer may have led to differences between the participant sample in this study compared with those of other studies. However, it is also possible that differences in children's TV/video-viewing based on race/ethnicity do not emerge until the preschool years. Indeed, the majority of studies that have found such differences among young children have included children older than 24 months (e.g., Anand & Krosnick, 2005; Bickham et al., 2003; Certain & Kahn, 2002).

The strongest predictors of infants' and toddlers' foreground TV/video viewing were found among the factors representing mothers' structural life circumstances, and in particular those circumstances pertaining to children's access to video content and alternative sources of entertainment. Some of these factors had somewhat surprising relationships with exposure. For example, infants and toddler who reportedly had more toys and books to play with also had higher reported rates of foreground TV/video exposure. Although the reverse relationship was expected, there are at least two explanations for this positive association. First, it is possible that for many families the toys and the television set are kept in the same room. If this is true, having more toys could frequently draw children to that room where the TV may also be playing. A second possibility is that the number of toys children have and the amount of television/videos they watch are two indicators of a more general underlying parenting approach. This parenting approach could reflect a propensity to indulge one's children (i.e., with a lot of toys/books, and a generous allowance of

TV/video viewing), or a keen focus on early childhood educational stimulation. That is, some mothers may be highly driven to provide a large amount of stimulation to their infants and toddlers, and this parenting approach manifests itself in buying many different toys and books for children as well as providing them with screen media stimulation. If this is the case, the relationship between the number of toys the child has and his/her foreground media exposure should be at least partially reflect the mother's promotion focus and/or her belief in the critical window of brain development. These relationships will be examined in the Chapter Nine and Chapter Ten analyses respectively.

Furthermore, the availability of various technologies for television- and video-viewing was predictive of children's foreground TV/video exposure in this study. Specifically, the findings point to higher rates of foreground TV/video exposure among children who had more non-traditional sources for viewing video content (e.g., laptops; car TV's), a childcare arrangement that used television and videos, and a television set in their bedroom. One possible explanation is that mothers who have positive attitudes toward television and video programming seek a variety of technologies with which to access this programming, and also allow their children to spend more time watching. Thus, both variables may be caused by mothers' media-related attitudes. On the other hand, it may be that merely having the technologies readily available across settings (e.g., the home; the car) tempts mothers to use them with their infants and toddlers, regardless of their perceptions of that use. These possibilities will be tested in the next chapter, which investigates the extent to which the relationships between children's foreground TV/video exposure and mothers' structural life circumstances are mediated by mothers' cognitions regarding infant/toddler television and video use.

Conversely, this association could be due to parenting approach differences that may also account for the observed positive relationship between the toy index and child's TV/video exposure. That is, having more media technologies to use with the child in various settings, and having a child that watches more foreground screen media may be manifestations of a tendency to provide the child with many different forms of cognitive stimulation. The likelihood of parenting approach differences influencing relationships is also supported by the fact that income had no significant relationship with the extent of television- and video-viewing among infants and toddlers. Thus, it seems that it is not how many resources a mother has, but rather her approach to parenting that likely influences young children's foreground television and video use; and that the differences in approaches may not be determined by demographic variables such as income or education level.

What is more, infants and toddlers with mothers who spent more time watching television themselves also had higher reported rates of foreground TV/video-viewing. There are a number of possible reasons for this association as well. First, it may be that mothers spend a lot of time viewing children's television and video content with their infants and toddlers, which accounts for the overlap between their own foreground viewing and their children's viewing. On the other hand, respondents in this study may have merely misattributed their children's background viewing as foreground viewing. Though every attempt was made to give clear definitions and examples of each form of TV/video exposure within the survey instrument, respondents may have been confused and reported all instances when they thought their child was attending to the screen as foreground viewing, regardless of the nature of the programming. A third possibility is that both mothers' TV/video use and children's foreground TV/video exposure are driven largely by structural circumstance variables that were not measured in this study. For example, an unsafe neighborhood might lead both mother and child to rely more heavily on television and videos as a source of entertainment (see Certain & Kahn 2002). Finally, mothers who watch more television and video programming may have favorable attitudes toward television and video-viewing generally. This general positive attitude may lead to a positive attitude towards young children's viewing as well, driving increased foreground TV/video viewing among their infants and toddlers too. This possibility will be addressed in the following chapter which tests the extent of mediation of mothers' structural life circumstance variables through the proximal cognitive constructs of the IM (e.g., attitude).

The results of this study also point to several structural circumstance variables that may influence children's exposure to TV/videos by impacting mothers' time and level of control over their young children's TV/video-viewing. The strongest such predictor was child's age. Mothers reported that the older children in this study spent more time each week viewing television and videos than did younger children. This is not surprising since children tend to sleep less and become increasing mobile as they advance to toddlerhood. Thus, it may be more difficult and demanding to entertain a toddler compared to an infant, leading to increased reliance on television and videos to occupy older children's time. Additionally, young children undergo vast cognitive developments as they transition through infancy and into toddlerhood, making them more able to comprehend video content (e.g., Anderson & Hanson, 2010; Anderson & Pempek, 2005). Parents may be aware of this growing ability, and accordingly let their toddlers spend more time viewing television and videos. If this is true, mothers' perceptions of the value of TV/videos for their young children may mediate the relationship between children's age and foreground TV/video exposure. This possibility will be examined more thoroughly in the following chapter.

Also noteworthy is the fact that mothers who reported being homemakers had children who spent less time with foreground television and videos, compared to those who identified as either employed or unemployed. These relationships suggest that the association between a mothers' time in the home and children's foreground media exposure is not a direct one, but is rather moderated by factors such as the nature of childcare arrangements and additional demands on a mothers' time. Since it is likely that mothers who are homemakers and those who are unemployed would both spend a lot of time at home with their children, it seems likely that they would have similarly high demand for many activities to entertain their children. It is possible that those who report being unemployed are actively seeking work, however, and thus have greater demands on their time and greater need to find activities that will entertain their children and enable them to work on other tasks (e.g., applying for jobs). However, it is also possible that mothers who classify themselves as homemakers tend to be more sensitive to possible social judgments compared to those who are employed or unemployed. This might make them more likely to under-report their child's actual foreground TV/video exposure.

On the other hand, it might be expected that mothers who are employed would instead have children who watched *less* television and video programming compared to homemakers. Specifically, children with employed mothers are more likely to be in childcare arrangements during the day.[34] There are several explanations for why the opposite relationship was found. First, mothers who are employed may be generally busier than those who are unemployed and homemakers. Employed mothers may bring work home with them, or even work from their home. Furthermore, when they are finished with work these mothers may have a variety of household tasks to perform, thus turning to television and video content as a way to entertain the child while getting other things done.

The higher foreground TV/video exposure rate among children of employed mothers may also reflect the nature of childcare that is used by many mothers. One recent study indicated that there is much variation in the amount of television and video viewing that occurs in daycare settings, although the majority of facilities do not abide by the zero-watching guidelines of the American Academy of Pediatrics (Gordon, 2011). In this study, more than half of mothers whose children were in childcare reported that that childcare arrangement involved television and video viewing for their children (an additional 15% were not sure about TV/video use in the child's childcare arrangement). Thus, for many employed mothers the relatively high

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[34] Indeed, a chi square analysis indicated that mothers who were employed full-time were most likely to report that their children were in childcare (55.9%), followed by those employed part-time (25.7%), homemakers (9.6%), and retired, disabled, and otherwise unemployed mothers (8.8%; χ^2 (3, N = 190) = 171.63, p < .001).

estimates of children's foreground TV/video-viewing may largely reflect their inferences of the viewing done while the children are in outside care.

Interestingly, simple bivariate relationships indicated that having any childcare arrangement at all was associated with greater time viewing TV/videos among target children. However, this relationship was reversed in the full model. That is, having childcare was associated with *less* weekly time viewing among target children when the other structural circumstance variables were controlled (i.e., likely due to the fact that mothers' perception that children did or did not watch TV/videos in childcare was controlled in these later analyses). As such, the findings in the present study related to childcare arrangements, combined with the results regarding mothers' working status, indicate that children who spend less time in the home do not necessarily spend less time with foreground television and videos. Rather, these relationships are more complex, and depend on other factors like the nature of the childcare arrangement and the number of sources of TV/video for children. Future research is needed to gain more detailed insight into intervening factors in these relationships, and to determine the accuracy of mothers' knowledge of the amount of television- and video-viewing that occurs during their young children's time in daycare.

Other interesting findings include the structural life circumstance variables that were *not* significant predictors of children's TV/video exposure. For example, marital status and the number of adults living in the home were unrelated to children's foreground television and video exposure in bivariate analyses. This may be because it is the nature of childcare provided by parents, relatives, and childcare facilities alike that matters, rather than the source alone. Additionally, the total number of additional children living in the home was not related to target children's foreground TV/video use. It is possible that the influence of additional children in the home depends on the age of those children. Children who are close in age to the infant or toddler may be interested in similar programming, leading to the increased foreground TV/video use found among children in this study who had a sibling that was 24 months old or younger. However, older children are likely viewing programming aimed at older audiences, and this may constitute less foreground viewing for babies and toddlers (though likely more background exposure). Similarly, older siblings may help entertain the infant or toddler with non-television related activities, where a younger sibling may not be able to do so. Thus, it is possible that having additional children in the home does influence infant/toddler foreground media exposure, though these associations were not able to be detected here

Finally, these findings have implications for possible campaigns, though further analysis is needed. While the nature of relationships uncovered here offer clues for whom to target in future campaigns to reduce infant/toddler screen time, as well as what aspects of mothers' lives play a role, these findings fall short of informing the best way to design such a campaign. Knowledge of the maternal cognitions that predict more or less use of television and videos with infants or toddlers is needed, as is a deeper understanding of how these cognitions might intervene between structural life circumstances and children's exposure. An essential question is whether these structural influences affect viewing largely though the cognitive variables, or retain a direct association with viewing. These relationships will be examined in the following chapter.

Chapter Seven

Accounting for Children's Foreground TV/video Exposure: Integrative Model vs. Structural Circumstances

The goal of the second dissertation study, addressed in this chapter, is to examine the general operation of integrative model constructs in accounting for mothers' use of foreground TV/videos with their infants and toddlers. In addition, the analyses in this chapter will determine the extent to which mothers' cognitions mediate the relationships between the structural circumstances of mothers' lives, described in the last chapter, and young children's estimated foreground TV/video exposure.

Like the vast array of behaviors previously studied through the integrative model of behavioral prediction and its antecedents, it is likely that mothers' use of foreground television and videos with their young children is influenced by some combination of their attitudes, perceived normative pressure, and perceived behavioral control. A mother's behavioral beliefs and attitude about her child's media use may be formed any number of ways, such as her own experiences growing up with media, the information she receives from doctors or news stories, or marketing messages from children's media producers. Additionally, as she interacts with family members, friends, and others in her life, she may perceive support or disapproval of media use from these sources. Contact with other mothers with young children likely provides her with a sense of the extent to which others like her are using television and videos with their babies and toddlers. Finally, a mother's consideration of her unique skills, abilities, and life circumstances likely contribute to a belief in her own control over the extent of her child's time spent with television and videos. While the results of the elicitation interview study described in Chapter Three indicate that variations in the nature of these three cognitive constructs (i.e., attitudes, perceived norms, perceived behavioral control) exist among mothers with infants and toddlers, the analyses contained in the present chapter will examine which of them correspond most strongly with their actual use of TV/video with children.

Furthermore, while mothers' attitudes, perceived normative pressure, and/or perceived behavioral control are likely associated with TV/video use intentions and behavior; it is also possible that these cognitions are not the primary driving force behind mothers' use of foreground TV/video with their infants and toddlers. It may be that the daily milieu of their lives ultimately determines the extent of their children's screen media exposure, regardless of mothers' beliefs about that exposure. Mothers in the United States live with and parent their young children in a variety of structural circumstances. Many are single-parenting; others are married and also living with additional relatives. Some juggle multiple jobs, while others stay home full-time. Many mothers have only one young child, while others need to divide their time and attention among numerous children and step-children. In addition, there is much diversity among the resources available to mothers with babies and toddlers, leading to differences in the type of home and number of books and toys that each mother can provide for her child. These factors may impact children's foreground TV/video exposure by influencing the more proximal, cognitive constructs laid out in the integrative model (i.e., attitudes, norms and perceived behavioral control regarding children's exposure). It is also conceivable that these and other structural circumstances could impact children's TV/video exposure directly, rather than through the cognitive mediators laid out in the integrative model. Various unalterable realities of mothers' lives may impact the time and resources mothers have available to devote to their child, thereby constituting either barriers to avoiding TV/video use with the child or providing alternatives to that screen media use. As such, the TV/video-use perceptions and TV/video-use behaviors may be inconsistent among some mothers due to the unalterable structural realities of their lives.

This dissertation analysis chapter (i.e., Chapter Seven) has one research question related to the functioning of the integrative model constructs in the prediction of mothers' use of foreground TV/video with their infants and toddlers:

> Research Question 3: Which component(s) of the integrative model of behavioral prediction will be most predictive of mothers' intentions regarding their children's amount of foreground TV/video exposure (i.e., attitudes, perceived social normative pressure or perceived behavioral control), and of children's estimated foreground TV/video exposure?

An additional research questions addresses the additional explanatory power added by the variables reflecting the structural circumstances of mothers' lives, beyond any mediation through the cognitive constructs of the integrative model constructs:

> Research Question 4: Are mothers' structural life circumstances directly associated with children's time spent with foreground TV/video, or are the relationships mediated through the integrative model constructs?

Methods

Measures

This study uses the survey measures described in brief below. While there were additional measures included in the online survey, they are not described here. The measures used and described in Chapter Six are only listed here. Chapter Five also contains a full description of the design and procedure used for this dissertation study, as well as greater details about the survey instrument. Additionally, the full online survey can be found in Appendix D.

Mother's demographic information. Mothers were asked their age, education level, and the number of rooms in their home.

Family composition. Mothers reported the number of children living in the home, in addition to the target child, as well as the number of children between the ages of 3 and 24 months. An additional question asked about the number of additional adults in the home.

Structural circumstances regarding mother's control and need for child TV/videos. Respondents reported their employment status, whether the target child was in childcare, and the target child's age.

Structural circumstances regarding TV/video availability/entertainment alternatives. Mothers reported the number of toys and books available for their child's use, the number of non-traditional sources on which their child ever viewed video content (e.g., cellphone screen; TiVo), whether there was a television set in the child's bedroom, whether they had a childcare arrangement that used TV/videos with the child, and mothers' own weekly time spent viewing TV/videos.

Child's weekly foreground TV/video exposure.

Intention to let child watch more than an hour a day of foreground TV/videos on at least several days each week.

Foreground TV/video attitude. Three 7-point semantic differential items addressed respondents' attitudes regarding the target child viewing television or videos "for more than an hour a day on at least several days each week during the next month" in terms of whether such exposure would be (1) bad/good; (2) foolish/wise; and (3) harmful/beneficial.

Foreground TV/video perceived descriptive norms. Two survey items were included to measure perceived descriptive norms regarding foreground screen media use with children who are two years old and younger: (1) Most people like me with children 2 and under let their children watch television or videos for more than an hour a day on at least several days each week (7-point scale from "likely" to "unlikely"); (2) How many of the people who are most similar to you with children 2 and under let their children watch television or videos for more than an hour a day on at least several days each week? (5-point scale from "None or very few" to "Almost all or all").

Foreground TV/video perceived injunctive norms. Perceived injunctive norms regarding foreground screen media use were assessed through two survey items, including: (1) Most people who are important to me think I should let [child's name] watch television programs or videos for more than an hour a day on at least several days a week during the next month" (7-point scale from "true" to "false"); and (2) "Most people whose opinions I value think that I should let [child's name] watch television programs or videos for more than an hour a day on at least several days a week during the next month" (unlikely/likely).

Foreground TV/video perceived behavioral control. Two survey items measured mothers' perceived behavioral control over their children's foreground screen media use: (1) "I am confident that I can control how much television- and video-watching [child's name] does during the next month" (7-point scale from "true" to "false"); and (2) "The amount my child watches television and videos during the next month is under my control" (7-point scale from "not at all" to "completely").

Data Analysis

Research Question 3. First, individual item analyses were conducted to determine the degree of variability and shape of the distributions among integrative model items (i.e., attitudes, perceived descriptive norms, perceived injunctive norms, perceived behavioral control and intention). These analyses include examinations of the means, standard deviations, and skewness and kurtosis coefficients. Cronbach's alphas and bivariate correlations were used to test internal consistencies before combining relevant items into scales.

Bivariate correlations were then used to determine the extent of linear relationships between the IM constructs and foreground exposure. In addition to correlational analyses, continuous variables were transformed into ordinal-level variables and then the linearity with the dependent variable (i.e., transformed exposure estimate) was assessed using SPSS "means" analysis (i.e., foreground exposure means were tested for significant difference across levels of the independent variable).

Relationships were deemed sufficiently linear when there was a negligible difference between the eta^2 and R^2 coefficients for these analyses.

Next, two ordinary least squares (OLS) regression models were constructed to examine the predictive validity of the four proximal IM constructs in accounting for variance in (1) children's weekly foreground TV/video exposure; and (2) mothers' intentions to let their child watch TV/videos for more than an hour a day at least several days each week. Adjusted R^2 values were evaluated to determine the extent to which the IM constructs account for variance in each model. Standardized beta coefficients were compared to determine which constructs were particularly predictive in each model.

Research Question 4. Three hierarchical regression models were then constructed to determine the extent to which structural life circumstance variables contribute additional explanatory power to the models predicting mothers' intentions and children's foreground TV/video exposure. The first two models predicted estimates of children's foreground TV/video exposure, and the third model predicted mothers' intentions. The first step of each model contained the demographic variables found to be significant in Chapter six as covariates (i.e., mother's age; mother's education level; number of room is in the home). In the second step, the four proximal IM constructs were added, as well as intentions in the second exposure model.[35] In the

[35] Intention was added in the second analysis to determine the extent of explanatory power that structural circumstance variables might add beyond even mothers' intentions. Though these data are cross-sectional, mothers' intentions regarding their children's future foreground exposure may reflect their prior intentions, which should be strongly related to behavior under the tenets of the IM.

third and final step of each model the structural life circumstance variables found to be significant in Chapter Six were entered into the model as well.

Two final hierarchical multiple regression models were constructed, one predicting mother's intentions, and the other predicting children's foreground TV/video exposure. The covariates found to be significant in Chapter Six were entered in the first step. Then structural circumstance variables found to be significantly predictive of children's foreground media exposure were entered together in the second step, followed by the inclusion of attitudes, perceived descriptive and injunctive norms, and perceived behavioral control in the third step. Mediation was determined by the extent of attenuation of relationships between structural variables and foreground exposure with the addition of the cognitive constructs. Tests of mediation involved bootstrapping analyses of 1,000 samples with replacement for each test. Each test of structural circumstance variable mediation assessed the significance of indirect relationships (i.e., indirect relationship estimates with confidence intervals that do not contain zero), controlling for the other structural circumstance variables. The proportion of each total relationship mediated by each IM construct and the four constructs combined were then calculated by dividing each point estimate by the original unstandardized regression coefficient from step 2 of the hierarchical regression analysis.

Results

Integrative model item and scale analyses

Foreground TV/video IM constructs. Table 7.1 contains the means, skewness coefficients and kurtosis coefficients for foreground intention, attitudes, injunctive normative pressure, descriptive normative pressure, and behavioral control items. Across items, all response options were represented in responses. However, responses for the two items measuring perceived behavioral control were particularly skewed towards high perceived control and leptokurtic (i.e., few response-options constituted the bulk of responses). In keeping with the integrative model of behavioral prediction and its appropriate analysis, these items were also not transformed despite deviations from normality.

Next, the relationships were analyzed for internal consistency for the items intended to form integrative model scales. The three attitude items had a Cronbach's alpha of 0.94. They were averaged together to create an estimate of participants' general attitudes toward letting the target children watch more than an hour of TV/videos a day for at least several days each week. This scale had a mean value of 3.93 (*SD* = 1.51) and a median of 4.00 (i.e., on a 7-point response scale).

The two injunctive normative pressure items were correlated at r = .87 ($p <$ .001). They were averaged together to form an estimate of participants' perceived injunctive normative pressure to let their child watch more than an hour a day of TV/videos on at least several days each week. The mean of this resultant scale was 3.40 (*SD* = 1.85; 7-point response scale) and the median was 3.50.

The two descriptive normative pressure items were correlated at r = .74 ($p <$ .001). These items were standardized due to varying response scales (i.e., 5-point scale and 7-point scale; see Table 7.1), and then averaged together to form a single estimate of descriptive normative pressure to allow children to watch more than an hour a day of TV/videos at least several days each week. This scale had a mean value of 0 (*SD* = 0.93) and the median was 0.25.

Finally, the two items that assessed mothers' perceived behavioral control over the target child's foreground TV/video exposure had a correlation of r = .78 ($p < .001$). They were averaged together to create a single estimate of mothers' perceived behavioral control over their children's foreground TV/video exposure. The resultant scale had a mean of 6.40 (*SD* = 1.02; 7-point scale) and a median value of 7.00.

Table 7.1. Foreground media integrative model item analysis.

Construct	Item	Mean (SD)	Skew[a]	Kurtosis[b]
Intention	I will let child watch more than an hour a day at least several days a week	4.19(2.16)	-0.12	-1.35
Attitude	Letting my child watch TV/videos for more than an hour a day on at least several days each week would be: Bad/Good	3.89(1.65)	0.03	-0.51
Attitude	Letting my child watch TV/videos for more than an hour a day on at least several days each week would be: Foolish/Wise	3.81(1.59)	-0.02	-0.46
Attitude	Letting my child watch TV/videos for more than an hour a day on at least several days each week would be: Harmful/Beneficial	4.09(1.55)	-0.03	-0.33
Injunctive norms	Most people who are important to me think that I should let my child watch television/videos for more than an hour a day on at least several days each week during the next month.	3.37(1.95)	0.27	-0.99
Injunctive norms	Most people whose opinions I value think that I should let my child watch television/videos for more than an hour a day on at least several days each week during the next month.	3.43(1.88)	0.23	-0.93
Descriptive norms	Most people like me with children 2 and under let their children watch television/videos for more than an hour a day on at least several days each week.	4.91(1.82)	-0.61	-0.59
Descriptive norms[c]	More specifically, how many of the people who are most similar to you with children 2 and under let their children watch television/videos for more than an hour a day on at least several days each week?	3.50(1.13)	-0.45	-0.57
PBC	I am confident that I can control how much television- and video-watching my child does during the next month	6.39(1.10)	-2.03	4.13
PBC	The amount my child watches television and videos during the next month is up to me	6.40(1.07)	-2.04	4.19

N = 698. [a] SE = .09; [b] SE = .19; [c] Response scale is from 1: none/very few, to 5: almost all/all. All other scales are from 1 – 7.

Research Question 3. Bivariate correlation analyses were conducted to confirm the appropriateness of using multiple linear regression analyses to test relationships among the integrative model constructs. Table 7.2 contains the Pearson correlation coefficients for associations between (1) the transformed estimate of children's weekly foreground exposure; (2) intentions to let children watch TV/videos for more than an hour a week at least several days a week; (3) the attitude scale; (4) the perceived injunctive normative pressure scale; (5) the perceived descriptive norms scale; and (6) the perceived behavioral control scale. All correlations were moderate, significant and in the expected direction except those involving the perceived behavioral control scale. This scale had a weak but significant negative relationship with the weekly exposure variable, but no significant relationship with intention. This is likely due largely to the stunted variability in the PBC items since more than 83% of respondents chose the two responses representing the highest perceived levels of control.

Table 7.2. Correlations between IM constructs regarding foreground media exposure.

Construct	2	3	4	5	6
1. Weekly foreground media exposure[a]	0.57***	0.44***	0.37***	0.28***	-0.11**
2. Intention		0.64***	0.51***	0.42***	-0.05
3. Attitude			0.69***	0.47***	0.06
4. Injunctive norms				0.49***	-0.01
5. Descriptive norms					0.06
6.Perceived behavioral control					

N = 697. [a]Variable was transformed by adding 1 and taking the square root. *p< 0.05; **p< 0.01; ***p < .001.

However, it is also possible that this variable moderates the other constructs in their influence on exposure and intention, rather than exerting influence directly (i.e., level of perceived control may only impact intentions and behavior depending on mothers' level of attitudes, injunctive norms, or descriptive norms). Perceived control over young children's media use likely does not matter for mothers who already have pro-TV/video use attitudes, for example, since these mothers are probably not *trying* to limit or eliminate their children's foreground television and video use. Thus, this construct will be included in analyses, as will interaction terms between PBC and the three other constructs.

Next, a hierarchical OLS regression analysis was conducted to determine the predictive values of the cognitive constructs in accounting for estimates of children's weekly foreground TV/video viewing and mothers' intentions. The first model step contained mothers' attitudes, perceived injunctive norms, perceived descriptive norms and perceived behavioral control as predictors of the transformed estimate of children's weekly foreground TV/video exposure. Three interaction terms were created by multiplying the centered PBC scale values by (1) the centered attitude scale values; (2) the descriptive norm scale values (i.e., already centered), and (3) the centered injunctive norm scale values.[36] These three terms were added to the model in the second step of the analysis.

The standardized and unstandardized regression coefficients for the predictors in each model are presented in Table 7.3. The first model was significant and accounted for 22% of the variance in the estimates of children's exposure (F(4, 685) =

[36] These variables were centered before creating interaction terms to limit multicollinearity in the model.

28.39, p < .001). Attitude was the strongest predictor of exposure, and more positive attitudes predicted higher estimates of children's TV/video viewing (β = 0.35, p < .001). Perceived behavioral control was the second strongest predictor and had a negative relationship with children's exposure (i.e., mothers' lower perceived control was related to more viewing among children; β = -0.14, p < .001). The predictive power of each normative construct was weaker than attitudes and perceived control, though descriptive normative pressure was a significant positive predictor of exposure (β = 0.09, p < .05), and injunctive normative pressure was a marginally significant positive predictor (β = 0.08, p = .09). Adding the three interaction terms in the second step did not contribute predictive value to the model (ΔR^2 = 0.003, *p* = .34).[37]

Table 7.3. IM constructs predicting child's weekly foreground exposure.

	Model 1		Model 2	
	B (SE B)	β	B (SE B)	β
Attitudes	0.35(0.05)	0.35***	0.35(0.05)	0.34***
Desc. Norms	0.14(0.07)	0.09*	0.15(0.07)	0.09*
Injunc. Norms	0.07(0.04)	0.08†	0.07(0.04)	0.09†
PBC	-0.21(0.05)	-0.14***	-0.21(0.05)	-0.14***
PBC x Attitude			-0.002(0.05)	-0.002
PBC x Desc. Norms			-0.10(0.07)	-0.05
PBC x Injunc. Norms			0.03(0.04)	0.03
R	0.47		0.47	
Adj. R^2	0.22		0.22	

N = 685. Dependent variable is square root transformed measure of children's continuous foreground. TV/video exposure estimate. ΔR^2 for Step 2 = 0.003 (p = .45); †p< .10; *p < .05; **p < .01; **p < .001

[37] The Durbin Watson statistic for the full model was 2.16, which indicates adequate independence of errors. A histogram of the residuals resembled a normal curve, and a normal probability plot of residuals deviated only slight from a straight diagonal line (i.e., suggesting some minimal deviation from normality). The highest VIF value in the model was 2.57, which is adequately below the conventional 10.0 indicator of multicollinearity. A plot of the standardized predicted values and standardized residuals indicated somewhat higher variance in the upper levels of the predictors (i.e., some heteroscedasticity).

These steps were repeated to test the associations between mothers' intentions and the four proximal IM constructs as well as the three interaction terms. All of the standardized and unstandardized regression coefficients are displayed in Table 7.4, as are the model R and R^2 values. The first step of this model was significant ($F(4, 696) = 132.04$, $p < .001$), and indicated that the four proximal IM constructs accounted for 43% of the variance in mothers' intentions to let their child watch foreground TV/videos for more than an hour a day at least several days each week. Attitude was the strongest predictor of intention, again in the positive direction ($\beta = 0.53$, $p < .001$). Descriptive normative pressure was the second strongest predictor, and this relationship was also positive ($\beta = 0.14$, $p < .001$). Perceived behavioral control had a significant negative relationship with mothers' intentions ($\beta = -0.09$, $p < .01$), and injunctive normative pressure had a marginally significant positive association ($\beta = 0.07$, $p = .09$). Like the model predicting children's exposure, the three interaction terms in the second step did not add explanatory power to the overall model ($\Delta R^2 = 0.001$, $p = 0.77$).[38]

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[38] The Durbin-Watson statistic for the full model was 2.03, indicating independence of errors. A histogram of residuals resembled a normal curve and a normal probability plot of residuals resembled straight line, suggested normally distributed residuals. A plot of the standardized predicted values and standardized residuals indicated no differences in the variance of residuals across levels of the predictor (i.e., acceptable homoscedasticity). Across models, the highest VIF value was 2.13, which is substantially below the 10.0 indicator of multi-collinearity.

Table 7.4. IM constructs predicting mothers' intentions to let their child watch more than an hour a day of TV/videos at least several days each week

	Model 1		Model 2	
	B(SE B)	β	B(SE B)	β
Attitudes	0.75(0.06)	0.53***	0.74(0.06)	0.52***
Desc. Norms	0.33(0.08)	0.14***	0.33(0.08)	0.14***
Injunc. Norms	0.08(0.05)	0.07	0.09(0.05)	0.07
PBC	-0.18(0.06)	-0.09**	-0.17(0.06)	-0.12***
PBC x Attitude			0.05(0.06)	0.03
PBC x Desc Norms			-0.05(0.08)	-0.02
PBC x Injunc Norms			0.01(0.05)	0.01
R	0.66		0.66	
Adj. R^2	0.43		0.43	

N = 679. ΔR^2 for Step 2 = 0.01 ($p < .001$); ***$p < .001$; **$p < .01$; *$p < .05$.

Research Question 4. The next set of analyses investigated how much predictive power the set of structural circumstance variables might add to the IM variables. First, two hierarchical OLS regressions were conducted, each with the transformed estimate of exposure as the dependent variable. Predictor variables were added in three steps. The first step contained the three demographic variables found to be predictive of exposure in Chapter Six (i.e., mother's age; mother's education level; number of rooms in the home). In the second step the four proximal IM constructs were added, as well as mothers' intentions in the second analysis (i.e., to investigate whether the structural variables might add explanatory power beyond intentions as well as the proximal IM predictors). Then, the ten significantly predictive structural life circumstance variables (see Chapter Six) were added to the model in the 3rd step of each analysis.

The first model of both models contained the transformed estimate of children's foreground TV/video exposure as the dependent variable, and all regression coefficients and R and R^2 values from this analysis are displayed in Table 7.5. As found in the analyses of Chapter Six as well, the three demographic variables accounted for 1% of the variance in children's exposure estimates ($F(3, 684) = 3.02$, $p < .05$). Following the second step of the first analysis, the four proximal IM constructs accounted for an additional 22% of variance in the estimates of children's exposure ($\Delta R^2 = 0.22$, $p < .001$; see Table 7.5). The full model was significant ($F(17, 684) = 22.66$, $p < .001$). The structural circumstance variables in the third step added an additional 14% of variance accounted for by the model (i.e., full model adj. $R^2 = 0.35$; step 3 $\Delta R^2 = 0.14$, $p < .001$).[39]

The inclusion of intentions in the second step of the second analysis boosted the variance accounted for by the IM variables to 34%. As shown in Table 7.6, the structural circumstance variables had only slightly lower predictive weights compared to the prior analysis not containing intentions (see Table 7.5), suggesting that they add explanatory power beyond mothers' attitudes, perceived normative pressure, perceived control, and intentions.

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[39] The Durbin-Watson statistic for the full model was 2.13, indicating independence of errors. A histogram of residuals resembled a normal curve and a normal probability plot of residuals deviated only slightly from a straight diagonal line (i.e., minimal deviation from normality). A plot of the standardized predicted values and standardized residuals indicated slightly higher variance of residuals in the higher levels of the predictors (i.e., some heteroscedasticity). Across models, the highest VIF value was 2.26, which is substantially below the 10.0 indicator of multi-collinearity.

Table 7.5. Role of demographic, structural circumstance, and cognitive construct variables in predicting children's weekly time with foreground screen media.

	Model 1		Model 2		Model 3	
	B(SE B)	β	B(SE B)	β	B(SE B)	β
Mother's education	-0.09(0.04)	-0.08†	0.002(0.04)	0.002	0.002(0.04)	0.002
Mother's age	0.02(0.01)	0.09*	-0.01(0.01)	-0.02	-0.01(0.01)	-0.02
Number of rooms in the home	-0.10(0.06)	-0.07†	-0.09(0.05)	-0.06†	-0.09(0.05)	-0.06†
Attitudes			0.34(0.05)	0.34***	0.28(0.05)	0.28***
Injunctive norms			0.07(0.04)	0.09†	0.02(0.04)	0.02
Descriptive norms			0.14(0.06)	0.09*	0.14(0.06)	0.09*
Perceived behavioral control			-0.20(0.05)	-0.13***	-0.17(0.05)	-0.11**
Child's age					0.05(0.01)	0.21***
Mother is unemployed[a] (dummy)					0.35(0.15)	0.08*
Mother is employed[b] (dummy)					0.09(0.12)	0.03
> 1 child between 3-24 months (dummy)					0.28(0.17)	0.05†
Child is in childcare (dummy)					-0.49(0.17)	-0.13**
Non-traditional video source index					0.09(0.04)	0.08*
Toy index					0.01(0.002)	0.14***
Child is in childcare with TV (dummy)					0.94(0.22)	0.19***
Child has a bedroom TV (dummy)					0.18(0.11)	0.05
Mother's TV/video time					0.03(0.004)	0.20***
R	0.12		0.48		0.61	
Adj. R^2	0.01		0.22		0.35	

N = 684. ΔR^2 for Step 2 = 0.22 ($p < .001$); ΔR^2 for Step 3 = 0.14 ($p < .001$). ***p < .001; **p < .01; *p < .05; †p < .10.

Table 7.6. Role of demographic, structural circumstance, proximal cognitive constructs, and intentions in predicting children's weekly time with foreground screen media.

	Model 1		Model 2		Model 3	
	B(SE B)	β	B(SE B)	β	B(SE B)	β
Mother's education	-0.09(0.04)	-0.08†	0.01(0.04)	0.01	0.01(0.04)	0.01
Mother's age	0.02(0.01)	0.09*	-0.01(0.01)	-0.02	-0.01(0.01)	-0.05
Number of rooms in the home	-0.10(0.06)	-0.07†	-0.03(0.05)	-0.02	-0.07(0.05)	-0.05†
Attitudes			0.10(0.05)	0.10*	0.09(0.05)	0.09†
Injunctive norms			0.04(0.04)	0.05	0.001(0.04)	0.001
Descriptive norms			0.05(0.06)	0.03	0.05(0.06)	0.03
Perceived behavioral control			-0.14(0.05)	-0.10**	-0.12(0.05)	-0.08**
Intentions			0.33(0.03)	0.47***	0.27(0.03)	0.38***
Child's age					0.04(0.01)	0.17***
Mother is unemployed[a] (dummy)					0.31(0.14)	0.07*
Mother is employed[b] (dummy)					0.04(0.11)	0.01
> 1 child between 3-24 months (dummy)					0.28(0.16)	0.05†
Child is in childcare (dummy)					-0.44(0.16)	-0.12**
Non-traditional video source index					0.07(0.04)	0.06*
Toy index					0.01(0.002)	0.12***
Child is in childcare with TV (dummy)					0.87(0.21)	0.17***
Child has a bedroom TV (dummy)					0.20(0.10)	0.06*
Mother's TV/video time					0.02(0.004)	0.15***
R	0.12		0.59		0.67	
Adj. R^2	0.01		0.34		0.43	

N = 684. ΔR^2 for Step 2 = 0.34 (p < .001); ΔR^2 for Step 3 = 0.10 (p < .001). ***p < .001; **p < .01; *p < .05; †p < .10.

The third regression model repeated the above steps to test associations with mothers' intentions. All resultant standardized and unstandardized coefficients, and model R and R^2 values are contained in Table 7.7. The addition of the IM constructs in the second step of the model raised the amount of variance explained to 44%, from the 3% explained by the three demographic variables ($\Delta R^2 = 0.41$, $p<.001$). The full model was significant ($F(17, 685) = 35.80$, p < 001), and the addition of the structural circumstance variables in the third step contributed an additional 3% of variance explained by the model (i.e., full model adj. $R^2 = 0.46$; step 3 $\Delta R^2 = 0.03$, $p < .001$).[40]

[40] The Durbin-Watson statistic for the full model was 2.01, indicating independence of errors. A histogram of residuals resembled a normal curve and a normal probability plot of residuals resembled a straight diagonal line. A plot of the standardized predicted values and standardized residuals indicated no variance of residuals across levels of the predictors (i.e., appropriate homoscedasticity). Across models, the highest VIF value was 2.26.

Table 7.7. Mothers' demographic, structural life circumstances, and cognitions as predictors of their intentions to let their children view foreground TV/videos for more than an hour a day at least several days each week.

	Model 1		Model 2		Model 3	
	B(SE B)	β	B(SE B)	β	B(SE B)	β
Mother's education	-0.20(0.06)	-0.13**	-0.02(0.05)	-0.02	-0.03(0.05)	-0.02
Mother's age	0.06(0.01)	0.18***	0.03(0.01)	0.08**	0.02(0.01)	0.06*
Number of rooms in the home	-0.15(0.08)	-0.07†	-0.06(0.06)	-0.03	-0.09(0.07)	-0.04
Attitudes			0.72(0.06)	0.51***	0.69(0.06)	0.48***
Injunctive norms			0.10(0.05)	0.08*	0.06(0.05)	0.05
Descriptive norms			0.35(0.08)	0.15***	0.34(0.08)	0.15***
Perceived behavioral control			-0.17(0.06)	-0.08**	-0.16(0.06)	-0.08*
Child's age					0.03(0.01)	0.09**
Mother is unemployed[a] (dummy)					0.14(0.19)	0.02
Mother is employed[b] (dummy)					0.18(0.15)	0.04
> 1 child between 3-24 months (dummy)					-0.01(0.21)	-0.002
Child is in childcare (dummy)					-0.17(0.22)	-0.03
Non-traditional video source index					0.06(0.05)	0.04
Toy index					0.004(0.003)	0.05
Child is in childcare with TV (dummy)					0.25(0.28)	0.04
Child has a bedroom TV (dummy)					-0.12(0.14)	-0.03
Mother's TV/video time					0.03(0.01)	0.15***
R	0.19		0.67		0.69	
Adj. R^2	0.03		0.44		0.46	

N = 685. ΔR^2 for Step 2 = 0.41 (p < .001); ΔR^2 for Step 3 = 0.03 (p < .001). ***p < .001; **p < .01; *p < .05; †p < .10.

Two final hierarchical regression analyses examined how fully the integrative model constructs might mediate associations between mothers' structural life circumstances with intentions and children's exposure. In these analyses, the last two steps from the above analyses were reversed: first the structural variables were entered, then the IM variables were entered. This permitted a clearer assessment of how much of the influence of the structural variables was mediated by the IM variables and how much was independent of them. A series of bootstrapping analyses were also conducted to determine the extent to which each of the proximal cognitive constructs of the integrative model (i.e., attitudes, injunctive norms, descriptive norms, and perceived behavioral control) mediated the relationships between the predictive structural circumstance variables and mothers' intentions and estimates of children's weekly foreground TV/video exposure. In the regression analyses, the three covariates were entered first in each model. Then, the ten significant structural circumstance variables were entered in the second step simultaneously. Next, the four proximal cognitive constructs of the integrative model (i.e., attitudes, descriptive norms, injunctive norms, and perceived behavioral control) were entered together in the third step of the analysis.

The first model included the transformed estimates of children's foreground TV/video exposure as the dependent variable. As conveyed in Table 7.8, the regression weights of the ten structural circumstance variables were not substantively diminished between model steps 2 and 3, suggesting only partial mediation by the IM constructs. However, the coefficients for seven structural circumstance variables were slightly to moderately weaker following the addition of the IM constructs. Here

(Table 7.8) and in the previous chapter, the structural variables were shown to account for 25% of the variance in foreground variables without the IM variables included. In Table 7.5 they are shown to account for an add-on 14% of the variance when the proximal IM variables were included. Thus, crudely, (1.00- 14/25) or 44% of the association of the structural variables with child viewing was mediated by the four proximal IM variables and 56% was not. In Table 7.6 they account for an additional 10% of variance in children's exposure when the proximal IM variables and intentions are included. This analysis indicates, then, that (1.00-10/25) or 60% of the relationship between structural circumstances and child viewing was mediated.

Bootstrapping analyses were conducted next to test the significance of indirect paths from each of the structural circumstance variables to exposure through the proximal integrative model constructs (see Preacher & Hayes, 2008)[41]. Each analysis tested the indirect path of an individual structural circumstance variable through the four proximal IM constructs, controlling for the demographic covariates. Table 7.9 contains the indirect point estimates for the structural circumstance variables through each cognitive constructs, as well as the combined total estimate of mediation (i.e., mediation through the four IM constructs combined). Ratios were calculated by dividing each point estimate by the original unstandardized regression coefficient from

[41] Bootstrapping mediation analyses test random subsamples of the full sample for direct and indirect effects, and create confidence intervals around the estimates based on the pooled results. This method is preferable to Baron and Kenny (1986) "causal steps approach" or Sobel tests when testing multiple mediator models, particularly when the sample distribution may be non-normal (see Preacher & Hayes, 2008; Rucker, Preacher, Tormala & Petty, 2011). These analyses were conducted using the "Indirect" SPSS script created by Hayes (2011), available from: http://www.afhayes.com/spss-sas-and-mplus-macros-and-code.html.

the above analysis (i.e., the B coefficients from the Model 2 section of Table 7.8). The resultant values represent the estimated proportion of the total relationship between each structural circumstance variable and children's foreground TV/video exposure that is mediated by the given construct (see Table 7.9). The confidence intervals around the point estimates obtained from the bootstrap analyses were examined to determine which indirect paths were significantly different from zero (i.e., confidence intervals that do not contain zero).

The structural circumstance variables most strongly mediated by the IM variables were the index of non-traditional sources for viewing video content (estimated mediation = 52%) and mother's status as employed (50%). Three other variables were moderately mediated, including having a television set in the child's bedroom (33%), having childcare arrangements that use TV/videos (24%), and mothers' own weekly TV/video viewing time (23%). For most of the variables the strongest indirect paths were through attitude, though there were also significant paths through descriptive norms and perceived behavioral control in several cases.

Table 7.8. Role of demographic, structural circumstance, and cognitive construct variables in predicting children's weekly time with foreground screen media.

	Model 1		Model 2		Model 3	
	B(SE B)	β	B(SE B)	β	B(SE B)	β
Mother's education	-0.10(0.04)	-0.08*	-0.06(0.04)	-0.06	0.002(0.04)	0.002
Mother's age	0.02(0.01)	0.09*	0.004(0.01)	0.02	-0.01(0.01)	-0.02
Number of rooms in the home	-0.10(0.06)	-0.07†	-0.12(0.06)	-0.08*	-0.09(0.05)	-0.06†
Child's age			0.06(0.01)	0.23***	0.06(0.01)	0.23***
Mother is unemployed[a] (dummy)			0.43(0.16)	0.10**	0.35(0.15)	0.08*
Mother is employed[b] (dummy)			0.23(0.12)	0.07†	0.09(0.12)	0.03
> 1 child between 3-24 months (dummy)			0.31(0.18)	0.06†	0.28(0.17)	0.05†
Child is in childcare (dummy)			-0.61(0.19)	-0.16**	-0.50(0.17)	-0.13**
Non-traditional video source index			0.19(0.04)	0.16***	0.09(0.04)	0.08*
Toy index			0.01 (0.002)	0.14***	0.01(0.002)	0.14***
Child is in childcare with TV (dummy)			1.23(0.23)	0.24***	0.94(0.22)	0.19***
Child has a bedroom TV (dummy)			0.27(0.11)	0.08*	0.18(0.11)	0.05
Mother's TV/video time			0.03(0.004)	0.26***	0.03(0.004)	0.20***
Attitude					0.28(0.05)	0.28***
Injunctive norms					0.02(0.04)	0.02
Descriptive norms					0.14(0.06)	0.09*
Perceived behavioral control					-0.17(0.05)	-0.11**
R	0.12		0.52		0.61	
Adj. R^2	0.01		0.25		0.35	

N = 685. ΔR^2 for Step 2 = 0.25 (p < .001); ΔR^2 for Step 3 = 0.10 (p < .001); ΔR^2 for Step 4 = 0.08 (p < .001). ***p < .001; **p < .01; *p < .05; †p < .10.

Table 7.9. Indirect paths between structural circumstance variables and children's foreground TV/video exposure through mothers' cognitions.

Structural variable (original effect)[a]	Total indirect paths Point estimate[b] (proportion of B)[c]	Attitudes Point estimate[b] (proportion of B)[c]	Injunctive Norms Point estimate[b] (proportion of B)[c]	Descriptive Norms Point estimate[b] (proportion of B)[c]	Perceived Control Point estimate[b] (proportion of B)[c]
Child's age (0.06)	0.006(0.10)	0.003(0.05)	0.0003(0.005)	0.001(0.02)	0.002(0.03)
Mother is unemployed (0.43)	0.023(0.05)	0.041(0.10)	-0.003(0.01)	-0.018(0.04)	0.003(0.01)
Mother is employed (0.23)	**0.116(0.50)**	0.043(0.19)	0.005(0.02)	**0.026(0.11)**	**0.041(0.18)**
> 1 child between 3-24 months (0.31)	0.034(0.11)	0.021(0.07)	0.005(0.02)	**0.038(0.12)**	-0.030(0.10)
Child is in childcare (-0.61)	-0.111(0.18)	-0.071(0.12)	-0.008(0.01)	-0.029(0.05)	-0.003(0.005)
Non-traditional video source index (0.19)	**0.099(0.52)**	**0.077(0.41)**	0.007(0.04)	0.005(0.03)	**0.010(0.05)**
Toy index (0.01)	0.000(0.00)	-0.0003(0.03)	0.0001(0.01)	**0.0005(0.05)**	-0.0004(0.04)
Child is in childcare with TV (1.23)	**0.290(0.24)**	**0.165(0.13)**	0.013(0.01)	0.026(0.02)	**0.087(0.07)**
Child has a bedroom TV (0.27)	**0.091(0.33)**	**0.097(0.36)**	0.005(0.02)	0.012(0.04)	-0.022(0.08)
Mother's TV/video time (0.03)	**0.007(0.23)**	**0.007(0.23)**	0.0004(0.01)	**0.001(0.03)**	**-0.001(0.03)**

N = 685. [a]Values represent the B values for the structural circumstance variables displayed in Table 7.8 Model 2. [b]Values represent indirect point estimates based on bootstrapping analyses with 1,000 samples, controlling for other structural circumstance variables and demographic covariates (see Preacher & Hayes, 2008). [c]Values represent the ratio of indirect relationship point estimates to the original B value (i.e., B values from Model 2 section of Table 7.8), or the proportion of total relationship that is mediated. Bold values indicate confidence intervals that do not contain zero, representing an indirect relationship that is statistically different from zero.

The final hierarchical regression model predicted mothers' intentions to let their children watch more than an hour of TV/videos a day on at least several days each week. Again demographic, structural circumstance, and IM predictors were added in three separate steps. In this model, the IM variables accounted for an additional 29% of variance beyond that explained by the demographic and structural circumstance variables (step 3 $\Delta R^2 = 0.29$, $p < .001$). All standardized and unstandardized coefficients are presented in Table 7.10. All of the significant or marginally significant predictors from Model 2 had diminished predictive power in Model 3, though two variables did retain their significance. Here (Table 7.10) and in the previous chapter, the structural variables without including the IM variables had added 15% to the demographic variables in predicting intention. Here (Table 7.7), they add only 3% once IM variables are controlled. Crudely 80% (1-3/15) of the association of the structural variables and intention are mediated through the IM constructs, and only 20% represents an independent influence.

Final bootstrapping analyses were conducted to test the significance of indirect paths from each of the six significant or marginally significant structural circumstance variables to intentions through the proximal IM constructs. These analysis steps mirrored those discussed above, and the resultant indirect point estimates and proportions of mediated relationships are displayed in Table 7.11. Four of the six structural circumstance variables had significant combined indirect paths (i.e., mediation through all four proximal IM variables combined). The most strongly mediated variable was the index of non-traditional sources of video content (estimated mediation = 80%), followed by childcare arrangements that use TV/videos (71%), mother's status as employed (52%), and mother's own TV/video-viewing time (38%). Again, the strongest discrete indirect paths were through attitudes, though there were also significant paths through descriptive norms and perceived behavioral control.

Table 7.10. Mothers' demographic, structural life circumstances, and cognitions as predictors of their intentions to let their children view foreground TV/videos for more than an hour a day at least several days each week.

	Model 1		Model 2		Model 3	
	B(SE B)	β	B(SE B)	β	B(SE B)	β
Mother's education	-0.20(0.06)	-0.13**	-0.18(0.06)	-0.11**	-0.03(0.05)	-0.02
Mother's age	0.06(0.01)	0.18***	0.04(0.01)	0.13**	0.02(0.01)	0.06*
Number of rooms in the home	-0.15(0.08)	-0.07†	-0.13(0.08)	-0.06	-0.09(0.07)	-0.04
Child's age			0.05(0.01)	0.13**	0.03(0.01)	0.09**
Mother is unemployed[a] (dummy)			0.32(0.23)	0.05	0.14(0.19)	0.02
Mother is employed[b] (dummy)			0.46(0.18)	0.10*	0.18(0.15)	0.04
> 1 child between 3-24 months (dummy)			0.11(0.26)	0.02	-0.02(0.21)	-0.002
Child is in childcare (dummy)			-0.45(0.28)	-0.08†	-0.17(0.22)	-0.03
Non-traditional video source index			0.29(0.06)	0.18***	0.06(0.05)	0.04
Toy index			0.01 (0.004)	0.05	0.004(0.003)	0.05
Child is in childcare with TV (dummy)			0.84(0.35)	0.12*	0.25(0.28)	0.04
Child has a bedroom TV (dummy)			0.15(0.17)	0.03	-0.12(0.14)	-0.03
Mother's TV/video time			0.05(0.01)	0.25***	0.03(0.01)	0.15***
Attitudes					0.69(0.06)	0.48***
Injunctive norms					0.06(0.05)	0.05
Descriptive norms					0.34(0.08)	0.15***
Perceived behavioral control					-0.16(0.06)	-0.08*
R	0.20		0.43		0.69	
Adj. R^2	0.03		0.17		0.46	

N = 685. ΔR^2 for Step 2 = 0.15 ($p < .001$); ΔR^2 for Step 3 = 0.29 ($p < .001$) . ***p < .001; **p < .01; *p < .05; †p < .10.

Table 7.11. Indirect paths between structural circumstance variables and children's foreground TV/video exposure through mothers' cognitions.

Structural variable (original effect)[a]	Total Point estimate[a] (proportion of B)[b]	Attitudes Point estimate[a] (proportion of B)[b]	Injunctive Norms Point estimate[a] (proportion of B)[b]	Descriptive Norms Point estimate[a] (proportion of B)[b]	Perceived Control Point estimate[a] (proportion of B)[b]
Child's age (0.05)	0.012(0.24)	0.007(0.14)	0.001(0.02)	0.003(0.06)	**0.002(0.04)**
Mother is employed (0.46)	**0.241(0.52)**	0.115(0.25)	0.020(0.04)	**0.065(0.14)**	**0.041(0.09)**
Child is in childcare (-0.45)	-0.285(0.63)	-0.185(0.41)	-0.024(0.05)	-0.071(0.16)	-0.005(0.01)
Non-traditional video source index (0.29)	**0.231(0.80)**	**0.187(0.64)**	0.023(0.08)	0.012(0.04)	**0.009(0.03)**
Child is in childcare with TV (0.84)	**0.600(0.71)**	**0.405(0.48)**	0.041(0.05)	0.068(0.08)	**0.083(0.10)**
Mother's TV/video time (0.05)	**0.019(0.38)**	**0.016(0.32)**	0.002 (0.04)	**0.003(0.06)**	**-0.002(0.04)**

N = 685. [a]Values represent the B values for the structural circumstance variables displayed in Table 7.10 Model 2. [b]Values represent indirect point estimates based on bootstrapping analyses with 1,000 samples, controlling for other structural circumstance variables and demographic covariates (see Preacher & Hayes, 2008). [c]Values represent the ratio of indirect relationship point estimates to the original B value (i.e., B values from Model 2 section of Table 7.10), or the proportion of total relationship that is mediated. Bold values indicate confidence intervals that do not contain zero, representing an indirect relationship that is statistically different from zero.

Figures were created to portray the relationships predicting mothers' intentions and estimates of their children's weekly foreground TV/video-viewing. Figure 7.1 pertains to children's estimated weekly viewing. The R^2 values between the set of structural circumstances and each proximal variable were obtained through four hierarchical regression analyses. Demographic variables were entered first in the analyses, followed by the structural circumstance variables. Each R^2 value in both figures represents the change in R^2 values between the 1st and 2nd model steps for the respective models. The standardized coefficients and R^2 value for the proximal constructs in predicting exposure were taken from Table 7.5, Model 2. The R^2 value for the independent contribution of the structural circumstance variable set was taken from Table 7.5, Model 3 (i.e., the change in the R^2 value from step 2). The respective values for the intention model in Figure 7.2 were taken from Table 7.7, Models 2-3.

Figure 7.1. Predictors of mothers' estimates of infant/toddler weekly TV/video exposure.

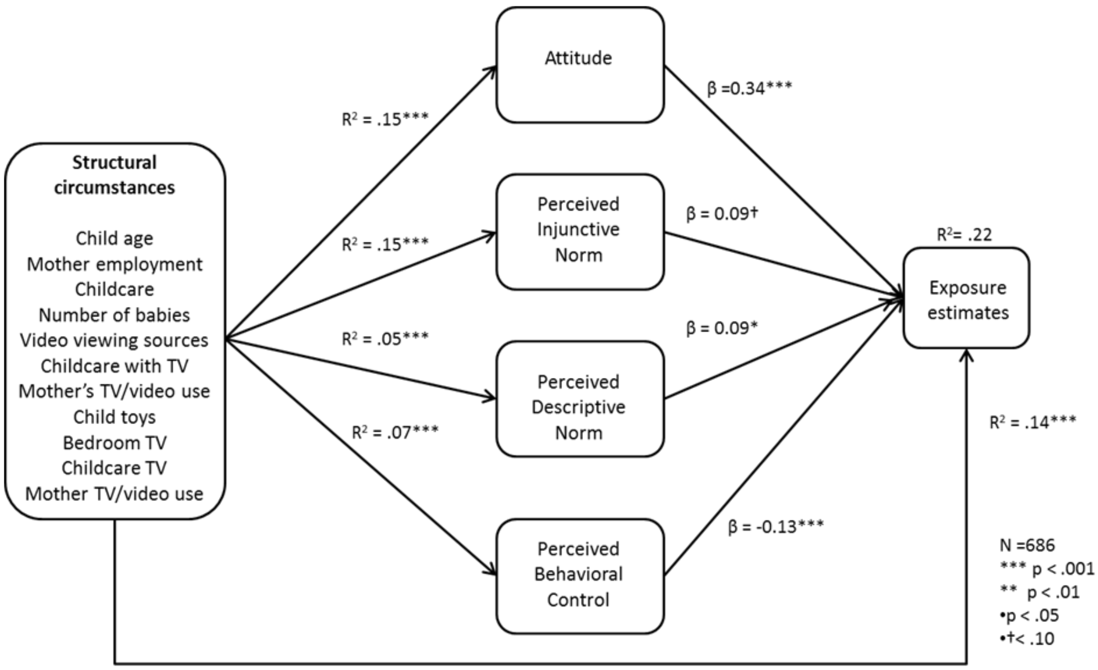
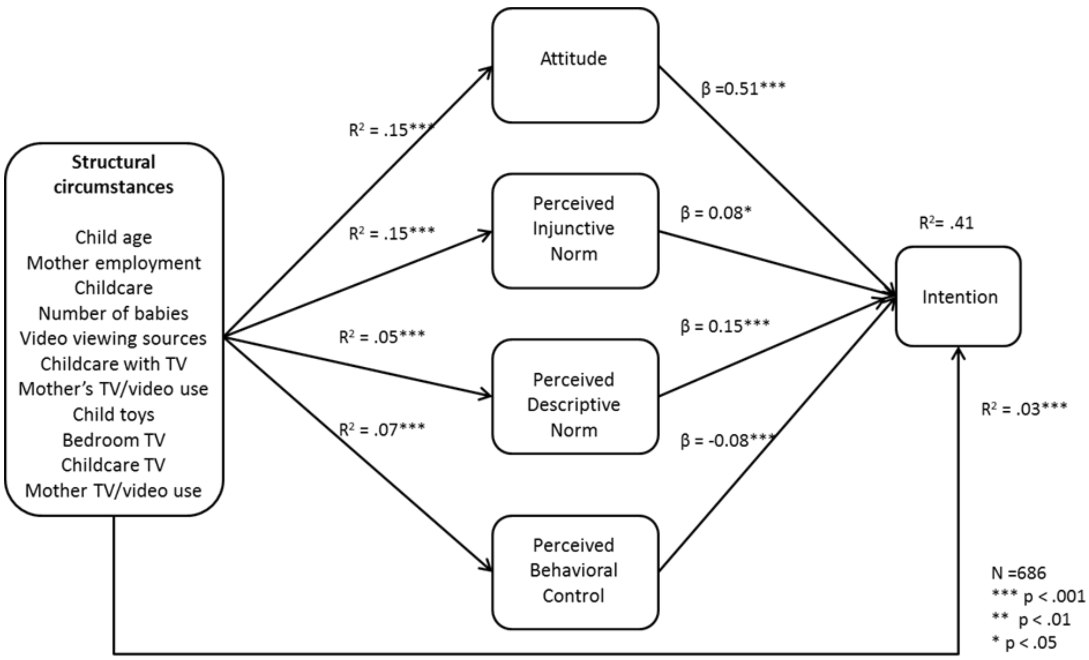


Figure 7.2. Predictors of mothers' intentions to let infants/toddlers view foreground TV/video for more than an hour a day at least several days each week.



Discussion

The goal of this study was to examine the predictive value of mothers' perceptions attitudes, perceived norms, and perceived behavioral control regarding infant/toddler television and video use in accounting for the extent of their infants' and toddlers' weekly exposure to foreground television and videos, as well as the degree to which those perceptions mediate the role of mothers' structural life circumstances. The results indicated that the cognitive constructs of the integrative model account for roughly the same amount of variance in young children's foreground television and video exposure as do the structural circumstance variables. Though the IM constructs are substantially more predictive of mothers' intentions to let their children view TV/videos, the structural circumstance variables do play a small independent predictive role as well. Furthermore, while there is some evidence of mediation through the cognitive constructs, the findings suggest that numerous structural circumstance factors also directly impact mothers' intentions and particularly young children's actual foreground TV/video exposure.

The results of this chapter suggest that while the integrative model of behavioral prediction does operate relatively well in predicting young children's foreground TV/video exposure from their mothers' cognitions, the model's constructs are not sufficient for predicting that exposure (i.e., the IM does not fully account for associations with demographic and structural life circumstance factors). In particular, the results do not support the model's "principle of theoretical sufficiency", which contends that the impact of exogenous factors on behavior is mediated fully through cognitions (e.g., see Ajzen & Albarracin, 2007; Hennessy et al., 2010). This may be due in part to the fact that the model is not being used here to predict mothers' behavior per se, but rather their children's total exposure to TV and videos. As such, these analyses do not strictly conform to the strict tenets for the definition and measurement of behavior and corresponding constructs laid out by the IM authors (Fishbein & Ajzen, 2010). This may partly account for the lower degree of mediation of relationships between structural life circumstance factors and exposure compared to intention (i.e., which defines the behavior in the same manner as the other IM survey items). The use of children's total exposure as a proxy for mother's behavior was due to several considerations. First, children's total foreground media exposure is of more practical concern than merely the amount of time their mothers put on TV/videos for them to watch. Second, measuring only the amount of time that mothers themselves choose to put on TV/videos for their children could bias the findings based on the amount of time the mother spends in the home with her child. For example, this measurement of exposure could result in findings which suggest that children of stay-at-home mothers watch more TV/videos when this may not be the case (and in fact the results of Chapter Six suggest this is not the case). Finally, based on insights from the elicitation interview study, it seems likely that the amount of time the mother herself puts on TV/videos for her infant/toddler would overlap substantially with the total amount of time the child is exposed to foreground TV/videos. Indeed, the fact that more than a third of the variation in children's estimated weekly foreground exposure can be predicted from mothers' cognitions and structural life circumstances supports mothers' role in determining that exposure.

In this study, mothers' attitudes regarding their children's foreground television and video use were the strongest predictors of children's concurrent weekly foreground TV/video exposure and mothers' future intentions to show their child TV/videos. That is, the more they felt foreground television and video use with the child was good, wise, and beneficial, the higher their reports of the target children's foreground TV/video exposure and of their intentions to let the children view TV/videos for more than an hour a day on at least several days each week. The principles of the integrative model of behavioral prediction contend that one's attitudes are driven by their discrete beliefs regarding the likelihood of various favorable and unfavorable outcomes associated with performing the behavior.

Mothers' behavioral beliefs regarding infant and toddler TV/video use were elicited from mothers in the interview study described in Chapter Three. The nature of these beliefs and their relationships to children's time spent viewing foreground television and videos will be examined in Chapter Eight.

In the present analyses, mothers generally expressed high perceptions of their own control over children's foreground television and video exposure. This was somewhat surprising given the range of challenging structural circumstances many mothers negotiate in the context of their parenting (e.g., single-parenting; parenting additional children). Despite the stunted variance in perceived control among mothers in this sample, this construct was significantly related to both mothers' intentions and their estimates of children's actual TV/video exposure. Notably, lower perceived behavioral control was even more strongly predictive of higher exposure rates among children, than of mothers' intentions. This suggests that perceived control may have a direct residual relationship with exposure that is not mediated through intentions, though this possibility cannot be confirmed with the present cross-sectional data. Still, it is possible that mothers' feelings of personal control over their children's television- and video-viewing impact children's rates of viewing, regardless of mothers' TV/video use intentions. The possibility of a direct effect between mothers' perceived behavioral control and infants' and toddlers' time spent viewing TV/videos should be investigated in future research, particularly given that such a finding would have implications for a campaign to reduce children's screen time.

In addition, perceived descriptive norms were also significantly predictive of exposure, such that mothers who perceived that many mothers like themselves were using foreground TV/videos with their children tended to have children who watched more foreground screen TV/videos and higher intentions to let them do so in the next month. Notably, the other normative dimension, perceived injunctive normative pressure, was not predictive of children's foreground TV/video use, though this construct did predict intentions. Thus, at the time of deciding the appropriate TV/video diet for their infants/toddlers, mothers seem to be more influenced by what other mothers are doing, rather than how others in their lives want them to act. Given that these data are correlational, however, it is also possible that these relationships are not causal. That is, some unmeasured third variable(s) may in fact cause the various factors, rather than a direct causal relationship between them. Moreover, the relationships may also operate in the reverse direction such that the amount that children view televisions and videos is influencing mothers' attitudes, perceived descriptive norms, and perceived behavioral control.

Additional findings of note in this study are the mediation patterns among mothers' structural life circumstance factors. Though analyses did not indicate full mediation of any of these variables, there was evidence of moderate partial mediation for numerous factors. Notably, for relationships with both exposure estimates and mothers' intentions, variables were differently mediated based on their classification as either those impacting mothers' control and need for children's TV/videos or the availability of TV/video and alternative entertainment sources (i.e., described in Chapter Six). Mothers' employment status, a "control and need for TV/videos" factor, was most strongly mediated by mothers' perceived behavioral control and descriptive normative pressure. This makes sense as, for many families, the child must spend time in the care of others (e.g., spouse/partner; nanny; daycare) while the mother is at work. Mothers would likely feel less control over their children's TV/video viewing while the children are not in their direct care. These mothers may also largely suspect that their children are viewing television and videos during this time. In addition, working mothers may also be busier than homemakers and unemployed mothers and feel that they *need to* use television and videos to occupy the child in order to accomplish all of their tasks and responsibilities. Furthermore, mothers who are employed may have coworkers and friends in similar situations as working mothers. In their circle of peers, then, television and video use with young children may be considered a normative behavior, causing the indirect relationship through descriptive norms.

Conversely, the relationships with four of the "availability of TV/videos" factors, (i.e., the number of available non-traditional video-viewing sources, use of childcare with TV/videos, children's bedroom TV, and mother's own TV/video-viewing time) were most strongly mediated by mothers' attitudes. This finding is also intuitive, as these factors largely reflect decisions made at least in part by the mother herself. That is, the density and variety of media sources within the home are not unavoidable structural circumstances, but rather determined by the occupants of that home. Purchasing media technologies and deciding where to place them (e.g., a child's bedroom; the family car) are likely to reflect one's attitudes toward media, and in this case one's attitudes toward young children's exposure to television and video programming. Furthermore, observing positive implications of that media access, such as how a television set in the car or the bedroom occupies children and keeps them quiet, may boost mothers' pro-TV/video use attitudes.

Mediation of mothers' own TV/video-viewing time through attitudes is similarly logical As discussed in the previous chapter, it is reasonable to expect that mothers' attitudes toward television- and video-viewing would influence her own rate of exposure, and could impact her attitudes regarding her child's viewing as well. Finally, allowing one's child to attend a childcare facility that uses television and video with young charges would be less likely to occur among mothers who feel TV/video exposure could be harmful for their child, compared to those who are pro-infant/toddler television and video use. What is more, mothers may be told or infer from childcare representatives that viewing television and video programs can be helpful for infants and toddlers (e.g., for teaching them; transitioning to quiet time from a busy activity). If this is true then having childcare arrangements that use TV/videos may boost mothers' attitudes toward infant/toddler television and video use, and lead them to show their young children more foreground programming.

Broadly, the findings of this chapter indicate that any intervention aimed at reducing infants' and toddlers' foreground television and video use should address mothers' cognitions about TV/video use with their children as well as structural aspects of their lives, as both contribute independent explanatory power to the prediction of children's TV/video exposure. However, mothers' attitudes toward infant and toddler television and video use may be particularly important to target, as this construct was the strongest predictor of both their intentions and the estimates of children's actual exposure. In addition, several of the structural circumstance variables most predictive of children's exposure showed significant mediation through mothers' attitudes. The determinants of mothers' attitudes will be examined in the following chapter, which addresses the role of mothers' discrete behavioral beliefs. Under the tenets of the integrative model of behavioral prediction, these beliefs should drive the strength and valence of one's attitude, and would constitute the specific targets of potential campaign messages.

Chapter Eight

Accounting for Children's Foreground TV/video Exposure: The role of mothers' behavioral beliefs

Integral to the theoretical operation and practical application of the integrative model of behavioral prediction are the salient underlying beliefs among a population in regards to the behavior of interest. These beliefs reflect individuals' primary perceptions about what other important social referents are doing or expect the individual to do in regards to the behavior, the particular skills, abilities, and life circumstances that would help or hinder the individual in carrying out the behavior, and the good or bad outcomes expected to result from performing or not performing the behavior. The purpose of the analyses in this dissertation chapter is to examine the distributions of discrete behavioral beliefs about infant/toddler foreground TV/video use among mothers, as well as the value of those beliefs in explaining mothers' general attitudes, intentions, and infants' and toddlers' actual TV/video exposure.

As described in Chapter Three, salient behavioral beliefs regarding infant/toddler television and video use were elicited from mothers with young children through preliminary interview research for the purposes of this dissertation study. These behavioral beliefs reflect mothers' "expectancy value" of TV/video use; or their expectations of the positive and negative outcomes associated with infant/toddler television and video use (e.g., baby videos will have educational benefit for their infants/ toddlers; infant/toddler foreground TV/video use will allow the parent to complete household chores; Fishbein & Ajzen, 2010). The majority of the beliefs elicited from mothers in the interview study have not been previously studied in research with parents of babies and toddlers, despite the fact that many scholars and clinicians are concerned about factors which lead parents to show their young children a lot of television and video programming. Understanding these beliefs is vital. Specifically, the integrative model contends that knowledge of the distribution of salient behavioral beliefs in a population is crucial for understanding the performance or lack of performance of the behavior among individuals within that population, as well as for providing a means through which a campaign might alter that performance (i.e., by constructing messages aimed at changing or reinforcing discrete beliefs).

Based on the principles of the IM, mothers' general attitudes regarding foreground TV/video use with their infants and toddlers should be determined by the overall valence of their underlying behavioral beliefs. Those who predominantly associate infants' and toddlers' foreground TV/video use with positive outcomes will have more favorable general attitudes towards their children's exposure, while those who have more negative expectations of infant- and toddler-directed TV/videos will have less favorable attitudes. However, various behavioral beliefs may be more or less common among members of a given population, and their endorsement may also be more or less predictive of general attitudes and actual performance of the respective behavior.

Hypothesis 3: The strength and valence of mothers' combined underlying behavioral beliefs will predict their general attitudes towards infant/toddler foreground TV/video use.

Research Question 5: Which specific behavioral beliefs will most discriminate between mothers whose children are more exposed to foreground TV/video from those whose children are less exposed?

Of further interest in this study is the possibility of a multi-dimensional structure of mothers' behavioral beliefs regarding infant/toddler foreground TV/video use. As described by the authors of the integrative model and its antecedents, behavioral beliefs constitute a uni-dimensional construct. That is, an individual's perceived likelihood of each possible outcome (often weighted by his/her evaluation of the favorability of that outcome) is summed together with the values from all other possible outcomes to form a single behavioral belief index (Fishbein & Ajzen, 2010). This index is subsequently used to predict individuals' general attitudes towards the behavior. However, prior studies involving various target behaviors have found that qualitatively different classes of behavioral beliefs can have disparate relationships with attitude, intention, and behavior (e.g., Bagozzi, 1981; Shimp & Kavas, 1994; Taylor & Todd, 1995). For example, a study by Shimp and Kavas (1984) indicated that individuals' attitudes regarding the use of coupons were differently predicted by their behavioral beliefs reflecting (1) time/effort inconveniences (i.e., associated with clipping and redeeming coupons), (2) encumbrances (i.e., associated with seeking out media containing coupons and shopping in non-preferred stores for non-preferred brands), and (3) expected rewards (i.e., saving money and feeling like a thrifty shopper) anticipated from performing the behavior.

If behavioral beliefs are multi-dimensional in nature, then combining them into a single index could obscure important predictive relationships between various qualitatively distinct cognitions and general attitudes and behavior. Conversely, understanding the relationships in the more complex belief structure would enhance knowledge regarding the operation of the IM for a given behavior, as well as more accurately inform the appropriate design of a campaign addressing that behavior (i.e., by boosting explanatory power, see Taylor & Todd, 1995). As such, this study will examine the potential multi-dimensionality of mothers' behavioral beliefs regarding their infants' and toddlers' foreground TV/video exposure. Analyses will focus on possible differences between positive and negative behavioral beliefs, as well as thematically different beliefs. Based on a review of beliefs elicited from mothers in the interview study (see Chapter Three), the full set of behavioral beliefs seem to reflect four disparate themes. Specifically, the beliefs reflect the perceptions that infant/toddler foreground TV/video use can (1) help or harm children's cognitive development or learning, (2) serve an instrumental parenting function, (3) engage children's attention or entertain them, and (4) have negative implications for children's health or behavior. Analyses in this chapter will investigate whether these four thematic categories exist among the behavioral beliefs of mothers in this study, as well as possible differences in the extent to which they account for children's estimated weekly exposure to foreground TV/videos.

Research Question 6: Do mothers' positive behavioral beliefs (i.e., reflecting favorable outcomes associated with the behavior) differently predict their attitudes, intentions, and children's foreground TV/video exposure, compared to their negative behavioral beliefs (i.e., reflecting possible unfavorable outcomes).

Research Question 7[42]. Do certain thematic classes of mothers' behavioral beliefs (i.e., reflecting cognitive/educational value; instrumental parenting function; child's engagement/enjoyment; and health/behavior implications) differentially predict their attitudes and intentions and the extent of children's foreground TV/video exposure?

The final goal of this study is to determine the extent to which the existing relationship between children's foreground TV/video exposure and mothers' behavioral beliefs pertaining to that exposure are accounted for by mothers' general attitudes regarding infant/toddler TV/video use. As described above, the IM contends that general behavioral attitude is more proximal to intentions and behavior, and thus should mediate any bivariate relationship between behavioral beliefs and actual behavior. However, prior findings indicate that neither behavioral beliefs (e.g., Bagozzi, 1981; Shimp & Kavas, 1984; Taylor & Todd, 1995), nor attitudes themselves consistently constitute uni-dimensional constructs (e.g., Crites, Fabrigar & Petty, 1994; Rhodes & Courneya, 2003). Furthermore, the "behavior" of interest in this study is children's total estimated weekly exposure to foreground television and video programming. As such, the behavior is not defined using the same parameters as the belief and attitude items (i.e., letting the child watch more than an hour a day at least several days each week). This mismatch may preclude substantive mediation of the relationship between mothers' beliefs and estimates of their children's foreground

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[42] Research questions 5 – 7 were added following the dissertation proposal defense, given the richness of the behavioral beliefs elicited in the preliminary interview study.

TV/video exposure through attitudes. Thus, analyses in this chapter may indicate residual relationships between children's exposure and the behavioral belief index, positive and negative indices, and/or thematic belief subscales that are unaccounted for by the general attitude scale.

Research Question 8: Will the relationships between mothers' beliefs and children's foreground TV/video exposure be mediated by attitudes, or will there be some residual relationship?

Methods

Measures[43]

Child's foreground TV/video exposure.

Foreground TV/video intentions. Two items were included to assess participants' intentions to let their target children watch foreground TV/videos in the subsequent week. On a 7-point response scale (ranging from 1: "unlikely" to 7: "likely"), respondents were asked to respond to the following items: (1) "I will keep [child's name] from watching any television or videos during the next month"; (2) "I will let [child's name] watch television or videos for more than an hour a day on at least several days in the next week during the next month."

Foreground TV/video beliefs. Thirteen positive and 17 negative behavioral beliefs developed from the elicitation interview study were included in the survey, each framed in terms of the child viewing "more than an hour a day on at least several

[43] Those measures which have been previously described in earlier chapters are listed here, and a fuller description can be found in the chapters pertaining to Chapters Six and Seven, as well as the general Methods chapter (i.e., Chapter Five). The full online survey can be found in Appendix D.

days each week". Each item was accompanied by a 7-point response scale ranging from 1: "unlikely" to 7: "likely." The order of the 30 behavioral belief items was randomized across participants.

Foreground TV/video attitude scale.

Foreground TV/video perceived descriptive normative pressure scale.

Foreground TV/video perceived injunctive normative pressure scale.

Foreground TV/video perceived behavioral control scale.

Data Analysis

Hypothesis 3. First, individual item analyses were conducted to determine the degree of variability and shape of the distributions among the behavioral beliefs. These analyses include examinations of the means, standard deviations, and skew and kurtosis coefficients. Cronbach's alphas and bivariate correlations were used to test internal consistencies before combining the discrete behavioral beliefs into a single index. The behavioral belief items were then averaged together to create the full behavioral belief index. Next, an OLS regression analysis was conducted to assess the bivariate relationship strength between the full behavioral belief index and attitude. Three additional analyses were conducted, which contained the full belief index as the sole predictor of (1) mothers' intentions to let their children view more than an hour a day of foreground TV/videos at least several days each week; (2) mothers' intentions to keep their children from viewing any foreground TV/videos; and (3) the estimates of children's weekly exposure to foreground TV/videos.

Research Question 5. The bivariate relationships between individual behavioral belief items and child's foreground TV/video exposure and mothers' intentions and attitudes were examined using correlation analysis. T-tests were used to analyze the differences in behavioral belief means between mothers whose children watched more than 3 hours per week of foreground TV/video, and mothers whose children watched 3 hours or less.

Research Question 6. Two additional belief indices were created to address Research Question 6: (1) an index of the "positive" beliefs (i.e., worded such that higher responses indicate a more pro-infant/toddler foreground TV/video position), and (2) an index of the "negative" beliefs (i.e., worded such that higher responses indicate a more anti-infant/toddler foreground TV/video use position). Both indices were created by averaging the respective behavioral belief items. Next, Pearson correlation analysis was used to determine the bivariate relationships between each of the indices and (1) the full behavioral belief index; (2) attitude; (3) intention to let the child watch more than an hour/day of foreground TV/videos at least several days each week; (4) intention to keep the child from watching any foreground TV/videos; and (5) the square root transformed estimate of children's weekly foreground TV/video exposure. Four separate ordinary least squares (OLS) regressions were then conducted to determine the power of the positive and negative belief indices in predicting mothers' attitudes, both types of intentions, and children's weekly foreground TV/video exposure estimates. Standardized beta coefficients were assessed and compared to determine relative predictive power of each index in each model.

Research Question 7. Principal components factor analysis and Cronbach's alpha tests of internal consistency were used to assess the existence of behavioral belief subscales. Items were grouped together based on a priori judgments that they reflect various belief themes (i.e., that TV/videos have educational or cognitive value for infants and toddlers). Subscale suitability was evaluated based on the presence of sufficiently high factor loadings (i.e., ≥ 0.40) and adequate internal consistency (i.e., Cronbach's alpha ≥ 0.70; alpha does not increase substantially with the removal of any belief items). Hypothesized items whose removal resulted in a higher alpha value for the subscale or which had low factor loadings were removed from respective subscales. Then confirmatory factor analyses and alpha tests were conducted on the revised subscales.

Using Pearson correlation analysis, bivariate relationships were assessed between the belief subscales and (1) the full belief index; (2) attitude; (3) intention to let child view more than an hour/day of foreground TV/videos at least several days each week; (4) intention to keep the child from viewing any foreground TV/videos; and the square root transformed measure of children's foreground TV/video exposure. Finally, separate ordinary least squares (OLS) regressions were conducted to determine the value of each belief subscale in predicting mothers' attitudes and intentions (i.e., both forms), and children's weekly foreground TV/video exposure estimates. Standardized beta coefficients were assessed and compared to determine relative predictive power of each subscale in each model.

Research Question 6 and 7. To determine whether some behavioral belief dimensions more fully account for children's foreground TV/video exposure than others, an additional series of OLS regressions was conducted. Using the transformed measure of children's exposure as the dependent variable, these analyses individually tested each belief index and subscale (i.e., in seven different regression analyses). The standardized beta and model R^2 values were then compared to determine differences in predictive power between indices and subscales.

Research Question 8: In order to determine the presence of residual relationships between behavioral beliefs and children's foreground exposure (i.e., unaccounted for by attitudes) three hierarchical OLS regression models were constructed. In the first analysis, the full behavioral belief index was the sole independent variable in the first step (i.e., the square root transformed measure of children's foreground TV/video exposure was the dependent variable). The attitude, injunctive normative pressure, descriptive normative pressure, and perceived behavioral control scales were added simultaneously in the second step. Beliefs were determined to have a significant residual relationship with exposure if the standardized beta coefficient for this variable was significant in the full model. The same process was then repeated with (1) the positive and negative indices as predictors, and (2) the four belief subscales as predictors (i.e., instead of the full belief index).

Following each OLS regression analysis, tests of mediation were conducted using bootstrapping analysis of 1,000 samples with replacement for each test. The first analysis tested indirect paths from the full behavioral belief model to children's foreground TV/video exposure through the four proximal cognitive constructs (i.e., attitudes, descriptive normative pressure, injunctive normative pressure, and perceived behavioral control). An indirect path was deemed significant if the confidence interval surrounding the point estimate of the indirect relationship did not contain zero. The following bootstrapping analyses tested indirect paths each of the four proximal cognitive constructs, between the transformed estimate of children's TV/video exposure and each belief subscale individually (controlling for the other subscales), as well as the positive and negative belief indices (each controlling for the other).

Results

Foreground TV/video exposure. The estimates of children's weekly foreground television/video exposure ranged from 0 to 68.25 hours per week. The estimates of exposure had a mean of 8.82 hours per week (*SD* = 10.86), and a median of 4.50 hours per week. Because the distribution of the foreground exposure estimates was non-normal and substantially skewed, this variable was transformed by adding 1 and then taking the square root (see Chapter Six). In addition, the original continuous exposure variable was dichotomized to split children into two groups: (1) those who do not watch more than 3 hours per week of foreground TV/videos, and (2) those who do watch more than 3 hours per week of foreground TV/videos.[44]

Foreground TV/video behavioral beliefs. Means, standard deviations, and skew and kurtosis coefficients for the 30 belief items are presented in Table 8.1. Results indicated relatively strong variability across belief items, as all seven response options were represented across items. Many of the item distributions for the positive beliefs were skewed towards a higher perceived likelihood of occurrence, while many of the distributions of the negative beliefs were skewed towards a lower perceived likelihood. The distributions of the items tended to be slightly platykurtic (i.e.,

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[44] The variable was dichotomized this way as it resembles the closest approximation of the "behavior" contained in the IM survey items (i.e., "let child watch more than an hour a day at least several days each week").

negative kurtosis coefficient), indicating a somewhat flat distribution. While many of the skew and kurtosis coefficients were statistically different from zero, they were regarded as not problematic due to the low standard error values (i.e., which boost the likelihood of statistical significance). Furthermore, responses represented the full range of options across items, and the use of a 7-point response scale precludes any outliers that could bias analyses.

Following individual item analysis, the 17 negative behavioral beliefs were reverse-coded such that a “1” represented an anti-TV/video stance, and a “7” represented a pro-TV/video stance for each of the 30 beliefs. Next, the internal consistency of the behavioral belief items was examined to verify the appropriateness of creating a combined index of these items. Cronbach’s alpha for the 30 behavioral belief items was high at $\alpha = 0.90$. Item-scale statistics indicated that no item deletions would result in a higher Cronbach’s alpha for the scale. Thus, the 30 behavioral belief items were averaged to create one behavioral belief index score for each participant. This scale had a mean value of 4.60 ($SD = 0.99$) and a median of 4.60 as well. Separate scales were also created for the positive belief items and the original negative belief items (i.e., non-recoded). The positive behavioral belief scale had high internal consistency ($\alpha = .91$), and a mean and median of 4.72 ($SD = 1.18$) and 4.69 respectively. The negative behavioral belief scale also had high internal consistency ($\alpha = .95$). The mean of this scale was 3.47 (SD = 1.44), and the median was 3.35.

Table 8.1. Individual item analyses for behavioral belief items. (α = .90)

Behavioral Belief	Mean (SD)	Skew[a]	Kurtosis[b]
Positive			
Help child learn	5.28(1.50)	-0.64***	-0.08
Keep child busy/let me get things done	5.03(1.76)	-0.72***	-0.31
Engage/entertain child	5.06(1.54)	-0.62***	-0.07
Expose child to things in outside world	5.02(1.42)	-0.57***	-0.35
Can teach child things better than I can	4.04(1.86)	-0.09	-0.98***
Calm child/distract from crying	4.62(1.78)	-0.41***	-0.63***
Stimulate child's attention/ability to focus	4.63(1.72)	-0.31***	-0.58
Stimulate child's vision or hearing	4.44(1.74)	-0.22*	-0.72***
Help to structure day/establish a routine	4.17(1.70)	-0.11	-0.69***
Help child learn social/emotional skills	4.88(1.71)	-0.48***	-0.51**
Stimulate child's creativity	4.74(1.65)	-0.36***	-0.59**
Good way to spend time with child	4.11(1.84)	-0.04	-0.96***
Negative			
Take away from healthy physical activity	3.89(2.07)	-0.01	-1.29***
Could become habit-forming	4.46(1.84)	-0.31***	-0.84***
Make child less able to self-entertain	3.67(2.05)	0.13	-1.30***
Takes away from time spent in social interaction	3.77(2.00)	-0.11	-1.20***
Child distracted/hypnotized by the screen	3.79(1.98)	-0.06	-1.19***
Child will throw tantrums/beg when TV is off	3.21(2.13)	0.48***	-1.18***
Bad for child's vision/hearing	3.19(1.81)	0.50***	-0.69***
Hurt child's creativity	2.98(1.89)	0.69***	-0.62***
Teach child aggressive behaviors	2.90(1.86)	0.71***	-0.60**
Detract from time spent in learning activities	3.61(1.94)	0.20*	-1.11***
Hurt brain development	2.91(1.87)	0.68***	-0.64***
Hurt later intelligence	2.78(1.81)	0.80***	-0.44*
Make child less interested in reading	3.33(2.04)	0.38***	-1.17***
Is under-stimulating/boring for child	3.39(1.79)	0.34***	-0.79***
Cause me to spend less time interacting with child	3.59(2.08)	0.17	-1.32***
Teach child things I would rather teach	4.10(1.95)	-0.06	-1.11***
Child wastes time just "zoning out"	3.48(2.02)	0.28**	-1.17***

N = 698. All belief items are on a scale from 1: unlikely to 7: likely. [a]SE = .09; [b]SE = .19. **p* < .05; ***p* < .01; ****p* < .001

Research Question 5. A series of correlations were run between each of the behavioral beliefs and mothers' attitudes and intentions. The resultant Pearson correlation coefficients for the positive beliefs are contained in Table 8.2, while those of the negative beliefs are in Table 8.3. All of the positive behavioral beliefs were positively and significantly correlated with attitude and intention, while all but one of the negative behavioral beliefs were negatively and significantly correlated with attitude and intention. The belief that TV/videos could teach the target child things that the mother would rather teach him/her had no significant relationship with either variable. Among the discrete positive beliefs, attitudes and intentions had the strongest relationships with the beliefs that foreground TV/video exposure could (1) stimulate the child's creativity; (2) stimulate the child's attention or ability to focus; (3) be a good way to spend time with the child; and (4) help the child learn. The negative beliefs with the strongest associations with attitude and intention were the beliefs that foreground TV/video exposure could: (1) detract from the child's time spent in learning activities; (2) hurt the child's creativity; (3) take away from the child's social interactions; (4) make the child less interested in reading; and (5) take away from time the child spent getting healthy physical activity.

In addition, correlations with the continuous transformed estimate of children's foreground exposure were calculated. The resultant values for the positive items are conveyed in Table 8.2, and those representing the negative beliefs are presented in Table 8.3. Similar to the relationships with attitude and intention, the positive beliefs with the strongest linear relationships with exposure were the beliefs that foreground TV/video use could (1) be a good way to spend time with the child; (2) stimulate the child's creativity; (3) stimulate the child's attention or ability to focus; and (4) help the child learn. The negative beliefs that were most associated with exposure included the beliefs that foreground TV/video exposure could (1) detract from time the child spent interacting socially; (2) detract from the child's time in learning activities; (3) detract from child's healthy physical activity; and (4) be a waste of time that the child spends "zoning out."

Next, t-tests were conducted to test the differences in means for each belief among mothers whose children were exposed to more than 3 hours of foreground TV/video each week and those whose children were exposed to less foreground TV/video (i.e., the dichotomous measure of the original exposure variable). The t-tests were intended to examine relationships between mothers' beliefs and children's estimated weekly exposure that might not be linear, and thus not well captured by the correlational analyses. Furthermore, using the dichotomous measure of whether or not children view more than 3 hours of foreground TV/videos parallels the manner in which the attitude and intention survey questions were worded (i.e., since watching more than an hour a day at least several days each week would constitute more than 3 hours of foreground exposure).

These analyses indicated similar patterns (see Tables 8.2 and 8.3 for means and t-test values for the positive and negative belief items). That is, for each positive behavioral belief the mean value among mothers whose children were not exposed to more than 3 hours per week was significantly lower than the mean value among mothers who children were exposed to 3 or more hours a week. With the exception of the belief that TV/videos could teach children skills/information that the mother would rather teach the child herself, the mean value of negative belief items were all significantly lower among mothers whose children were exposed to 3 hours or more foreground TV/videos each week.

The results indicated that the positive beliefs that best discriminated between children more or less exposed to foreground TV/video included the beliefs that TV/videos could: (1) be good way to spend time with child; (2) help structure the child's day or establish a routine; (3) stimulate the child's creativity; and (4) help the child learn social/emotional skills. The negative maternal beliefs that best discriminated between children who were more or less exposed to TV/videos were the beliefs that TV/videos could: (1) cause the child to have less interest in reading; (2) mean less time the child is socially interacting; (3) detract from the time the child spent in learning activities; (4) be a waste of time when the child was just zoning out; and (5) be bad for the child's brain development.

Table 8.2. Relationships between discrete positive behavioral beliefs and mothers' attitudes, intentions, and estimates of children's weekly foreground TV/video exposure.

Positive behavioral Belief	Attitude (r)	Intention (r)	Exposure (r)	>3 hrs/week[a] (Mean)	≤ 3 hrs/week[b] (Mean)	Difference in means (t value)
Help child learn	**0.54**	**0.44**	**0.29**	4.82	5.59	**0.77(-6.85)**
Keep child busy/let me get things done	**0.26**	**0.19**	**0.13**	4.79	5.21	**0.42(-3.10)**
Engage/entertain child	**0.45**	**0.33**	**0.28**	4.64	5.37	**0.73(-6.33)**
Expose child to things in outside world	**0.33**	**0.23**	**0.16**	4.73	5.14	**0.41(-3.30)**
Can teach child things better than I can	**0.47**	**0.37**	**0.25**	3.58	4.36	**0.78(-5.59)**
Calm child/distract from crying	**0.35**	**0.26**	**0.20**	4.24	4.89	**0.65(-4.84)**
Stimulate child's attention/ability to focus	**0.55**	**0.43**	**0.31**	4.11	4.99	**0.88(-6.87)**
Stimulate child's vision or hearing	**0.48**	**0.38**	**0.22**	4.04	4.72	**0.68(-5.16)**
Help to structure day/establish a routine	**0.50**	**0.37**	**0.27**	3.61	4.55	**0.94(-7.45)**
Help child learn social/emotional skills	**0.52**	**0.41**	**0.27**	4.35	5.25	**0.90(-7.09)**
Stimulate child's creativity	**0.56**	**0.44**	**0.32**	4.20	5.11	**0.91(-7.43)**
Good way to spend time with child	**0.55**	**0.40**	**0.33**	3.49	4.54	**1.05(-7.71)**
Child is actively involved in program/music	**0.45**	**0.38**	**0.28**	4.94	5.66	**0.72(-6.57)**

Note. *N* = 698. All items are on a scale from 1 "unlikely to 7 "likely." Bold values = p < .05.

Table 8.3. Relationships between discrete negative behavioral beliefs and mothers' attitudes, intentions, and estimates of children's weekly foreground TV/video exposure.

Negative Behavioral Belief	Attitude (r)	Intention (r)	Exposure (r)	>3 hrs/week[a] (Mean)	≤ 3 hrs/week[b] (Mean)	Difference in means (t value)
Take away from healthy physical activity	**-0.36**	**-0.28**	**-0.23**	4.40	3.53	**-0.87(5.59)**
Could become habit-forming	**-0.19**	**-0.19**	**-0.12**	4.72	4.28	**-0.44(3.11)**
Make child less able to self-entertain	**-0.29**	**-0.30**	**-0.21**	4.18	3.33	**-0.85(5.48)**
Takes away from time in social interaction	**-0.37**	**-0.32**	**-0.26**	4.31	3.40	**-0.91(6.03)**
Child distracted/hypnotized by the screen	**-0.23**	**-0.20**	**-0.14**	4.05	3.62	**-0.43(2.86)**
Child will throw tantrums when TV is off	**-0.20**	**-0.20**	**-0.13**	3.57	2.96	**-0.61(3.70)**
Bad for child's vision/hearing	**-0.24**	**-0.20**	**-0.13**	3.52	2.97	**-0.55(4.02)**
Hurt child's creativity	**-0.37**	**-0.26**	**-0.19**	3.39	2.70	**-0.69(4.82)**
Teach child aggressive behaviors	**-0.23**	**-0.23**	**-0.17**	3.25	2.65	**-0.60(4.24)**
Detract from time in learning activities	**-0.39**	**-0.35**	**-0.23**	4.15	3.25	**-0.90(6.22)**
Hurt brain development	**-0.33**	**-0.28**	**-0.19**	3.39	2.58	**-0.81(5.75)**
Hurt later intelligence	**-0.31**	**-0.28**	**-0.18**	3.15	2.52	**-0.63(4.55)**
Make child less interested in reading	**-0.36**	**-0.31**	**-0.22**	3.90	2.94	**-0.96(6.31)**
Is under-stimulating/boring for child	**-0.22**	**-0.24**	**-0.21**	3.79	3.12	**-0.67(4.93)**
Cause me to spend less time interacting	**-0.30**	**-0.27**	**-0.19**	4.07	3.27	**-0.88(5.08)**
Teach child things I would rather teach	0.04	-0.01	-0.05	4.05	4.13	0.08(-0.51)
Child wastes time just "zoning out"	**-0.40**	**-0.32**	**-0.23**	4.00	3.12	**-0.88(5.76)**

Hypothesis 3. A series of regression analyses were conducted to assess the relationship between the full behavioral belief scale and mothers' attitudes, intentions, and estimates of children's foreground TV/video exposure. The standardized and unstandardized regression coefficients and R and R^2 values for each model are displayed in Table 8.4. The full belief index accounted for the least amount of variance in estimated exposure (adjusted $R^2 = 0.39$), compared to intention to keep the child from viewing (adjusted $R^2 = 0.17$), intention to let the child view more than an hour during at least several days each week (adjusted $R^2 = 0.26$), and attitudes (adjusted $R^2 = 0.39$).

Table 8.4. Variance in mothers' attitudes, intentions and estimates of children's foreground TV/video exposure explained by scores on the full behavioral belief index.

	Attitude[a]		Intention to show child >1hr on several days [a]		Intention to keep child from watching at all[a]		Foreground Exposure[b]	
	B (SE B)	β	B (SE B)	β	B (SE B)	β	B (SE B)	β
Full behavioral belief index	0.95(0.05)	0.62***	1.12(0.07)	0.51***	-0.79(0.07)	-0.41***	0.57(0.05)	0.37***
R	0.62		0.51		0.41		0.37	
Adj. R^2	0.39		0.26		0.17		0.14	

N = 697. Note: Each model was significant at p < .001.

Research Question 6. Pearson correlation analyses assessed the bivariate relationships of the negative and positive belief indices with attitudes, intentions, and the transformed estimate of children's weekly exposure. As shown in Table 8.5, the positive belief index had stronger bivariate relationships than the negative index with attitude, intention to let the child watch more than an hour a day at least several days each week, and the child's actual exposure. Conversely, the negative index was more strongly related to the full behavioral belief index and mothers' intentions to keep their children from viewing any foreground TV/videos. Not surprisingly, the four OLS regression analyses using both indices to predict attitudes, intentions, and estimated exposure mirrored the correlational results (see Table 8.6).[45] These analyses also indicated that together the positive and negative indices accounted for more variance in attitudes (adj. $R^2 = 0.48$) and intentions to let the child watch more than an hour a day at least several days each week (adj. $R^2 = 0.30$), compared to intention to keep the child from viewing at all (adj. $R^2 = 0.19$) and the estimate of exposure (adj. $R^2 = 0.15$). The adjusted R^2 of 0.48 with attitude for the two scales contrasts with an adjusted R^2 of 0.39 for the full behavioral scale, reported above.

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[45] The variance inflation factor (VIF) for the two predictors was 1.06, indicating no threat to inferences due to multicollinearity. The Durbin Watson statistics across the four analyses ranged from 1.98 to 2.13, reflecting adequate independence of errors. The histogram of residuals for the model predicting mothers' intention to keep the child from watching any TV/videos ad a somewhat positive skew, and normal probability plot of residuals showed some deviation from normality. However, a plot of the standardized predicted values and standardized residuals indicated minimal variance of residuals in the higher levels of the predictor (i.e., only slight heteroscedasticity).

Table 8.5. Bivariate relationships between the positive and negative belief index and the full belief index, mothers' attitudes and intentions, and children's weekly foreground TV/video exposure.

Belief index	Full belief index[a] (r)	Attitude[a] (r)	Intention to let child watch >1hr[a] (r)	Intention to not let child watch at all[a] (r)	Child's weekly foreground exposure[b] (r)
Positive belief index	**0.70**	**0.66**	**0.50**	**-0.19**	**0.36**
Negative belief index	**-0.84**	**-0.38**	**-0.34**	**0.43**	**-0.24**

[a]N = 698. [b]N = 697; variable is square root transformed estimate. Note: all correlations were significant at $p < .001$.

Table 8.6. Prediction of mothers' attitude and intentions and children's estimated foreground TV/video exposure from the positive and negative behavioral belief indices.

	Attitude[a]		Intention to show child >1hr on several days[a]		Intention to keep child from watching at all[a]		Foreground Exposure[b]	
Belief Index	B (SE B)	β	B (SE B)	β	B (SE B)	β	B (SE B)	β
Positive belief index	0.77(0.04)	0.60***	0.82(0.06)	0.45***	-0.14(0.06)	-0.09*	0.41(0.05)	0.32***
Negative belief index	-0.25(0.03)	-0.24***	-0.35(0.05)	-0.23***	0.55(0.05)	0.41***	-0.17(0.04)	-0.16***
R	0.69		0.55		0.44		0.39	
Adj. R^2	0.48		0.30		0.19		0.15	

[a]N = 698. [b]N = 697.

Research Question 7. Next, subscale analyses were conducted to determine whether various groupings of discrete beliefs represented broader thematic classes of maternal behavioral beliefs regarding infant/toddler foreground TV/video use. First, the belief items were reviewed for the presence of conceptual themes. Overall, the items seemed to reflect four different themes: (1) the cognitive/educational value of TV/videos for babies and toddlers (13 items, e.g., teaches the child; harms brain development); (2) the instrumental parenting value of TV/video use with babies/toddlers (5 items; e.g., occupies the child; soothes the child); (3) the value of TV/videos for engaging or entertaining infants/toddlers (3 items, e.g., lets' child get actively involved in the music or other parts of the program); (4) the negative implications for infants'/toddlers' health and lifestyle behaviors (12 items, e.g., hurts their vision or hearing; detracts from their time spent being physically active; could be habit-forming). Three items could conceptually fit with two different scales, and were initially included as a possible candidate for each of the respective scales (see Table 8.7).

Each hypothesized subscale was then analyzed using principal components factor analysis with varimax rotation (i.e., forced to extract 1 factor), and Cronbach's alpha tests to verify internal consistency.[46] The factor loadings and reliability

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[46] Factor analyses were also conducted with all of the belief items to determine whether items loaded on sub-factors as anticipated. The first factor analysis was a principal components factor analysis with varimax rotation which allowed SPSS to extract as many factors as there were eigenvalues greater than 1. This resulted in a 2-factor solution with all of the positive behavioral beliefs on 1 factor and the negative beliefs on the other. The second analysis forced SPSS to extract 4 factors, again using principal components with varimax rotation. This solution resulted in 2 strong factors representing

coefficients for each predicted subscale of behavioral beliefs are contained in Table 8.7. The factor extracted to represent mothers' beliefs in the value of TV/videos for infants'/toddlers' educational and cognitive explained 39.51% of the variance in the 13 items, and the subscale had an alpha value of 0.73 (see Table 8.4). Two predicted belief items did not load well on this subscale (i.e., "child is distracted/hypnotized by the screen;" "[TV/videos] teaches child things I would rather teach"), and their removal also resulted in higher subscale internal consistency (i.e., Cronbach's alpha for the scale was higher when each of the two items was individually removed). Thus, these two items were not retained on the final subscale.

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the positive and negative items respectively and 3 weak factors with double-loaders from the first 2 factors.

Table 8.7. Predicted behavioral belief sub-scale solution.

Belief item	Factor loading on subscale[b]	Subscale reliability if removed (α)
Educational/cognitive value (α = 0.73; item variance explained = 39.51%)		
Help child learn	0.76	0.69
Can teach child things better than I can	0.54	0.71
Stimulate child's attention/focus	0.73	0.69
Stimulate child's vision/hearing[a]	0.65	0.69
Help child learn social/emotional skills	0.70	0.69
Stimulate child's creativity	0.77	0.68
Child distracted/hypnotized by the screen[R, a]	-0.27	0.86
Hurt child's creativity[R]	0.71	0.68
Detract from time spent learning[R]	0.69	0.69
Hurt brain development[R]	0.67	0.69
Hurt later intelligence[R]	0.69	0.69
Is under-stimulating/boring for child[R]	0.51	0.71
Teaches child things I would rather teach[R, a]	0.08	0.75
Instrumental parenting function (α = 0.48; item variance explained = 43.98%)		
Keep child busy/let me get things done	0.65	0.37
Calm/distract child from crying	0.78	0.30
Help structure day/establish routine	0.74	0.31
Good way to spend time with child	0.72	0.31
Teaches child things I would rather teach[R, a]	-0.34	0.71
Child engagement/enjoyment (α = 0.73; item variance explained = 64.39%)		
Engage/entertain child	0.80	0.64
Expose child to things in outside world	0.78	0.66
Child actively involved in program	0.82	0.60
Undesirable health/lifestyle implications (α = 0.80; item variance explained = 51.49%)		
Detract from child's physical activity[R]	0.67	0.76
Stimulate child's vision/hearing[R, a]	0.07	0.81
Bad for child's vision/hearing[R]	0.46	0.78
Child wastes time "zoning out" [R]	0.70	0.76
Could become habit-forming[R]	0.49	0.78
Make child less able to self-entertain[R]	0.61	0.77
Detracts from time social interacting[R]	0.67	0.77
Child distracted/hypnotized by screen[R, a]	0.15	0.91
Child will tantrum/beg when turned off[R]	0.55	0.77
Teach child aggressive behaviors[R]	0.52	0.78
Make child less interested in reading[R]	0.66	0.76
I will spend less time interacting with child[R]	0.63	0.77

N = 698. [R]item is reverse-coded, such that a higher score represents a pro-TV endorsement. [a]Item could conceivably fit with two predicted subscales, and was assessed as a component of each subscale. [b]Value represents factor loading on a single-factor forced principal components solution with varimax rotation.

The second predicted subscale, which addressed the value of TV/videos for serving instrumental parenting functions, consisted of five items. The one-factor forced solution for this subscale resulted in a factor that accounted for 43.98% of variance in the five items, though the internal consistency of the predicted subscale was quite low ($\alpha = 0.48$). One of the belief items, "[TV/videos] teaches child things I would rather teach," was the foremost cause of the low internal consistency (i.e., factor loading = -0.34; α if item removed = 0.71). As such, this item was removed from the final version of the subscale.

The third predicted subscale contained three items addressing mothers' beliefs in the extent to which TV/videos are valuable for engaging or providing enjoyment for the child. A forced one-factor principal components solution with varimax rotation resulted in a factor that accounted for 64.39% of the variance in the three items. The subscale had adequate reliability ($\alpha = 0.73$), and the removal of any of the items would result in a lower alpha coefficient for the scale. Thus, this hypothesized subscale was accepted in its original form.

The final predicted subscale consisted of 12 items reflecting mothers' beliefs that TV/video viewing could lead to undesirable health or lifestyle implications for their children (e.g., viewing could become a habit; could make the child less interested in reading). The forced one-factor solution indicated that a single factor accounted for 51.49% of the variance in the items, and had high internal consistency ($\alpha = 0.80$). Two items (i.e., belief that TV/videos can stimulate child's vision and/or hearing; belief that child is "distracted or hypnotized by what is on the screen") were deemed inappropriate for this subscale based on a low factor loadings (i.e., 0.07 and 0.15

respectively), and a higher resultant Cronbach's alpha coefficient after their individual removal (α=0.81 and 0.91 respectively). The other ten items were retained for this subscale.

The final solution of four belief subscales had high item coverage (i.e., utilized 28 out of the 30 belief items) with no double-loading beliefs. To further confirm the appropriateness of these subscales, a final factor analysis was conducted. Using principal components analysis with varimax rotation, this factor analysis included all belief items and forced a one-factor solution. This was done so that individual factor loadings on a single general scale could be compared to item factor loadings on their respective subscales, to verify that subsets of items represent different underlying belief dimensions. The single extracted factor accounted for 36.70% of variance in the individual items. As portrayed in Table 8.8, the item factor loadings on this general factor were generally substantially lower than the respective subscale factor loadings. The only exceptions were in subscale one which contained both positive and negative belief items. The different wording directions of items on this subscale are likely to blame for the five comparatively lower subscale factor loadings (i.e., which are still quite high and all above the conventional 0.40 criterion for inclusion).

The items of each subscale were averaged together to create the four behavioral belief subscales. The "health/lifestyle implications" subscale was then reverse-coded such that higher values on this subscale represented a stronger belief in the potential for unfavorable health/lifestyle repercussions from children's TV/video-viewing. This was done for clearer interpretation of subsequent analyses (e.g., one would expect that stronger perception of unfavorable health/lifestyle implications would result in *less positive* attitudes).

Table 8.8. Final behavioral belief sub-scale solution.

Belief item	Factor loading on general factor[a]	Factor loading on subscale[b]	Subscale reliability if removed (α)
Educational/cognitive value (α = .88; item variance explained = 46.15%)			
Help child learn	0.61	0.77	0.86
Can teach child things better than I	0.39	0.55	0.88
Stimulate child's attention/focus	0.58	0.74	0.86
Stimulate child's vision/hearing	0.50	0.66	0.87
Help child learn soc/emotional skills	0.55	0.71	0.87
Stimulate child's creativity	0.62	0.78	0.86
Hurt child's creativity[R]	0.79	0.70	0.86
Detract from time spent learning[R]	0.78	0.68	0.87
Hurt brain development[R]	0.74	0.65	0.87
Hurt later intelligence[R]	0.76	0.67	0.87
Is under-stimulating/boring[R]	0.58	0.50	0.88
Instrumental parenting function (α = .71; item variance explained = 53.37%)			
Keep child busy/let me get things done	0.13	0.65	0.69
Calm/distract child from crying	0.23	0.78	0.60
Help structure day/establish routine	0.41	0.75	0.63
Good way to spend time with child	0.51	0.73	0.65
Child engagement/enjoyment (α = .72; item variance explained = 64.39%)			
Engage/entertain child	0.39	0.80	0.64
Expose child to things in the world	0.29	0.78	0.66
Child actively involved in program	0.52	0.82	0.60
Undesirable health/lifestyle implications (α = .93; item variance explained = 59.89%)			
Detract from child's physical activity[R]	0.74	0.82	0.92
Bad for child's vision/hearing[R]	0.60	0.68	0.92
Child wastes time "zoning out"[R]	0.78	0.84	0.91
Could become habit-forming[R]	0.57	0.70	0.92
Make child less able to self-entertain[R]	0.69	0.78	0.92
Detracts from time social interacting[R]	0.75	0.82	0.92
Child will tantrum/beg when turned off[R]	0.60	0.75	0.92
Teach child aggressive behaviors[R]	0.65	0.73	0.92
Make child less interested in reading[R]	0.76	0.82	0.92
I will spend less time interacting with child[R]	0.73	0.79	0.92

N = 698. [R]Item is reversed coded such that increasing values on all beliefs represent increasingly pro-TV/video endorsements; [a]Value represents factor loading on a single-factor forced principal components solution with varimax rotation using all belief items (i.e., a general factor); [b]Value represents factor loading on a single-factor forced principal components solution with varimax rotation using only the items of the subscale.

Next, Pearson correlation analyses were used to examine the bivariate relationships between the four behavioral belief subscales and (1) the full behavioral belief index; (2) attitude (3) intention to let the child watch foreground TV/videos for more than an hour a day on at least several days each week; (4) intention to keep the child from watching any foreground TV/videos each week; and (5) the transformed version of child's weekly foreground TV/video exposure. The Pearson correlation coefficients for all of the bivariate relationships are displayed in Table 8.9. Inter-correlations between the subscales ranged from $r = 0.09$ (i.e., between the instrumental parenting function and health/lifestyle implications subscales; $p < .05$) and $r = 0.70$ (i.e., between the cognitive/educational value and health/lifestyle implications subscales; $p < .001$). Of the four subscales, the cognitive/educational value belief subscale was most highly correlated with the full belief index ($r = 0.94$, $p < .001$), attitude ($r = 0.63$, $p < .001$), intention to let the child view more than an hour a day several days each week ($r = 0.52$, $p < .001$), and child's exposure ($r = 0.36$, $p < .001$). The health/lifestyle implications subscale was most strongly correlated with intention to keep the child from viewing any foreground TV/videos each week ($r = -0.41$, $p < .001$).

Table 8.9. Correlations between thematic behavioral belief subscales, IM cognitive constructs, and children's weekly foreground TV/video exposure.

Construct		2	3	4	5	6	7	8	9
1	Cognitive/Educational subscale	0.54***	0.59***	-0.70***	0.94***	0.63***	0.52***	-0.39***	0.36***
2	Instrumental parenting subscale		0.69***	-0.09*	0.54***	0.57***	0.42***	-0.11**	0.32***
3	Engagement/enjoyment subscale			-0.15***	0.57***	0.51***	0.39***	-0.17***	0.30***
4	Health/lifestyle implications subscale				-0.83***	-0.38***	-0.34***	0.41***	-0.25***
5	Full belief index					0.62***	0.51***	-0.41***	0.37***
6	Attitude						0.64***	-0.25***	0.37***
7	Intention to let child watch >1hr/day							-0.30***	0.57***
8	Intention to keep child from watching at all								-0.21***
9	Exposure[a]								

N = 698. [a]This variable is the transformed estimate of children's weekly foreground TV/video exposure (i.e., the original variable was transformed by adding 1 and then taking the square root).

Four separate OLS regressions were then conducted, using the values on the four behavioral belief subscales to predict (1) attitude; (2) intention to let the child watch foreground TV/videos for more than an hour a day at least several days each week; (3) intention to keep the child from watching any foreground TV/videos; and (4) the transformed measure of children's weekly foreground TV/video exposure.[47] As shown in Table 8.10, three of the subscales were significantly and positively predictive of mothers' attitudes toward infant/toddler foreground TV/video use and their intentions to let their children watch more than an hour a day at least several days each week (i.e., the cognitive/educational value, instrumental parenting function, and health/lifestyle implications subscales). The cognitive/educational value and health/lifestyle implications subscales also had significant negative relationships with mothers' intentions to keep their children from watching any foreground TV/videos. The instrumental parenting function and health/lifestyle implications subscales were significant positive predictors in the model predicting exposure estimates. The child engagement/enjoyment subscale was not significantly predictive of any of the four dependent variables. Together, the subscales accounted for 15% of the variance in the estimates of children's actual weekly TV/video exposure and 48% of the variance in

[47] The highest variance inflation factor (VIF) between the four subscales in these models was 4.25. This value is higher than has been found in prior analyses in Studies 1 and 2, but still substantially below the convention of 10.0 as an indicator of multi-collinearity (Dielman, 2005). The Durbin Watson statistics ranged from 1.97 to 2.11. For the models predicting exposure and intention to keep the child from viewing any TV/videos, the histograms of residuals had a slight positive skew, and the normal probability plots of residuals showed slight deviation from normality. Additionally, the plots of the standardized predicted values and standardized residuals indicated some variance of residuals in the higher levels of the predictor (i.e., some heteroscedasticity).

mothers' attitudes, exactly mirroring the variance accounted for by the positive and negative belief indices (see Table 8.6).

Research Questions 6 and 7. Seven separate OLS regression models were constructed, each testing the association between one behavioral belief dimension (e.g., positive beliefs; instrumental parenting beliefs) and the square root transformed estimate of target children's weekly foreground TV/video exposure. The results, displayed in Table 8.11, indicate that the full belief index accounts for the most variance in children's exposure (adj. $R^2 = 0.14$), followed closely by the positive belief index (adj. $R^2 = 0.13$) and the cognitive/educational value subscale ($R^2 = 0.12$). The negative index and health/lifestyle implications subscale explained the least variance (adj. $R^2 = 0.06$ for both models).

Table 8.10. Prediction of mothers' attitude and intentions and child's foreground TV/video exposure from the thematic behavioral belief subscales.

	Attitude[a]		Intention to show child >1hr on several days[a]		Intention to keep child from watching at all[a]		Foreground Exposure[b]	
Belief subscale	B (SE B)	β	B (SE B)	β	B (SE B)	β	B (SE B)	β
Cognitive/educational value	0.455(0.07)	0.35***	0.55(0.12)	0.30***	-0.34(0.11)	-0.21**	0.13(0.09)	0.10
Instrumental parenting function	0.39(0.05)	0.33***	0.36(0.08)	0.22***	0.11(0.08)	0.07	0.23(0.06)	0.19***
Child engagement/enjoyment	0.07(0.05)	0.06	0.08(0.09)	0.04	-0.09(0.08)	-0.06	0.10(0.07)	0.08
Health/lifestyle implications	-0.10(0.04)	-0.10*	-0.15(0.079)	-0.11*	0.32(0.07)	0.26***	-0.15(0.06)	-0.15*
R	0.69		0.55		0.44		0.40	
Adj. R^2	0.48		0.30		0.19		0.15	

[a]N = 697. [b]N = 696.

Table 8.11. Power of each behavioral belief scale and index in predicting children's weekly foreground TV/video exposure.

Belief construct	Model 1 β (R^2)	Model 2 β (R^2)	Model 3 β (R^2)	Model 4 β (R^2)	Model 5 β (R^2)	Model 6 β (R^2)	Model 7 β (R^2)
Full belief index	0.37 (0.14)						
Positive beliefs		0.36 (0.13)					
Negative beliefs			-0.24 (0.06)				
Cognitive/education value				0.36 (0.12)			
Instrumental parenting					0.32 (0.10)		
Engage/enjoyment						0.30 (0.09)	
Health/lifestyle implications							-0.25 (0.06)

N = 696. All betas are significant at p < .001.

Research Question 8. A hierarchical OLS regression was conducted to examine whether there was a relationship between the full behavioral belief index and the estimate of children's foreground TV/video exposure, unaccounted for by the four proximal cognitive constructs of the integrative model. The first step of the model contained the full belief index as the sole predictor of children's exposure, and then the four IM constructs were added simultaneously in the second step of the model. As conveyed in Table 8.12, the predictive power of the behavioral belief index dropped by nearly half in the second step of the model, but retained significance (i.e., step 1 $\beta = 0.37$, $p < .001$; step 2 $\beta = 0.19$, $p < .001$).[48]

Table 8.12. Residual association between mothers' behavioral beliefs and children's foreground TV/video exposure.

	Model 1		Model 2	
Construct	B (SE B)	β	B (SE B)	β
Full belief index	0.57(0.05)	0.37***	0.30(0.07)	0.19***
Attitude			0.23(0.05)	0.23***
Injunctive norms			0.07(0.04)	0.08
Descriptive norms			0.14(0.06)	0.08*
Perceived behavioral control			-0.25(0.05)	-0.17***
R	0.37		0.49	
Adj. R^2	0.14		0.24	

N = 695. *p < .05; **p < .01; ***p<.001.

[48] This analysis was repeated with the model steps reversed (i.e., IM constructs in step one; behavioral belief index in step two). The results indicated that the full behavioral belief index added 2% explained variance, which was unaccounted for by the IM constructs (i.e., $\Delta R^2 = 0.02$, $p < .001$).

Next, bootstrapping analyses were conducted to assess the strength and significance of indirect relationships between the belief index and children's TV/video exposure through mothers' media-related cognitions (i.e., attitudes, perceived descriptive and injunctive norms, and perceived behavioral control; see Preacher & Hayes, 2008). Based on 1,000 bootstrap samples, mediation of the association between the full belief index and children's foreground TV/video exposure was significantly different from zero (95% bias-corrected bootstrap confidence interval = 0.191 – 0.360; point estimate = 0.271). Given that the original unstandardized coefficient (B) was 0.57 (see Table 8.12, Model 1), this means that the proximal IM constructs accounted for 47.5% (0.271/0.57) of the original relationship between the full belief index and foreground exposure estimates. The strongest discrete indirect path was through attitude, which accounted for 21.8% of the original relationship (bootstrap confidence interval = 0.124 – 0.330; point estimate = 0.219). Perceived behavioral control mediated an additional 7.9% of the original relationship (bootstrap confidence interval = -0.078 - -0.023; point estimate = -0.045), and descriptive normative pressure accounted for 7.2% of the relationship (bootstrap confidence interval = 0.005 – 0.084; point estimate = 0.041). The indirect path through injunctive normative pressure was not significant (bootstrap confidence interval = -0.026 – 0.116; point estimate = 0.056).

A second hierarchical regression analysis was conducted, predicting the transformed estimate of children's weekly foreground TV/video exposure using the positive and negative belief indices. The positive and negative behavioral belief indices were entered together in the first step of the model, followed by the IM constructs in the second step. The results, displayed in Table 8.13, indicate that both indices retain their predictive power across both steps of the model, though each was somewhat weaker (second model step positive belief β = 0.14, p < .01; negative belief β = -0.12, p < .01).[49]

Table 8.13. Residual association between mothers' positive and negative behavioral beliefs and children's foreground TV/video exposure.

	Model 1		Model 2	
Construct	B (SE B)	β	B (SE B)	β
Positive belief index	0.41 (0.05)	0.32***	0.17(0.06)	0.14**
Negative belief index	-0.17(0.04)	-0.16***	-0.13(0.04)	-0.12**
Attitude			0.23(0.06)	0.22***
Injunctive norms			0.06(0.04)	0.07
Descriptive norms			0.14(0.06)	0.08*
Perceived behavioral control			-0.25(0.05)	-0.17***
R	0.39		0.49	
Adj. R^2	0.15		0.24	

N = 695. *p < .05; **p < .01; ***p<.001.

Bootstrapping tests of mediation suggested significant partial mediation for both indices (see Table 8.14). Based on these analyses and the original unstandardized relationships (see Table 8.13, Model 1), 58.0% of the relationship between exposure estimates and the index of mothers' positive

[49] This analysis was also conducted with the steps reversed (i.e., IM constructs in step one; belief indices in step two). This analysis indicated that the inclusion of the belief indices accounted for an additional 2% of variance beyond the IM constructs (i.e., $\Delta R^2 = 0.02$, p < .001).

beliefs was mediated by the proximal IM constructs (i.e. 0.238/0.41), and 28.2% of the relationship between exposure and negative belief index was mediated (i.e., -0.048/-0.17). As anticipated, the indirect paths through attitude were particularly strong for both the positive belief index (42% of original relationship; bootstrap confidence interval = 0.093, 0.265; point estimate = 0.172) and the negative belief index (32.9% of relationship; bootstrap confidence interval = -0.093,-0.028; point estimate = -0.056). Though there were significant indirect paths through descriptive normative pressure and perceived behavioral control for each index as well.

Table 8.14. Mediation of positive and negative belief indices through integrative model cognitive constructs.

	Total (4 proximal)	Attitude	Injunctive norm	Descriptive norm	PBC
Belief index (original effect)[a]	Point estimate[b] (Proportion of B)[c]	Point estimate[b] (Proportion of B)[c]	Point estimate[b] (Proportion of B)[c]	Point estimate[b] (Proportion of B)[c]	Point estimate[b] (Proportion of B)[c]
Positive beliefs (0.41)	**0.238(0.58)**	**0.172(0.42)**	0.048(0.12)	**0.034(0.08)**	**-0.016(0.04)**
Negative beliefs (-0.17)	**-0.048(0.28)**	**-0.056(0.33)**	-0.009(0.05)	**-0.010(0.06)**	**0.027(0.16)**

N = 696. [a]Values represent the B values for the indices displayed in Table 8.13 Model 1. [b]Values represent indirect point estimates based on bootstrapping analyses with 1,000 samples, controlling for the other index (see Preacher & Hayes, 2008). [c]Values represent the ratio of indirect relationship point estimates to the original B value (i.e., B values from Model 1 section of Table 8.13), or the proportion of total relationship that is mediated. Bold values indicate confidence intervals that do not contain zero, representing an indirect relationship that is statistically different from zero.

To determine whether dimensions of behavioral beliefs (i.e., thematic subscales) might be differently mediated by attitude, a final hierarchical regression was conducted. The transformed measure of children's foreground TV/video exposure was the dependent variable. The four behavioral belief subscales were included together in the first step, followed by the addition of the four proximal IM constructs in the next step. The regression coefficients from both steps are contained in Table 8.15. In the first model, the instrumental parenting function and health/lifestyle implications subscales were significant positive predictors of children's exposure (i.e., $\beta = 0.19$, $p < .001$; and $\beta = 0.15$, $p < .05$, respectively). With the addition of the IM cognitive constructs the instrumental parenting function belief subscale became a non-significant predictor ($\beta = 0.06$, $p = .23$), though the health/lifestyle implications subscale retained significance ($\beta = 0.14$, $p < .05$).[50]

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[50] A second regression was conducted with the steps reversed (i.e., IM constructs, followed by belief subscales). This analysis indicated that the inclusion of the four belief subscales added 3% explained variance, not accounted for by the proximal IM constructs ($\Delta R^2 = 0.03$, $p < .001$).

Table 8.15. Associations between thematic behavioral belief subscales and children's foreground TV/video exposure.

	Model 1		Model 2	
Construct	B (SE B)	β	B (SE B)	β
Cognitive/educational value beliefs	0.13(0.09)	0.10	-0.01(0.09)	-0.004
Instrumental parenting function beliefs	0.23(0.06)	0.19***	0.08(0.06)	0.06
Child engagement/enjoyment beliefs	0.11(0.07)	0.09	0.12(0.06)	0.10†
Health/lifestyle implications beliefs	-0.15(0.06)	-0.15*	-0.14(0.05)	-0.14*
Attitude			0.23(0.06)	0.22***
Injunctive norms			0.06(0.04)	0.07
Descriptive norms			0.13(0.06)	0.08*
Perceived behavioral control			-0.26(0.05)	-0.17***
R	0.40		0.50	
Adj. R^2	0.15		0.24	

N = 695. †p < .10; *p < .05; **p < .01; ***p<.001.

A final set of bootstrapping analyses assessed the significance of mediation of the relationships between the subscales and children's foreground TV/video exposure through the four IM cognitive constructs. Four analyses were conducted: one for each of the belief subscales, each controlling for the three other subscales. As conveyed in Table 8.16, significant mediation was found for both of the subscales that were predictive of children's exposure (i.e., instrumental parenting function; health/lifestyle implications). The estimated total mediation of the instrumental parenting function subscale was 67% (bootstrap confidence interval = 0.103 – 0.206). The strongest indirect path was through attitude (i.e., 38%, confidence interval = 0.046 – 0.136). Though the health/lifestyle implications subscale did not show significant mediation through the four proximal IM constructs combined (bootstrap confidence interval = -0.037 – 0.047; point estimate = 0.008), results did indicate significant indirect paths from this variable to foreground exposure estimates through perceived behavioral control (i.e., 19%, confidence interval = -0.06 - -0.10) and attitudes (i.e., 15%, confidence interval = 0.003 - 0.053).

Table 8.16. Mediation of thematic belief subscales through integrative model cognitive constructs.

Belief subscale (original effect)[a]	Total (4 proximal) Point estimate[b] (proportion of B)[c]	Attitude Point estimate[b] (proportion of B)[c]	Injunctive norm Point estimate[b] (proportion of B)[c]	Descriptive norm Point estimate[b] (proportion of B)[c]	PBC Point estimate[b] (proportion of B)[c]
Cognitive/educational value (0.13)	**0.131(1.01)**	**0.099(0.76)**	0.018(0.14)	0.008(0.06)	0.007(0.05)
Instrumental parenting (0.23)	**0.153(0.67)**	**0.088(0.38)**	0.028(0.12)	**0.010(0.04)**	**0.027(0.12)**
Child engagement/ enjoyment (0.11)	-0.019(-0.17)	0.017(0.15)	0.004(0.04)	**0.017(0.15)**	**-0.056(0.51)**
Health/lifestyle implications (-0.15)	-0.008(0.05)	**-0.023(0.15)**	-0.005(0.03)	-0.009(0.06)	**0.028(0.19)**

N = 696. [a]Values represent the B values for the subscales displayed in Table 8.15 Model 1. [b]Values represent indirect point estimates based on bootstrapping analyses with 1,000 samples, controlling for the other subscales (see Preacher & Hayes, 2008). [c]Values represent the ratio of indirect relationship point estimates to the original B value (i.e., B values from Model 1 section of Table 8.15), or the proportion of total relationship that is mediated. Bold values indicate confidence intervals that do not contain zero, representing an indirect relationship that is statistically different from zero.

Discussion

The results of this study represent a crucial step in understanding the specific perceptions that mothers' have about their infants' and toddlers' foreground television and video exposure, and which of those perceptions are particularly strong predictors of more or less exposure among children. Though concerned parties, such as the American Academy of Pediatrics, have already directed messages at parents to attempt to reduce early childhood TV/video exposure (see AAP, 1999; 2001), such messages have been designed and disseminated without knowledge of many of the salient maternal beliefs examined in the present study. By uncovering salient, yet previously unexplored maternal beliefs about infant/toddler TV/video use, this study highlights the importance of using theory and preliminary elicitation research to guide campaign design and evaluation.

In this chapter, the nature of mothers' attitudes was strongly related to the strength and valence of their combined discrete behavioral beliefs, as predicted by the tenets of the integrative model of behavioral prediction. Mothers whose overall beliefs about the expected outcomes of infant/toddler TV/video use were more positive in nature (i.e., expected more good outcomes) had more favorable general attitudes towards that use as well (i.e., they thought infant/toddler TV/video use was more good, wise, and beneficial), while those with more negative beliefs tended to have unfavorable attitudes. Interestingly, mothers' behavioral beliefs did have residual relationships with children's foreground exposure estimates that were not fully accounted for by attitudes; a finding which will be discussed more thoroughly below.

Notably, the beliefs that most discriminated between mothers whose infants/toddlers were exposed to more or less foreground television and video programming were largely not the beliefs most frequently studied in previous surveys (i.e., educational value; e.g., Rideout & Hamel, 2006; Vandewater et al., 2007; Zimmerman, Christakis & Meltzoff, 2007). In fact, mean differences between the mothers whose children had more or less exposure were largest among those with differing beliefs about the potential for foreground TV/videos to (1) allow them to spend more time with their child, (2) structure the child's day or establish routine, (3) stimulate the child's creativity, and (4) help the child learn social/emotional skills. Though concerns about the potential for television and video use to detract from children's time spent learning and hurt their brain development, beliefs studied in earlier research, were among the five most discriminating negative behavioral beliefs (see Rideout & Hamel, 2006). Together, these findings indicate that potential future campaigns intended to reduce infants' and toddlers' time with foreground television and videos may be more successful if they aim to alter various beliefs among mothers in addition to the potential for these media to help or harm young children's educational development. For example, media campaigns might attempt to change the perceptions that watching TV/videos with one's baby constitutes a good way to spend time with the child or could stimulate the child's creativity, or provide alternative means for accomplishing these goals (e.g., reading together; coloring with crayons).

This research also suggests a multi-dimensional structure of mothers' beliefs regarding the favorable and unfavorable outcomes associated with their infants' and toddlers' TV/video use. In this study, there were differences between positive and negative behavioral beliefs, as well as between beliefs reflecting different thematic categories in terms of the ability for various dimensions to predict mothers' attitudes and intentions and children's TV/video exposure.[51] Notably, these differences varied between the dependent variables as well. That is, some belief dimensions accounted for more variance in attitudes and intentions to let children watch TV/videos for more than an hour a day at least several days each week, while others were stronger predictors of intentions to keep children from viewing any TV/videos and children's actual exposure estimates.[52]

The strongest single predictor of children's exposure was the full behavioral belief index when compared to each of the *individual* belief subscales and indices. However, the positive and negative belief indices and four thematic belief subscales accounted for slightly more variance in each of the dependent variables when entered into models as sets of predictors. The differences were most striking among the models predicting attitudes (i.e., the two multi-dimensional solutions each explained 48% of variance in attitudes, compared to 39% explained by the full belief index). Given the high internal consistencies of the negative and positive belief indices, as

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[51] It is possible that the different dimensions that emerged may actually reflect differences in mothers' *evaluations* of the desirability or undesirability of outcomes. Traditional IM survey measures not only participants' perceptions of the likelihood of a particular outcome, but also their ratings of how good/bad those outcomes would be. Unfortunately, outcome evaluations were not included in the present survey due to space limitations, so the possibility cannot be ruled out that the observed differences between various beliefs actually reflect differences in outcome evaluations.

[52] The differences between the two measures of intentions are not at odds with the IM, given that the theory would contend that they represent two distinct behaviors (i.e., willingness to let the child view TV/videos more than an hour a day at least several days each week; vs. willingness to let the child view any TV/videos at all).

well as the fact that these two subscales emerge naturally from factor analyses, this two-index solution seems to comprise the strongest multi-dimensional behavioral belief structure. While there did seem to be thematic dimensions within the full set of behavioral beliefs, the four thematic subscale solution did not naturally emerge from factor analyses and did not account for more variance than was explained by the pair of negative and positive belief indices.

While understanding the multidimensional nature of the behavioral belief structure did add to the theoretical operation of the theory (i.e., explanatory power was boosted slightly by the multidimensional solutions), this new-found knowledge has important practical implications as well. For example, compared to their negative behavioral beliefs, mothers' positive beliefs were stronger predictors of attitude, intention (i.e., to let the child view more than an hour a day several days each week), and exposure. Thus, a potential campaign aimed at reducing infant/toddler TV/video viewing may be more successful if it seeks to reduce mothers' perceptions of the desirable outcomes associated with using TV/videos with their children, instead of increasing their perceptions of undesirable outcomes. Moreover, targeting beliefs regarding the instrumental parenting function of infant/toddler TV/video use may be particularly successful given that this dimension was strongly predictive of attitudes, intentions, and behavior.

Furthermore, the multidimensional belief structure may help to explain why attitudes do not fully mediate the relationship between behavioral beliefs and behavior. Though the reason for the residual relationship is not clear from these analyses, there are at least several possible explanations based on the multidimensional structure. This survey may have omitted questions that would have incorporated additional dimensions of mothers' general attitude (e.g., whether the behavior is "pleasant/unpleasant"). For example, the three questions which measured attitude on the survey (i.e., whether the behavior is "good/bad", "foolish/wise," and "harmful/beneficial") seem conceptually to measure mothers' perceptions of likely implications of TV/video use *for their children*. One aspect missing from the attitude scale may be mothers' perceptions of implications infant/toddler TV/video use *for themselves*. In fact, benefits of media use to the mother is incorporated into the "instrumental parenting function" belief subscale, a thematic belief component found to be significantly predictive of children's exposure. As such, a richer measurement of attitude may have led to a better match between the dimensions of behavioral beliefs and attitude, which may have resulted in greater mediation of the relationship between behavioral beliefs and behavior.

It is also possible that mothers' general attitudes about infant/toddler TV/video use simply do not fully mediate their specific behavioral beliefs. There may some expected outcomes that are so salient to mothers that they impact behavior above and beyond their general attitudes about children's TV/video use. That is, when a mother is making real-life decisions about whether or not to let the child view television and videos, there may be some specific considerations that are so prominent that they impact her decision-making regardless of her broader infant/toddler TV/video use attitude. For example, the thematic subscale reflecting beliefs about the health or lifestyle implications of TV/video use for the child had a particularly strong residual relationship with children's actual exposure. When deciding to allow or not allow the child to watch television, mothers may give particular consideration to the health implications of TV/video viewing, instead of relying only upon their more general attitudes toward that viewing.[53]

Finally, though it was not an explicit focus of this study, the mediation analyses suggested some slight “cross-over” between mothers’ behavioral beliefs and their perceived descriptive normative pressure and behavioral control. This was indicated through the unexpected significant indirect paths between behavioral beliefs and children’s exposure through the descriptive normative pressure and perceived control constructs (i.e., mediation of behavioral beliefs through the other constructs of the IM than attitudes). Similar evidence of cross-over between IM constructs has been found in previous studies with different target behaviors (e.g., Taylor & Todd, 1995). Unfortunately, the cross-sectional nature of the present data precludes certainty about the existence or direction of causal relationships. For example, it is possible that mothers’ low perceived behavioral control leads to more beliefs about the positive outcomes related to infant/toddler TV/video use, the reverse causal direction may be true, or an unmeasured third variable may be causing both factors. Still, the existence of these indirect paths are worthy of more careful attention in future research using different methodologies.

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[53] The possibility of this particular example is bolstered by the fact that there has been much current societal focus on the growing childhood obesity epidemic, as well as a fair amount of discussion regarding the potential contribution of children’s media use to that epidemic. Thus, considerations of health implications of children’s TV/video viewing diet may be particularly salient in parents’ minds.

Chapter Nine

Accounting for children's foreground TV/video exposure: The role of mother's perceptions of brain and cognitive development

The goal of the present study is to investigate the intersections between mothers' beliefs in a "critical window" of children's brain development between birth and age three, mothers' attitudes and intentions regarding infant/toddler television and video use, and their children's actual rates of TV/video viewing. As no known measure of parents' endorsement of the "critical window" of brain development currently exists, this study sought to develop a scale to measure this belief. This scale was then used to examine associations between mothers' perceptions of the nature of children's brain and intellectual development and their behavioral beliefs, attitudes, and intentions regarding their infants' and toddlers' foreground TV/video use, as well as children's actual weekly time spent viewing television and videos.

The critical window of brain development

Since the mid-1990s there has been a prominent discourse in the US regarding the brain development of infants and toddlers, as well as the determinants, alterability, and life-long implications of the nature of that development (see Bruer, 1998; Thompson & Nelson, 2001). As portrayed in news and parenting media, this discourse often takes a "critical window" approach to children's brain development. That is, messages in the media often assert that the first few years of life constitute a crucial period of time for brain development, when brain synapses are "pruned away." Furthermore, these messages purport that environmental stimulation during this period of a child's life will increase the number of synapses spared the pruning process (i.e., the “use it or lose it” approach; see Bruer, 1999a). The final piece of the “critical window” approach is the contention that saving more brain synapses during this crucial period will enhance an individual’s lifelong intellectual potential.

In reality, many news stories and parenting articles contain generalizations and extrapolations based on research conducted with animals 20 to 40 years ago, and have more implications for the possible negative effects of deprivation than the benefits of enriched environments (see Barinaga, 2000; Bruer, 1999b). Furthermore, existing research largely pertains to the impact of environment on neurobiological outcomes, such as the influence of stimulation deprivation on animals’ vision and hearing (e.g., Greenough, Black & Wallace, 1987; Greenough & Chang, 1985; Hubel & Wiesel, 1970; Wiesel & Hubel, 1965). When these findings are used to make inferences about the development of human intelligence the distinction is blurred between neurobiology and psychology; that is, between brain structure and brain function (Bruer, 1998; 1999). In fact, scientists have not yet linked synapse number and structure to human psychological functions like intelligence.

Although the existence of a “critical window” of brain development has been a common topic in the news and parenting media, no known study has examined the influence that the endorsement of this belief may have on parenting philosophies and practices. Many parents are likely exposed frequently to critical window messages in various mass media. In fact, one recent survey indicates that 42% of parents with infants and toddlers claim they turn to parenting magazines and websites for parenting information at least one or two times a month (Zero to Three, 2009). While perusing these publications and websites they are likely to encounter messages like the following article on BabiesToday.com:

> Learning is an inverse function of age… The younger the baby is, the faster he will learn. If the baby is provided with visual, auditory and tactile stimulation with increased frequency, intensity and duration and given enhanced mobility, language and manual competence opportunity, he will develop more rapidly in all areas. This will increase his overall understanding of the world around him and greatly increase his interaction with his family. (Brown, 2010).

Similarly, those exposed to news media outlets are also likely to encounter messages regarding a critical window of children's brain development. Those reading *Newsweek*, for example, might come upon statements like the following from the 1996 article "Your Child's Brain":

> It is the experiences of childhood, determining which neurons are used, that wire the circuits of the brain as surely as a programmer at a keyboard reconfigures the circuits in a computer. Which keys are typed -- which experiences a child has -- determines whether the child grows up to be intelligent or dull, fearful or self-assured, articulate or tongue-tied. Early experiences are so powerful, says pediatric neurobiologist Harry Chugani of Wayne State University, that "they can completely change the way a person turns out" (Begley, 1996, p. 1).

Assertions regarding a fleeting window of opportunity to impact an individual's brain development through stimulation extend beyond the news and parenting media as well. Notably, it is common for producers of infant/toddler media to reference this "critical period" of brain development in order to market various products to parents. For example, the website for the DVD and flashcard series "Your Baby Can Read" states:

> A baby's brain thrives on stimulation and develops at a phenomenal pace...nearly 90% during the first five years of life! The best and easiest time to learn a language is during the infant and toddler years...when the brain is creating thousands of synapses, or connections, allowing a child to learn both the written word and spoken word simultaneously. Seize this window of opportunity to enhance your child's learning ability with the Your Baby Can Read! Early Language Development System… According to Your Baby Can Read! developer Dr. Robert Titzer, the current practice of starting to teach reading in school is too late. When children develop reading skills during their natural window of opportunity, from about birth to age four, they read better and are more likely to enjoy it. (yourbabycanread.com; 2011).

In addition, warnings to parents against the use of TV/video with babies may also include messages regarding a critical window for children's brain development. For example, in one radio and print campaign about healthy child development, the AAP warns that "these early years are crucial" and infant/toddler media exposure may be particularly harmful given the developmental vulnerability of children under age 3 (AAP, 2010).

Given the number and variety of information sources that reference the critical "0 to 3" perspective in discussions of child development, it is likely that mothers develop beliefs about early childhood brain/cognitive development. In light of the variety of sources that relate a "critical window" for brain stimulation specifically to early media use, it is reasonable to speculate that mothers' perceptions of the nature of brain and intellectual development influence their behavioral beliefs regarding infant/toddler media use. In particular, mothers with a strong belief in a critical period of children's brain development are likely considering whether specific experiences (e.g., television- and video-viewing) may influence their children's cognitive development, for better or for worse. Such consideration may lead them to develop strong positive or strong negative beliefs in the ability of television and video programs to teach infants and toddlers or contribute to their brain/cognitive development. That is, those mothers who feel strongly that their babies and toddlers are in the most crucial brain development stage of their lives will also feel strongly that television and video programs can either aid or impede that development. These fundamental behavioral beliefs may in-turn influence mothers' overall attitudes, leading to differences in children's actual foreground television and video exposure.

Hypothesis 4: Mothers with stronger beliefs in a "critical window" in brain development between birth and age three will have stronger behavioral beliefs (i.e., either pro- or con-) regarding the cognitive or educational value of foreground TV/videos for infants/toddlers.

What is more, the extent of a mother's belief in a critical window of brain development likely moderates the relationship between her beliefs regarding the cognitive or educational value of foreground TV/videos and her attitude and intentions, as well as the extent to which she allows her child to spend time viewing. In particular, perceptions of the cognitive harm or boon for children are likely to be particularly salient among those who feel strongly that children's brain development and lifelong intelligence is impacted by cognitive stimulation during the first three years of life. As such, mothers who have a strong belief in the critical window are more likely to be highly impacted by the beliefs they hold regarding the potential of foreground TV/video to harm or boost children's cognitive development or learning.

These mothers should have attitudes, intentions, and estimates of children's exposure that are more strongly in-line with their beliefs about the cognitive/educational value of foreground TV/videos for infants and toddlers, compared to those with little or no belief in a critical window of brain development from birth to age three.

Hypothesis 5: The beliefs regarding the cognitive/educational value of foreground TV/video for infants and toddlers held by mothers with strong beliefs in a critical window of brain development will have stronger relationships with their attitudes, intentions, and their children's foreground TV/video exposure, compared to mothers with weak or no belief in the critical window.

Methods

Measures[54]

Child's foreground TV/video exposure.

Foreground TV/video intention (i.e. , (1) to keep the child from watching any foreground TV/video in the next month; (2) to let the child watch foreground TV/videos for more than an hour a day at least several days each week).

Foreground TV/video beliefs.

Foreground TV/video attitude scale.

Perception of a "critical window" of brain development. Eight survey items were included in both survey versions to address participants' beliefs in a "critical

[54] Those measures which have been previously described in earlier chapters are listed here, and a fuller description can be found in the chapters pertaining to Chapters 6 - 8, as well as the general Methods chapter (i.e., Chapter 5). The full online survey can be found in Appendix D.

window" of brain development. These items were created based on responses from mothers in the preliminary elicitation interview study (see Chapter Three), and tested through the pilot survey test (see Chapter Four). Each of the critical window belief items was on a 7-point response scale from 1: "strongly disagree" to 7: "strongly agree." Broadly, the items were intended to reflect the extent of belief in three general ideas: (1) the 0-3 years are particularly crucial time for brain development; (2) early brain development determines children's lifelong intellectual potential; and (3) children's experiences (e.g., as opposed to genes) determine the nature of their brain development.

Data analysis

Critical window belief scale. Individual item analysis was first conducted on each of the eight critical window belief items. The analyses included were item means, standard deviations, skewness, and kurtosis. All appropriate items were then reverse-coded (i.e., such that higher values on all items represented higher perceptions of a critical window of brain development from birth to age three). Factor analysis of the eight items was conducted using principal components analysis with varimax oblique rotation to force extraction of one dimension. Cronbach's alpha analysis was used to assess the internal consistency of the scale.

Hypothesis 4. First, correlational analysis and means analysis were used to determine the extent of linear relationships between critical window beliefs and beliefs in the cognitive/educational value of infant/toddler foreground TV/videos (i.e., the subscale developed in Chapter Eight).[55] Ordinary least squares (OLS) regression analysis was then used to determine whether mothers with stronger beliefs in a critical window of children's brain development held behavioral beliefs about the cognitive/educational value of TV/videos for infants and toddlers that were more distant from neutral. The critical window belief scale was entered as a predictor of the absolute distance from neutral of mothers' scores on the cognitive/educational value belief subscale.

Hypothesis 5. Four hierarchical OLS regressions were conducted to test the extent to which mothers' beliefs in the critical window of young children's brain development might moderate the relationships between their beliefs in the cognitive/educational value of infant/toddler foreground TV/video use and their (1) attitudes; (2) intentions to keep the children from viewing any TV/videos in the next month; (3) intentions to let the children view more than an hour a day of TV/videos at least several days each week; and (4) estimates of children's weekly foreground TV/video exposure. In each model, the continuous critical window scale was entered in the first step, followed by the four thematic TV/video belief subscales in the second, and the interactions of the critical window beliefs and foreground TV/video belief subscales in the third step. The interaction terms were created by first centering both the critical window scale and the belief subscales (i.e., to avoid high multi-collinearity in the model), and then multiplying the centered terms.

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[55] Means analysis tests for significant differences in the means of a dependent variable across various levels of the independent variable.

Results

Critical window beliefs. Individual item analyses, including means, standard deviations, skew coefficients and kurtosis coefficients, for the eight critical window belief items are contained in Table 9.1. The responses to several of the items were substantially skewed towards a stronger belief in the critical window, particularly items 1, 2, and 5. Additionally, items 1 and 2 had particularly high positive kurtosis coefficients, indicating a high percentage of responses were concentrated across only a few response options (in this case, the highest two response options). Before combining the items into a scale, all negatively worded items were reverse-coded so that higher values for each item represented stronger belief in a critical window of brain development. Internal consistency for the eight items was relatively low at α = .67. A principal components factor analysis with varimax rotation and a forced single-factor solution was conducted to examine the appropriateness of a single-factor structure for the full scale. The single extracted factor accounted for 31% of variance in the items. Item factor loadings (portrayed in Table 9.1) were relatively high, with the exception of items 1, 2 and 5[56].

[56] These were also the only three items that were not reverse-coded, suggesting that the direction of item wording may be partially responsible for the lower co-variance of these items with the reverse-coded items.

Table 9.1. Critical window item and scale analysis. (α = .67)

Item	Mean (SD)	Skew (SE)	Kurtosis (SE)	Factor loading[a]	Reliability if removed (α)
1. The first 3 years of a child's life are most crucial for brain development	6.46(1.04)	-2.65(0.09)***	8.57(0.19)***	.10	.66
2. Experiences children have in the first 3 years build pathways in their brains	6.34(1.05)	-2.01(0.09)***	5.01(0.19)***	.08	.66
3. Brain development is determined mostly by a person's genes[R]	4.20(1.73)	-0.12(0.09)	-0.68(0.19)	.82	.60
4. How smart a child is depends mostly on genes[R]	4.46(1.76)	-0.18(0.09)	-0.80(0.19)	.82	.59
5. How smart a child is depends a lot on the learning experiences they have early on	6.05(1.16)	-1.19(0.09)***	1.07(0.19)*	-.01	.68
6. The majority of brain development happens after age 3[R]	4.38(1.70)	-0.25(0.09)	-0.59(0.19)	.71	.59
7. Experiences between birth and 3 are not as crucial to intelligence as experience in later years[R]	4.77(1.99)	-0.52(0.09)*	-0.90(0.19)*	.62	.61
8. My child's brain/intellect will develop appropriately through play/ interaction experienced automatically[R]	3.05(1.55)	0.58(0.09)*	-0.08(0.19)	.48	.67

N = 692. Note: items were on a 1 (strongly disagree) to 7 (strongly agree) response scale. [R] These items were reverse-coded such that higher values represent stronger belief in the critical window of brain development. [a] Values are derived from a principal components analysis with varimax oblique rotation (forced 1 factor solution)*p < .05; **p < .01; ****p* <.001.

Upon re-examination of the eight critical window survey items it seemed there were two distinct ideas reflected in the full set: (1) that experiences between 0 – 3 years of age are crucial for brain development (items 1, 2, 5, 6, 7, 8); and (2) that a person's genes largely determine their intelligence (items 3 and 4). Furthermore, these beliefs do not necessarily represent varying endorsements of the same conception, but could in fact represent conceptually distinct constructs (i.e., a mother could believe that 0-3 experience are important *and* that genes are important in determining intelligence). Thus, a second principal components factor analysis was then conducted in which as many factors were extracted as there were eigenvalues greater than 1.0. The potential existence of more than one factor was hypothesized to yield subscales reflecting the belief themes described above.

As conveyed in Table 9.2, this analysis suggested that there were two "brain/cognitive development belief" factors within the items. The results indicated a strong wording direction trend such that the five items that were reverse-coded emerged as the first factor, and the three items which were not reverse-coded emerged as the second factor. Of the five items comprising the first factor, two reflected the conception that brain development and intelligence are determined largely by genes (i.e., items 3 and 4). These two items were correlated at $r = 0.80$ ($p < .001$). They were averaged together to form a subscale representing a strong belief in the role of genes in determining brain development and intelligence.[57] Values on this subscale

[57] Though the three other items did hang together well with these two items in the factor analysis, they seemed conceptually distinct. Thus, it seemed that direction wording might be causing the high factor loadings between these five items. As such, only the items regarding the role of genes were

ranged from 1 to 7, and had a mean of 3.67 (i.e., on a 7-point scale; SD = 1.65). The "genes" subscale had a slight positive skew (skewness = 0.15; SE = 0.09) and was slightly platykurtic (kurtosis = -0.66, SE = 0.19).

Table 9.2. Analysis of brain/intellectual development belief subscales.

Item		Factor 1	Factor 2
1.	The first 3 years of a child's life are most crucial for brain development	0.04	0.88
2.	Experiences children have in the first 3 years build pathways in their brains	0.02	0.91
3.	Brain development is determined mostly by a person's genes[R]	0.82	-0.10
4.	How smart a child is depends mostly on genes[R]	0.83	-0.06
5.	How smart a child is depends a lot on the learning experiences they have early on	-0.06	0.76
6.	The majority of brain development happens after age 3[R]	0.70	0.13
7.	Experiences between birth and 3 are not as crucial to intelligence as experience in later years[R]	0.60	0.23
8.	My child's brain/intellect will develop appropriately through play/ interaction experienced automatically[R]	0.50	-0.20
	% Variance accounted for	30.97	28.73

N = 692. Values are derived from a principal components analysis with varimax oblique rotation (allowed to extract as many factors as there were eigenvalues greater than 1.0). [R] These items were reverse-coded such that higher values represent stronger belief in the critical window of brain development.

retained in this subscale as these two items comprised the strongest subscale conceptually and analytically.

The three non-reverse-coded items were examined next. These three items had high internal consistency ($\alpha = 0.81$). Further, each of the items conceptually reflected the belief that children's brain development and intelligence were determined largely by the experiences that children have between birth and age three. Thus, these three items were averaged together to form a subscale reflecting beliefs in the critical nature of children's "experiences between 0 - 3" in determining their brain development and intelligence.[58] The values on this subscale ranged from 1 to 7, with a mean value of 6.28 (i.e., on a 7-point scale; SD = 0.92). This subscale had a substantial negative skew (skewness = -1.91, SE = 0.09) and was leptokurtic (kurtosis = 5.12, SE = 0.19).[59]

Hypothesis 4. Correlational analyses were conducted between the "experiences between 0 -3" and "genes" subscales and the thematic behavioral belief subscale representing mothers' beliefs in the cognitive/educational value of infant/toddler

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[58] This subscale most closely reflects the originally conceptualized "critical window" scale. However, because two relatively strong and distinct concepts about the determinants of young children's brain development/intelligence emerged through these analyses, both subscales will be examined in the remaining analyses. The subscales were not significantly correlated with each other (r = 0.05, p = .19).

[59] Values on the "experiences between 0 -3" subscale were not significantly correlated with respondent education (r = 0.03, p = 0.48), respondent income (r = -0.01, p = 0.80), child's age (r = -0.06, p = 0.12), or respondent's reported weekly time spent viewing TV/videos (r = 0.06, p = 0.10). Nor was there any difference between mothers who were White, Black, or an "other" race/ethnicity (*F*(2, 690) = 0.56, p = 0.57). The "experiences between 0 -3" subscale was also correlated with the number of reported books available in the home for the child (r = 0.10, p < .01), as well as the number of over-all toys (r = 0.08, p < .05). In contrast, the subscale reflecting strong belief in the role of genes was weakly but significantly correlated with respondent's education level (r = 0.20, p < .001), respondent income (r = 0.13, p < .01), and the child's age (r = 0.08, p < .05). Additionally, mothers classified as an "other" race/ethnicity had a higher mean belief in the role of genes (*M* = 4.10; SD = 1.84), compared to those who were White (*M* = 3.56, SD = 1.52) or Black (*M* = 3.63, SD = 1.93; *F*(2, 690) = 5.19, p < .01). Scores on this subscale were not related to the number of reported books (r = -0.01, p = 0.82) or toys available to the child (r = -0.01, p = 0.88).

foreground TV/video-viewing. The results indicated that the cognitive/educational value subscale had a weak but significant positive linear relationship between with mothers' scores on "experiences between 0-3

subscale ($r = 0.13$, $p < .01$), and no relationship with the "genes" subscale ($r = 0.01$, $p = 0.91$). Next, the "experiences between 0-3" and "genes" subscales were transformed into ordinal-level variables containing five categories each. Means analyses were then conducted to assess potential non-linear relationships with the cognitive/educational value subscale. Again, there was a significant relationship between the "experiences between 0-3" subscale and the cognitive/educational value belief subscale, and no relationship found with the "genes" subscale. Furthermore, the results indicated that relationship forms were not quadratic or higher, as the deviation from linearity statistics were non-significant and there were negligible differences between the R^2 and eta^2 values (i.e., largest difference was 0.005).

An OLS regression was then conducted to determine the extent to which each of the subscales predicted stronger cognitive/educational value beliefs (i.e., scores on the subscale that are more distant from neutral). The dependent variable for the analysis represented the distance of mothers' cognitive/educational value subscale scores from neutral, which was created by subtracting 4 (i.e., the neutral belief response) from each individual's response on that subscale, and taking the absolute value (i.e., absolute value [score – 4]). The results of the regression, displayed in Table 9.3, indicated that a higher score on the "experiences between 0-3" subscale predicted cognitive/educational value beliefs that were more distant from neutral (β =

0.23, $p < .001$), and a higher score on the “genes” subscale predicted cognitive/educational value beliefs that were closer to neutral ($\beta = -0.10$, $p < .01$).

Table 9.3. Strength of mothers' beliefs in the cognitive/ educational value of infant/toddler foreground TV/videos based on perceptions of the nature of brain/intellectual development.

Predictor	B (SEB)	β
Experiences between 0-3 subscale	0.21(0.03)	0.23***
Genes subscale	-0.05(0.02)	-0.10**
R	0.25	
Adj. R^2	0.06	

N = 696. Note: The outcome variable in this analysis is the absolute distance from neutral of mothers' scores on the cognitive/educational value behavioral belief subscale. †p < .10; *p < .05; **p < .01; ***p < .001.

Hypothesis 5. Four hierarchical OLS regression analyses were conducted to test for a possible moderating role of mothers' critical window beliefs in the relationships between the thematic behavioral belief subscales and (1) attitudes; (2) intentions to keep children from viewing any foreground TV/videos; (3) intentions to let children view more than an hour at least several days each week; and (4) estimated weekly foreground TV/video exposure. The two brain/cognitive development subscales (i.e., "experiences between 0-3"; "genes") were entered together in the first step of each model. In the second step, the four behavioral belief thematic subscales were added to the analyses. Finally, eight interaction terms were entered in the third step of the analyses, representing each possible interaction between the brain/cognitive development and behavioral belief subscales (e.g., "experiences between 0-3" x cognitive /educational value; "genes" x instrumental parenting).

The regression coefficients and R and R^2 values for the analysis predicting attitudes are presented in Table 9.4. The first step was significant ($F(2, 696) = 5.82$, $p < .01$), and indicated that the two brain/cognitive development subscales together accounted for 1% of the variation in mothers' intentions. Stronger belief in the role of genes in determining children's brain development and intelligence predicted more positive attitudes toward letting infants/toddlers watch more than an hour a day of TV/videos at least several days each week ($\beta = 0.12$, $p < .01$). In the second step, the "genes" subscale remained a positive significant predictor ($\beta = 0.07$, $p < .05$), and the "experiences between 0-3" subscale became a significant negative predictor ($\beta = -0.05$, $p = .05$). The predictive weights of each of the thematic behavioral belief subscales mirrored the results of Chapter Eight (see Table 8.9, Model 1). Three interaction terms were significant in the third model step. The interaction of the "genes" subscale and the instrumental parenting belief subscale was a positive predictor of attitudes ($\beta = 0.09$, $p < .05$), as was the interaction between the "genes" subscale and the health/lifestyle behavior implications subscale ($\beta = 0.12$, $p < .01$). The interaction between the "experiences between 0-3" subscale and health/lifestyle implications belief subscale was a negative predictor ($\beta = -0.13$, $p < .01$).[60] The full model accounted for 50% of the variance in mothers' attitudes.

The projected predictive weight and significance of each interaction term had it been entered in the third step alone was determined by consulting the "Excluded

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[60] The Durbin-Watson statistic for the full model was 1.94, indicating adequate independence of errors. A histogram of residuals resembled a normal curve, and a normal probability plot of residuals resembled a diagonal straight line. A plot of the standardized predicted values and standardized residuals indicated consistent variance of residuals across levels of the predictor (i.e., homoscedasticity). Across models, the highest variance inflation factor (VIF) value was 4.45, which is substantially below the convention of 10.0 as an indicator of multi-collinearity.

Variables" analysis table of the hierarchical regression analysis described above. The "Model 3b" section of Table 9.4 contains the standardized coefficients of each interaction term had it been the sole predictor entered in step three. There were several differences in these regression coefficients, compared to those of the interaction terms entered together (i.e., Model 3a). Entered individually, the interaction between the "experiences between 0-3" belief subscale and "health and lifestyle implications" subscale is not a significant predictor of attitudes. In addition, the interaction between the "belief in genes" subscale and "cognitive/educational value" subscale is a marginally significant negative predictor, if entered in the model apart from the other interactions ($\beta = -0.05$, $p = .08$).

Table 9.4. Mothers' attitudes toward infant/toddler foreground TV/video-viewing based on their perceptions of brain/intellectual development and thematic behavioral beliefs.

	Model 1		Model 2		Model 3a[a]		Model3b[b]
Predictor	B (SEB)	β	B (SEB)	β	B (SEB)	β	β
Experiences between 0-3 subscale	0.07(0.06)	0.04	-0.09(0.05)	-0.05†	-0.10(0.05)	-0.06*	--
Genes subscale	0.11(0.04)	0.12**	0.07(0.03)	0.07*	0.06(0.03)	0.06*	--
Cognitive/educational value belief subscale			0.45(0.07)	0.35***	0.47(0.07)	0.37***	--
Instrumental parenting belief subscale			0.36(0.05)	0.31***	0.32(0.05)	0.28***	--
Child engagement/ enjoyment belief subscale			0.10(0.05)	0.08†	0.09(0.05)	0.07†	--
Health/lifestyle implications belief subscale			-0.10(0.04)	-0.10*	-0.09(0.05)	-0.09*	--
Experiences 0-3 x cognitive/educational value					-0.12(0.08)	-0.09	0.01
Experiences 0-3 x instrumental parenting					0.07(0.06)	0.06	0.001
Experiences 0-3 x engage/enjoy					-0.01(0.05)	-0.01	-0.02
Experiences 0-3 x health/lifestyle					-0.14(0.05)	-0.13**	-0.05
Genes x cognitive/educational value					-0.01(0.04)	-0.01	-0.05†
Genes x instrumental parenting					0.06(0.03)	0.09*	0.07*
Genes x engage/enjoy					-0.01(0.03)	-0.02	0.03
Genes x health/lifestyle					0.07(0.02)	0.12**	0.12***
R	0.13		0.70		0.71		--
Adj. R^2	0.01		0.48		0.50		--

N = 696. Step 2 $\Delta R^2 = 0.47$ ($p < .001$); Step 3 $\Delta R^2 = 0.03$ ($p < .001$). [a]These values were obtained from a hierarchical regression in which all interaction values were entered into the 3rd step simultaneously; [b]These values were obtained from the "excluded variables" table in SPSS derived from the hierarchical regression analysis. They represent the standardized regression coefficients for each interaction if that interaction had been the only term entered in the 3rd model step (i.e., without the other 7 interaction terms). †p < .10; *p < .05; **p < .01; ***p < .001.

The interactions between each of the brain/cognitive development subscales with the health/lifestyle implications belief subscale (i.e., obtained from the hierarchical regression with all interactions entered simultaneously) were plotted to examine the relationships graphically. Figure 9.1, which illustrates the relationship between the "belief in the role of 0-3 experiences" subscale and health/lifestyle implications beliefs, was created by using the regression equation obtained from the above analysis. All predictor variables except the two interactive subscales were set at their means. Predicted values were obtained from the equation for 7 health/lifestyle implication scores from 1 through 7 (i.e., the possible whole number scores from the lowest to the highest possible subscale score) for "0-3 experiences" belief scores of 4 (neutral subscale score), 5.83 (one standard deviation below the mean) and 7 (highest possible scale score). These values were chosen given the stunted variance in the "belief in the role of 0-3 experiences" measure.[61]

The above steps were repeated using the "belief in the role of genes" and health/lifestyle implications belief subscale to create the graph in Figure 9.2. However, for this graph, predicted values were obtained from the equation for whole number health/lifestyle implication scores from 1 through 7, for "genes" belief scores of 1 (lowest score), 4 (neutral subscale score) and 7 (highest possible subscale). This was possible given the higher amount of variance in the measure representing mothers' belief in the role of genes in determining brain/intellectual development.

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[61] A score of "1" on this subscale would be 5.72 standard deviations below the mean, and using this value in the graph would extrapolate considerably beyond the actual data.

Figure 9.1. Interaction of "belief in 0-3 experiences" and "health/lifestyle implications" subscales in predicting mothers' attitudes toward infant/toddler foreground TV/video viewing.

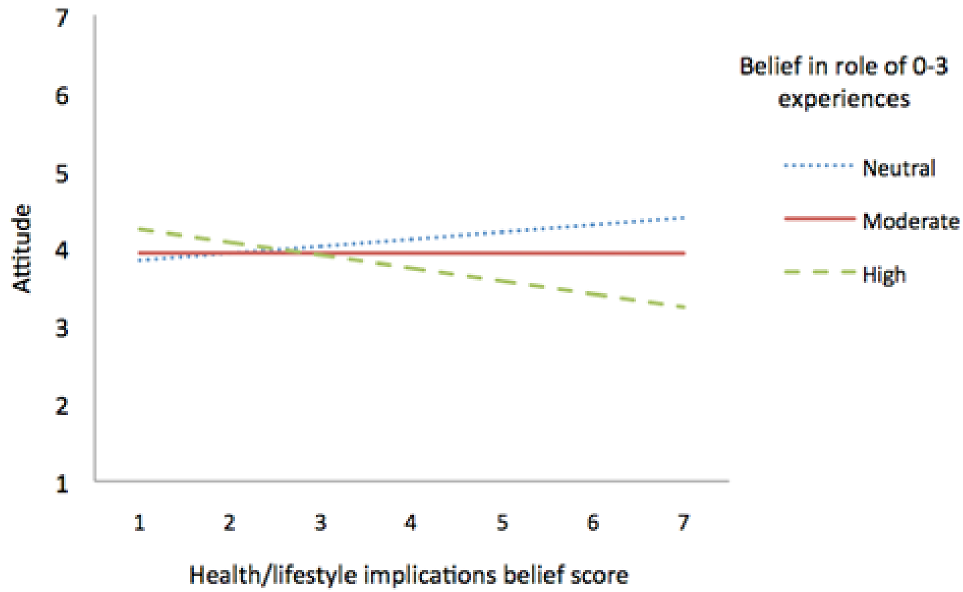
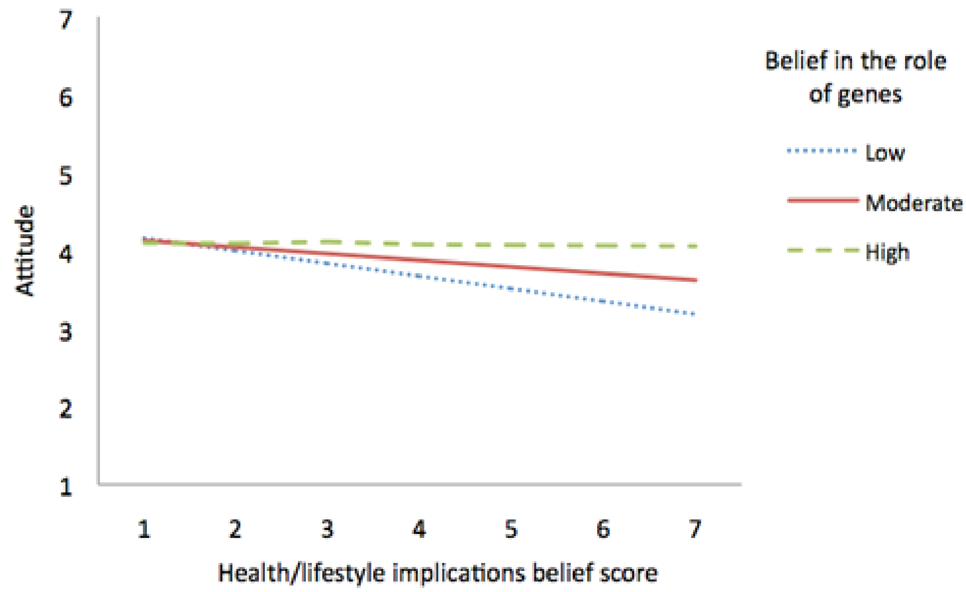


Figure 9.2. Interaction of “belief in genes” and “health/lifestyle implications” subscales in predicting mothers’ attitudes toward infant/toddler foreground TV/video viewing.



The next analysis predicted mothers’ intentions to keep their children from watching any foreground TV/video in the next month. The resultant R and R^2 values and regression coefficients from this analysis are displayed in Table 9.5. The first model step was significant and suggested that the two brain/cognitive development subscales accounted for 2% of the variance in mothers’ intentions ($F(2, 696) = 9.10$, $p < .001$). In this step, the “genes” subscale was a significant positive predictor ($\beta = 0.15$, $p < .001$), while the “experiences between 0- 3” subscale was a marginally significant negative predictor of mothers’ intentions to keep their infants/toddlers from viewing ($\beta = -0.06$, $p = 0.09$). This subscale lost its marginal level of significance after the thematic behavioral belief subscales were added in the second step ($\beta = -0.03$, $p = 0.47$), though the "genes" subscale remained predictive ($\beta = 0.12$, $p < .01$). Again, the predictive weights and significance levels of the four behavioral belief subscales mirrored the results of Chapter Eight (see Table 8.9, Model 3). One interaction term was significantly predictive in the third step. The interaction between scores on the "genes" subscale and the health/lifestyle implication subscales was positively predictive of mothers' intentions to keep their children from viewing any foreground TV/videos ($\beta = 0.14$, $p < .05$). Additionally, the term representing the interaction between the "genes" subscale and instrumental parenting function subscale was predictive of higher intentions, at a marginal level of significance ($\beta = 0.10$, $p = .07$). The full model explained 21% of the variance in mothers' intentions to keep their children from viewing any foreground TV/videos in the subsequent month.[62]

Again, the "Excluded Variables" analyses were consulted to determine possible differences in predictive weight and significance if the interaction terms had been entered separately from each other. As conveyed in the Model 3b section of Table 9.5, there was one notable difference from the results of the hierarchical analysis with all interactions entered in the 3rd model step. The interaction between the "belief in genes" subscale and the engage/enjoy belief subscale would be positively predictive if entered into step 3 of the hierarchical regression alone ($\beta = 0.09$, $p < .05$). The

[62] The Durbin-Watson statistic for the full model was 1.90. The histogram of residual values resembled a normal curve with a slight negative skew, and the normal probability plot of residuals showed slight deviation from normality. A plot of the standardized predicted values and standardized residuals indicated equivalent variance across predictor levels (i.e., homoscedasticity). The highest VIF value across models was 4.45.

power of two other interactive relationships was somewhat different if entered alone, however the inferences drawn from the results would be the same as from the findings reported in Model 3a.

Table 9.5. Mothers' intentions to keep their infants/toddlers from viewing any foreground TV/video-viewing based on their perceptions of brain/intellectual development and thematic behavioral beliefs.

	Model 1		Model 2		Model 3a[a]		Model 3b[b]
Predictor	B (SEB)	β	B (SEB)	β	B (SEB)	β	β
Experiences between 0-3 subscale	-0.13(0.08)	-0.06†	-0.05(0.07)	-0.03	0.01(0.08)	0.003	--
Genes subscale	0.17(0.04)	0.15***	0.14(0.04)	0.12**	0.11(0.04)	0.10**	--
Cognitive/educational value belief subscale			-0.34(0.11)	-0.21**	-0.35(0.11)	-0.22**	--
Instrumental parenting belief subscale			0.06(0.08)	0.04	0.07(0.08)	0.05	--
Child engagement/ enjoyment belief subscale			-0.07(0.08)	-0.04	-0.09(0.08)	-0.06	--
Health/lifestyle implications belief subscale			0.30(0.07)	0.24***	0.29(0.07)	0.23***	--
Experiences 0-3 x cognitive/educational value					0.07(0.12)	0.04	0.03
Experiences 0-3 x instrumental parenting					-0.13(0.09)	-0.08	-0.01
Experiences 0-3 x engage/enjoy					0.09(0.08)	0.07	0.03
Experiences 0-3 x health/lifestyle					0.02(0.09)	0.02	-0.01
Genes x cognitive/educational value					-0.10(0.07)	-0.11	0.05
Genes x instrumental parenting					0.08(0.04)	0.10†	0.12**
Genes x engage/enjoy					-0.03(0.05)	-0.04	0.09*
Genes x health/lifestyle					0.09(0.04)	0.14*	0.07*
R	0.16		0.45		0.48		--
Adj. R^2	0.03		0.20		0.21		--

N = 696. Step 2 $\Delta R^2 = 0.18$ ($p < .001$); Step 3 $\Delta R^2 = 0.03$ ($p < .01$). [a]These values were obtained from a hierarchical regression in which all interaction values were entered into the 3rd step simultaneously; [b]These values were obtained from the "excluded variables" table in SPSS derived from the hierarchical regression analysis. They represent the standardized regression coefficients for each interaction if that interaction had been the only term entered in the 3rd model step (i.e., without the other 7 interaction terms). †p < .10; *p < .05; **p < .01; ***p < .001.

The third regression model predicted mothers' intentions to let their children view foreground TV/videos for more than an hour a day on at least several hours each week in the next month. As conveyed in Table 9.6, the brain/cognitive development subscales explained 2% of variance in intentions in this analysis (step 1 $F(2, 696) = 7.45$, $p < .001$). Both subscales were significant positive predictors of mothers' intentions. The "genes" subscale was a somewhat stronger predictor ($\beta = 0.12$, $p < .02$), compared to the "experiences between 0-3" subscale ($\beta = 0.08$, $p < .05$). The former subscale retained its significance in the second step ($\beta = 0.10$, $p < .01$), though the "experiences between 0-3" subscale became non-predictive once the four behavioral belief subscales were added ($\beta = 0.003$, $p = 0.93$). The predictive weights and significance of the thematic behavioral belief scales reflected the results of Chapter Eight (see Table 8.9, Model 2). The full model accounted for 31% of the variance in mothers' intentions. Three interaction terms were marginally significant predictors: "experiences between 0-3" by cognitive/educational value ($\beta = -0.12$, $p = 0.06$), "experiences between 0-3" by health/lifestyle implications ($\beta = -0.11$, $p = 0.05$), and "genes" by health/lifestyle implications ($\beta = 0.10$, $p = 0.06$).[63]

The "Excluded Variables" analysis, reported in the Model 3b section of Table 9.6, indicated some differences would result if each interaction term was entered alone in step 3. In particular, the role of "experiences between 0-3" subscale and

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[63] The Durbin-Watson statistic for the full model was 1.98. The histogram of residuals resembled a normal curve, and the normal probability plot of residuals resembled a straight line. A plot of the standardized predicted values and standardized residuals indicated consistent variance across predictor levels (i.e., homoscedasticity). The highest VIF value across model steps was 4.54.

"health/lifestyle implications" belief subscale interaction would be non-significant if entered alone (i.e., compared to marginal significance when entered with the other terms as described above).

Table 9.6. Mothers' intentions to let their infants/toddlers view more than an hour a day of foreground TV/video-viewing at least several days each week, based on their perceptions of brain/intellectual development and thematic behavioral beliefs.

	Model 1		Model 2		Model 3a[a]		Model3b[b]
Predictor	B (SEB)	β	B (SEB)	β	B (SEB)	β	β
Experiences between 0-3 subscale	0.18(0.09)	0.08*	0.01(0.08)	0.001	0.001(0.08)	0.001	--
Genes subscale	0.16(0.05)	0.12**	0.13(0.04)	0.10**	0.13(0.04)	0.10**	--
Cognitive/educational value belief subscale			0.57(0.12)	0.32***	0.57(0.12)	0.32***	--
Instrumental parenting belief subscale			0.31(0.08)	0.19***	0.31(0.08)	0.19***	--
Child engagement/ enjoyment belief subscale			0.07(0.09)	0.04	0.07(0.09)	0.04	--
Health/lifestyle implications belief subscale			-0.17(0.07)	-0.12*	-0.15(0.08)	-0.10*	--
Experiences 0-3 x cognitive/educational value					-0.25(0.13)	-0.12†	-0.03
Experiences 0-3 x instrumental parenting					0.02(0.10)	0.01	-0.03
Experiences 0-3 x engage/enjoy					0.10(0.08)	0.06	-0.01
Experiences 0-3 x health/lifestyle					-0.18(0.09)	-0.11†	-0.02
Genes x cognitive/educational value					0.07(0.07)	0.07	-0.04
Genes x instrumental parenting					0.01(0.05)	0.02	-0.02
Genes x engage/enjoy					-0.09(0.05)	-0.09	-0.05
Genes x health/lifestyle					0.08(0.04)	0.10†	0.05†
R	0.15		0.56		0.57		
Adj. R^2	0.02		0.31		0.32		

N = 696. Step 2 $\Delta R^2 = 0.29$ ($p < .001$); Step 3 $\Delta R^2 = 0.01$ ($p = .21$). [a]These values were obtained from a hierarchical regression in which all interaction values were entered into the 3rd step simultaneously; [b]These values were obtained from the "excluded variables" table in SPSS derived from the hierarchical regression analysis. They represent the standardized regression coefficients for each interaction if that interaction had been the only term entered in the 3rd model step (i.e., without the other 7 interaction terms). †p < .10; *p < .05; **p < .01; ***p < .001.

The final model predicted the estimates of children's foreground TV/video exposure. The resultant values from this analysis are contained in Table 9.7. Again, mothers' scores on the "genes" subscale was a significant positive predictor in the first step ($F(2, 695) = 11.30$, $p < .01$; $\beta = 0.12$, $p < .01$), though the "experiences between 0-3" subscale was non-predictive ($\beta = 0.01$, $p = 0.73$). These two subscales accounted for 1% of the variance in children's estimated weekly TV/video exposure. The predictive weights and significance of the four behavioral belief subscales in the second model step mirrored the results of Chapter Eight (see Table 8.9, Model 4). One interaction term was significant in the third step: the interaction between the "genes" subscale and the instrumental parenting behavioral belief subscale was a positive predictor ($\beta = 0.17$, $p < .01$). The interaction between the "genes" subscale and the engagement/enjoyment behavioral belief subscale was a marginally significant negative predictor ($\beta = -0.10$, $p = .09$). The full model accounted for 16% of the variance in children's exposure estimates.[64]

The Model 3b section of Table 9.7 contains the standardized coefficients of the interactions terms obtained from the "Excluded Variables" analyses. These results indicated that, if entered alone in the 3rd model step, the interaction between the "belief in genes" subscale and "instrumental parenting function" belief subscale would

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[64] The Durbin-Watson statistic for the full model was 2.00. A histogram of residuals resembled a normal curve with a very slight positive skew, and a normal probability plot of residuals showed only slight deviation from normality. A plot of the standardized predicted values and standardized residuals indicated some variance of residuals in the higher levels of the predictor (i.e., some heteroscedasticity). Across models, the highest VIF value was 1.08.

be substantially weaker and its significance level would be only marginal ($\beta = 0.06$, $p = 0.08$). Additionally, the term representing the interaction between “belief in genes” subscale and “engage/entertain” belief subscale would no longer a marginally significant if entered alone.

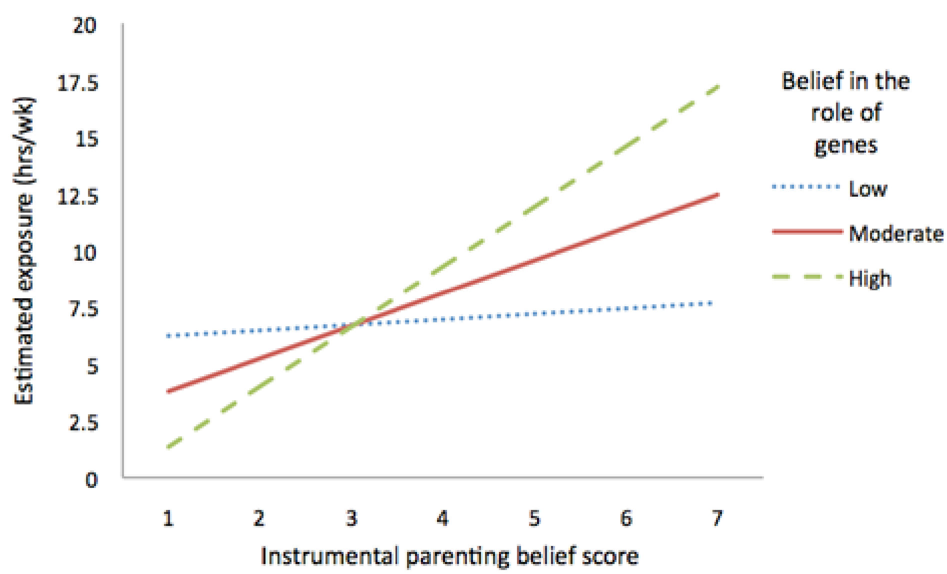
Table 9.7. Mothers' estimates of their infants'/toddlers' weekly foreground TV/video-viewing based on their perceptions of brain/intellectual development and thematic behavioral beliefs.

	Model 1		Model 2		Model 3a[a]		Model 3b[b]
Predictor	B (SEB)	β	B (SEB)	β	B (SEB)	β	
Experiences between 0-3 subscale	0.02(0.06)	0.01	-0.07(0.08)	-0.04	-0.07(0.07)	-0.04	--
Genes subscale	0.11(0.04)	0.12**	0.08(0.03)	0.09*	0.08(0.03)	0.09*	--
Cognitive/educational value belief subscale			0.13(0.09)	0.10	0.13(0.10)	0.10	--
Instrumental parenting belief subscale			0.20(0.06)	0.16**	0.21(0.07)	0.17**	--
Child engagement/ enjoyment belief subscale			0.12(0.07)	0.10†	0.11(0.07)	0.09	--
Health/lifestyle implications belief subscale			-0.16(0.06)	-0.16**	-0.17(0.06)	-0.17**	--
Experiences 0-3 x cognitive/educational value					-0.02(0.10)	-0.01	-0.02
Experiences 0-3 x instrumental parenting					-0.05(0.08)	-0.04	-0.03
Experiences 0-3 x engage/enjoy					0.02(0.06)	0.02	-0.02
Experiences 0-3 x health/lifestyle					-0.02(0.07)	-0.01	-0.01
Genes x cognitive/educational value					-0.04(0.05)	-0.06	-0.02
Genes x instrumental parenting					0.11(0.04)	0.17**	0.06†
Genes x engage/enjoy					-0.07(0.04)	-0.10†	-0.01
Genes x health/lifestyle					-0.01(0.03)	-0.02	0.02
R	0.12		0.41		0.42		
Adj. R^2	0.01		0.16		0.16		

N = 695. Step 2 $\Delta R^2 = 0.15$ ($p < .001$); Step 3 $\Delta R^2 = 0.01$ ($p = .19$). [a]These values were obtained from a hierarchical regression in which all interaction values were entered into the 3rd step simultaneously; [b]These values were obtained from the "excluded variables" table in SPSS derived from the hierarchical regression analysis. They represent the standardized regression coefficients for each interaction if that interaction had been the only term entered in the 3rd model step (i.e., without the other 7 interaction terms). †p < .10; *p < .05; **p < .01; ***p < .001.

The interaction between the “role of genes” and “instrumental parenting function” belief subscales in the prediction of the estimates of children’s foreground exposure is illustrated in Figure 9.3. This graph was created using the same technique as Figures 9.1 and 9.2, though the equation was obtained from an analysis predicting children’s *actual* estimated exposure (i.e., not transformed) for clearer interpretation. Whole values from 1 to 7 were used for the instrumental parenting subscale, and 1 (lowest), 4 (neutral), and 7 (highest) values were used for “genes” belief scores.

Figure 9.3. Interaction of “belief in genes” and “instrumental parenting function” subscales in predicting (transformed) estimates of infant/toddler foreground TV/video viewing.



Finally, a table was created to portray the significant interactions uncovered above. Table 9.8 indicates the brain/intellectual development belief by behavioral belief subscales that were found to be significant or marginally significant for the analyses predicting attitudes, each form of intentions, and estimated exposure.

Table 9.8. Moderating relationships between brain/intellectual development belief subscales and behavioral belief indices.

Interaction	Model 3a relationship	Model 3b relationship
Attitudes		
Experiences 0-3 x cognitive/educational value	--	--
Experiences 0-3 x instrumental parenting	--	--
Experiences 0-3 x engage/enjoy	--	--
Experiences 0-3 x health/lifestyle	-β**	--
Genes x cognitive/educational value	--	-β†
Genes x instrumental parenting	β*	β*
Genes x engage/enjoy	--	--
Genes x health/lifestyle	β**	β***
Intentions to keep child from viewing		
Experiences 0-3 x cognitive/educational value	--	--
Experiences 0-3 x instrumental parenting	--	--
Experiences 0-3 x engage/enjoy	--	--
Experiences 0-3 x health/lifestyle	--	--
Genes x cognitive/educational value	--	--
Genes x instrumental parenting	β†	β**
Genes x engage/enjoy	--	β*
Genes x health/lifestyle	β*	β*
Intentions to let child view >1hr/day several days/week		
Experiences 0-3 x cognitive/educational value	-β†	--
Experiences 0-3 x instrumental parenting	--	--
Experiences 0-3 x engage/enjoy	--	--
Experiences 0-3 x health/lifestyle	-β†	--
Genes x cognitive/educational value	--	--
Genes x instrumental parenting	--	--
Genes x engage/enjoy	--	--
Genes x health/lifestyle	β†	β†
Child's estimated exposure		
Experiences 0-3 x cognitive/educational value	--	--
Experiences 0-3 x instrumental parenting	--	--
Experiences 0-3 x engage/enjoy	--	--
Experiences 0-3 x health/lifestyle	--	--
Genes x cognitive/educational value	--	--
Genes x instrumental parenting	β**	β†
Genes x engage/enjoy	-β†	--
Genes x health/lifestyle	--	--

Discussion

This study examined the relationships between the nature of mothers' beliefs regarding early childhood brain/intellectual development and their perceptions and use of foreground television and videos with their infants and toddlers. Since the mid-1990s the news and parenting media have contained an abundance of messages proclaiming a sensitive period of brain development in early childhood, as well as much speculation for what such a sensitive period might mean for parenting. Still, no known research has studied parents' beliefs in this "critical window." As such, one important goal of the present study was to develop a scale for measuring this perception among mothers with children under the age of three. Although the hypothesized critical window scale did not emerge quite as expected in this study, the results suggested that mothers do have varying beliefs in the determinants of children's brain and intellectual development. Additionally, mothers' perceptions of the nature of this development do seem to influence their beliefs about the value of infant/toddler foreground television- and video-viewing, as well as their attitudes, intentions, and reported use of TV/videos with their children.

In this study, two constructs emerged from the critical window survey items, both analytically and conceptually. One dimension reflected mothers' beliefs that children's experiences between birth and three were crucial to brain development and intelligence, while the other was comprised of beliefs regarding the role of genes in that development. Mothers' endorsements of each of these beliefs had different relationships with their perceptions of the possible cognitive and educational outcomes associated with infant/toddler television and video use, as well as their attitudes, intentions, and actual reported use of TV/videos with their children. Mothers who had a higher score on the subscale which addressed belief in the role of children's experiences between birth and three tended to have stronger perceptions of the ability of TV/videos to help or harm young children's brain and intellectual development. In particular, these mothers were more likely to believe strongly in the positive potential of TV/video-viewing for children's learning and cognitive development. On the other hand, mothers who believed strongly that one's genes largely determine their brain development and intelligence tended to have more neutral beliefs about the influence of foreground TV/videos on children's brain and intellectual development. Thus, while it may be good in many ways for mothers to perceive that children's experiences in the first three years of life are very important to their development, the present results suggest there may also be some unfavorable repercussions from a particularly strong belief in the role of experiences between birth and three in determining brain development and intelligence. In particular, this view may lead parents to believe more strongly in the educational potential of television and videos for infants and toddlers. As described in Chapter Two, the existing research suggests very little learning among infants and toddlers from video sources and perhaps some harm for heavy viewers, though the body of research is still small.

In addition, bivariate relationships were found between the two brain/cognitive development belief subscales and mothers' attitudes, intentions, and reported use of foreground TV/videos with their infants and toddlers. A strong belief in the role of genes in determining children's brain development and intelligence was a particularly powerful predictor of mothers' more favorable attitudes towards infant/toddler foreground TV/video use, increased intentions to let their children spend time viewing, and higher estimates of children's foreground TV/video viewing rates. Mediation was not explicitly examined here because these direct relationships were not hypothesized. However, the results suggest that the relationships between mothers' strong belief in the role of genetics and their attitudes, intentions, and use of infant/toddler foreground TV/videos are largely not driven by their behavioral beliefs regarding infant/toddler foreground TV/video exposure. That is, these predictive relationships persisted even after mothers' behavioral beliefs were added as predictors to the analytic models. It is possible that mothers that have an external locus of control or are generally more laissez-faire in their parenting style may be more likely to believe that a child's brain and intellectual development are determined by genes, and also have more favorable attitudes toward infant/toddler media use. Future research should examine the extent to which maternal locus of control and other personality dimensions might account for these observed relationships.

In this study there was also some evidence of a moderating effect of each of the brain/cognitive development belief subscales in the relationships between behavioral beliefs and attitudes, intentions, and estimated exposure. There were some differences between the weights and significance levels of interactions when interaction terms were entered into models together instead of separately, particularly for models pertaining to intention to let the child view and estimates of exposure. This finding, combined with the lack of significant predictive power added contributed by the interaction terms in Tables 9.6 and 9.7, raises the concern that some of the significant interactions found when all predictors were entered together may be untrustworthy and were significant here merely by chance.

Still, in only once instance was an interaction significant alone but not non-significant when entered with the other interactions (i.e., in Table 9.5). This suggests that, while there may be some multicollinearity between the behavioral belief subscales, the inferences are generally similar across both types of analyses. Further, accounting for the covariance with other subscales seemed to clarify the interactive relationships (i.e., relationships were generally stronger when all of the interaction terms were in the analytic models simultaneously). As such, the discussion of these moderation relationships will focus on the models which contained all eight interaction terms together (i.e., Model 3a from tables 9.4 – 9.7). Additional research is needed to verify that the presence of the moderating relationships was not due to chance.

Notably, the interactions that were found in this study were generally not as hypothesized and somewhat inconsistent across the outcomes of interest. The most consistently predictive interaction was between the subscale reflecting a strong belief in the role of genes and mothers' perceptions of unfavorable health and lifestyle implications of infants' and toddlers' foreground TV/video-viewing. Specifically, these analyses indicated that the associations between perceptions of the health and lifestyle implications of foreground TV/video-viewing and attitudes, intentions, and estimates of children's exposure were weaker among mothers with stronger perceptions that genes largely determine brain development and intelligence. Notably, there was a significant interaction found between belief in the role of experiences between birth and three in brain/intellectual development and the health and lifestyle implications belief subscale in the determination of mothers' attitudes, though the relationship was in the opposite direction to that of the belief in genes. That is, the relationship between beliefs in the possible health and lifestyle implications of children's foreground TV/video use and mothers' attitudes toward foreground TV/video use with children was *stronger* among those with stronger perceptions that children's experiences between birth and three largely determined their brain development and intelligence.

Conversely, it was anticipated that mothers' perceptions of early childhood brain development would interact with the cognitive/educational value behavioral belief subscale, as this construct is comprised of discrete beliefs regarding expected cognitive and learning outcomes associated with young children's foreground TV/video-viewing. It is possible that interactions were found with the health/lifestyle implications subscale instead due partly to the valence of these items. As described in Chapter Eight, the health/lifestyle implications subscale is comprised of ten of the 17 negative behavioral beliefs and none of the positive beliefs. The 17 negative behavioral belief items also comprised a relatively strong single subscale in that chapter. Thus, it may be that it is the negative valence of the items in the health/lifestyle implications scale that are driving the significant interactions with the brain/cognitive development subscales. That is, mothers who believe that genes largely determine children's brain and intellectual development may not worry much about unfavorable outcomes from their children's TV/video-viewing. Conversely, mothers who believe that experiences between birth and age three drive brain and intellectual development may be particularly wary of the possible harms of TV/video-viewing when considering their attitudes and intended use of TV/videos with their young children. While these mothers may or may not believe that educational gains are possible for their infants and toddlers, their actual attitudes and intentions are more strongly driven by the perceived likelihood of negative outcomes.

Additionally, mothers' beliefs in the primary role of children's genes in determining brain development and intelligence were found to moderate relationships with the instrumental parenting behavioral belief subscale in three of the analyses. The results indicated that the more mothers believed that children's brain development and intelligence is driven by genes, the more in-line were their attitudes, intentions, and estimates of children's viewing with their beliefs that infant/toddler foreground TV/video use served instrumental parenting functions. Though these specific multivariate relationships were not predicted they do make sense. Specifically, it is reasonable to expect that a mother who believes that children's brain and intellectual development are determined by genes, and thus largely unalterable by outside forces, will not rely on perceptions of the educational value or harm of media when deciding to use or not use TV/videos with her young child (and in fact these mothers tended to have more neutral beliefs of the cognitive/educational value of infant/toddler foreground television and video use). Rather, it is conceivable that her foremost consideration would be the instrumental value of TV/video use for her in that moment (e.g., to calm an upset child; to occupy the child while she completes household chores).

Still, it is puzzling that mothers with a higher belief in the importance of experiences between birth and age three in determining brain/intellectual development – the subscale that most resembled the originally hypothesized “critical window” scale on its face – did not have attitudes, intentions, or estimates of children’s exposure that were more in-line with their cognitive/educational value belief subscale, compared to other types of beliefs. In fact, they were found to rely *less* on these beliefs in predictions of their intentions to show children more than an hour a day of TV/videos at least several days a week (though this relationship was only marginally significant). One possible explanation is that these beliefs are more predictive of attitudes, intention and use of certain kinds of television and video programming with infants and toddlers. In this study, mothers were asked for their attitudes and intentions regarding infant/toddler foreground television and video-viewing generally, rather than certain types of content (e.g., child’s entertainment programming; baby videos). Further, the exposure estimates here reflect mothers’ reports of their children’s total weekly time spent viewing any foreground television and video programming. Their beliefs of the cognitive/educational value of TV/videos for infants and toddlers may be more predictive only of their attitudes, intentions, and use of programs and videos which are marketed as educational.

The lack of hypothesized associations with mothers’ belief in the importance of experiences between birth and age three may also be attributable in part to the lack of variability in mothers’ endorsements of the items on this subscale. The mothers in this study generally perceived that children’s experiences between birth and age three were crucial for their brain and intellectual development. In fact, more than 40% of mothers had the highest possible score on this subscale (i.e., 7), and only 2% had scores that were lower than the neutral point. It is possible that some of this stunted variability was due to social desirability of reporting, as one who reports little perceived importance of her baby's or toddler's early experiences may feel like a bad parent. On the other hand, it is possible that the messages regarding the importance of early childhood experiences are so widespread that most mothers have encountered and endorse them. The bigger difference, as evidenced by these results, may be the extent to which mothers believe that genes play an important role in that development. Though they were gleaned in part from elicitation interview research with mothers of infants and toddlers (see Chapter Three), important facets of brain/intellectual development beliefs may be missing from the scale items. Additional research should investigate whether additional items might yield greater variability and validity of the hypothesized "critical window" scale.

Furthermore, while a number of the relationships between the "belief in genes" subscale and behavioral beliefs, attitudes, intentions, and exposure estimates were significant, the effect sizes were not very strong (i.e., they did not explain very much variance in analyses). In fact, the direct and moderation effects of mothers' brain/intellectual development beliefs explained 4% of variance in their cognitions and use of TV/videos at most. Thus, the findings suggest that perceptions of the nature of early childhood brain development are not a primary determinant of mothers' beliefs or decision-making regarding their infants' and toddlers' foreground TV/video use. Instead, a mother's perceptions of whether television and videos are likely to teach her child or detract from her child's learning and brain development may be formed largely through other means, such as her direct observation of how much media has taught her children, or friends' and relatives' children. Once these beliefs are formed, they may drive her attitudes and intentions regarding young children's TV/video use, largely regardless of her perceptions of early childhood brain/intellectual development. It may be that mothers' behavioral beliefs regarding infant/toddler foreground TV/video-viewing are more impacted by their regulatory focus orientation, a possibility which will be examined in Chapter Ten.

Finally, it is possible that the relationships examined in this chapter would have been stronger if the behavioral belief items were asked in regards to young children in general, rather than referencing each respondent's child specifically. Mothers' perceptions of early childhood brain development may impact their considerations of how media impacts children generally, but when they consider their own child the "third person effect" could influence their perceptions or responses regarding those effects. A large body of communication research indicates that individuals often underestimate the effects of media on themselves compared to other people (see Perloff, 1999). Some research indicates that this phenomenon can extend to parents' perceptions of media effects on their children as well (e.g., effects of violent media; Hoffner and Buchanan, 2002). Future research should determine whether the inter-relationships between mothers' early childhood brain/intellectual development and their behavioral beliefs regarding the cognitive/educational value of foreground TV/videos for young children are stronger if behavioral beliefs are measured using wording that references young children more generally.

Chapter Ten

Accounting for children's foreground TV/video use:

The role of mother's regulatory focus orientation

The purpose of this chapter is to investigate relationships between one dimension of mothers' personalities, their regulatory focus orientation, and their cognitions and use of foreground TV/videos with their babies and toddlers. Specifically, analyses reported here will describe associations between the extent of mothers' general prevention and promotion focus and their expectations of favorable and unfavorable outcomes of infant/toddler television- and video-viewing. Additionally, this chapter examines the degree to which prevention and promotion orientations moderate the relationships between mothers' behavioral beliefs and attitudes, intentions, and estimates of their young children's foreground TV/video use.

Regulatory focus orientation

The theory behind regulatory focus orientation, a personality dimension most frequently studied in health and consumer behavior research, is predicated on the premise that an individual has two distinct internal self-regulation systems for satisfying different classes of goals that arise (Higgins, 1997; Higgins et al., 2001). One class of goals includes those pertaining to the individuals' growth, reward, and nurturance needs. The promotion self-regulation system works to satisfy these types of goals by spurring the individual to pursue his or her desires (Camacho, Higgins & Luger, 2003). The second class includes goals regarding protection, safety and security. A person's prevention self-regulation system is activated to fulfill security needs by prompting him or her to perform obligations and responsibilities (Camacho et al., 2003).

Studies have found that while prevention and promotion self-regulation systems exist within each individual and can be activated situationally based on the needs and goals that arise at a given time, individuals also have a chronic orientation towards a particular focus. Specifically, some individuals have a greater sensitivity and motivation to pursue the possibility of rewards (i.e., promotion focus orientation). These individuals are generally more eager to pursue possible desirable outcomes, even when the certainty of obtaining those rewards is unknown. Conversely, other people are more driven to avoid failures or negative outcomes. In the face of uncertain outcomes, these "prevention focused" people are generally more likely to be more cautious and on-guard against erring and encountering undesirable results, and thus tend to pursue outcomes that have a low perceived risk of unfavorable results (Camacho et al., 2003, p. 499).

Additional research has shown that message-wording often interacts with regulatory focus to influence individuals' responses. "Gain-framed" messages present information in terms of the probability that some action will result in favorable outcomes or rewards; while messages that are "loss-framed" pitch persuasive information in terms of the likelihood of avoiding undesirable outcomes or failures. Studies regarding the "regulatory fit" between individuals' personalities and message frames have found that those with a with a promotion focus are more readily persuaded by information presented in a gain-framed message due to the "fit" between their tendency to seek out positive outcomes and the frame of the message (e.g., Florack & Scarabis, 2006; Keller, 2006; Lee & Aaker, 2004; Yi & Baumgartner, 2009). Conversely, individuals who have an orientation toward prevention focus experience "fit" with loss-framed messages because these messages correspond with their inclination to act to avoid undesirable outcomes. As a result, persuasion tends to be more successful for prevention-focused individuals who encounter loss-framed messages in comparison to those presented with a gain frame.

Mothers' regulatory focus and infant/toddler foreground TV/video viewing

Based on evidence of varying "fit" between regulatory focus orientation and message frame, a mother's promotion or prevention orientation may impact her beliefs about the value or harm of television and videos for young children. Specifically, mothers who have primarily a promotion-oriented focus may experience greater "fit" with gain-framed messages about infant/toddler TV/video use, and be more likely than those who are prevention-focused to be persuaded by them. It is possible that these mothers would be more readily persuaded by the educational claims on baby videos and programs, as these claims tend to be gain-framed. The DVD cover for *Your Baby can Read*, for example, states that the program "delivers the tools that will make an incredible difference in your child's life! The natural window of language development is 3 months to 5 years. Children can learn to read at the same time as their speech develops."

Moreover, mothers who have primarily a prevention focus may experience greater "fit" with loss-framed messages, and be more readily persuaded by them compared to those that are promotion-focused. Loss-framed messages regarding early childhood TV/video use tend to be found among warnings from the AAP and others against such use. For example, in a recent radio and print campaign the AAP says:

> "It may be tempting to put your infant or toddler in front of the television, especially to watch shows created for children under age two. But the American Academy of Pediatrics says: Don't do it! These early years are crucial in a child's development. The Academy is concerned about the impact of television programming intended for children younger than age two and how it could affect your child's development." (AAP, 2010).

Therefore, it is possible that mothers' chronic regulatory focus orientation will impact their underlying behavioral beliefs about infant/toddler media, based on the premise that mothers' persuasion from marketing claims or warnings from child advocates may be different based on their regulatory focus orientation. That is, promotion-focused mothers may tend to believe generally that infant/toddler media products will have beneficial outcomes for their young children, while mothers who are prevention-focused may be more likely to believe that exposure to infant/toddler media products could be harmful to children's development. Because there is no known research addressing the possible influence of parents' regulatory focus orientation on their beliefs and regards to their children (i.e., rather than themselves), and this study cannot account for mothers' actual exposure to gain- or loss-framed messages about infant/toddler foreground TV/video exposure, these analyses are approaches as a research question.

Research Question 9. Will mothers' regulatory focus orientation be related to their underlying behavioral beliefs about infant/toddler foreground TV/video use such that mothers with a higher promotion focus endorse more promotion-oriented beliefs about infant/toddler foreground TV/video use, and those with a higher prevention focus will endorse more prevention-oriented beliefs?

What is more, mothers' regulatory focus likely moderates the relationship between their behavioral beliefs and attitudes, intentions, and use of foreground TV/video with their children. That is, mothers' attitudes, intentions, and use of TV/videos will be more affected by TV/video-related beliefs that are in-line with mothers' regulatory focus orientations. Thus, promotion-oriented beliefs (i.e., regarding the positive outcomes of TV/video-viewing for children) should have a particularly strong impact on attitudes, intentions, and children's exposure estimates among mothers with a promotion focus. Conversely, prevention-oriented beliefs (i.e., that address possible unfavorable outcomes of TV/video-viewing for children) should have particularly strong impact on TV/video use attitudes, intentions, and estimates among mothers who are prevention-focused.

Hypothesis 6: Promotion-oriented behavioral beliefs will have a stronger impact on attitudes, intentions, and children's exposure rates among promotion-focused mothers, while prevention-oriented behavioral beliefs will have a stronger impact on attitudes, intentions, and children's exposure rates among prevention-focused mothers.

Methods

Measures[65]

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[65] Those measures which have been previously described in earlier chapters are only listed here. More detailed descriptions can be found in the chapters 6 - 9 as well as in the general methods chapter (i.e., Chapter 5). The full online survey instrument is contained in Appendix D.

Child's foreground TV/video exposure (i.e., square root transformed estimate).

Foreground TV/video behavioral beliefs.

Foreground TV/video attitude scale.

Foreground TV/video intentions (i.e., (1) to keep the child from watching any foreground TV/video in the next month; (2) to let the child watch foreground TV/videos for more than an hour a day at least several days each week).

Regulatory focus orientation. Respondents' chronic regulatory focus orientation was assessed using the 11-item Regulatory Focus Questionnaire (RFQ) developed by Higgins and colleagues (2001). The RFQ is comprised of two distinct scales: (1) promotion (made up of six items), and (2) prevention (made up of five items). The promotion items are designed to measure respondents' motivation to seek rewards or positive outcomes (e.g., "How often have you accomplished things that got you ``psyched" to work even harder?). Conversely, the prevention items are meant to assess one's drive to avoid failures or negative outcomes (e.g., "Not being careful enough has gotten me into trouble at times."). Each of the 11 RFQ items are on a five-point scale (i.e., response options are from 1: "never or seldom" or "certainly false", to 5: "very often" or "certainly true"; see Tables 10.1 and 10.2). In prior research the RFQ has been found to have high internal consistency and predictive validity (e.g., Haws, Dholakia & Bearden, 2010; Higgins et al., 2001).

Data Analysis

Regulatory focus scales. Individual item analysis was first conducted on each of the eleven items from the regulatory focus questionnaire. First, all appropriate items were reverse-coded. The item analyses included were item means, standard deviations, skew, and kurtosis statistics. Two factor analyses were conducted to assess the strength of each hypothesized scale (i.e., promotion; prevention). Each factor analysis used principal components analysis with varimax oblique rotation to force the extraction of one dimension. Then, Cronbach's alpha analyses were used to assess the internal consistency of the scales.

Promotion- and prevention-orientation behavioral belief indices. Behavioral beliefs were reviewed. Those that reflected a promotion-oriented goal on their face (i.e., addressed a desirable outcome for children that promotion-focused mothers would be motivated to pursue) were selected for the promotion-orientation behavioral belief scale. Belief items that reflected a prevention-oriented goal (i.e., addressed an undesirable outcome for children that prevention-focused mothers would be motivated to avoid) were selected for the prevention-orientation behavioral belief index. Separate principal components factor analyses and cronbach's alpha analyses were then conducted to assess the relative strength of each index.

Research question 9. First, correlational analyses were conducted between each regulatory focus scale and the promotion- and prevention-oriented behavioral belief indices. In addition, the prevention and promotion scales were transformed into ordinal-level variables (i.e., each with six categories) and then the linearity with each dependent variable was assessed using SPSS "means" analysis (i.e., behavioral belief index means were tested for significant difference across levels of the prevention and promotion scale scores). Relationships were deemed sufficiently linear when there was a negligible difference between the eta^2 and R^2 values for these analyses. Finally, two ordinary least squares (OLS) regressions were conducted. Each contained both the prevention and promotion scales as independent variables to predict the promotion- and prevention-oriented behavioral belief indices individually.

Hypothesis 6. Four hierarchical OLS regressions were conducted to test hypothesis 7. The dependent variable in the models were (1) the scale of mothers' attitudes toward infant/toddler foreground TV/video viewing; (2) mothers' intentions to keep their children from viewing any foreground TV/videos in the next month; (3) mothers' intentions to let their children spend more than an hour a day viewing foreground TV/videos at least several days each week; (4) the transformed estimates of children's weekly foreground TV/video exposure. In the first step of each model, the prevention and promotion scales were entered as predictors, followed by the promotion- and prevention-oriented behavioral belief indices in the second step of the model. Four interaction terms were entered into the model in the third step; these terms represented each combination of regulatory focus scale with behavioral belief index interaction (e.g., promotion scale score by promotion-oriented behavioral belief index score).

Results

Regulatory focus scales. The means, standard deviations, and skew and kurtosis coefficients for the six promotion scale items are contained in Table 10.1. All appropriate items were reverse-coded prior to analyses. The individual item means ranged from 3.26 to 3.90 (i.e., on a 5-point scale). The distributions for each item were slightly skewed toward higher values on the scale (i.e., a negative skew), and most were also slightly platykurtic (i.e, had a negative kurtosis coefficient). However, the extent of skew and kurtosis were deemed small to moderate, and were thus considered negligible.

A factor analysis was then conducted to determine the appropriateness of combining the six promotion items into a scale. Specifically, a principal components analysis with varimax oblique rotation was used to force a 1-factor solution. The factor loadings for all six items are contained in Table 10.1. All loadings were above the traditional .40 cut-off (i.e., ranged from .50 to .64). Next, Cronbach's reliability analysis was used to determine the internal consistency of the scale. The full scale alpha value was moderate, at $\alpha = 0.61$, though analyses indicated that the internal consistency would not benefit from the removal of any of the items (see Table 10.1). Thus, the six items were averaged together to form the regulatory focus promotion scale. The scale had a mean of 3.31 (i.e., on a 5-pt scale; SD = 0.88) and a median value of 3.20.[66]

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[66] Note: OLS regression analyses indicated that the promotion scale was positively related to mother's education level ($\beta = 0.11$, $p < .05$) and mothers' Black/non-Hispanic race/ethnicity status ($\beta = 0.11$, $p < .01$).

Table10.1. Item and scale analysis for the regulatory focus promotion scale (α = .61).

Item	Mean (SD)	Skew[a]	Kurtosis[b]	Factor Loading[c]	Reliability if removed (α)
1 Compared to most people, are you typically unable to get what you want out of life?[R] (Never/seldom; very often)	3.33(1.11)	-0.23	-0.45	0.51	0.58
2 How often have you accomplished things that got you ``psyched'' to work even harder? (never/seldom; very often)	3.79(0.94)	-0.47	-0.06	0.57	0.58
3 Do you often do well at different things that you try? (Never/seldom; very often)	3.90(0.87)	-0.26	-0.64	0.64	0.56
4 When it comes to achieving things that are important to me, I find that I don't perform as well as I ideally would like to do.[R] (Never true; very often true)	3.28(1.05)	-0.42	-0.29	0.51	0.52
5 I feel like I have made progress toward being successful in my life. (Certainly false; certainly true)	3.85(0.98)	-0.69	0.22	0.64	0.55
6 I have found very few hobbies or activities in my life that capture my interest or motivate me to put effort into them.[R] (Certainly false; certainly true)	3.26(1.30)	-0.19	-1.04	0.50	0.59

N = 691. Note: each item is on a 5-point response scale. [R]Item is reverse-coded. [a]Standard error = 0.09; [b]Standard error = 0.19; [c]Values are derived from a principal components analysis with varimax oblique rotation (forced 1 factor solution).

These steps were then repeated to assess the item distributions and scale qualities of the prevention scale. Again, all appropriate items were first reverse-coded such that higher values represented a stronger prevention focus orientation. The means, standard deviations, and skew and kurtosis coefficients are displayed in Table 10.2. The means for these five items ranged from 2.82 to 3.89 (i.e., on a 5-point scale). Again, some items had small to moderate negative skews and kurtosis coefficients, but they were deemed negligible. The results of the principal components factor analysis with varimax rotation yielded higher factor loadings for this scale (i.e., ranged from .61 to .86). Additionally, this scale had substantially higher internal consistency ($\alpha = 0.82$). The cronbach's alpha analysis indicated that the removal of one item (i.e., "How often did you obey rules and regulations that were established by your parents?") would raise the alpha value to 0.83. However, this item was left in the scale, given that this is an existing and already validated scale and that the removal of this item would not benefit the internal consistency substantially. The five items were averaged together to form the regulatory focus prevention scale, which had a mean of 3.56 (SD = 0.61) and a median value of 3.50.[67]

[67] OLS regression analyses indicated that the prevention scale was positively related to mother's education level ($\beta = 0.14$, $p < .01$), mother's age ($\beta = 0.10$, $p < .05$), and mothers' Black/non-Hispanic race/ethnicity status ($\beta = 0.12$, $p < .01$). It was negatively related to mothers' single/non-married status ($\beta = -0.09$, $p < .05$) and employed status (i.e., compared to homemaker or unemployed; $\beta = -0.12$, $p < .01$).

Table 10.2. Item and scale analysis for the regulatory focus prevention scale (α = .82).

	Item	Mean (SD)	Skew[a]	Kurtosis [b]	Factor loading[c]	Reliability if removed (α)
1	Growing up, would you ever ``cross the line'' by doing things that your parents would not tolerate? [R] (Never/seldom; very often)	2.82(1.22)	-0.19	-0.19	0.84	0.76
2	Did you get on your parents' nerves often when you were growing up?[R] (Never/ seldom; very often)	3.10(1.24)	-0.78	-0.78	0.80	0.77
3	How often did you obey rules and regulations that were established by your parents? (Never/seldom; very often)	3.89(1.03)	0.02	0.02	0.61	0.83
4	Growing up, did you ever act in ways that your parents thought were objectionable?[R] (Never/seldom; very often)	3.14(1.17)	-0.63	-0.63	0.86	0.74
5	Not being careful enough has gotten me into trouble at times.[R] (Never/seldom; very often)	3.37(1.09)	-0.48	-0.48	0.68	0.81

N = 692. Note: each item is on a 5-point response scale. RItem is reverse-coded. aStandard error = 0.09; bStandard error = 0.19; cValues are derived from a principal components analysis with varimax oblique rotation (forced 1 factor solution).

Promotion- and prevention-oriented behavioral belief indices. In order to construct the promotion- and prevention-oriented behavioral belief indices, the original 30 behavioral belief items were reviewed. The criteria for the promotion-oriented items were that they had to reference the possibility of a desirable outcome for the child, and that the outcome had to be a relatively permanent (e.g., "Child is actively involved in program/music" would not qualify because it is a relatively fleeting outcome that occurs only as the child watches). Similarly, items were chosen for the prevention-oriented belief index if they referenced a relatively permanent *undesirable* outcome for the child.[68] Seven of the 13 positive behavioral beliefs met the criteria for the promotion-oriented behavioral belief index (see Table 10.3 for a list of the items).[69] A principal components factor analysis with varimax rotation was conducted, in which as many factors were extracted as there were eigenvalues greater than 1.0. The results of this analysis, displayed in Table 3, indicated that only one dimension existed within the items and that the factor loadings for all 7 items were above the 0.40 cut-off (i.e., loadings ranged from 0.66 to 0.85). A cronbach's alpha analysis suggested high internal consistency ($\alpha = 0.89$), which would not be increased by the removal of any of the items. These 7 items were then averaged together to create a promotion-oriented behavioral belief index.

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[68] The "permanence" criterion was used because regulatory focus is fundamentally about an individual's goals. In this case, "goals" are interpreted to include lasting outcomes for infants and toddlers that are associated with watching foreground TV/videos.

[69] The full list of positive behavioral belief items can be found in Chapter 8: Table 1.

Nine of the original 17 negative behavioral belief items were deemed appropriate for the prevention-oriented behavioral belief index, under the criteria described above (see Table 10.4). A principal components factor analysis indicated that a one-factor solution was appropriate. Further, each of the 9 items had a factor loading on the dimension that was above the 0.40 cut-off (i.e., loadings ranged from 0.71 – 0.85). The items of this index also had high internal consistency (α = 0.93), which would not be increased with the removal of any of the items. Thus, these 9 items were averaged together to create the prevention-oriented behavioral belief index. It should be noted that since these items were not reverse-coded, a higher score on this index reflects a higher perceived likelihood of unfavorable outcomes for children from viewing foreground TV/videos.

Table 10.3. Promotion-oriented behavioral belief index analysis. (α = 0.89)

Promotion-oriented behavioral Belief	Factor loading	Reliability if removed (α)
1 Help child learn	0.84	0.87
2 Expose child to things in outside world	0.66	0.89
3 Can teach child things better than I can	0.71	0.88
4 Stimulate child’s attention/ability to focus	0.83	0.87
5 Stimulate child’s vision or hearing	0.76	0.88
6 Help child learn social/emotional skills	0.80	0.87
7 Stimulate child’s creativity	0.85	0.86

N = 698. Note: higher scores on belief items reflect higher belief endorsement. Behavioral belief items are on a 7-point scale.

Table 10.4. Prevention-oriented behavioral belief index analysis. (α = 0.93)

	Prevention-oriented behavioral Belief	Factor loading	Reliability if removed (α)
1	Take away from healthy physical activity	0.79	0.92
2	Make child less able to self-entertain	0.78	0.92
3	Bad for child's vision/hearing	0.71	0.93
4	Hurt child's creativity	0.84	0.92
5	Teach child aggressive behaviors	0.76	0.92
6	Detract from time in learning activities	0.82	0.92
7	Hurt brain development	0.83	0.92
8	Hurt later intelligence	0.85	0.92
9	Make child less interested in reading	0.81	0.92

N = 698. Note: higher scores on belief items reflect higher belief endorsement. Behavioral belief items are on a 7-point scale.

Research question 9. Bivariate Pearson correlation analyses were conducted between the two regulatory focus scales (i.e., prevention; promotion) and the promotion- and prevention-oriented behavioral belief indices. The correlation coefficients are contained in Table 10.5. Mothers' promotion orientation scores were negatively associated with their prevention-oriented behavioral beliefs ($r = -0.16$, $p < .001$). Their prevention orientation scores were negatively related to both the promotion-oriented behavioral belief index ($r = -0.11$, $p < .05$) and the prevention-oriented behavioral belief index ($r = -0.09$, $p < .05$).[70]

[70] Correlations were also assessed between each regulatory focus scale and the brain/intellectual development belief subscales developed in Chapter 9. Mothers' promotion focus score had a weak but significant positive correlation with the "experiences between 0-3" subscale ($r = 0.20$, $p < .001$), as well as a negative association with the "genes" subscale of roughly the same magnitude ($r = -0.18$, $p < .001$). The prevention scale was not related to either brain/intellectual development subscale.

Table 10.5. Correlations between the prevention and promotion scales and promotion- and prevention-oriented behavioral belief indices

Construct		2	3	4
1	Promotion scale	0.20***	0.01	-0.16***
2	Prevention scale		-0.11*	-0.09*
3	Promotion-oriented belief index			-0.08*
4	Prevention-oriented belief index			

N = 693.

To verify that the above relationships were linear, means analyses were conducted using ordinal-level measures of the prevention and promotion scales. That is, each scale was transformed into an ordinal variable consisting of six equivalent categories; then the means of the promotion- and prevention-oriented behavioral belief indices were tested for significant differences across the levels of the promotion and prevention focus scales. The results of these analyses mirrored the correlation analyses, as the same linear relationships were significant. Furthermore, there were no indications of non-linear relationships (i.e., deviation from linearity statistics were non-significant; the largest difference between R^2 and eta^2 values was 0.005).

Next, two OLS regressions were conducted, containing the prevention and promotion scales as predictors to explain the variance in the promotion- and prevention-oriented behavioral belief indices separately. The standardized and unstandardized regression coefficients obtained from each analysis are presented in Table 10.6, as well as the R and adjusted R^2 values for both models. The results indicated that the prevention focus scale was a significant negative predictor of mothers' scores on the promotion-oriented behavioral belief index ($\beta = -0.11$, $p < .01$;

F(2, 692) = 4.15, $p < .05$), though the model explained only 1% of variance in the index scores.[71] Conversely, the promotion focus scale was a significant negative predictor of mothers' prevention-oriented behavioral beliefs ($\beta = -0.16$, $p < .01$; $F(2, 692) = 10.19$, $p < .001$). The regulatory focus scales explained 3% of variance in this model.[72]

Table 10.6. Mothers' promotion focus and prevention focus orientations as predictors of their endorsements of promotion- and prevention-oriented behavioral beliefs about infant/toddler TV/video-viewing.

	Promotion-oriented belief index		Prevention-oriented belief index	
RF Scale	B(SE B)	β	B(SE B)	β
Promotion focus	0.07(0.08)	0.03	-0.39(0.10)	-0.16**
Prevention focus	-0.17(0.06)	-0.11**	-0.08(0.07)	-0.04
R	0.11		0.17	
Adj. R^2	0.01		0.03	

N = 692. *p < .05; **p< .01; ***p < .001.

Hypothesis 6. Four hierarchical OLS regression analyses were constructed to test hypothesis 6. Each model predicted one of the following outcomes: (1) attitudes; (2) intentions to keep children from viewing any foreground TV/videos; (3) intentions to let children view foreground TV/videos for more than an hour a day at least several

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[71] The Durbin Watson value for the full model was 1.78 and the variance inflation factor (VIF) value for the two predictors was 1.04. A histogram of residuals resembled a normal curve with a slight negative skew, while the probability plot of standardized residuals resembled a straight line. A scatter-plot of standardized predicted values and standardized residuals indicated appropriate homogeneity of variance (i.e., no differences in variance based on level of predictor).

[72] The Durbin Watson value for the full model was 1.95 and the VIF value was 1.04. A histogram of residuals resembled a normal curve, while the probability plot of standardized residuals deviated only slightly from a straight diagonal line. The scatter-plot of standardized predicted values and standardized residuals indicated no differences in variance based on level of predictor.

days each week; and (4) the transformed estimates of children's typically weekly foreground TV/video-viewing. Each model contained the same eight predictors, entered in three different steps. Step one contained mothers' scores on promotion focus and prevention focus scales from the regulatory focus questionnaire. In step two, the promotion- and prevention-oriented behavioral belief indices were added. Four centered interaction terms were created by multiplying each regulatory focus question subscale with each behavioral belief index. These interaction terms were entered together in the final model step.

The standardized and unstandardized regression coefficients, as well as the R and R^2 values for the model predicting mothers' attitudes are contained in Table 10.7. The first step of the model, which contained only prevention and promotion scales as predictors, was marginally significant ($F(2, 692) = 2.87$, $p = 0.06$). The prevention focus scale was a negative predictor of attitudes in this step ($\beta = -0.09$, $p < .05$). The addition of the promotion- and prevention-oriented behavioral belief indices as predictors led to a significant step 2 model which accounted for 45% of the variance in mothers' attitudes ($F(4, 692) = 140.80$, $p < .001$). Higher scores on the promotion-oriented belief index predicted more favorable attitudes ($\beta = 0.55$, $p < .001$), while higher scores on the prevention-oriented belief index predicted less favorable attitudes ($\beta = -0.24$, $p < .001$). The prevention scale was no longer a significant predictor in this step, though the promotion scale became a significant negative predictor ($\beta = -0.07$, $p < 0.05$). The third step of the model, which contained the four behavioral belief index by regulatory focus scale interactions, was also significant ($F(8, 692) =$

95.88, $p < .001$).[73] The results of this step indicated that four variables were negatively and significantly predictive of mothers' attitudes: (1) the promotion scale ($\beta = -0.07$, $p < .05$); (2) the prevention-oriented behavioral belief index ($\beta = -0.26$, $p < .001$); (3) the prevention-focused belief index by prevention subscale interaction term ($\beta = -0.11$, $p < .001$); and (4) the prevention-focused belief index by promotion subscale ($\beta = -0.14$, $p < .001$).[74] Finally, the promotion-oriented behavioral belief index remained a significant positive predictor of mothers' attitudes ($\beta = 0.51$, $p < .001$).

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[73] The Durbin Watson value for the full model was 1.84 and the highest VIF value across steps was 1.35. A histogram of residuals resembled a normal curve, while the probability plot of standardized residuals resembled a straight diagonal line. The scatter-plot of standardized predicted values and standardized residuals indicated appropriate homogeneity of variance (i.e., no differences in variance based on level of predictor).

[74] The significance of each interaction if it had been entered alone in the 3rd step of the model was determined by consulting the "Excluded Variables" SPSS table. These analyses indicated no substantial differences from the analysis containing all interactions simultaneously (reported above and in Table 7).

Table 10.7. Mothers' regulatory focus and promotion- and prevention-oriented behavioral beliefs as predictors of their attitudes towards infant/toddler TV/video-viewing.

	Model 1		Model 2		Model 3	
Predictor	B (SEB)	β	B (SEB)	β	B (SEB)	β
Promotion focus subscale	-0.05(0.10)	-0.02	-0.18(0.07)	-0.07*	-0.17(0.07)	-0.07*
Prevention focus subscale	-0.15(0.07)	-0.09*	-0.06(0.05)	-0.04	-0.04(0.05)	-0.03
Promotion-oriented behavioral beliefs			0.56(0.04)	0.55***	0.58(0.04)	0.50***
Prevention-oriented behavioral beliefs			-0.24(0.03)	-0.24***	-0.26(0.03)	-0.27***
Promotion focus x promotion-oriented beliefs					-0.08(0.05)	-0.05
Promotion focus x prevention-oriented beliefs					-0.21(0.05)	-0.14***
Prevention focus x promotion-oriented beliefs					0.003(0.04)	0.002
Prevention focus x prevention-oriented beliefs					-0.11(0.03)	-0.11**
R	0.09		0.67		0.70	
Adj. R^2	0.01		0.45		0.48	

N = 692. Step 2 $\Delta R^2 = 0.44$ ($p < .001$); Step 3 $\Delta R^2 = 0.03$ ($p < .001$). †$p < .10$; *$p < .05$; **$p < .01$; ***$p < .001$.

Two figures were created, containing graphs of the interactions between the prevention-oriented belief subscale and each of the regulatory focus scales. The equation derived from the analysis above was used for both graphs. All predictor variables except the two interactive subscales were set at their means. For Figure 10.1, predicted values were obtained from the equation for 7 scores on the prevention-oriented belief index, from 1 through 7 (i.e., the possible whole number scores from the lowest to the highest possible score) for the mean promotion scale score (3.57), 2 standard deviations below the mean score (2.35), and 2 standard deviations above the mean score (4.79). These steps were repeated for the prevention focus scale to create the graph in Figure 10.2 (mean prevention focus = 3.31; 2 SD below mean = 1.55; 2 SD above mean = 5.07).

Figure 10.1. Interaction between mothers' promotion focus and prevention-oriented beliefs in the prediction of their attitudes.

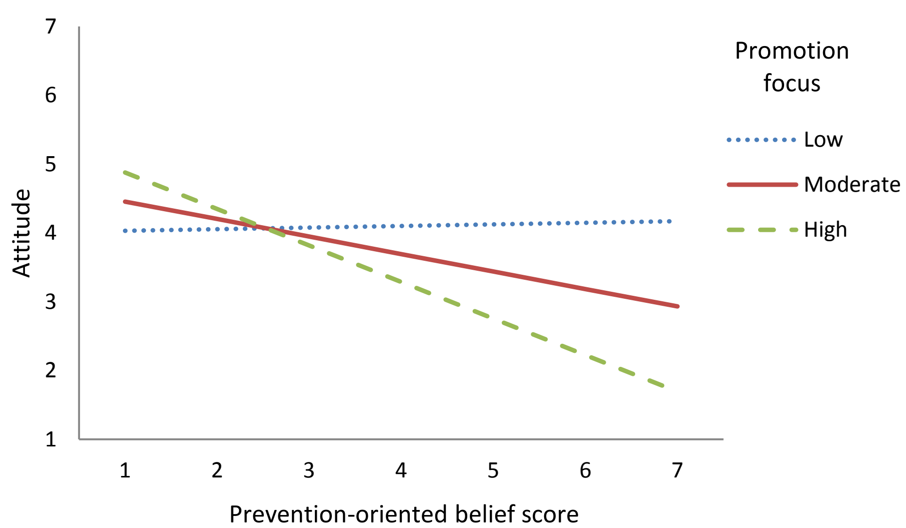
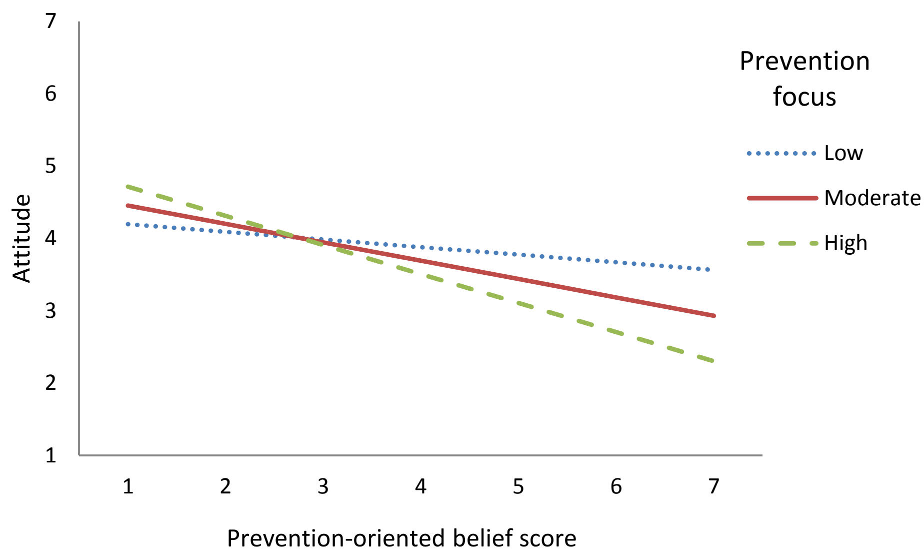


Figure 10.2. Interaction between mothers' promotion focus and prevention-oriented beliefs in the prediction of their attitudes.



The next analysis pertained to mothers' intentions to keep their children from viewing any foreground TV/videos in the following month. Resultant regression coefficients and R and R^2 values from each model step are displayed in Table 10.8. The first step of this analysis was significant ($F(2, 692) = 4.28$, $p < .05$), and suggested that the two regulatory focus subscales explained 1% of the variance in mothers' intentions to keep children from viewing. Only promotion focus subscale scores were significantly predictive, and this relationship was negative ($\beta = -0.11$, $p < .01$). In the second step of the model, neither regulatory focus subscale was significantly predictive, though both behavioral belief indices were significant ($F(4, 692) = 46.30$, $p < .001$). Specifically, higher scores on the promotion-oriented belief index was related to lower intentions to keep children from viewing foreground TV/videos ($\beta = -0.07$, $p = .05$), while higher scores on the prevention-oriented belief index predicted higher intentions to keep children from viewing ($\beta = 0.43$, $p < .001$). These indices retained their predictive weights and significance in the third step of the model, and one of the interaction terms was also significantly predictive ($F(8,692) = 24.15$, $p < .001$).[75] The interaction of the promotion focus scale and promotion-oriented belief index was significant and negatively predictive ($\beta = -0.10$, $p < .05$).[76] The full model accounted for 21% of the variance in mothers' intentions to keep their children from viewing any foreground TV/videos in the next month.

A graph was created to illustrate the interaction between mothers' promotion focus and promotion-oriented behavioral beliefs in the prediction of their intentions to keep children from viewing any foreground TV/videos. This graph was created from the equation derived from the analysis above, using the steps described for Figure 10.1.

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[75] The Durbin-Watson statistic for the full model was 1.86, and the highest VIF value was 1.35. The histogram of residual values resembled a normal curve skewed slightly towards higher values, and the normal probably plot of residuals did deviate somewhat from a straight diagonal line (i.e., suggesting some non-normality). The plot of standardized predicted values and standardized residuals indicated appropriate homoscedasticity (i.e., no differences in variance across levels of predictors).

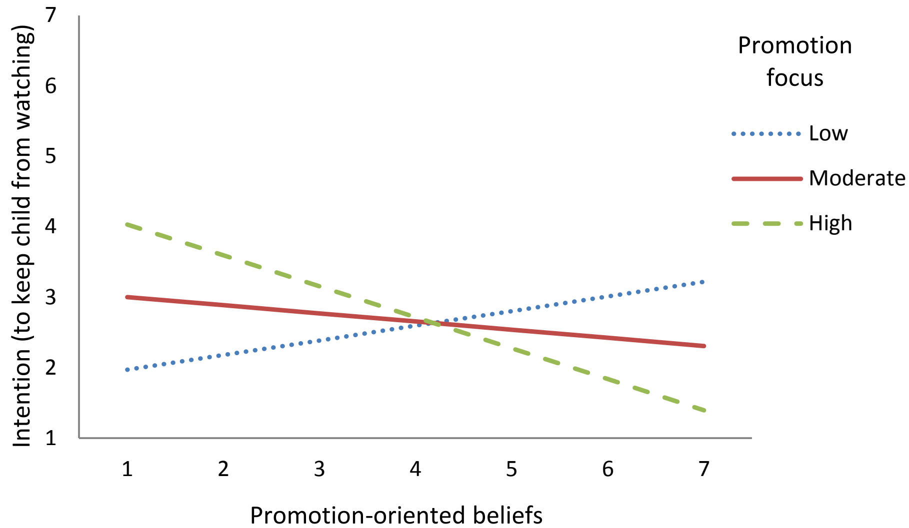
[76] Again, the "Excluded Variables" SPSS analyses indicated no significant differences between results when the interactions were added simultaneously (reported above and in Table 8) compared to if each interaction had been added in the 3rd step alone.

Table 10.8. Mothers' regulatory focus and promotion- and prevention-oriented behavioral beliefs as predictors of their intentions to keep children from viewing any foreground TV/video.

	Model 1		Model 2		Model 3	
Predictor	B (SEB)	β	B (SEB)	β	B (SEB)	β
Promotion focus subscale	-0.35(0.12)	-0.11**	-0.14(0.11)	-0.05	-0.14(0.11)	-0.05
Prevention focus subscale	0.02(0.08)	0.01	0.05(0.08)	0.02	0.06(0.08)	0.03
Promotion-oriented behavioral beliefs			-0.10(0.05)	-0.07*	-0.12(0.06)	-0.08*
Prevention-oriented behavioral beliefs			0.53(0.05)	0.43***	0.50(0.05)	0.40***
Promotion focus x promotion-oriented beliefs					-0.21(0.08)	-0.10*
Promotion focus x prevention-oriented beliefs					-0.10(0.07)	-0.05
Prevention focus x promotion-oriented beliefs					-0.01(0.06)	-0.004
Prevention focus x prevention-oriented beliefs					-0.01(0.05)	-0.01
R	0.11		0.46		0.47	
Adj. R^2	0.01		0.21		0.21	

N = 692. Step 2 ΔR^2 = 0.20 (p < .001); Step 3 ΔR^2 = 0.01 (p = .17). †p < .10; *p < .05; **p < .01; ***p < .001

Figure 10.3. The interaction between mothers' promotion focus and promotion oriented beliefs in the prediction of their intentions to keep children from viewing any weekly TV/videos.



The third analysis predicted mothers' intentions to let their infants/toddlers spend time viewing foreground TV/videos for over an hour a day/several days each week. The resultant values from this analysis are contained in Table 10.9. Neither regulatory focus scale was significantly predictive in the first model step ($F(2, 692) = 1.28$, $p = .28$). The second model step was significant ($F(4, 692) = 72.58$, $p < .001$), and here the predictors accounted for 29% of variance in intentions. Higher scores on the promotion-oriented belief index were related to higher intentions to let children view more than an hour a day at least several days a week ($\beta = 0.43$, $p < .001$), while higher scores on the prevention-oriented belief index predicted lower intentions ($\beta = -0.23$, $p < .001$). Additionally, promotion focus became a significant negative predictor in this step ($\beta = -0.09$, $p < .01$). In the final step of the analysis only one interaction term was significant: the interaction between mothers' prevention focus scale scores and prevention-oriented beliefs predicted lower intentions ($\beta = -0.08$, $p < 05$; $F(8, 692) = 37.76$, $p < .001$).[77] The promotion focus subscale also remained significantly predictive of lower intentions in this step ($\beta = -0.09$, $p < .01$).

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[77] The Durbin-Watson statistic for the full model was 1.99, and the highest VIF value was 1.35. A histogram of residual values resembled a normal curve, and a normal probability plot of residual resembled a straight diagonal line. The plot of standardized predicted values and standardized residuals suggested equivalent variance across predictor levels (i.e., adequate homoscedasticity).

Also, the "Excluded Variables" SPSS analyses indicated no significant differences between results when the interactions were added simultaneously (reported above and in Table 9) compared to if each interaction had been added in the 3rd step alone.

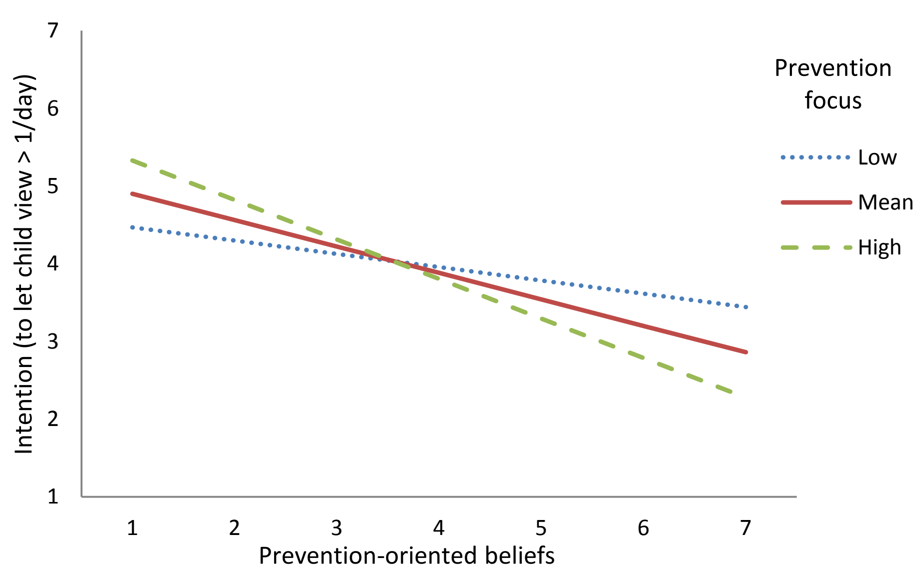
Table 10.9. Mothers' regulatory focus and promotion- and prevention-oriented behavioral beliefs as predictors of their intentions to let children watch TV/videos for more than an hour a day at least several days each week.

	Model 1		Model 2		Model 3	
Predictor	B (SEB)	β	B (SEB)	β	B (SEB)	β
Promotion focus subscale	-0.17(0.14)	-0.05	-0.34(0.12)	-0.10**	-0.33(0.12)	-0.09**
Prevention focus subscale	-0.07(0.10)	-0.03	0.02(0.08)	0.01	0.03(0.08)	0.01
Promotion-oriented behavioral beliefs			0.71(0.06)	0.43***	0.67(0.06)	0.41***
Prevention-oriented behavioral beliefs			-0.32(0.05)	-0.23***	-0.34(0.05)	-0.24***
Promotion focus x promotion-oriented beliefs					-0.03(0.09)	-0.01
Promotion focus x prevention-oriented beliefs					-0.09(0.08)	-0.04
Prevention focus x promotion-oriented beliefs					-0.03(0.06)	-0.02
Prevention focus x prevention-oriented beliefs					-0.13(0.05)	-0.09*
R	0.06		0.55		0.55	
Adj. R^2	0.001		0.30		0.30	

N = 692. Step 2 ΔR^2 = 0.30 (p < .001); Step 3 ΔR^2 = 0.01 (p = .06). †p < .10; *p < .05; **p < .01; ***p < .001.

Figure 10.4 contains a graphic illustration of the interaction of mothers' prevention focus and prevention-oriented beliefs in the prediction of intentions to let children watch foreground TV/videos for more than an hour a day on at least several days each week. This graph was created using the regression equation derived from the analysis described above. The means of all variables were entered into the equation, except for the two predictors of interest (i.e., the prevention focus subscale and prevention-oriented belief index). Predicted intention values were obtained from the equation for whole number prevention-oriented belief index scores from 1 to 7 for the mean prevention scale score (3.31), 2 standard deviations below the mean score (1.55), and 2 standard deviations above the mean score (5.07).

Figure 10.4. Interaction between mothers' prevention focus and prevention-oriented beliefs in the prediction of their intentions to let children view TV/videos for more than an hour a day at least several days a week.



The final analysis, the results of which are displayed in Table 10.10, predicted the square root transformed estimates of children's weekly time spent viewing foreground TV/videos. The promotion and prevention focus scales were not significantly predictive of exposure estimates in the first model step ($F(2, 691) = 2.22$, $p = .11$). The second step was significant ($F(4, 691) = 29.21$, $p < .001$), and together the four predictors accounted for 14% of variance in the exposure estimates. Again, the promotion-oriented belief index was positively predictive ($\beta = 0.28$, $p < .001$), and the prevention-oriented belief index was negatively predictive of estimated exposure rates ($\beta = -0.18$, $p < .001$). In this step, the promotion focus scale also became a significant negative predictor of estimated exposure ($\beta = -0.10$, $p < .01$). None of the interaction terms reached statistical significance, though one was marginally significant: the interaction of the prevention focus scale and prevention-oriented behavioral belief index was marginally predictive of lower exposure ($\beta = -0.06$, $p = 0.09$).[78] In total, the full model accounted for 14% of variance in mothers' estimates of their children's weekly exposure to foreground TV/video ($F(8691) = 15.51$, $p < .001$).[79]

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[78] These results were not different from what would have resulted if each interaction term had been added alone in the 3rd model step (i.e., based on the "Excluded Variables" analyses in SPSS).

[79] The Durbin-Watson statistic for this analysis was 2.09, and the highest VIF value was 1.35. A histogram of residuals resembled a normal curve with a slight negative skew, and a normal probably plot of residual deviated slightly from a straight diagonal line. A plot of standardized predictive values and standardized residuals suggested equivalent variance across levels of the predictors (i.e., acceptably homoscedasticity).

Table 10.10. Mothers' regulatory focus and promotion- and prevention-oriented behavioral beliefs as predictors of their estimates of children's weekly foreground TV/video exposure.

	Model 1		Model 2		Model 3	
Predictor	B (SEB)	β	B (SEB)	β	B (SEB)	β
Promotion focus subscale	-0.16(0.10)	-0.06	-0.25(0.09)	-0.10**	-0.25(0.10)	-0.10**
Prevention focus subscale	-0.07(0.07)	-0.04	-0.03(0.06)	-0.02	-0.03(0.06)	-0.02
Promotion-oriented behavioral beliefs			0.32(0.04)	0.27***	0.31(0.05)	0.26***
Prevention-oriented behavioral beliefs			-0.18(0.04)	-0.18***	-0.18(0.04)	-0.18***
Promotion focus x promotion-oriented beliefs					0.006(0.07)	0.003
Promotion focus x prevention-oriented beliefs					-0.05(0.06)	-0.03
Prevention focus x promotion-oriented beliefs					0.05(0.05)	0.04
Prevention focus x prevention-oriented beliefs					-0.07(0.04)	-0.06†
R	0.08		0.38		0.39	
Adj. R^2	0.004		0.14		0.14	

N = 691. Step 2 ΔR^2 = 0.14 (p < .001); Step 3 ΔR^2 = 0.01 (p = .18). †p < .10; *p < .05; **p < .01; ***p < .001.

A table was constructed to clarify the nature of predicted interactive relationships, and the actual relationships that were uncovered above. As shown in Table 10.11 below, four out of the eight anticipated significant interactive relationships were found across analyses. The most consistently predictive interaction indicated that mothers with a higher prevention focus had attitudes, intentions to let children view more than an hour/day at least several days, and estimates of their children's exposure that were more in-line with their prevention-oriented behavioral beliefs (i.e., these interactions have negative coefficients because prevention-oriented beliefs are associated with lower attitudes, intentions, and exposure estimates).

Table 10.11. Expected and actual relationships between regulatory focus subscales and behavioral belief indices in predicting mothers' attitude, intentions, and estimates of children's foreground exposure.

Interaction	Expected relationship	Actual relationship
Attitudes		
Promotion focus x promotion-oriented beliefs	+β	--
Promotion focus x prevention-oriented beliefs	--	-β***
Prevention focus x promotion oriented beliefs	--	--
Prevention focus x prevention-oriented beliefs	-β	-β**
Intentions to keep child from viewing		
Promotion focus x promotion-oriented beliefs	-β	-β*
Promotion focus x prevention-oriented beliefs	--	--
Prevention focus x promotion oriented beliefs	--	--
Prevention focus x prevention-oriented beliefs	+β	--
Intentions to let child view >1hr/day several days/week		
Promotion focus x promotion-oriented beliefs	+β	--
Promotion focus x prevention-oriented beliefs	--	--
Prevention focus x promotion oriented beliefs	--	--
Prevention focus x prevention-oriented beliefs	-β	-β*
Child's estimated exposure		
Promotion focus x promotion-oriented beliefs	+β	--
Promotion focus x prevention-oriented beliefs	--	--
Prevention focus x promotion oriented beliefs	--	--
Prevention focus x prevention-oriented beliefs	-β	-β[†]

Discussion

The analyses in this study suggested the existence of numerous relationships between mothers' regulatory focus orientations and their cognitions related to infant and toddler foreground TV/video viewing. In particular, associations were found between the extent to which mothers are generally motivated to pursue possible rewards (i.e., promotion focus) or avoid possible failures (i.e., prevention focus), and their behavioral beliefs, attitudes, and intentions, as well as their estimates of children's weekly foreground TV/video exposure. Additionally, regulatory focus orientation moderated relationships between mothers' behavioral beliefs and attitudes, intentions, and exposure estimates in various ways both predicted and unanticipated. Taken together, the findings suggest that mothers' regulatory focus orientations do play a role in their considerations and use of foreground TV/videos with infants and toddlers, though not always in ways that would necessarily be expected based on the principles of the integrative model and regulatory focus theories.

In early analyses the prevention scale seemed to be the stronger scale psychometrically, as the items of this scale had higher internal consistency and stronger factor loadings compared to those of the promotion scale items. However, the prevention scale was not ultimately a stronger predictor of mothers' beliefs, attitudes, and intentions, or of children's estimated foreground TV/video exposure. In fact, compared to the prevention scale, mothers' scores on the promotion scale were more predictive of their scores on the prevention-focused belief index, as well as their attitudes, intentions to let children view TV/videos for more than an hour a day at least several days each week, and exposure estimates in the full analytic models.

What is more, mothers' higher promotion focus was predictive of a lower score on the prevention-oriented behavioral belief index, while prevention focus was not significantly predictive of mothers' scores on this index. In contrast, the prevention scale was predictive of a lower score on the promotion-oriented behavioral belief index, though promotion was non-predictive of this construct. These findings suggest that regulatory focus orientation does impact mothers' behavioral beliefs about infant/toddler foreground TV/video-viewing, though not quite as anticipated. In the context of infant/toddler foreground television- and video-viewing, it seems that mothers with a high promotion focus are less likely to endorse perceptions of possible undesirable repercussions of that exposure, though they do not necessarily believe more strongly in the potential gains. On the other hand, mothers with a high prevention focus tend to eschew beliefs in the possible benefits of foreground TV/video-viewing for their children, while not necessarily perceiving greater harm.

It is not clear why promotion- and prevention-focused mothers were not also more likely to endorse behavioral beliefs in-line with their particular regulatory focus. One possible explanation is that they may not be using or not using foreground TV/videos with their young children in order to fulfill specific child-related goals. In fact, the results of Chapter Eight suggested that behavioral beliefs regarding the instrumental parenting function of TV/video use with young children were the strongest predictors of children's actual estimated rates of exposure, compared to beliefs reflecting over themes. These beliefs were not considered promotion- or prevention-oriented beliefs in the present chapter because they did not reflect child-related outcomes that mothers would be likely to pursue or avoid. Though mothers may perceive some potential benefit or harm from viewing, if they do not consider their children's developmental enrichment to be a goal of foreground TV/video use, or avoiding physical, social, or developmental harm to be a goal of limiting foreground TV/video use, the beliefs in-line with their regulatory focus may not actually resonate with them more strongly than do other beliefs.

Moreover, the differences in the endorsements of promotion- and prevention oriented behavioral beliefs based on regulatory focus were relatively small, and the regulatory focus subscales accounted for only 1 – 3% of the variance in mothers' promotion- and prevention-oriented behavioral beliefs. Furthermore, scores on the promotion- and prevention-oriented behavioral belief indices had only a slight negative correlation with each other among the mothers in this study (i.e., $r = -0.08$). Taken together, these findings suggest that mothers of infants and toddlers do not tend to have either mostly favorable or mostly unfavorable perceptions of the outcomes associated with foreground TV/video-viewing for their young children, regardless of their regulatory focus orientation. Adding to the findings of Chapter Eight and consistent with IM theory, mothers' behavioral beliefs about infant/toddler TV/video use are not on a continuum from "bad" to "good" outcomes, but rather reflect various possible outcomes which they do not regard as mutually exclusive (e.g., children could learn from TV, and also become less interested in reading).

Perhaps the most interesting findings in the current chapter involve the ways in which the regulatory focus scales were found to moderate relationships between the promotion- and prevention-oriented behavioral belief indices and attitudes, intentions, and exposure estimates. The most consistent moderating relationship in this study was between mothers' prevention focus and prevention-oriented behavioral beliefs. As anticipated, mothers who had high prevention focus scores tended to have attitudes, intentions, and foreground exposure estimates (to a marginally significant degree) that were particularly in-line with their prevention-oriented behavioral beliefs. Thus, though they do not necessarily have stronger prevention-oriented perceptions of viewing outcomes for infants and toddlers, beliefs regarding the possible unfavorable outcomes of TV/video-viewing for children do seem to factor more heavily into the attitudes, intentions, and reported behavior of highly prevention-focused mothers, compared to those with a lower prevention focus.

Notably, the findings of this chapter suggest similar patterns in the interactions between prevention-oriented behavioral beliefs and the prevention and promotion scales in predicting mothers' attitudes. Specifically, mothers with higher scores on the promotion scale as well as those with higher scores on the prevention scale had attitudes toward infant/toddler foreground TV/video use that were more in-line with their prevention-oriented behavioral beliefs, compared to those with lower scores on each scale. While it was predicted that the prevention-oriented behavioral beliefs of prevention-focused mothers would have a particularly strong impact on their attitudes, it is less clear why prevention-oriented beliefs also have a strong impact on the attitudes of promotion-focused mothers. It is possible that to some degree these scales each tap into a shared construct, such as individuals' degree of general conscientiousness. In fact, several recent studies have found that both promotion- and prevention-focused individuals tend to have higher scores on "conscientiousness" personality measures, compared to those who have low scores on both regulatory focus scales (Bak, 2009; Gorman et al., 2011). Thus, while promotion-focused mothers may tend to be more motivated to pursue possible rewards, they may also be more likely to seek general information about their children's development compared with low promotion mothers. If they have encountered information suggesting unfavorable impacts of viewing for infants and toddlers, then they too may rely more heavily on their perceptions of the possible unfavorable viewing outcomes when forming their general attitudes towards children's viewing. This tendency to consider possible unfavorable outcomes may be compounded by the fact that many parents perceive infants and toddlers to be in a particularly vulnerable state of growth and development, as shown in Chapter Nine.[80] When it comes to the health and development of their infants and toddlers, then, even promotion-focused mothers may be less willing to pursue possible, but uncertain, gains in the face of possible risks.

Of further interest are the different patterns of predictive and moderating relationships pertaining to mothers' intentions to keep their children from viewing any foreground TV/videos, compared to their intentions to let children spend more than an hour a day viewing on at least several days each week. In particular, prevention-oriented behavioral beliefs were more strongly predictive of mothers' intentions to keep children from viewing at all, though promotion-focused mothers did have intentions that were more in-line with their promotion-oriented beliefs (i.e., compared to other mothers). Conversely, promotion-oriented beliefs were more generally predictive of mothers' intentions to let children view foreground TV/videos for more than an hour a day at least several days a week. In this model, prevention-focused mothers had intentions that were more strongly in-line with their prevention-oriented beliefs, compared to other mothers. Thus, different child outcome expectancies are more or less salient to mothers generally and to mothers with varying regulatory orientations when considering *whether* versus *how much* to let their children view foreground TV/videos. In considerations of whether to let their children watch

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[80] Note, post hoc analyses also indicated that the promotion scale had a significant positive correlation with the measure of mothers' perceived behavioral control ($r = 0.30$, $p < .001$), and that the prevention scale had a marginally significant positive relationship with perceived behavioral control ($r = 0.07$, $p = 0.07$). Thus, mothers' higher prevention and promotion focus may also reflect a stronger internal locus of control regarding children's TV/video viewing, and possibly other parenting behaviors as well.

TV/videos at all, mothers rely most strongly on their perceptions of the possible negative repercussions of that viewing. Considerations of the potential benefits to children do contribute to these intentions to a lesser extent, and matter particularly to mothers who are generally more motivated by possible gains (i.e., promotion-focused). In deciding how much foreground TV/video-viewing is appropriate for children, mothers tend to rely more heavily on their beliefs about the possible desirable outcomes of their viewing several hours each week. Perceptions of potential undesirable outcomes for children also play a role, however, and are particularly important among mothers who tend to be more motivated to avoid unfavorable outcomes (i.e., prevention-focused).[81] Though it is not clear why this particular pattern was found, these findings do indicate that using TV/videos "at all" or "not at all", versus using "some" versus "a lot" of TV/videos with children are distinct behaviors, and different considerations are brought to bear on them by mothers. Further, mothers' regulatory focus influences these distinct decisions in different ways.

Despite the number of statistically significant relationships, relatively low predictive weights of the prevention and promotion scales and of their interactions with belief indices were found across analyses in this study. These findings may be due in part to a weak match between mothers' perceptions and use of TV/videos with

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[81] Varying patterns of prediction were found between the two measures of intentions for relationships involving the different thematic behavioral belief subscales (see Chapter Eight) and perceptions of children's brain/intellectual development as well (see Chapter Nine). All of these findings will be discussed in greater depth in the general discussion chapter (i.e., Chapter Thirteen).

young children and the underlying dimensions measured in the RFQ. For example, the RFQ may not be a good indicator of individuals' persuasion and actual behavior pertaining to others, or may at least differently predict other-oriented behavior. Typically, this measure is used to determine people's decision-making and behavior regarding self-oriented needs and goals. There are very few known studies that assess relationships between a parent's regulatory focus orientation, as measured by the RFQ, and his or her cognitions and behavior regarding their children (for exceptions see Coplan, Arbeau & Armer, 2008; and Eiser, Eiser & Greco, 2004). Furthermore, these studies have typically involved child outcomes such as shyness (e.g., Coplan, Arbeau & Armer, 2008) and quality of life and cancer survival (e.g., Eiser, Eiser & Greco, 2004), rather than specific discrete parenting behaviors like permitting foreground TV/video use. This study, conversely, involves *mothers'* regulatory focus and their perceptions and use of TV/videos with *their children.* Thus, the results indicate that individuals' regulatory focus orientations may not operate in the same manner when people are acting on behalf of others, even their children, as they do when the behavioral outcomes pertain only to themselves. More research is needed to determine whether this may be true, and how patterns of behavioral prediction based on regulatory focus orientation are different for self-oriented versus other-oriented behaviors. In addition, as researchers have begun developing context-specific regulatory focus constructs and measures (e.g., work-related regulatory focus; see Neubert et al., 2008), perhaps efforts should be made to develop a regulatory focus measure that is more specifically related to parenting young children.

Chapter Eleven

Accounting for children's background TV/video exposure:

The role of demographic and structural circumstance factors

The present dissertation chapter, analysis section 6, examines the relationships between mothers' demographic factors (e.g., mother's race/ethnicity; age) and structural life circumstances (e.g., employed; number of children in the home) and infants' and toddlers' exposure to background TV/videos. Researchers have only recently begun studying the existence and implications of background media in the lives of very young children. As such, the analyses in this chapter and the next represent an important early investigation of factors which may distinguish between infants and toddlers with different rates of background television and video exposure.

Young children and background TV/video exposure

Infants' and toddlers' exposure to background screen media is a recent issue of interest, and very little research exists to inform our understanding of which children have more or less exposure and what that exposure might mean for their development. In fact, the distinction of "background media" as an exposure category for young children apart from "foreground media" was first made in children and media research just ten years ago (Anderson & Evans, 2001). Thus far, what studies have been done in this area have focused primarily on how infants' and toddlers' play and socially interactive behaviors are impacted in the presence of background television and videos (e.g., Kirkorian et al., 2009; Schmidt et al., 2008). This research points to less and lower quality play and social interaction among young children who are in a room with programming that is not intended for them, presumably due to the interruption of children's (and adults') focused attention on these activities. Given that the content is incomprehensible to babies (see Anderson & Pempek, 2005; Anderson & Evans, 2001), young children's occasional attention to background TV/videos is believed to be largely recruited by perceptually salient program features (e.g., loud noises; sound effects, see Courage & Setliff, 2010).

Additional recent research suggests that exposure background television programming can have long-term cognitive implications for children (Barr et al., 2010; Tomopoulos et al., 2010). Specifically, children in one study who were exposed to more adult-oriented background television at age one were more likely to have lower executive functioning skills at age four, compared to their peers who were exposed to less background television as infants (Barr et al., 2010). In correlational analyses, the authors also found that parents' socio-economic status, ethnicity, and education level were unrelated to the rates of background exposure among the one-year-olds in their study. In another study, which used media use recall diaries in a sample of low SES Hispanic mothers, children's exposure to older child/adult programming at six months of age predicted lower language and cognitive development scores at 14 months (Tomopoulos et al., 2010). However, their exposure to programs intended for children six years and younger was unrelated to their language or cognitive development (Tomopoulos et al., 2010).

Notably, no known study has closely investigated the factors regarding children and their families that may be related to young children's rate of background television and video exposure. To the extent that background TV/video exposure does have adverse short- and long-term effects on children's development, as early research suggests, it is critical to understand what parent- and child-level factors are related to more or less exposure for young children. Furthermore, an understanding of whether the integrative model constructs can account for children's exposure will offer an important first glimpse into what parental cognitions may be most related to children's background TV/video exposure. Combined, this knowledge can help to guide the appropriate design of potential campaigns to reduce infants' and toddlers' background television and video exposure by providing insights about who is most exposed and what categories of perceptions might be best to target.

The analyses contained in this chapter mirror those pertaining to foreground TV/video exposure in Chapter Six, as they will examine the inter-relationships between mothers' demographic factors (e.g., education; age) and structural life circumstances (e.g., childcare arrangements; access to media technologies) and young children's estimated weekly background TV/video exposure. Because this particular study represents a first look at mother- and child-level predictors of infants' and toddlers' background TV/video exposure, the analyses in this chapter are approached as research questions.

<u>Research Question 10</u>: Which demographic variables will be linked to differential rates of children's background TV/video exposure (i.e., among mother's race/ethnicity; mother's education; mother's age; child's gender household income; and number of rooms in the home).

<u>Research Question 11</u>: Which variables regarding mothers' structural life circumstances (i.e., influencing her control/need for background TV/videos and

TV/video availability/entertainment alternatives) will be related to children's background TV/video exposure?

Methods

Measures[82]

Target child information. Participants were asked how many children they had between 3 months and 24 months of age. Those with more than one child in this age range were then prompted to think of the child between 3 and 24 months "whose name comes first in the alphabet". Each participant reported the target child's date of birth and birth order.

Family composition. Respondents were asked how many children, besides the target child lived in their home, as well as how many adults, besides themselves, lived in the home.

Childcare: Including whether target child was currently in any form of childcare, and whether or not the child ever watched television or videos while in childcare.

Children's background TV/video exposure. Respondents were asked on how many weekdays (0 – 5) in a typical week the child is "in the room with background television or videos for at least a few minutes."   Next, they indicated how much time in a typical weekday the child spends in a room with background television or videos. There were five response options broken up in 2 hour increments between "less than 2

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[82] Those measures which have been previously described in earlier chapters are listed here, and a fuller description can be found in the chapters 6 – 10, as well as the general Methods chapter (i.e., Chapter Five). The full online survey can be found in Appendix D.

hours” and “8 hours or more.” Based on her response to this question, each participant was then directed to a follow-up question where she was asked to choose one of four response categories to indicate a more detailed range of exposure time in a typical day (e.g., “less than 30 minutes;” “at least 30 minutes but less than 1 hour”). This series of three questions was then repeated to assess children’s weekend background TV/video exposure.

Following data collection, the number of weekdays that the child is in a room with background TV/videos was multiplied by the midpoint of the more specific chosen category of typical daily exposure (i.e., 45 minutes for the category “at least 30 minutes but less than 1 hour). Then, the number of weekend days during which the child spends some time in a room with background TV/videos was multiplied by the midpoint of the category of weekend day background TV/video exposure amount. These two figures were then added together and divided by 60 to represent the child’s average weekly background TV/video exposure in hours (i.e., divided by 60 minutes to convert the estimate into hours). The range of possible weekly exposure estimates was from 0 to 68.25 hours or more per week (i.e., if the participant indicates the child spends 9.75 hours of television/videos or more in a room with background TV/videos on all seven days of a typical week).

Background TV/video intention. On a 7-point response scale (ranging from 1: “unlikely” to 7: “likely”), respondents were asked to respond to the following items: “I will let [child’s name] spend time in a room with background television or videos for more than an hour a day on at least several days in the next week during the next month.”

Home environment and media access: Number of rooms in the home, number of rooms in the home that contained a television set; index of the number of toys/books available for the child to use; index of the number of non-traditional sources for viewing video content for the child's use (e.g., portable DVD player; TV mounted in the car); the child's sleeping arrangements; and presence of a television set in the room where the child sleeps.

Mother's weekly TV/video viewing.

Demographics. Respondents were asked for basic demographic information, including marital status, age, race and ethnicity, education level, and household income.

Data Analysis

Research question 10. Bivariate relationships between the demographic variables of interest and children's background TV/video exposure estimate were assessed first. For continuous variables, Pearson correlation analyses were used. In addition, continuous variables were transformed into ordinal-level variables (i.e., with 5 ordered categories) and then the linearity with children's TV/video exposure was assessed using SPSS "means" analysis. Relationships were deemed sufficiently linear when there was a negligible difference between the eta^2 and R^2 coefficients for these analyses. Separate ordinary least squares regression analyses were used to determine relationships between children's exposure to foreground TV/videos and each of the nominal variables (i.e., with dummy variables). Next, a multiple regression model was constructed containing all background variables (i.e., regardless of presence of significant bivariate relationships) to verify significant demographic predictors of children's background TV/video exposure. This analysis was repeated using mothers' intentions to let the children spend more than an hour a day at least several days each week in a room with TV/videos, to verify that the predictive relationships were consistent across outcomes. Each of these steps was then repeated to assess bivariate relationships with continuous and nominal-level structural life circumstance variables.

Research question 11. Hierarchical ordinary least squares regression analyses were conducted to assess research questions. Two separate analyses were conducted: one predicting behavior (i.e., transformed estimate of children's background TV/video exposure), and the other predicting mothers' intentions (i.e., to let their children spend time in a room with background TV/videos for more than one hour a day on at least several days each week during the next month).[83] For each analysis, demographic variables found to have a significant bivariate relationship with children's background TV/video exposure and/or mothers' intentions were entered together in the first step of the model, followed by followed by structural life circumstance variables in the second step. Standardized beta coefficients were assessed to compare predictive power of independent variables in the models.

Results

Children's background TV/video exposure. Mothers' estimates of the target children's typical weekly exposure to background TV/videos ranged from 0 to 68.25 hours. The mean amount was 21.19 hours per week (SD = 18.67) and the median was

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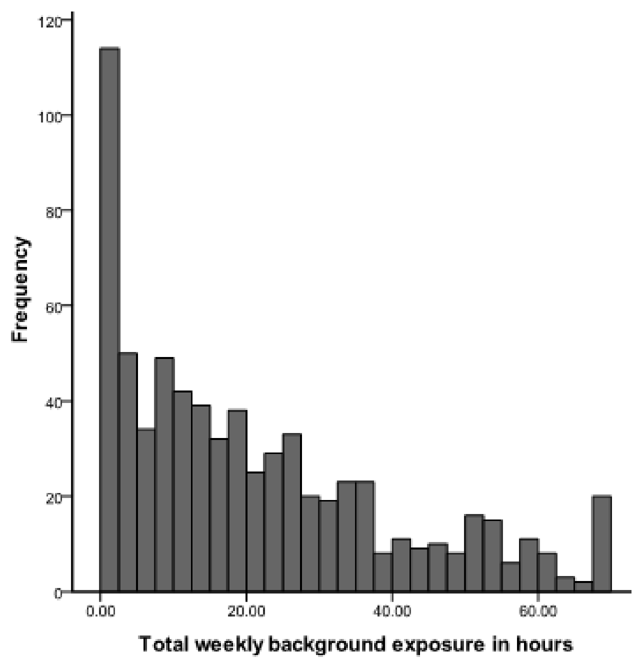
[83] These two models were tested to verify that the predictors operate similarly in their prediction of both prior behavior as well as future intentions.

16.25. As conveyed in Figure 11.1, the distribution was skewed towards higher exposure (skew = 0.88; SE = 0.09), and was slightly platykurtic (kurtosis = -0.14, SE = 0.19). Though the skew was not as dramatic as that of the foreground TV/video viewing estimates (see Chapter Six), the background viewing was transformed by adding 1 and taking the square root in order to be consistent with the prior analyses and avoid any violations of linearity and normality in regression analyses.[84]

Figure 11.1. Estimates of children's weekly exposure to background TV/videos.



Research question 10. First, Pearson's correlation analyses were conducted to assess the bivariate relationships between the transformed estimate of children's

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[84] Note: the transformed estimate of children's background TV/video exposure was correlated with the transformed estimates of their foreground TV/video exposure at r = 0.20 (p < .001). Mothers' intentions to allow their children to be exposed to each form of exposure were correlated at r = 0.25 (p < .001).

background TV/video exposure and (1) mother's education level (2) mother's age; (3) number of rooms in the home; and (4) household income. Only one relationship was significant. The estimate of children's background TV/video exposure was negatively related to mother's education level ($r = -0.12$, $p < .01$). Next, means analyses were conducted using ordinal level variables representing the above four variables; each variable consisting of five categories. The analyses tested for differences in children's background TV/video exposure means across the levels of these four predictor variables in order to verify that relationships were linear. The results of these analyses mirrored the correlational results, in that only the association with mother's education level was significant. The deviation from linearity tests were non-significant, and there were negligible differences between the R^2 and eta^2 values.

Separate OLS regression analyses were then conducted to test for differences in background TV/video exposure for children of different races/ethnicities (i.e., using dummy variables for Black/non-Hispanic, and "other", compared to White/non-Hispanic) and child's gender (i.e., dummy variable representing females)[85]. Dummy variables were entered into analyses, with one category omitted to serve as the comparison group. The results indicated that there were no differences in background TV/video exposure based on race/ethnicity ($F(2, 689) = 1.29$, $p =0.28$) or child's gender ($F(1, 696) = 0.37$, $p =0.54$).

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[85] An additional analysis was run containing dummy variables for "second-born" and "third-born or later," compared to first-born children (who comprised the omitted category). Neither dummy variable was significantly predictive of background TV/video exposure.

Next, an additional OLS regression was conducted containing all possible demographic variables as predictors of the transformed estimate of children's weekly background TV/video exposure. This was done to ensure that no significant predictors were omitted from analyses due to suppression of bivariate relationships with the dependent variable from suppression by other predictors. The standardized and unstandardized regression coefficients from this analysis are contained in Table 11.1, as are the R and R^2 values. The model containing all seven predictors was significant ($F(7,653) = 2.18$, $p < .05$), and accounted for 1% of the variance in the transformed estimate of children's background TV/video exposure. This model suggested that mothers' education level was a significant negative predictor ($\beta = -0.16$, $p < .001$). No other variables had significant associations with children's background TV/video exposure.

Table 11.1. Demographic variables predicting children's foreground TV/video exposure (transformed estimate).

Demographic variable	B (SE B)	β
Mother's education	-0.24(0.07)	-0.16***
Mother's age	0.02(0.01)	0.05
Household income	0.05(0.05)	0.05
Number of rooms in the home	-0.04(0.09)	-0.02
Child is a girl	-0.09(0.16)	-0.02
Mother is Black/non-Hispanic (dummy)[a]	-0.25(0.24)	-0.04
Mother is "other" race/ethnicity (dummy)[a]	-0.09(0.21)	-0.02
R	0.15	
Adj. R^2	0.01	

N = 652. [a]Omitted comparison group is mothers who are White/non-Hispanic. *p < .05; **p < .01; ***p < .001.

This analysis was repeated using mothers' intentions regarding infants'/toddlers' weekly background TV/video exposure as the dependent variable, in order to verify that predictors were similar across outcomes. Table 11.2 contains the results of this analysis, which indicated that household income was a significant positive predictor of intentions (β = 0.13, $p < .001$) and mothers' education level was a marginally significant negative predictor (β = -0.08, $p = .08$). Thus, both mother's education and household income will be included in subsequent analysis as demographic predictors of both mothers' intentions and estimates of children's background TV/video exposure.[86]

Table 11.2. Demographic variables predicting mothers' intentions to let their child spend more than an hour a day in a room with background TV/videos at least several days each week.

Demographic variable	B (SE B)	β
Mother's education	-0.11(0.06)	-0.08†
Mother's age	0.01(0.01)	0.04
Household income	0.12(0.05)	0.13*
Number of rooms in the home	0.03(0.08)	0.02
Child is a girl	0.24(0.15)	0.06
Mother is Black/non-Hispanic (dummy)[a]	-0.27(0.23)	-0.05
Mother is "other" race/ethnicity (dummy)[a]	-0.24(0.20)	-0.05
R	0.16	
Adj. R^2	0.02	

N = 652. [a]Omitted comparison group is mothers who are White/non-Hispanic. *$p < .05$; **$p < .01$; ***$p < .001$.

Research question 11. Next, bivariate relationships were assessed between the transformed estimates of children's background TV/video exposure and mothers' structural life circumstance variables. The first set of analyses included Pearson

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[86] Although this means that the models predicting children's exposure estimates will be slightly less parsimonious, it was considered best to include the same independent variables across models predicting both outcomes for consistency and to enable direct comparisons.

correlations between the transformed estimate of exposure and the continuous and ordinal variables, including: (1) index of child's toys; (2) number of rooms with TVs; (3) index of non-traditional sources of video content; (4) number of additional children in the home; (5) number of additional adults; (6) child's age; and (7) mother's own time spent viewing TV/videos. The resultant correlation coefficients are displayed in Table 11.3. There were three significant positive associations with exposure: mother's time spent viewing TV/videos ($r = 0.51$, $p < .001$), the number of rooms in the home containing television sets ($r = 0.14$, $p < .01$), and the number of additional children in the home ($r = 0.08$, $p < .05$). Child's age had a negative relationship with the transformed estimate of children's background exposure ($r = -0.12$, $p < .01$). Means analysis using ordinal versions of each variable with 5 categories each confirmed the same relationships were significant. There was no evidence of non-linear relationships (i.e., greatest difference between eta^2 and R^2 was 0.007).

Table 11.3. Correlations between ordinal- and interval-level structural circumstance variables and children's background TV/video exposure.

Variable	Foreground exposure correlation
Toy index	0.03
Number of rooms with TVs	0.14**
Non-traditional video source index	-0.07
Number of additional children in the home	0.08*
Number of additional adults in the home	0.03
Mother's time spent viewing TV/videos	0.51***
Child's age	-0.12**

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

Individual OLS regressions were then used to test bivariate relationships between the transformed estimate of children's background exposure and each of the nominal-level variables (i.e., using dummy variables with one category omitted for comparison). The variables assessed included: (1) whether the child was in childcare; (2) whether the child was in a childcare that used television/videos; (3) mother's employment status (i.e., employed dummy; unemployed dummy[87]); (4) whether there were no additional adults living in the home in addition to the respondent[88]; (5) child's birth order; (6) whether the mother was parenting an additional child 24 months of age or younger; (7) whether the child had his/her own bedroom; (8) whether the mother was single; and (9) whether there was a television set in the bedroom where the child slept. As shown in Table 11.4, these analyses indicated only one significantly predictive relationship. Target children who had their own bedroom tended to have lower estimated rates of background TV/video exposure ($\beta = -0.10$, $p < .05$). Having a television in the child's bedroom was marginally predictive of more background TV/video exposure ($\beta = 0.07$, $p = 0.07$).

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[87] This analysis left out "homemaker" as the comparison category.

[88] This dummy variable was created because while the number of additional adults may not have a linear relationship with child's exposure, it is feasible that having at least one additional adult living in the home would be associated with how much time children are exposed to foreground screen media.

Table 11.4. Relationships between dichotomous structural circumstance variables and children's background TV/video exposure.

Variable	B (SE B)	β
Mother is employed[a]	0.03 (0.17)	0.01
Mother is unemployed[a]	0.04(0.23)	0.01
Mother is single	0.18(0.18)	0.04
Child is first-born	-0.23(0.16)	-0.06
No additional adults in the home[b]	-0.44(0.34)	-0.05
More than 1 child 3-24 months	-0.22(0.26)	-0.03
Child in childcare	0.02(0.20)	0.003
Child has own bedroom	-0.40(0.16)	-0.10*
Childcare uses TV/videos	0.12(0.26)	0.02
Child has bedroom television	0.30(0.16)	0.07†

Note: values are from individual OLS regression models with only the respective dummy variable included unless otherwise noted; [a] These predictors were entered into a regression analysis together, homemakers were left out of the model as the comparison group; [b]compared to one or more additional adults. ***$p < .001$; **$p < .01$; *$p < .05$; †$p < .10$.

Another OLS regression analysis was then conducted containing all possible structural circumstance variables to determine which were significantly predictive of children's exposure when all other variables were included, and to generate an estimate of predictive power of all structural variables as a set. Structural variables were included regardless of whether prior analyses indicated they had a significant bivariate relationship with exposure. This was done to ensure that no significant predictors were omitted due to possible intercorrelations suppressing bivariate relationships with the outcome variable. Additionally, seven interaction terms were included in a second model step in order to examine the possibility that differences in children's background exposure might be compounded by the presence of several structural life circumstances (see Chapter Six for more explanation). The included interaction terms were: (1) marital status by unemployment status; (2) marital status by childcare status; (3) marital status by the presence of at least one additional adult in the home; (4) marital status by additional children in the home; (5) marital status by income; (6) income by education level, and (7) unemployment by childcare status.

Table 11.5 contains the coefficients and R and R^2 values from this analysis. The results of the first step of this analysis indicated that the full set of structural circumstance variables accounted for 26% of the variance in the transformed estimates of children's weekly background TV/video exposure ($F(16, 677) = 15.88$, $p < .001$). Three variables were significant predictors in the first model step. Children with their own bedrooms tended to have lower background TV/video exposure ($\beta = -0.08$, $p < .05$), as did those who had access to more non-traditional sources for viewing video content ($\beta = -0.08$, $p < .05$). Mothers' time spent viewing TV/videos was strongly related to higher background TV/video exposure estimates among target children ($\beta = 0.50$, $p < .001$). Additionally, having a higher number of toys and books to play with was marginally related to higher estimates of children's background TV/video exposure ($\beta = 0.07$, $p = .06$). In the second step of the model, the 16 structural variables retained their predictive weights and significance. None of the interaction terms were significant.

Table 11.5. Mothers' structural life circumstances as predictors of children's weekly time with background TV/videos.

	Model 1		Model 2	
	B(SE B)	β	B(SE B)	β
Child's age	-0.02(0.01)	-0.05	-0.02(0.01)	-0.05
Child has own bedroom (dummy)	-0.35(0.16)	-0.08*	-0.36(0.16)	-0.09*
Number of additional children	0.07(0.08)	0.04	0.08(0.08)	0.04
Mother is single (dummy)	0.09(0.19)	0.02	0.09(0. 19)	0.02
More than 1 child between 3-24 months (dummy)	-0.16(0.25)	-0.02	-0.14(0.25)	-0.02
Child is first born (dummy)	0.03(0.18)	0.01	0.03(0.18)	0.01
Mother is unemployed[a] (dummy)	-0.33(0.22)	0.05	-0.35(0.22)	-0.06
Mother is employed[b] (dummy)	0.10(0.17)	0.02	0.09(0.17)	0.02
No additional adults in the home (dummy)	-0.11(0.33)	-0.01	-0.12(0.33)	-0.01
Child is in childcare (dummy)	-0.04 (0.25)	-0.01	-0.03(0.25)	-0.01
Number of rooms with TV in the home	0.03(0.08)	0.02	0.04(0.08)	0.02
Non-traditional video source index	-0.12(0.05)	-0.08*	-0.12(0.06)	-0.08*
Toy index	0.01(0.003)	0.07†	0.01(0.003)	0.07†
Child is in childcare with TV (dummy)	0.33(0.31)	0.05	0.33(0.31)	0.05
Child has a bedroom TV (dummy)	-0.13(0.18)	-0.03	-0.15(0.18)	-0.04
Mother's TV/video time	0.08(0.01)	0.50***	0.08(0.01)	0.50***
Unemployment x childcare			0.28(0.57)	0.02
Unemployment x marital status			0.02(0.38)	0.002
Marital status x no additional adult			0.20(0.42)	0.02
Marital status x childcare			0.10(0.39)	0.01
Marital status x income			0.06(0.07)	0.03
Marital status x additional children			0.14(0.13)	0.04
Income x education level			-0.01(0.02)	-0.01
R	0.53		0.53	
Adj. R^2	0.26		0.26	

N = 677. ΔR^2 for Step 2 = 0.003 (p = 0.93). ***p < .001; **p < .01; *p < .05; †p < .10.

The above analysis was repeated with mothers' intentions to let their children spend more than an hour a day in a room with background TV/videos at least several days each week as the outcome variable. This was done to determine whether structural circumstance variables were consistent in their prediction of children's exposure estimates as well as mothers' intentions. This analysis indicated a different pattern of results. As shown in Table 11.6, the 16 structural variables accounted for 13% of variance in mothers' intentions ($F(16, 678) = 7.34$, $p < .001$). Two variables predicted lower maternal intentions, including mothers' status as unemployed ($\beta = -0.12$, $p < .001$) and child's age ($\beta = -0.09$, $p < .05$). Additionally, two variables predicted higher intentions to let the child spent some time with background TV/videos each week, including mothers' time spent viewing TV/videos ($\beta = 0.32$, $p < .001$) and having more rooms in the home containing television sets ($\beta = 0.10$, $p < .05$). The weight and significance of the 16 structural circumstance variables was consistent across model steps. In the second step of the model one interaction term was significant. The interaction term representing mothers' single status and household income was positively predictive of their intentions ($\beta = 0.08$, $p < .05$). However, the inclusion of this interaction term raised the general variance accounted for by the model only slightly ($\Delta R^2 = 0.006$, $p = 0.03$). Thus, this variable will not be included in further analyses. All other structural circumstance variables that exhibited a relationship with intentions and/or estimates of children's background exposure in bivariate or multivariate analyses will be examined in further analyses. These variables include: (1) whether the child has his/her own bedroom; (2) the presence of a television set in the child's bedroom, (3) the index of non-traditional sources for viewing video content, (4) the index of children's toys/books, (5) mothers' time spent viewing TV/videos, (6) child's age, (7) mothers' employment status, (8) number of rooms in the home containing televisions, and (9) number of additional children in the home.

Table 11.6. Mothers' structural life circumstances as predictors of children's weekly time intentions.

	Model 1		Model 2	
	B(SE B)	β	B(SE B)	β
Child's age	-0.03(0.01)	-0.09*	-0.03(0.01)	-0.09*
Child has own bedroom (dummy)	0.23(0.16)	0.06	-0.24(0.16)	0.06
Number of additional children	-0.002(0.08)	-0.001	0.004(0.08)	0.002
Mother is single (dummy)	-0.22(0.20)	-0.05	-0.22(0.20)	-0.05
More than 1 child between 3-24 months (dummy)	-0.08(0.26)	-0.01	-0.05(0.26)	-0.01
Child is first born (dummy)	0.22(0.18)	0.06	0.25(0.18)	0.06
Mother is unemployed[a] (dummy)	-0.67(0.23)	-0.12**	-0.66(0.23)	-0.12**
Mother is employed[b] (dummy)	0.21(0.18)	0.05	0.23(0.18)	0.06
No additional adults in the home (dummy)	0.06(0.34)	0.01	0.03(0.34)	0.004
Child is in childcare (dummy)	0.04 (0.25)	0.01	0.03(0.26)	0.01
Number of rooms with TV in the home	0.18(0.08)	0.10*	0.18(0.08)	0.10*
Non-traditional video source index	0.08(0.06)	0.05	0.08(0.06)	0.05
Toy index	0.002(0.003)	0.02	0.002(0.003)	0.02
Child is in childcare with TV (dummy)	-0.12(0.32)	-0.02	-0.09(0.32)	-0.01
Child has a bedroom TV (dummy)	-0.09(0.18)	-0.02	-0.10(0.18)	-0.03
Mother's TV/video time	0.05(0.01)	0.32***	0.05(0.01)	0.32***
Unemployment x childcare			-0.18(0.59)	-0.01
Unemployment x marital status			-0.45(0.39)	-0.04
Marital status x no additional adult			0.16(0.43)	0.01
Marital status x childcare			-0.31(0.40)	-0.03
Marital status x income			0.14(0.07)	0.08*
Marital status x additional children			-0.02(0.13)	-0.01
Income x education level			0.001(0.02)	0.001
R	0.39		0.40	
Adj. R^2	0.13		0.13	

N = 677. ΔR^2 for Step 2 = 0.009 (p = 0.44). ***p < .001; **p < .01; *p < .05; †p < .10.

The two final analyses in this chapter consisted of hierarchical OLS regression analyses which tested the extent of variance in (1) estimates of children's background TV/video exposure and (2) mothers' intentions that was accounted for by the demographic and structural circumstance variables. In each analysis, the two significant demographic variables (i.e., mother's education level; household income) were added together in the first step. In the second step the eight structural circumstance variables listed above were added to the model as well.

The first analysis predicted the transformed estimates of children's background TV/video exposure. The standardized and unstandardized coefficients and R and R^2 values from both model steps are presented in Table 11.7. The first step accounted for 2% of variance ($F(2, 653) = 6.34$, $p < .01$), and only mother's education level was significantly predictive ($\beta = -0.16$, $p < .001$). The addition of the structural circumstance variables in the second step raised the explained variance to 27% ($\Delta R^2 = 0.27$, $p < .001$). Significant structural variable relationships reflected those in Table 11.5, such that children who had their own bedroom ($\beta = -0.10$, $p < .05$), and more non-traditional sources for viewing video content ($\beta = -0.07$, $p < .05$) had lower estimated background TV/video exposure.[89] Mothers' time spent viewing TV/videos

[89] The Durbin-Watson statistic for the full model was 2.09, indicating adequate independence of errors. A histogram of residuals resembled a curve, and a normal probability plot of residuals resembled a straight diagonal line, suggesting a normal distribution of residuals. A plot of the standardized predicted values and standardized residuals indicated slightly more variance at the higher levels of the predicted values (i.e., some deviation from homoscedasticity). The highest variance inflation factor (VIF) value was 1.61, which is well below the standard multicollinearity indicator of 10.0 (Dielman, 2005).

was the strongest predictor in the model, and was associated with higher estimated background exposure among children (β = 0.51, $p < .001$). Notably, mothers' education became a non-significant predictor once the structural circumstance variables were added, and household income became a marginally significant predictor of higher estimated exposure among children (β = 0.07, $p = .08$).

Table 11.7. Mothers' structural life circumstances as predictors of children's estimated weekly time with background TV/videos.

	Model 1		Model 2	
	B(SE B)	β	B(SE B)	β
Mother's education	-0.24(0.07)	-0.16***	-0.09(0.06)	-0.07
Household income	0.07(0.05)	0.07	0.09(0.04)	0.07†
Child's age			-0.01(0.01)	-0.03
Mother is unemployed[a]			-0.18(0.22)	-0.03
Mother is employed[a]			0.15(0.15)	0.04
Number of additional children			0.06(0.06)	0.03
Child has own bedroom (dummy)			0.41(0.16)	-0.10*
Child has bedroom TV (dummy)			-0.06(0.18)	-0.01
Number of rooms with TV's			0.01(0.08)	0.01
Non-traditional video source index			-0.11(0.05)	-0.07*
Toy index			0.01(0.003)	0.05
Mother's TV/video time			0.08(0.01)	0.51***
R	0.14		0.54	
Adj. R^2	0.02		0.27	

N = 653. ΔR^2 for Step 2 = 0.27 ($p < .001$). ***$p < .001$; **$p < .01$; *$p < .05$; †$p < .10$

The final analysis predicted mothers' intentions to let their children spend more than an hour a day in a room with background TV/videos at least several days each week. The results of this analysis are contained in Table 11.8, including standardized and unstandardized coefficients as well as model R and R^2 values. The first step of the regression was significant ($F(2, 653) = 5.28$, $p < .01$), and indicated that the demographic variables accounted for 1% of the variance in mothers' intentions. Higher income predicted higher intentions in this step ($\beta = 0.15$, $p < .01$), and a higher level of maternal education was marginally predictive of lower intentions ($\beta = -0.08$, $p = .07$). The inclusion of the structural variables in the second step increased the explained variance to 13% ($\Delta R^2 = 0.13$, $p < .001$).[90] Household income retained its significance after this step ($\beta = 0.12$, $p < .05$), though education was no longer marginally significant. Of the structural circumstance variables, two had significant negative relationships with intentions, including child's age ($\beta = -0.09$, $p < .05$) and mother's unemployment status ($\beta = -0.09$, $p < .05$). Mothers' time spent viewing TV/videos was associated with higher intentions to allow children to spend more than an hour a day in a room with background TV/videos on at least several days each week ($\beta = 0.31$, $p < .001$), and number of rooms containing television sets was marginally predictive of higher intentions as well ($\beta = 0.08$, $p = 0.08$).

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[90] The Durbin-Watson statistic for the full model was 2.12, suggesting adequate independence of errors. A histogram of residuals resembled a curve with a slight positive skew, and a normal probability plot of residuals deviated only slightly from a straight diagonal line, suggesting only slight deviation from a normal distribution of residuals. A plot of the standardized predicted values and standardized residuals indicated equivalent variance across levels of the predicted values (i.e., homoscedasticity). The highest variance inflation factor (VIF) value was 1.61, which is well below the standard multicollinearity indicator of 10.0.

Table 11.8. Mothers' structural life circumstances as predictors of their intentions to let their children spend time in a room with background TV/videos for more than an hour a day at least several days each week.

	Model 1		Model 2	
	B(SE B)	β	B(SE B)	β
Mother's education	-0.12(0.06)	-0.08†	-0.07(0.06)	-0.05
Household income	0.14(0.04)	0.15**	0.11(0.04)	0.12*
Child's age			-0.03(0.01)	-0.09*
Mother is unemployed[a]			-0.53(0.23)	-0.09*
Mother is employed[a]			0.22(0.16)	0.06
Number of additional children			-0.05(0.07)	-0.03
Child has own bedroom (dummy)			0.10(0.17)	0.03
Child has bedroom TV (dummy)			-0.04(0.19)	-0.01
Number of rooms with TV's			0.15(0.08)	0.08†
Non-traditional video source index			0.06(0.06)	0.04
Toy index			0.001(0.003)	0.002
Mother's TV/video time			0.05(0.01)	0.31***
R	0.13		0.38	
Adj. R^2	0.01		0.13	

N = 653. ΔR^2 for Step 2 = 0.13 (p < .001). ***p < .001; **p < .01; *p < .05; †p < .10.

Discussion

As we continue to learn more about the implications of the presence of background media in infants' and toddlers' daily lives, it is also imperative that we determine which children spend more time exposed to this media and which parent- and family-level factors may drive that exposure. This study takes important first steps in doing so. Understanding such predictive factors is particularly important given the high rates of background TV/video exposure among many of the infants and toddlers in this study and others (e.g., Masur & Flynn, 2008; Tomopoulos et al., 2010). The findings in this chapter indicated that the average child spent an estimated 21 hours per week in the presence of background programming, compared to only 9 hours of foreground TV/videos (see Chapter Six). Furthermore, children's estimated rates of exposure could be differentiated to a moderate extent from the structural circumstances of their mothers' lives, and also from demographic factors to a lesser extent.

One puzzling finding in the present chapter was that while more highly educated mothers tended to report lower rates of background TV/video exposure among their infants and toddlers, this factor was not predictive of mothers' intentions. Conversely, mothers with higher incomes report increased intentions to let their child spend time in a room with background TV/videos for more than an hour a day at least several days each week. In the analysis predicting estimates of children's background exposure, the predictive power of mother's education level disappeared once the structural circumstance variables were added to the model. However, income remained a significant predictor of mothers' intentions in the full model. It is not clear why income would have a positive relationship with mothers' intentions to allow their child to spend time in a room with background TV/videos, or why this relationship would not be mediated by mothers' structural life circumstances (e.g., number of TV's; mothers' employment). It is possible that more affluent mothers have more favorable attitudes toward background exposure, stronger perceived normative pressure, or lower perceptions of their own ability to limit their children's background TV/video exposure. If this is the case, then the relationship should weaken substantially when the integrative model constructs are included in predictive models in Chapter Twelve. It is also possible that there are other important intervening structural circumstance factors that might explain this relationship that were not included in this study.

Not surprisingly, the strongest predictor of children's background TV/video exposure rates was mothers' own time spent viewing TV/videos. It is not unlikely that the bulk of background TV/video exposure for many infants and toddlers would likely be comprised of their mothers' foreground TV/video viewing, as many infants spend the majority of their time with their mothers. In this study, the outcome variable represents mothers' estimates of their children's exposure to television and video programming on in the background and intended for older children or adults. As such, it is also possible that mothers are merely more likely to be aware of their children's exposure to the programming that the mothers themselves are watching, compared to children's exposure to programming watched by other adults or older siblings. This would also account for the strong overlap between mothers' estimates of their own viewing and estimates of their children's background TV/video exposure, though the estimates of children's background exposure would be less accurate in this case.

In either case, it may be that the observed association between mothers' time viewing TV/videos and infants' and toddlers' estimated background TV/video exposure is due to a lack of other options for occupying the child during the times that the mother wants to watch her own programming, or merely the *perception* that there are no other options for occupying the child (i.e., perceived behavioral control). Mothers' attitudes regarding infants' and toddlers' exposure to background content may also intervene. For example, mothers who spend more time watching television and videos themselves may have formed more favorable (or less unfavorable) attitudes towards young children's exposure to background TV/videos. With these more favorable attitudes, mothers may allow their children to spend a lot of time in a room with them or with others as they watch foreground programming that to the target children would constitute background exposure (i.e., it may not be direct overlap with mothers' own viewing). As such, mothers' attitudes may mediate this observed association. The extent to which the relationship between mothers' time viewing TV/videos and children's background TV/video exposure is mediated by the cognitive constructs of the IM will be examined in Chapter Twelve.

In this study, children's access to a greater number of non-traditional sources for viewing video content was associated with lower estimates of background television and video exposure. In Chapter Six this same variable predicted more foreground TV/video exposure; a relationship which was found to be substantially mediated through mothers' attitudes in Chapter Seven. It is possible that mothers who have more sources for video-viewing available to their infants and toddlers have favorable attitudes toward their children's foreground TV/video viewing, but unfavorable attitudes toward their exposure to background content. This possibility will be investigated in the following chapter. A second explanation for the relationship is that having more sources for foreground video-viewing available for young children means that they can watch their own programming (e.g., on a laptop; portable DVD player) at the same time that others in the home view their own programming as well. This would displace the children's exposure to background content with foreground viewing. If this is true, however, it would be expected that the number of rooms in the home containing television sets would also predict lower rates of background exposure for infants and toddlers; this relationship was not found when other structural variables were in the model.

Of further note is the finding that children who had their own bedroom, apart from parents or siblings, tended to have lower rates of background TV/video exposure, though the presence of a television set in children's bedroom was not significant in models containing the other structural circumstance variables as well. One explanation for this pattern of results is that children who have their own bedroom go to sleep earlier and are less disturbed by background television or videos around bedtime. Those who share a bedroom with parents or siblings may be more likely to stay up later with the other occupants of their bedrooms. Thus, these children may be more exposed to the television and videos watched by their parents and siblings at nighttime. Several post hoc analyses were conducted to examine relationships that might account for the association between children having their own bedrooms and lower background TV/video exposure. These analyses indicated that infants and toddlers who had their own room were significantly less likely to have a bedroom television, compared to those who shared a room with parents or siblings.[91] What is more, infants and toddlers who shared a room, particularly those who shared a room with their parents, were more likely to have a later bedtime. [92] It is also possible that

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[91] 16.4% of children who have their own bedroom have a television set in the bedroom, compared to 54.4% of those who share a bedroom (χ^2 (1, N = 698) = 63.51, p < .001).

[92] In an OLS regression predicting children's reported bedtime, sharing a bedroom with one or more parents was associated with a later bedtime (β = 0.34, p < .001). Having a bedroom TV was marginally associated with an earlier bedtime (β = -0.06, p = .09), as was children's age (β = -0.07, p = 0.08). Sharing a bedroom with siblings was unrelated to children's reported bedtime (β = 0.02, p = 0.54). The

children who have their own bedrooms have more space to themselves in the home, away from parents and siblings. Having one's own room may be a stronger predictor of less background exposure compared to the sheer number of rooms in the home because in any of the other rooms infants and toddlers may or may not be exposed to background TV/videos that others are watching. Furthermore, young children with television sets in their own bedrooms may be more exposed to weekly foreground TV/videos, though it is less likely that other family members would go to the infant's or toddler's room to watch their own programming. This would explain the stronger relationship between background exposure and having one's own bedroom, compared to the absence of a bedroom TV.

In contrast to the models predicting foreground TV/video-viewing in Chapter Six, infants' and toddlers' background TV/video exposure did not change with advancing age once the other structural circumstances were included in the model. It was surmised in Chapter Six that children's media diets may shift from heavily background TV/video exposure to more foreground TV/video-viewing as they grow up and can more readily comprehend and request child-directed content. However, the present findings suggest instead that children's exposure to background content remains relatively constant for the children's ages included in this study, though their foreground exposure increases as they progress through infancy into toddlerhood. In retrospect, this does make sense, as young children are changing dramatically during

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model containing these four predictors accounted for 14% of variance in children's reported bedtimes (i.e., children with their own bedroom were omitted as the comparison category).

the first two years of life, (i.e., developmentally and with regards to foreground media comprehension and enjoyment), though their parents and older siblings likely have more established viewing patterns. A consequence of this suggested pattern is that many young children have *more* overall exposure to television and video content (i.e., background and foreground media combined) as they grow into toddlerhood. This is particularly problematic for toddlers to the extent that they do not learn from either type of TV/video exposure (e.g., see Anderson & Pempek, 2005; Wartella, Richert & Robb, 2010).

Similarly, children's birth order was not predictive of their rate of exposure to background TV/videos in this study. In addition, the presence of other children in the home was related to background TV/video exposure in the simple bivariate relationship, but disappeared when other structural circumstance variables were added to the model. It may be that children under age three spend the bulk of their time in the home with their mothers, rather than with their siblings. If this is true then they would not be frequently exposed to the content that their older siblings view. As discussed in the chapter pertaining to children's foreground TV/video viewing, differences may be found among background TV/video exposure rates based on an interaction between birth-order and sibling age. That is, birth order may not be predictive alone because some children in this study have siblings very close in age, while others have siblings who are considerably older. It would be expected that those with older siblings would have higher rates of background exposure since siblings closer in age would likely be viewing programming that would be classified as foreground TV/videos for the target children in this study. Unfortunately, siblings' ages were not collected in thus study, and thus future research will have to explore this possibility.

Still, the results of this study hold important implications for potential infant/toddler media exposure reduction campaigns aimed at parents. Due to the substantially higher rate of young children's exposure to background TV/videos compared to foreground programming, campaign designers might be best served to focus on this type of media exposure among infants and toddlers. Given the strong link between mothers' time spent viewing television and videos and children's background media exposure, it may also be advantageous to incorporate explicit suggestions of ways that mothers can view their own programming without exposing their children to it. In many families, an infant's or toddler's time spent in a room with background programming may be a non-intended consequence of other family members' decisions about their own viewing (e.g., a mother decides to watch the news and her toddler happens to be playing in the same room). As such, it is not clear a priori whether the integrative model constructs will operate as efficiently in accounting for this type of exposure as they did in the prediction of young children's foreground TV/video viewing (see Chapter Seven). The next and final analysis chapter will examine the predictive power of the integrative model constructs in accounting for young children's background TV/video exposure, as well as the extent to which these constructs might mediate relationships with structural circumstance variables.

Chapter Twelve

Accounting for children's background TV/video exposure: Integrative model vs. structural circumstances

This final analysis chapter investigates whether and to what degree mothers' cognitions, as laid out by the integrative model, are able to account for estimates of infants' and toddlers' background television and video exposure. Of further interest are potential inter-relationships between the IM constructs and children's background TV/video exposure, and the structural circumstance variables found to predict intentions and exposure in the previous chapter. Thus, a secondary goal of this chapter is to determine the extent to which the IM constructs may mediate relationships between structural circumstance variables and mothers' intentions and estimates of their children's background TV/video exposure. Given the particularly strong relationship between mothers' own time spent viewing TV/videos and children's background exposure, additional analyses will examine the extent to which the influence of this variable may be moderated by mothers' attitudes, perceived norms, and perceived behavioral control.

Background TV/video exposure as a "behavior"

Allowing one's infant or toddler to spend time in the presence of background television and videos represents a very different behavior conceptually, compared to the use of foreground programs with a young child, or many of the myriad behaviors commonly examined using the integrative model (e.g., exercise; condom-use; consumer behavior). Specifically, young children's background TV/video exposure seems unlikely to reflect an intentional action with regards to the child. Because young children are not the targets of the television or video content by definition (i.e., it is not turned on for them to watch), their exposure to background television and videos is not likely to be a particular goal of parents or caregivers. Given that this behavior may differ dramatically from that of foreground TV/video use or of other behaviors studied through the lens of the integrative model, it is not clear whether and how the model might operate in this instance.

It is possible that the proximal integrative model constructs will not be predictive of children's exposure to background television and videos, particularly if mothers generally do not even consider an infant's or toddler's time in a room with content directed at others to constitute TV/video "exposure". In fact, numerous mothers in the elicitation study (described in Chapter Three) suggested that their children were playing or otherwise not paying attention when there was background television on in the room, and thus it would not make a difference one way or another. Given also that young children's exposure to background TV/video content is a new area of research interest, parents may not have received as many messages from pediatricians, the media, or other sources regarding infant/toddler background TV/video exposure (i.e., compared to children's foreground TV/video viewing). Furthermore, they may not have discussed this form of exposure with their friends or relatives, or considered whether they could limit their children's background TV/video exposure if they wished to do so. In short, mothers may not have formulated very strong attitudes, perceptions of descriptive and injunctive norms, or perceptions of their own behavioral control regarding their young children's background TV/video exposure. As such, there may be stunted variance among the attitudes, perceived normative pressure, and perceived behavioral control of mothers in this study. If this is the case then estimates of children's weekly background exposure are likely to be driven by the structural circumstances of their lives, and particularly their own television watching habits, rather than by their cognitions.

However, to the extent that mothers do have varying perceptions regarding their infants' and toddlers' background TV/video exposure, it is possible that children's exposure may be well-predicted from the integrative model constructs. For example, mothers who feel that spending a lot of time in the presence of background television or video content could be harmful to their children's development are more likely to try to limit that exposure, compared to those who consider it harmless or even potentially beneficial. Similarly, a mother whose friend mentions only watching television programming when her baby is asleep may feel that other mothers do not typically expose their infants to adult programming. This mother may limit her child's background TV/video exposure in-turn. On the other hand, mothers who perceive that they could not limit their children's exposure to background television and videos, even if they wanted to do so, may not even try.

What is more, it is possible that these varying cognitions regarding infant/toddler background television and video exposure may mediate the influence of mothers' structural life circumstances on their intentions and estimates of children's background exposure. As described in Chapter Eleven, it is possible that the intention and exposure relationships with mothers' own time viewing TV/videos may be mediated by their perceptions that they cannot find a way to watch their own programming without exposing their children to it. Additionally, these associations may reflect mothers' intervening attitudes. That is, mothers who spend more time watching television and videos may have perceived that it has not harmed their child in any way, leading to more favorable general attitudes towards infant/toddler background exposure. Thus, the predictive power of mothers' own time spent viewing TV/videos may be mediated by these and other cognitions regarding infant/toddler background TV/video exposure. Similar cognitions may intervene to mediate the influence of the other structural circumstance variables as well (e.g., number of non-traditional sources for video viewing available to the child; mother's unemployment status).

Furthermore, it is possible that one or more of the IM constructs may moderate the relationship between mothers' time spent viewing TV/videos and their intentions and estimates of children's background exposure. A mother who watches a lot of television but is strongly against infant/toddler background TV/video exposure, for example, may take greater care to view her own programming only when her child is not in the room. The relationship may also be influenced by perceived behavioral control. Specifically, the association of mothers' time viewing with their intentions and estimates of children's background exposure may be stronger among mothers who perceive little control over their children's time spent in the presence of background television and videos. A third possibility is that mothers who watch a lot of television themselves but perceive that other mothers do not expose their infants and toddlers to background TV/videos may be more likely to view their own programming only at times when their children are not present.

The extent of explanatory power afforded by the integrative model constructs in the prediction of infants' and toddlers' exposure to background television and videos will be investigated in this chapter, as will the degree to which such explanatory relationships might mediate or moderate the influence of the structural life circumstance factors uncovered in Chapter Eleven. While there is currently insufficient research in this area to formulate specific hypotheses, analyses guided by the research questions below may offer important early insights into this domain and direct future investigations of mothers' exposure of their infants and toddlers to background screen media.

Research Question 12: Which component(s) of the integrative model of behavioral prediction will be most predictive of mothers' intentions regarding their children's amount of background TV/video exposure (i.e., attitudes, perceived social normative pressure or perceived behavioral control), and of children's estimated background TV/video exposure?

Research Question 13: Are mothers' structural life circumstances directly associated with children's time spent in the presence of background TV/videos, or are the relationships mediated through the integrative model constructs?

Research Question 14: Do integrative model constructs (i.e., attitudes, perceive normative pressure, or perceived behavioral control) moderate the relationship between mothers' time spent viewing TV/videos and their intentions and estimates of children's background TV/video exposure?

Methods

Measures[93]

Children's background TV/video exposure.

Background TV/video intention. On a 7-point response scale (ranging from 1: "unlikely" to 7: "likely"), respondents were asked to respond to the following items: "I will let [child's name] spend time in a room with background television or videos for more than an hour a day on at least several days in the next week during the next month."

Background TV/video attitude. Three 7-point semantic differential items addressed respondents' attitudes regarding the target child's exposure to background television or videos "for more than an hour a day on at least several days each week during the next month" in terms of whether such exposure would be (1) bad/good; (2) foolish/wise; and (3) harmful/beneficial.

Background TV/video perceived descriptive norms. Two survey items were included to measure perceived descriptive norms regarding background TV/video exposure among children who are two years old and younger: (1) Most people like me with children 2 and under let their children spend time in a room with background television or videos for more than an hour a day on at least several days each week (7-point scale from "likely" to "unlikely"); (2) How many of the people who are most similar to you with children 2 and under let their children spend time in a room with

[93] Those measures which have been previously described in earlier chapters are listed here, and a fuller description can be found in the chapters 6 - 11, as well as the general Methods chapter (i.e., Chapter 5). The full online survey can be found in Appendix D.

background television or videos for more than an hour a day on at least several days each week? (5-point scale from “None or very few” to “Almost all or all”).

Background TV/video perceived injunctive norms. Perceived injunctive norms regarding infant/toddler background TV/video exposure were assessed through two survey items, including: (1) Most people who are important to me think I should let [child’s name]spend time in a room with background television or videos for more than an hour a day on at least several days a week during the next month” (7-point scale from “true” to “false”); and (2) “Most people whose opinions I value think that I should let [child’s name] spend time in a room with background television or videos for more than an hour a day on at least several days a week during the next month” (unlikely/likely).

Background TV/video perceived behavioral control. Two survey items measured mothers’ perceived behavioral control over their children’s foreground screen media use: (1) “I am confident that I can control how much [child’s name] is in a room with background television or videos during the next month” (7-point scale from “true” to “false”); and (2) “The amount of time my child spends in a room with background television and videos during the next month is under my control” (7-point scale from “not at all” to “completely”).

Mother’s demographic information. Mothers were asked their education level and annual household income.

Family composition. Mothers reported the number of children living in the home in addition to the target child.

Structural circumstances regarding mother's available time and control. Respondents reported their employment status, the target child's age, and whether the target child has his/her own bedroom (or shared a bedroom with siblings or parents).

Structural circumstances regarding media access. Mothers reported the number of toys and books available for their child's use, the number of non-traditional sources on which their child ever viewed video content (e.g., cellphone screen; TiVo), the number of rooms in the home containing at least one television set, whether there was a television set in the child's bedroom, and mothers' own weekly time spent viewing TV/videos.

Data Analysis

Research Question 12. First, individual item analyses were conducted to determine the degree of variability and shape of the distributions among integrative model items (i.e., attitudes, perceived descriptive norms, perceived injunctive norms, perceived behavioral control and intention). These analyses include examinations of the means, standard deviations, and skewness and kurtosis coefficients. Cronbach's alphas and bivariate correlations were used to test internal consistencies before combining relevant items into scales.

Bivariate correlations were then used to determine the extent of linear relationships between the IM constructs and background TV/video exposure. In addition to correlational analyses, continuous variables were transformed into ordinal-level variables and then the linearity with the dependent variable (i.e., exposure) was assessed using SPSS "means" analysis (i.e., background exposure means were tested for significant difference across levels of the independent variable). Relationships were deemed sufficiently linear when there was a negligible difference between the eta^2 and R^2 coefficients for these analyses.

Next, two ordinary least squares (OLS) regression models were constructed to examine the predictive validity of the four proximal IM constructs in accounting for variance in (1) the estimate of children's weekly background TV/video exposure; and (2) mothers' intentions to let their child spend more than an hour a day at least several days each week in a room with background TV/videos. Adjusted R^2 values were evaluated to determine the extent to which the IM constructs account for variance in each model. Standardized beta coefficients were compared to determine which constructs were particularly predictive in each model.

Research Question 13 and 14. Three hierarchical regression models were then constructed to determine the extent to which structural life circumstance variables contribute additional explanatory power to the models predicting mothers' intentions and children's background TV/video exposure. The first two models predicted estimates of children's background TV/video exposure, and the third analysis predicted mothers' intentions. The first step of each model contained the demographic variables found to be significant in Chapter Eleven as covariates (i.e., mother's education level; household income). Next, the four proximal IM constructs were added in the second step of model, along with intentions in the second analysis predicting exposure. In the third step of the model the structural life circumstance variables found to be significant in Chapter Eleven were entered into the model. Finally, four interaction terms representing the centered interactions between mothers' own time spent viewing TV/videos and each of the four proximal IM constructs were added in the fourth step of the intentions analysis and the exposure analysis which did not contain intention has a predictor.

Two additional hierarchical multiple regression models were constructed; one predicting mother's intentions, and the other predicting the estimates of children's background TV/video exposure. The covariates found to be significant in Chapter Eleven were entered in the first step. Then structural circumstance variables found to be significantly predictive of children's background TV/video exposure were entered together in the second step, followed by the inclusion of the proximal integrative model constructs in the third step. Mediation was determined by the extent of attenuation of relationships between structural variables and background exposure or intentions with the addition of the cognitive constructs. Tests of mediation involved bootstrapping analyses of 1,000 samples with replacement for each test. Each test of structural circumstance variable mediation assessed the significance of indirect relationships (i.e., indirect relationship estimates with confidence intervals that do not contain zero), controlling for the other structural circumstance variables. The proportion of each total relationship mediated by each IM construct and the four constructs combined were then calculated by dividing each point estimate by the original unstandardized regression coefficient from step 2 of the hierarchical regression analysis.

Results

Children's background TV/video exposure. Mothers' estimates of the target children's typical weekly exposure to background TV/videos ranged from 0 to 68.25 hours. The mean amount was 21.19 hours per week (SD = 18.67) and the median was

16.25. The distribution was skewed towards higher exposure (skew = 0.88; SE = 0.09), and was slightly platykurtic (kurtosis = -0.14, SE = 0.19). Though the skew was not as dramatic as that of the foreground TV/video viewing estimates (see Chapter Six), the background viewing was transformed by adding 1 and taking the square root in order to be consistent with the prior analyses and avoid any violations of linearity and normality in regression analyses.

Background TV/video IM constructs. The means, standard deviations, and skew and kurtosis coefficients for the individual integrative model items measuring attitudes, injunctive and descriptive norms, perceived behavioral control, and intentions are contained in Table 12.1. All response options were represented in participants' responses. As was found with the corresponding foreground TV/video items, the responses pertaining to the perceived behavioral control items were skewed toward a high sense of control. These items were also leptokurtic (i.e., a few options represented the bulk of responses). Despite deviations from normality, these item responses were not transformed in keeping with the integrative model and its appropriate analysis.

Table 12.1. Background TV/video exposure integrative model item analysis.

Construct	Item	Mean (SD)	Skew[a]	Kurtosis[b]
Intention	I will let my child spend time in a room with background television or videos for more than an hour a day on at least several days each week during the next month.	4.76(1.96)	-0.44	-0.94
Attitude	Letting my child spend time in a room with background television or videos for more than an hour a day on at least several days would be: Bad/Good	4.04(1.47)	-0.05	0.12
Attitude	Letting my child spend time in a room with background television or videos for more than an hour a day on at least several days would be: Foolish/Wise	3.98(1.44)	-0.04	0.28
Attitude	Letting my child spend time in a room with background television or videos for more than an hour a day on at least several days would be: Harmful/Beneficial	4.08(1.40)	-0.004	0.37
Injunctive norms	Most people who are important to me think that I should let my child spend time in a room with background television or videos for more than an hour a day on at least several days each week during the next month.	3.81(1.84)	-0.02	-0.75
Injunctive norms	Most people whose opinions I value think that I should let my child spend time in a room with background television or videos for more than an hour a day on at least several days each week during the next month.	3.84(1.81)	-0.07	-0.74
Descriptive norms	Most people like me with children 2 or under let their children spend time in a room with background television or videos for more than an hour a day on at least several days each week.	5.21(1.69)	-0.77	-0.12
Descriptive norms[c]	How many of the people who are most similar to you who have children 2 or under let their children spend time in a room with background television or videos for more than an hour a day on at least several days each week?	3.68(1.05)	-0.59	-0.18
PBC	I am confident that I can control how much my child is in a room with background television or videos	6.08(1.37)	-1.52	1.68
PBC	The amount of time my child is in a room with background television or videos is under my control	6.12(1.29)	-1.50	1.80

N = 698. [a] SE = .09; [b] SE = .19; [c]Response scale is from 1: none/very few, to 5: almost all/all. All other scales are from 1 – 7.

The relationships between items intended to form IM scales were next analyzed using correlations and Cronbach's alpha tests. The three items intended to make up the attitude scale had an alpha of $\alpha = 0.95$. They were averaged together to create a scale representing mothers' attitude toward letting the child spend time in a room with background TV/videos for more than an hour a day at least several days each week.. The scale had a mean value of 4.03 (SD = 1.37), and a median value of 4.00 (i.e., on a 7-point scale).

The two items meant to comprise the injunctive normative pressure scale were correlated at $r = 0.92$ ($p < .001$). These items were averaged together to create a scale representing mothers' perceived injunctive pressure to let the child spend time in a room with background TV/videos for more than an hour a day at least several days each week. The mean of the resultant scale was 3.82 (SD = 1.79) and the median value was 4.00 (also on a 7-point scale).

Next, the correlation between the two descriptive normative pressure items was assessed. These items also had a high correlation ($r = 0.78$ p .001). These items were standardized, due to their varying response scales, and then averaged together to form a single estimate of mothers' perceived descriptive normative pressure to let their children spend time in a room with background TV/videos for more than an hour a day at least several days each week. This standardized scale had a mean of 0 (SD = 0.94) and a median of 0.09.

Finally, the two items that assessed mothers' perceptions of their control over children's background TV/video exposure had a correlation of $r = 0.88$ ($p < .001$).

They were averaged together to create a perceived behavioral control scale, which had a mean of 6.10 (SD = 1.29) and a median value of 7.00 (i.e., on a 7-point scale).

Research Question 12. Bivariate correlation analyses were then conducted to determine the extent of linear relationships among the integrative model constructs. Table 12.2 contains the Pearson correlation coefficients for associations between (1) the transformed estimate of children's weekly background TV/video exposure; (2) intentions to let children spend time in a room with background TV/videos for more than an hour a week at least several days a week; (3) the attitude scale; (4) the perceived injunctive normative pressure scale; (5) the perceived descriptive norms scale; and (6) the perceived behavioral control scale. Though they tended to be weaker than those pertaining to children's foreground TV/video exposure (see Chapter Six), the majority of correlations were moderate, significant and in the expected direction. The exceptions were among relationship involving the perceived behavioral control scale. This scale had relatively weak but significant positive relationships with the transformed estimate of exposure, attitude, and descriptive norms. Perceived control was also positively related to intention at a marginal level of significance. Like foreground TV/video relationships, the weak associations with perceived control here may be due largely to the stunted variability in the PBC items (i.e., more than 74% of mothers chose the responses representing the two highest levels of perceived control).

Table 12.2. Correlations between IM constructs regarding background TV/video exposure.

Construct	2	3	4	5	6
1. Weekly background TV/video exposure[a]	0.47***	0.32***	0.26***	0.31***	0.08*
2. Intention		0.58***	0.48***	0.47***	0.07†
3. Attitude			0.66***	0.41***	0.14***
4. Injunctive norms				0.46***	0.03
5. Descriptive norms					0.10**
6.Perceived behavioral control					

N = 697. [a]Variable was transformed by adding 1 and taking the square root. †$p < .10$; *$p < 0.05$; **$p < 0.01$; ***$p < .001$.

It is also feasible that mothers' perceived behavioral control over infants' and toddlers' background TV/video exposure moderates the other constructs in their influence on exposure and intention, rather than exerting influence directly (i.e., extent of perceived control may only impact intentions and behavior depending on the extent of mothers' attitudes, injunctive norms, and/or descriptive norms). Thus, perceived behavioral control will be included in analyses, as will interaction terms between PBC and the three other constructs.

Next, two hierarchical OLS regression analyses were conducted to determine the predictive weights of each of the proximal cognitive constructs and interactions in accounting for mothers' intentions and children's estimated weekly background TV/video viewing. The first model step contained mothers' attitudes, perceived injunctive norms, perceived descriptive norms and perceived behavioral control as predictors of the transformed estimate of children's weekly foreground TV/video exposure. Three interaction terms were created by multiplying the centered PBC scale values by (1) the centered attitude scale values; (2) the descriptive norm scale values (i.e., already centered), and (3) the centered injunctive norm scale values.[94] These three terms were added to the model in the second step of each analysis.

The standardized and unstandardized regression coefficients and model R and R^2 values for the analysis predicting the transformed estimates of children's background TV/video exposure can be found in Table 12.3. The first step of this model was significant and accounted for 13% of the variance in the estimates of children's background exposure ($F(4, 696) = 28.03$, $p < .001$). Two proximal IM constructs were significant predictors. Mothers' attitudes ($\beta = 0.22$, $p < .001$) and perceived descriptive norms ($\beta = 0.22$, $p < .001$) each had positive significant relationships with the transformed exposure estimates. The addition of the three interaction terms did not raise the variance accounted for in the second model step ($\Delta R^2 = 0.002$, $p = 0.70$).[95]

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[94] These variables were centered before creating interaction terms to limit multicollinearity in the model.

[95] The Durbin Watson statistic for the full model was 1.94, indicating appropriate independence of errors. A histogram of the residuals resembled a normal curve, and a normal probability plot of residuals deviated only slight from a straight diagonal line (i.e., suggesting minimal deviation from normality). The highest variance inflation factor (VIF) in the model was 2.23, which is adequately below the conventional 10.0 indicator of multicollinearity. A plot of the standardized predicted values and standardized residuals suggested equivalent variance across levels of the predictors (i.e., homoscedasticity).

Table 12.3. IM constructs predicting child's weekly background TV/video exposure.

	Model 1		Model 2	
	B (SE B)	β	B (SE B)	β
Attitudes	0.33(0.07)	0.22***	0.31(0.07)	0.20***
Desc. Norms	0.45(0.09)	0.21***	0.45(0.09)	0.21***
Injunc. Norms	0.02(0.06)	0.02	0.02(0.06)	0.02
PBC	0.04(0.06)	0.03	0.06(0.06)	0.04
PBC x Attitude			0.07(0.06)	0.06
PBC x Desc. Norms			-0.02(0.06)	-0.01
PBC x Injunc. Norms			-0.01(0.04)	-0.01
R	0.37		0.38	
Adj. R^2	0.13		0.13	

N = 696. Dependent variable is square root transformed estimate of children's continuous background TV/video exposure. ΔR^2 for Step 2 = 0.002 (p = .70); $^{\dagger}p<$ .10; *p < .05; **p < .01; **p < .001

The next analysis repeated these steps to test the predictive relationships between the four proximal IM constructs and three interaction terms with mothers' intentions to allow the children to spend more than an hour a day in a room with background TV/videos on at least several days each week. Table 12.4 contains the standardized and unstandardized regression coefficients as well as the model R and R^2 values. The first step of this model was significant ($F(4, 697) = 118.95$, $p < .001$), and indicated that the four proximal IM constructs accounted for 40% of the variance in mothers' intentions. There were three significant relationships, each of which was positive. Attitude was the strongest predictor of mothers' intentions ($\beta = 0.42$, $p < .001$), followed by descriptive normative pressure ($\beta = 0.26$, $p < .001$), and injunctive normative pressure ($\beta = 0.09$, $p < .05$). The second step of the model, in which the interaction terms were added, contributed another 1% of explained variance ($\Delta R^2 =$

0.01, p < .05).[96] The only significant interaction was that of descriptive norms with perceived behavioral control, which was negatively related to mothers' intentions (β = -0.09, p < .01).

Table 12.4. IM constructs predicting mothers' intentions to let their child watch more than an hour a day of TV/videos at least several days each week

	Model 1		Model 2	
	B(SE B)	β	B(SE B)	β
Attitudes	0.60(0.06)	0.42***	0.58(0.06)	0.41***
Desc. Norms	0.53(0.07)	0.26***	0.54(0.07)	0.26***
Injunc. Norms	0.10(0.04)	0.09*	0.10(0.04)	0.09*
PBC	-0.03(0.05)	-0.02	-0.01(0.05)	-0.01
PBC x Attitude			0.05(0.05)	0.05
PBC x Desc Norms			-0.13(0.05)	-0.09**
PBC x Injunc Norms			0.04(0.03)	0.04
R	0.64		0.64	
Adj. R^2	0.40		0.41	

N = 679. ΔR^2 for Step 2 = 0.01 (p < .05); ***p < .001; **p < .01; *p < .05.

A graph, displayed in Figure 12.1, was created to examine the nature of the interaction between mothers' descriptive normative pressure and perceived control in the prediction of their intentions to let children spend more than an hour a day with background TV/videos at least several days a week. The equation derived from the

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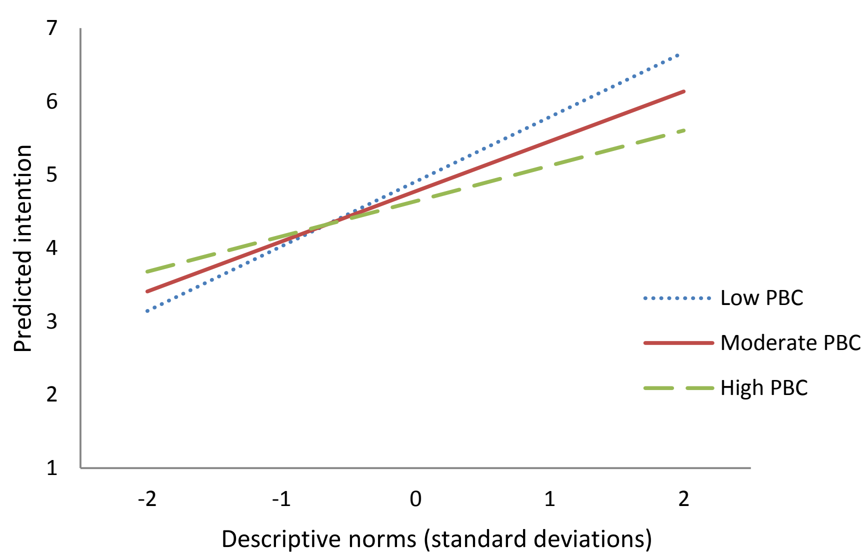
[96] The Durbin-Watson statistic for the full model was 2.04, indicating adequate independence of errors. A histogram of residuals resembled a normal curve with a slight positive skew, and a normal probability plot of residuals resembled straight line (i.e., adequately normal distribution of residuals). A plot of the standardized predicted values and standardized residuals indicated no differences in the variance of residuals across levels of the predictor (i.e., acceptable homoscedasticity). Across models, the highest VIF value was 1.95, which is substantially below the 10.0 indicator of multi-collinearity.

above analysis was used to create this graph. The values for attitudes and injunctive norms were set to the respective means. Predicted values were obtained from the equation for five descriptive norms scale scores from -2 through 2 (i.e., because this scale was standardized due to non-equivalent item response scales) for perceived behavioral control scores of 1 (lowest score), 4 (neutral point) and 7 (highest score). As conveyed by the figure, the relationship between descriptive normative pressure and mothers' intentions is strongest for mothers who have low perceived behavioral control. The variable representing this interaction between mothers' perceived descriptive norms and perceived behavioral control will be included in all further models predicting both mothers' intentions and estimates of children's background TV/video exposure.

Figure 12.1. The relationship between perceived control and intentions among mothers with low, moderate, and high perceived behavioral control.



Research Question 13 and 14. Three hierarchical regression analyses were conducted next to determine how much predictive power the set of structural circumstance variables might add to the IM variables. The first two analyses contained the transformed estimate of exposure as the dependent variable. The first step of each analysis included as predictors the two demographic variables found to be predictive of exposure in Chapter Eleven (i.e., mother's education level and household income). The four proximal IM constructs were added in the second model step, as well as mothers' intentions in the second regression analysis (i.e., to investigate whether the structural circumstance variables might add explanatory power beyond intentions as well as the proximal IM predictors). The structural life circumstance variables found to be predictive of children's background exposure estimates and/or mothers' intentions (see Chapter Eleven) were added to the model in the 3rd step of each analysis. Four interaction terms were created by centering and multiplying each of the four proximal IM constructs by the centered variable representing mothers' own time spent viewing TV/videos. These interactions were entered in the fourth and final step of the first analysis only (i.e., the model which did not contain intentions as a predictor).

The regression coefficients and R and R^2 values from the first analysis predicting children's background exposure estimates are displayed in Table 12.5. The two demographic variables accounted for 2% of the variance in children's exposure estimates ($F(2, 653) = 6.34$, $p < .01$), mirroring the findings from Chapter Eleven. The four proximal IM constructs accounted for an additional 22% of variance in the estimates of children's exposure when they were added in the second step ($\Delta R^2 = 0.13$, $p < .001$; see Table 12.5). The structural circumstance variables in the third step contributed an additional 21% of variance accounted for by the model (i.e., step 3 $\Delta R^2 = 0.21$, $p < .001$). The full model, which included the four terms representing interactions between the proximal constructs and mothers' time spent viewing TV/videos, was significant ($F(21, 653) = 17.06$, $p < .001$) and accounted for 34% of the variance in estimates of children's background TV/video exposure.[97] Although the overall change in variance accounted for by the 4 interaction terms was not significant (step 4 $\Delta R^2 = 0.006$, $p = 0.20$), one of the interaction terms was a marginally significant predictor. The interaction between mothers' own time spent viewing and perceived descriptive norms was a marginally significant positive predictor in the full model ($\beta = 0.07$, $p = 0.06$). This suggests a stronger relationship between mothers' own time spent viewing TV/videos and estimates of their children's time spent with background TV/videos among those with stronger perceptions that other mothers allow their children to spend a lot of time with background TV/videos.

Table 12.6 contains the results of the analysis which contained intentions as an additional predictor. The inclusion of intentions in the second step of the second analysis raised the variance accounted for by the IM variables to 24%. Only two of

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[97] The Durbin-Watson statistic for the full model was 2.06, indicating independence of errors. A histogram of residuals resembled a normal curve and a normal probability plot of residuals resembled a straight diagonal line (i.e., adequate normality). A plot of the standardized predicted values and standardized residuals indicated equivalent variance of residuals across levels of the predictors (i.e., some homoscedasticity). Across models, the highest VIF value was 2.11 (i.e., appropriately low multi-collinearity).

the three structural circumstance variables had lower predictive weights compared to the prior analysis not containing intentions (see Table 12.5), and their reduction was quite minor. This indicates the three variables add explanatory power beyond mothers' attitudes, perceived normative pressure, perceived control, and intentions.

Table 12.5. Role of demographic, structural circumstance, and cognitive construct variables in predicting children's weekly time with background TV/videos.

	Model 1		Model 2		Model 3		Model 4	
	B(SE B)	β	B(SE B)	β	B(SE B)	β	B (SE B)	β
Mother's education	-0.24(0.07)	-0.16***	-0.18(0.06)	-0.12**	-0.06(0.06)	-0.04	-0.06(0.06)	-0.04
Household income	0.07(0.05)	0.07	0.03(0.04)	0.03	0.06(0.04)	0.06	0.06(0.04)	0.06
Attitudes			0.33(0.08)	0.22***	0.25(0.07)	0.17***	0.23(0.07)	0.15**
Injunctive norms			0.02(0.06)	0.02	0.01(0.05)	0.01	0.01(0.05)	0.01
Descriptive norms			0.42(0.09)	0.19***	0.36(0.08)	0.16***	0.39(0.08)	0.18***
Perceived behavioral control			0.001(0.06)	0.001	-0.03(0.05)	-0.02	-0.03(0.05)	-0.02
PBC x Desc Norms			-0.02(0.06)	-0.01	-0.02(0.05)	-0.02	-0.03(0.05)	-0.02
Child's age					-0.003(0.01)	-0.01	-0.004(0.01)	-0.01
Mother is unemployed[a] (dummy)					0.08(0.22)	0.01	0.09(0.22)	0.01
Mother is employed[b] (dummy)					0.10(0.15)	0.02	0.08(0.15)	0.02
Number of additional children					0.06(0.06)	0.03	0.06(0.06)	0.04
Child has own bedroom (dummy)					-0.44(0.15)	-0.10**	-0.44(0.15)	-0.10**
Child has bedroom TV (dummy)					-0.09(0.17)	-0.02	-0.11(0.17)	-0.02
Number of rooms with TV's					-0.04(0.08)	-0.02	-0.04(0.08)	-0.02
Non-traditional video source index					-0.17(0.05)	-0.11**	-0.16(0.05)	-0.11**
Toy index					0.002(0.003)	0.02	0.003(0.003)	0.03
Mother's TV/video time					0.08(0.01)	0.45***	0.08(0.01)	0.47***
Mother's TV/video time x Attitude							-0.01(0.01)	-0.08
Mother's TV/video time x Injunctive							-0.001(0.004)	-0.01
Mother's TV/video time x Descriptive							0.01(0.007)	0.07†
Mother's TV/video time x PBC							0.003(0.004)	0.03
R	0.14		0.38		0.60		0.60	
Adj. R^2	0.02		0.14		0.34		0.34	

N = 684. ΔR^2 for Step 2 = 0.13 (p < .001); ΔR^2 for Step 3 = 0.21 (p < .001); ΔR^2 for Step 4 = 0.006 (p = 0.20). ***p < .001; **p < .01; *p < .05; †p < .10.

Table 12.6. Role of demographic, structural circumstance, proximal cognitive constructs, and intentions in predicting children's weekly time with background TV/videos.

	Model 1		Model 2		Model 3	
	B(SE B)	β	B(SE B)	β	B(SE B)	β
Mother's education	-0.24(0.07)	-0.16***	-0.17(0.06)	-0.11**	-0.06(0.06)	-0.04
Household income	0.07(0.05)	0.07	-0.01(0.04)	-0.01	0.03(0.04)	0.03
Attitudes			0.06(0.08)	0.04	0.07(0.07)	0.05
Injunctive norms			-0.02(0.06)	-0.02	-0.02(0.05)	-0.02
Descriptive norms			0.19(0.09)	0.09*	0.21(0.08)	0.10*
Perceived behavioral control			0.02(0.06)	0.02	-0.01(0.05)	-0.01
PBC x Desc Norms			0.02(0.05)	0.01	0.002(0.05)	0.001
Intentions			0.44(0.05)	0.42***	0.31(0.04)	0.29***
Child's age					0.001(0.01)	0.002
Mother is unemployed[a] (dummy)					0.09(0.21)	0.02
Mother is employed[b] (dummy)					0.07(0.14)	0.02
Number of additional children					0.07(0.06)	0.04
Child has own bedroom (dummy)					-0.45(0.15)	-0.11**
Child has bedroom TV (dummy)					-0.04(0.17)	-0.01
Number of rooms with TV's					-0.05(0.08)	-0.03
Non-traditional video source index					-0.14(0.05)	-0.09**
Toy index					0.004(0.003)	0.04
Mother's TV/video time					0.07(0.01)	0.40***
R	0.14		0.50		0.63	
Adj. R^2	0.02		0.24		0.39	

N = 684. ΔR^2 for Step 2 = 0.23 (p < .001); ΔR^2 for Step 3 = 0.16 (p < .001). ***p < .001; **p < .01; *p < .05; †p < .10.

Next, the above steps were repeated to test associations with mothers' intentions. All resultant standardized and unstandardized coefficients, and the model R and R^2 values can be found in Table 12.7. Mirroring Chapter Eleven analysis, the two demographic variables explained 2% of variance in intentions in the first step of the model. The addition of the IM constructs in the second step of the model raised the amount of variance explained to 41% ($\Delta R^2 = 0.40$, $p<.001$). The structural circumstance variables, added in the third step, contributed an additional 4% of variance explained by the model (i.e., step 3 $\Delta R^2 = 0.05$, $p < .001$). The full model was significant ($F(21, 653) = 28.35$, $p < .001$), and accounted for 47% of the variance in mothers' intentions (step 4 $\Delta R^2 = 0.02$, $p < .001$).[98] One of the four interaction terms was statistically significant: the interaction between mothers' time spent viewing TV/videos and perceived behavioral control was a positive predictor of their intentions to allow children to spend more than an hour a day with background TV/videos, at least several days each week ($\beta = 0.15$, $p < .001$).

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[98] The Durbin-Watson statistic for the full model was 2.04, indicating independence of errors. A histogram of residuals resembled a normal curve and a normal probability plot of residuals resembled a straight diagonal line. A plot of the standardized predicted values and standardized residuals indicated no difference in the variance of residuals across levels of the predictors (i.e., appropriate homoscedasticity). Across models, the highest VIF value was 2.04.

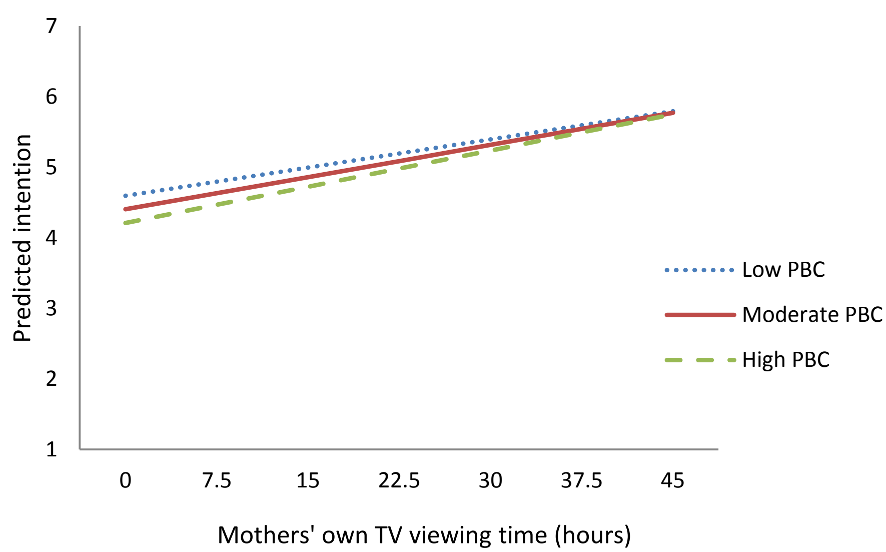
Table 12.7. Mothers' demographic, structural life circumstances, and cognitions as predictors of their intentions to let their children spend time in a room with background TV/videos for more than an hour a day at least several days each week.

	Model 1		Model 2		Model 3		Model 4	
	B(SE B)	β	B(SE B)	β	B(SE B)	β	B(SE B)	β
Mother's education	-0.12(0.06)	-0.08†	-0.02(0.05)	-0.01	0.02(0.05)	0.01	0.01(0.05)	0.01
Household income	0.14(0.04)	0.15**	0.08(0.03)	0.08*	0.09(0.04)	0.10*	0.09(0.03)	0.09*
Attitudes			0.61(0.06)	0.43***	0.58(0.06)	0.41***	0.56(0.06)	0.39***
Injunctive norms			0.10(0.05)	0.09*	0.11(0.05)	0.10*	0.10(0.04)	0.09*
Descriptive norms			0.52(0.07)	0.25***	0.49(0.07)	0.23***	0.47(0.07)	0.23***
Perceived behavioral control			-0.05(0.05)	-0.04	-0.07(0.05)	-0.05	-0.04(0.05)	-0.03
PBC x Desc Norms			-0.08(0.05)	-0.05†	-0.08(0.04)	-0.06†	-0.09(0.04)	-0.06*
Child's age					-0.01(0.01)	-0.04	-0.01(0.01)	-0.04
Mother is unemployed[a] (dummy)					-0.05(0.19)	-0.01	-0.06(0.18)	-0.01
Mother is employed[b] (dummy)					0.09(0.13)	0.02	0.08(0.13)	0.02
Number of additional children					-0.05(0.05)	-0.03	-0.05(0.05)	-0.03
Child has own bedroom (dummy)					0.03(0.13)	0.01	0.01(0.13)	0.003
Child has bedroom TV (dummy)					-0.16(0.15)	-0.04	-0.17(0.15)	-0.04
Number of rooms with TV's					0.06(0.07)	0.03	0.03(0.07)	0.02
Non-traditional video source index					-0.12(0.05)	-0.08**	-0.11(0.05)	-0.08*
Toy index					-0.01(0.003)	0.05	-0.003(0.003)	-0.04
Mother's TV/video time					0.03(0.005)	0.19***	0.03(0.005)	0.21***
Mother's TV/video time x Attitude							-0.007(0.005)	-0.06
Mother's TV/video time x Injunctive							-0.002(0.003)	-0.03
Mother's TV/video time x Descriptive							-0.001(0.006)	-0.005
Mother's TV/video time x PBC							0.02(0.003)	0.15***
R	0.13		0.64		0.68		0.70	
Adj. R^2	0.01		0.41		0.45		0.47	

N = 684. ΔR^2 for Step 2 = 0.40 ($p < .001$); ΔR^2 for Step 3 = 0.05 ($p < .001$); ΔR^2 for Step 4 = 0.02 ($p < .001$). ***$p < .001$; **$p < .01$; *$p < .05$; †$p < .10$.

The interactive effect of mothers' time spent viewing TV/videos and perceived control on mothers' intentions to allow their child to spent time with background TV/videos was graphed using the equation obtained from the analysis above (holding all of the other variables constant at their means). Seven 5-hour increments between 0 and 36 hours per week across the lowest (1) middle (4) and highest (7) points on the perceived behavioral control scale were entered into the equation and the resulting values were plotted. The beta value combined with the graph in figure 12.2 suggests that the association between mothers' own time viewing and intentions is slightly stronger among mothers with higher perceived behavioral control.

Figure 12.2. The relationship between mothers' time spent viewing TV/videos and intentions among mothers with low, moderate, and high perceived behavioral control.



The next analyses examined how fully the structural circumstance variables were mediated by the integrative model constructs in their relationships with children' background TV/video exposure estimates and mothers' intentions. The last two steps of the above regression models were reversed in these analyses: first the structural variables were entered, followed by the IM variables. This order permitted a clearer evaluation of the degree to which the influence of the structural variables was mediated by the IM variables and the extent of influence that was independent of them. Following each hierarchical regression analysis a series of bootstrapping analyses were conducted to assess indirect relationships between the structural circumstance variables and outcomes, through each of the proximal cognitive constructs of the integrative model (i.e., attitudes, injunctive norms, descriptive norms, and perceived behavioral control).

The first model predicted the transformed estimates of children's foreground TV/video exposure from the demographic, structural circumstance, and IM variables. As conveyed in Table 12.8, the regression weights of the previously significant structural circumstance variables were not substantively diminished between model steps 2 and 3. In fact, the variable representing the child having his/her own bedroom retained the same weight and significance after the addition of the IM variables (β = -0.10, $p < .01$), and the index of non-traditional sources of video-viewing available to children became an even stronger predictor (step 3 β = -0.11, $p < .05$). Only mothers' own TV/video viewing time was reduced in the final model (step 3 β = 0.45, $p < .001$). These findings suggest minimal mediation by the IM constructs. Here (Table 12.8) and in the previous chapter, the structural variables were shown to account for 27% of the variance in background exposure estimates without the IM variables included. In Table 12.5 they are shown to account for an add-on 21% of the variance when the proximal IM variables were included. Thus, crudely, (1.00- 21/27) or 22% of the association of the structural variables with child viewing was mediated by the four proximal IM variables and 78% was not. In Table 12.6 they account for an additional 16% of variance in children's exposure when the proximal IM variables and intentions are included. This analysis indicates, then, that (1.00-16/27) or 41% of the total relationship between structural circumstances and child viewing was mediated with intentions in the model.

Table 12.8. Role of demographic, structural circumstance, and cognitive construct variables in predicting children's weekly time with background TV/videos.

	Model 1		Model 2		Model 3	
	B(SE B)	β	B(SE B)	β	B(SE B)	β
Mother's education	-0.24(0.07)	-0.16***	-0.10(0.06)	-0.07	-0.06(0.06)	-0.04
Household income	0.07(0.05)	0.07	0.07(0.04)	0.07†	0.06(0.04)	0.06
Child's age			-0.01(0.01)	-0.03	-0.003(0.01)	-0.01
Mother is unemployed[a] (dummy)			-0.18(0.22)	-0.03	0.08(0.22)	0.01
Mother is employed[b] (dummy)			0.15(0.15)	0.04	0.10(0.15)	0.02
Number of additional children			0.06(0.06)	0.03	0.06(0.06)	0.03
Child has own bedroom (dummy)			-0.41(0.16)	-0.10*	-0.43(0.15)	-0.10**
Child has a bedroom TV (dummy)			-0.06(0.18)	-0.01	-0.09(0.17)	-0.02
Number of rooms with TV's			0.01(0.08)	0.01	-0.04(0.08)	-0.02
Non-traditional video source index			-0.11(0.05)	-0.07*	-0.17(0.05)	-0.11**
Toy index			0.01(0.003)	0.05	0.002(0.003)	0.02
Mother's TV/video time			0.08(0.01)	0.51***	0.08(0.01)	0.45***
Attitude					0.25(0.07)	0.17***
Injunctive norms					0.01(0.05)	0.01
Descriptive norms					0.36(0.08)	0.16***
Perceived behavioral control					-0.03(0.05)	-0.02
PBC x Desc Norms					-0.02(0.05)	-0.02
R	0.14		0.54		0.60	
Adj. R^2	0.02		0.27		0.34	

N = 653. ΔR^2 for Step 2 = 0.27 (p < .001); ΔR^2 for Step 3 = 0.07 (p < .001); ΔR^2 for Step 4 = 0.08 (p < .001). ***p < .001; **p < .01; *p < .05; †p < .10

Bootstrapping analyses were conducted to test the significance of indirect paths from each of the structural circumstance variables to exposure through the proximal integrative model constructs. Again, each analysis tested the indirect path of an individual structural circumstance variable through the four proximal IM constructs, controlling for the other structural circumstance variables, the demographic covariates, and the term representing the interaction between descriptive norms and perceived behavioral control. The indirect point estimates for the structural circumstance variables through each of the cognitive constructs, as well as the combined total estimate of mediation (i.e., mediation through the four IM constructs combined) are displayed in Table 12.9. Ratios were calculated by dividing each point estimate by the original unstandardized regression coefficient from the above analysis (i.e., the B coefficients from the Model 2 section of Table 12.8). These values represent the estimated proportion of the total relationship between each structural circumstance variable and children's background TV/video exposure estimate that is mediated by the given construct (see Table 12.9). The confidence intervals around the point estimates obtained from the bootstrap analyses were examined to determine which indirect paths were significantly different from zero (i.e., confidence intervals that do not contain zero).

The findings from the bootstrapping analyses mirror those suggested by the regression analysis. The dichotomous variable representing whether or not children had their own bedroom showed no significant mediation through any of the proximal IM variables. An estimated 11% of the original relationship between mothers' own time spent viewing TV/videos and children's estimated background TV/video exposure was mediated (point estimate = 0.009; 95% confidence interval = 0.005 – 0.014). The strongest discrete indirect path was through attitudes (8% of original relationship), followed by descriptive norms (4%). Finally, these results suggested that the inclusion of the IM constructs in the third model step actually boosted the predictive power of the index of non-traditional sources for viewing video content by 62% (point estimate = 0.068; 95% confidence interval = 0.025 – 0.122).[99] The strongest indirect relationship was found through attitude, the inclusion of which increased the predictive power of the index an estimated 55% (i.e., point estimate = 0.062, confidence interval = 0.031 – 0.110).

[99] Post hoc analyses indicated that this index had relatively weak but significant positive correlations with mothers' attitude ($r = 0.25$, $p < .001$) and perceived injunctive norms ($r = 0.23$, $p < .001$). This variable also had a marginally significant negative relationships with the transformed estimate of children's background TV/video exposure ($r = -0.07$, $p = 0.07$). There were no significant or marginally significant relationships between this index and descriptive norms, perceived control, or intentions.

Table 12.9. Indirect paths between structural circumstance variables and children's background TV/video exposure through mothers' cognitions.

Structural variable (original effect)[a]	Total paths Point estimate[b] (proportion of B)[c]	Attitudes Point estimate[b] (proportion of B)[c]	Injunctive Norms Point estimate[b] (proportion of B)[c]	Descriptive Norms Point estimate[b] (proportion of B)[c]	Perceived Control Point estimate[b] (proportion of B)[c]
Child's has own bedroom (-0.41)	0.030(-0.07)	0.030(-0.07)	0.002(-0.005)	0.003(0.007)	-0.003(0.007)
Non-traditional video source index (-0.11)	**0.068(-0.62)**	**0.062(-0.56)**	0.004(-0.04)	0.003(-0.03)	0.0003(-0.003)
Mother's TV/video time (0.08)	**0.009(0.11)**	**0.006(0.08)**	0.0003(0.004)	**0.003(0.04)**	-0.0002(-0.001)

N = 654. Note: additional paths through the descriptive norms x perceived control interaction term were tested, but none of these paths were significant nor were they of interest. Thus, they are not reported here. [a]Values represent the B values for the structural circumstance variables displayed in Table 12.8 Model 2. [b]Values represent indirect point estimates based on bootstrapping analyses with 1,000 samples, controlling for other structural circumstance variables and demographic covariates (see Preacher & Hayes, 2008). [c]Values represent the ratio of indirect relationship point estimates to the original B value (i.e., B values from Model 2 section of Table 12.8), or the proportion of total relationship that is mediated. Bold values indicate confidence intervals that do not contain zero, representing an indirect relationship that is statistically different from zero.

The next hierarchical regression model contained mothers' intentions to let their children spend more than an hour a day in a room with background TV/videos on at least several days each week during the following month. The process described above was repeated by adding demographic, structural circumstance, and IM predictors in three separate steps. All standardized and unstandardized coefficients from the model are presented in Table 12.10. The four significant and marginally significant predictors from Model 2 had diminished predictive power in Model 3, and three were no longer significant or marginally significant predictors (i.e., child's age, mother's unemployment status, and number of rooms in the home containing television sets). The estimate of mother's own time spent viewing TV/videos was diminished, but still a significant predictor in the full model ($\beta = 0.19$, $p < .001$). The variable representing the index of non-traditional video viewing sources available for children became a significant predictor following the addition of the IM constructs to the model ($\beta = -0.08$, $p < .01$).

Here (Table 12.10) and in the previous chapter, the structural variables without including the IM variables had added 13% to the demographic variables in the prediction of mothers' intentions. Here (Table 12.7), once IM variables are controlled, they add only 5%. Thus, crudely (1-5/13) 62% of the association of the structural variables with intention are mediated through the IM variables, and only 38% represents an independent influence.

Table 12.10. Mothers' demographic, structural life circumstances, and cognitions as predictors of their intentions to let their children spend time in a room with background TV/videos for more than an hour a day at least several days each week.

	Model 1		Model 2		Model 3	
	B(SE B)	β	B(SE B)	β	B(SE B)	β
Mother's education	-0.12(0.06)	-0.08[†]	-0.07(0.06)	-0.05	0.02(0.05)	0.01
Household income	0.14(0.04)	0.15**	0.11(0.04)	0.12*	0.09(0.04)	0.10*
Child's age			-0.03(0.01)	-0.09*	-0.01(0.01)	-0.04
Mother is unemployed[a] (dummy)			-0.53(0.23)	-0.09*	-0.05(0.19)	-0.01
Mother is employed[b] (dummy)			0.22(0.16)	0.06	0.09(0.13)	0.02
Number of additional children			-0.05(0.07)	-0.03	-0.05(0.05)	-0.03
Child has own bedroom (dummy)			0.10(0.17)	0.03	0.03(0.13)	-0.01
Child has a bedroom TV (dummy)			-0.04(0.19)	-0.01	-0.16(0.15)	-0.04
Number of rooms with TV's			0.15(0.08)	0.08[†]	0.06(0.07)	0.03
Non-traditional video source index			-0.06(0.06)	-0.04	-0.12(0.05)	-0.08**
Toy index			0.001(0.003)	0.002	-0.01(0.003)	-0.05
Mother's TV/video time			0.05(0.01)	0.31***	0.03(0.01)	0.19***
Attitude					0.58(0.06)	0.41***
Injunctive norms					0.11(0.05)	0.10*
Descriptive norms					0.49(0.07)	0.23***
Perceived behavioral control					-0.07(0.05)	-0.05
PBC x Desc Norms					-0.08(0.04)	-0.06[†]
R	0.13		0.38		0.68	
Adj. R^2	0.01		0.15		0.45	

N = 653. ΔR^2 for Step 2 = 0.13 (p < .001); ΔR^2 for Step 3 = 0.32 (p < .001). ***p < .001; **p < .01; *p < .05; †p < .10.

A final series of bootstrapping analyses were conducted to test the significance of indirect paths from each of the five structural circumstance variables to intentions through the proximal integrative model constructs. These analysis steps mirrored the prior bootstrap analyses described above. The indirect point estimates and proportions of mediated relationships from these analyses are displayed in Table 12.11. Four out of the five structural circumstance variables had significant combined indirect paths (i.e., mediation through all four proximal IM variables and interaction term combined), and one of these relationships indicated suppression (i.e., non-traditional video source index). Mothers' status as unemployed was the most strongly mediated variable (estimated 100% of original relationship), followed by child's age (57%) and mothers' own video viewing time (38%). The strongest indirect relationships were through attitudes, except for mothers' unemployment which had roughly equivalent indirect relationships through attitudes (46%) and descriptive norms (43%).

Table 12.11. Indirect paths between structural circumstance variables and mothers' intentions regarding children's exposure to background TV/videos through mothers' cognitions.

	Total	Attitudes	Injunctive Norms	Descriptive Norms	Perceived Control
Structural variable (original effect)[a]	Point estimate[a] (proportion of B)[b]	Point estimate[a] (proportion of B)[b]	Point estimate[a] (proportion of B)[b]	Point estimate[a] (proportion of B)[b]	Point estimate[a] (proportion of B)[b]
Child's age (-0.03)	**-0.017(0.57)**	**-0.010 (0.33)**	-0.004(0.13)	-0.005(0.17)	0.001(-0.03)
Mother is unemployed (-0.53)	**-0.531(1.00)**	**-0.242(0.46)**	-0.048(0.09)	**-0.228(0.43)**	0.015(0.03)
Number of rooms with TVs (0.15)	0.077(0.51)	0.044(0.29)	0.007(0.05)	0.033(0.22)	-0.006(-0.04)
Non-traditional video source index (-0.06)	**0.179(-2.98)**	**0.142(-2.37)**	**0.036(-0.60)**	0.004(-0.10)	0.001(-0.02)
Mother's TV/video time (0.05)	**0.019(0.38)**	**0.013(0.26)**	**0.003(0.06)**	**0.005(0.10)**	-0.0004(0.008)

N = 654. Note: additional paths through the descriptive norms x perceived control interaction term were tested. Only one of these paths was significant (i.e., mother is employed point estimate = -0.028(0.05)), and the paths in general were not of interest. Thus, they are not reported here. [a]Values represent the B values for the structural circumstance variables displayed in Table 12.10 Model 2. [b]Values represent indirect point estimates based on bootstrapping analyses with 1,000 samples, controlling for other structural circumstance variables and demographic covariates (see Preacher & Hayes, 2008). [c]Values represent the ratio of indirect relationship point estimates to the original B value (i.e., B values from Model 2 section of Table 12.10), or the proportion of total relationship that is mediated. Bold values indicate confidence intervals that do not contain zero, representing an indirect relationship that is statistically different from zero.

Additional figures were created to portray the relationships predicting mothers' intentions and estimates of their children's weekly background TV/video exposure. Figure 12.3 pertains to children's estimated weekly background exposure. The R^2 values between the set of structural circumstances and each proximal variable were obtained through four hierarchical regression analyses, each predicting one of the proximal constructs. Demographic variables were entered first in the analyses, followed by the structural circumstance variables. Each R^2 value in both figures represents the change in R^2 values between the 1st and 2nd model steps. Standardized coefficients and R^2 values for the proximal constructs in predicting exposure (i.e., Figure 12.3) were taken from Table 12.5, Model 2. The R^2 value for the independent contribution of the structural variable set was taken from Table 12.5, Model 3 (i.e., step 2 ΔR^2). The respective values for the intention model in Figure 12.4 were taken from Table 12.7, Models 2 - 4.

Figure 12.3. Predictors of mothers' estimates of infants/toddlers weekly background TV/video exposure.

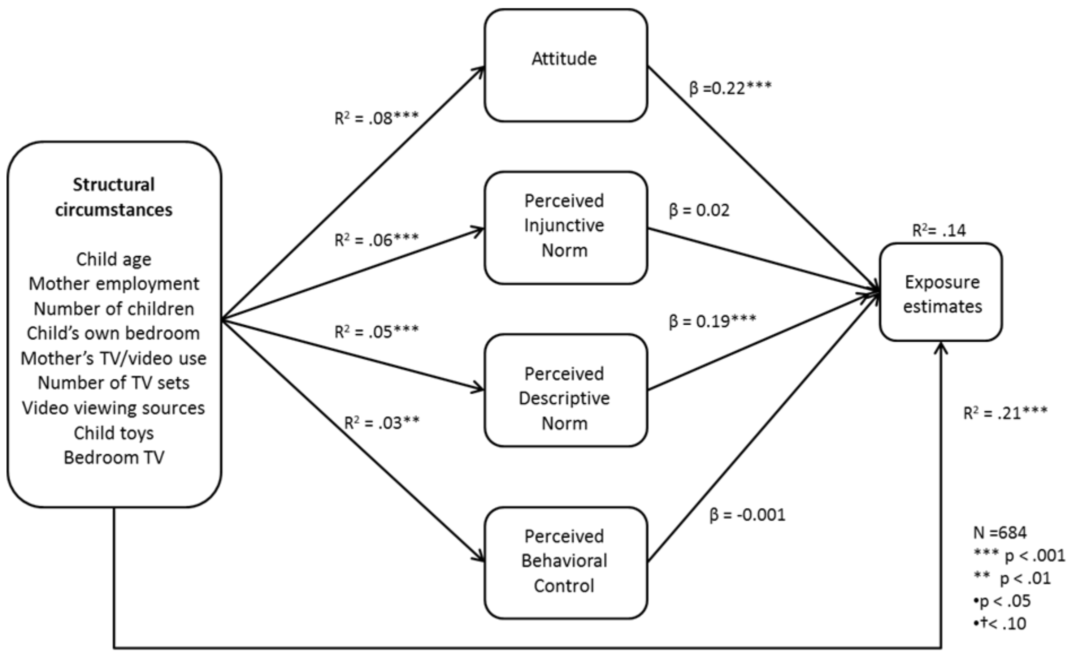
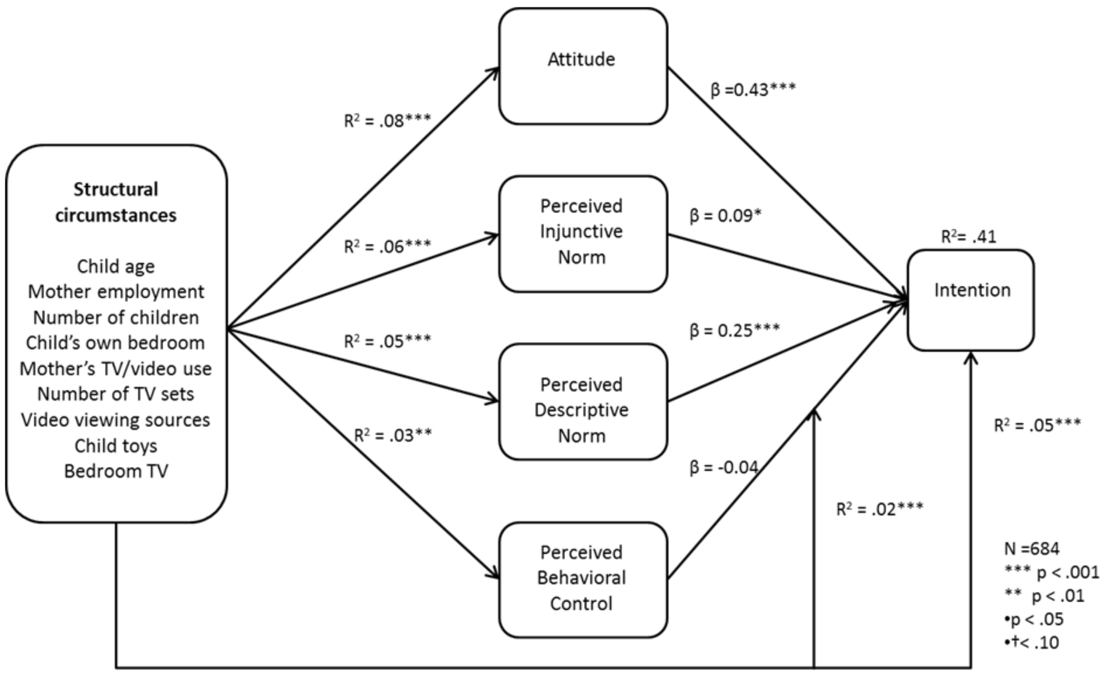


Figure 12.4. Predictors of mothers' intentions to let infants/toddlers spend more than an hour a day with background TV/video at least several days each week.



Discussion

The intent of this chapter was to examine the predictive power of the integrative model constructs in explaining infants' and toddlers' exposure to background TV/videos, and the extent to which these constructs might mediate or moderate relationships between mothers' structural life circumstances and their intentions and estimates of children's background exposure. In this study, the proximal constructs of the IM accounted for 13% of the variation in mothers' estimates of their children's weekly background exposure, and 40% of the variation in their intentions to allow their children to spend time in the presence of background TV/videos in the next month. There was also indication of some mediation of the structural circumstance variables through mothers' cognitions, as well as moderation of relationships with mothers' time spent viewing TV/videos. Over-all, though it accounts for slightly less variance in children's background exposure compared to their foreground TV/video exposure (i.e., 22% of variance; see Chapter Seven), the findings of this chapter suggest that the integrative model of behavioral prediction is a useful model for examining infants' and toddlers' exposure to background television and videos as well.

Mothers' attitudes and perceived descriptive norms were particularly strong predictors of their intentions to allow children to spend time in the presence of background TV/videos and of their children's estimated background exposure. In Chapter Seven, these constructs were also found to be predictive of children's foreground TV/video viewing and mothers' intentions. Also mirroring the previously examined relationships with foreground intentions, mothers' perceived injunctive norms were found to be predictive of background exposure intentions in the present analyses. As such, though their feelings of what others would want them to do may influence mothers' intentions to allow or not allow their children to spend time in the presence of background television and videos, it seems that mothers' attitudes about how beneficial or harmful that exposure might be, and their perceptions of what other mothers are doing are the more important determinants of their actual behavior.

In fact, it is possible that some mothers not only feel that their children's exposure to background TV/videos is harmless, but that it may be helpful for children as well. For example, mothers may feel that young children's time spent with programming aimed at adults or older children could expose them to things in the outside world. Many mothers held this belief in regards to infants' and toddlers' foreground TV/video viewing (see Chapter Eight), and it is conceivable that they believe it to be true for programming that is not created specifically for young children as well. Further, it is possible that mothers perceive the benefit to stem not from the actual background TV/video exposure per se, but from the child's time spent with caregivers (during which background programming happens to be present). This belief was reflected in the commentary of numerous mothers in the preliminary elicitation study, described in Chapter Three. Specifically, mothers felt that since their infants and toddlers could not understand the background programming and did not seem to pay any attention to it, that it did not impact them in any way. The time spent together with caregivers, however, was seen as an over-arching positive consequence. Additional research is needed to elicit mothers' underlying beliefs regarding infants' and toddlers' exposure to background television and videos, and tie those beliefs to their more general cognitions and actual behavior.

In the present chapter, perceived control was not related to mothers' estimates of their children's weekly background exposure nor their intentions regarding their children's future exposure. A significant interaction was found which suggested that mothers with lower perceived behavioral control tend to have intentions that are more in-line with their perceptions of descriptive norms, though this interaction had relatively weak predictive power. In general, mothers in this study felt a high degree of personal control over their children's background television and video exposure, as they did regarding foreground exposure as well (see Chapter Seven). Though it is possible that mothers do tend to perceive themselves to be largely in control of their infants' and toddlers' exposure to background TV/videos, it is also possible that the low variation reflects the wording of the perceived control survey items. In this study, mothers were asked to report their perceived control over children's exposure "during the next month," while the other IM items inquired about exposure to TV/videos "for more than an hour day on at least several days each week during the next month." Future research should determine whether greater variation might be found in mothers' perceived control over their children's exposure to foreground and background TV/video exposure if the perceived items more closely matched the wording of the other integrative model items.

What is more, mothers' structural life circumstance factors contributed significant explanatory power to the prediction of their children's background exposure estimates, beyond that which was accounted for by the integrative model constructs. Particularly predictive was mothers' own time spent viewing television and videos, which remained the strongest predictor in the model even after the inclusion of the IM constructs. The findings also suggested that mothers with strong perceptions that other mothers were allowing their infants and toddlers to spend time with background TV/videos had a particularly strong association between their own viewing and estimates of their children's background exposure. Conversely, perceived behavioral control moderated the association between this structural circumstance variable and mothers' intentions. Though interpreting this interaction is difficult, one possibility is that perceived behavioral control is serving as a proxy for the extent to which children spend the majority of their time with their mothers (i.e., and thus the mother has strong personal control over the children's TV/video exposure).[100] It is likely that the background TV/video exposure of young children who spend most of their time with their mothers would be more strongly associated with their mothers' foreground viewing, compared to those who spend more time away from their mothers. As such, mothers who spend the majority of time with their children are likely to have intentions regarding their children's future background TV/video exposure than reflect their own viewing habits.

Moreover, the analyses of this chapter indicated significant, though relatively minor partial mediation of relationships between mothers' time spent viewing TV/videos and intentions and estimates of children's background exposure variable. The strongest indirect paths were through mothers' attitudes and descriptive norms. As discussed in Chapter Eleven, it seems that mothers who watch a lot of television and video programming themselves may feel that their young children's time spent in the presence of background programming is not harmful, and may even be a good thing. Additionally, mothers who spend more time watching may have friends who also spend a lot of time viewing TV/video content, and frequently expose their children to background programming. However, the fact that the bulk of the relationship between mothers' time spent viewing and their children's background TV/video exposure was not mediated by the IM constructs suggests that mothers may

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[100] In fact, post hoc analyses suggested this may be true. A one-way ANOVA indicated that mothers who were not employed (e.g., homemakers; unemployed) had a higher mean perceived behavioral control scale score (M = 6.21, SD = 1.24), compared to those employed part-time (M = 5.89, SD = 1.40) and full-time (M = 5.93, SD = 1.31; $F(2, 689) = 4.43$, $p < .05$). Additionally, an independent samples t test showed that mothers of children who were in childcare had lower mean perceived behavioral control (M = 5.82, SD = 1.38) compared to those whose children were not in childcare (M = 6.16, SD = 1.26; $t(696) = -2.86$, $p < .01$).

allow their infants and toddlers to spend time in the presence of background programming in ways that are not in-line with their attitudes, perceived norms, or even their intentions regarding that exposure. This possibility would need to be considered in the design of a campaign to reduce young children's exposure to background TV/videos. It may not be sufficient to target mothers' attitudes and perceived norms; messages may need to include suggestions for ways that mothers can watch their own programming without exposing their child to it (e.g., using DVR to record their favorite programs and watch them when the child is sleeping).

The findings in this chapter also suggest that infants and toddlers who had their own bedrooms tended to spend less time background TV/video programming, compared to those who shared a bedroom with siblings or parents. Further, this relationship was not mediated by mothers' cognitions regarding young children's background TV/video exposure. As discussed in the prior chapter, it seems possible that having space within the home that is dedicated to the child may help shield the child from background programming. This may be partially driven by the lower incidence of bedroom televisions when infants and toddlers have their own bedrooms (i.e., which were much more common in infants' and toddlers' rooms when they share a bedroom with other family members). Even if there is a television set in a young child's own room, it seems unlikely that other family members would go there to watch their own programming, which may explain why bedroom television was not a significant predictor of background TV/video exposure in this study.[101] Additionally, children who have their own bedrooms may go to bed earlier and spend more time sleeping, leaving less time available to be exposed to background television and videos.

Notably, structural circumstance variables were more strongly mediated in their relationships with mothers' intentions to allow children to spend more than an hour a day in a room with background TV/videos on at least several days each week, compared to estimates of actual exposure. In Chapter Eleven, intentions to let the child be exposed to background TV/videos were lower among mothers who were unemployed, compared to homemakers and employed mothers. However, the predictive power of mothers' unemployment status completely disappeared when the proximal integrative model constructs were entered into the analyses presented here. This variable was mediated through mothers' attitudes and descriptive norms, though it is not clear why mothers who report being unemployed would have less favorable attitudes toward their infants' and toddlers' exposure to background TV/videos, or why they would perceive that other mothers are not allowing their children to very much spend time with background TV/videos. As this study is one of the first known studies to investigate predictors of infants' and toddlers' rates of exposure to background media, future research is needed to examine this and other relationships more closely. In particular, in-depth interview studies should be conducted with

[101] One exception to this might be mothers watching their own programming during late night infant feedings in the child's bedroom.

mothers from a range of background and life circumstances to elicit underlying beliefs and additional life circumstances that may impact their intentions and their children's background TV/video exposure.

The negative relationship between child's age and mothers' intentions to let children spend time with background TV/videos was also substantially mediated by the IM constructs. In particular, there was a strong indirect relationship through mothers' attitudes which suggested that as children get older their mothers have less favorable attitudes toward background exposure, and have stronger intentions to limit children's exposure. Commentary from mothers in the elicitation interview study (see Chapter Three) may offer some explanatory clues. In the interview study, numerous mothers expressed no concern over their babies' time spent in the presence of background programming because they felt the children could not understand the programming content, and also did not pay attention to it. It may be that as children develop cognitively their mothers perceive that they are more able to understand adult-directed programming content and more attracted to it. Thus, if they are concerned about what kinds of things the child might glean from background programming (e.g., violence; curse words), they may intend to keep them away from such programming. Notably, however, older children in this study did not actually have lower estimates of exposure to background TV/videos, suggesting that the differences in intentions may not be strong enough to impact behavior in this case.

Particularly puzzling findings in this study included the suppression relationships involving the index of non-traditional video viewing sources available to children. This variable became a stronger negative predictor of mothers' intentions and children's background exposure estimates when the integrative model constructs were included in the analytic models. In both cases, the increased strength of the relationships was largely attributable to the addition of mothers' attitude as a predictor within the models. That is, mothers who had more sources for video-viewing available in the home for the target children and others, also had more favorable perceptions of their young children's exposure to content directed at older children and adults. When this confounded relationship was controlled, the negative relationships between the index of video sources and mothers' intentions and estimates of children's exposure were amplified. One possible explanation for these negative associations is that the presence of more sources for children's foreground viewing (e.g., laptops; DVRs to record child's own programming) allows more isolated viewing within the home. Thus, infants and toddlers can view their own programming while their siblings and parents view something different; eliminating the need for young children to spend as much time in the presence of background TV/videos. It is also possible that there are mediating relationships, however; possibly with other structural life circumstances that were not included in this study.

Also of note is the finding that income remained positively predictive of mothers' intentions to allow children to spend an hour or more a day in a room with background TV/videos on at least several days each week, even after the proximal integrative model constructs were added to analyses. Though the exact reason for this finding is not clear, there are at least a few possible explanations. First, women who report higher household incomes may be more likely to be married or have a partner.[102] If this is true then it is possible that they anticipate higher background exposure rates due at least in part to their partner's viewing. It is also possible that mothers who have lower incomes are more susceptive to social desirability reporting, or otherwise over-estimate the extent to which they will limit their children's background exposure in the future. As such, this observed relationship could be due to more realistic reporting of intentions from higher income mothers.[103] Finally, as discussed in Chapter Eleven, it is possible that there are additional structural circumstances in mothers' lives which actually are driving this relationship. Further research is needed to determine the specific nature of the relationship between mothers' income level and intentions to allow their young children to spend time in the presence of background TV/videos, as well as additional structural life circumstances that may influence children's background exposure.

[102] In fact, post hoc analyses were conducted to examine this possibility. Respondents were broken into four groups based on their reported income level. Only 61.7% of mothers in the lowest income bracket (i.e., less than $10,000 - $29,000) were married or living with a partner. This rate rose steadily, as 82.7% of mothers in the second lowest income bracket ($30,000 - $49,000), 90.3% in the second highest bracket ($50,000 - $74,999), and 92.8% of mothers in the highest income bracket (i.e., $75,000+) were married or living with a partner.

[103] Some additional post hoc analyses were conducted to try to examine this possibility. Specifically, exposure-intention correlations were assessed between mothers in each of the four income categories. Mothers who reported the lowest income levels had the weakest relationship between estimates of their children's exposure and their future exposure intentions ($r = 0.40$, $p < .001$), compared to those in the second lowest ($r = 0.58$, $p < .001$), second highest ($r = 0.45$, $p < .001$), and highest income brackets ($r = 0.53$, $p < .001$).

Chapter Thirteen

Summary and Conclusions

August of 2011 marked the launch of the “Vinci” tablet in the American marketplace. Like existing technology of its kind, the Vinci uses an android operating system, sells for $400 - $500 apiece, and has a variety of “apps” available for purchase. Unlike other previously available digital tablets, however, the Vinci was created specifically for infants and toddlers. Those familiar with the *Baby Einstein* video phenomenon may recognize some similarities in the marketing of this new product. The Vinci is named for famous artist, inventor, and scientist, Leonardo da Vinci. It was created by a mother eager to fill a perceived gap in electronic learning opportunities for her own baby. Its website declares that the Vinci “taps into the Windows of Opportunity” in early childhood education in order “to ensure your children get the best start in life.” The Vinci’s tagline: “Inspire the Genius.” Its motto: “Do the best today, to be in the best place for tomorrow.”

The Vinci tablet, with its seductive marketing, hits the scene at a time when researchers are still scrambling to understand the nature and impact of television and video exposure in the lives of babies and toddlers – media that have been created for young children and marketed heavily to their parents for nearly 15 years. Also ruefully behind the times is our understanding of what factors and perceptions drive parents’ decision-making about their young children’s screen media exposure. What is clear is that today’s parents encounter an abundance of mixed messages regarding infant/toddler media use. They find enticing marketing claims on DVD covers and associated websites, hear warnings of developmental delays from their pediatricians, receive media-use tips from parenting magazines, and read news articles that laud baby media products as "must have" baby shower gifts one minute and decry the lack of documented learning from the same videos the next. Amidst this cacophony, parents must decide what constitutes an appropriate media diet for their own young children. Understanding what parental perceptions and life factors determine infants' and toddlers' exposure to television and video is not only necessary in its own right, this information can also inform our early knowledge and subsequent research on parents' use of new media technologies with their young children as well.

At the outset, the present study accepts the premise that the majority of existing research links heavy infant/toddler television and video exposure to disadvantageous health and developmental outcomes, and that many clinicians and child advocates seek to reduce this exposure. As such, this study examines in-depth the maternal cognitive and structural life circumstance factors predictive of more or less television and video exposure among infants and toddlers. Notably, if the general research findings were different - video content was found to boost young children's learning and the general desire was to increase young children's exposure to this medium - the need for and approach of this study would remain the same. Understanding which children are more likely to experience unfavorable outcomes based on their extent of exposure to television and videos and intervening where appropriate requires a thorough understanding of the factors which drive exposure rates. As described in the previous chapters and the summary of findings below, this dissertation study takes important steps in doing so.

Summary

This dissertation research consisted of three phases. The first phase, reported in Chapter Three, was an in-depth interview study with mothers regarding their perceptions of television and video use with their infants and toddlers. This study elicited the discrete underlying behavioral beliefs held by mothers, which were used in the second two research phases. The majority of these behavioral beliefs had not been addressed in prior research, which has focused mainly on parents' perceptions of the educational value of infant/toddler media. Further, the preliminary interview study indicated sufficient variability in mothers' attitudes, perceived norms, perceived behavioral control, and use of foreground and background TV/videos with young children to construct a survey instrument and study predictive relationships on a larger scale.

The second research phase consisted of a pilot survey study to inform the construction of the main dissertation survey (i.e., phase three). The main purpose of the pilot study was to determine the appropriate operationalization of children's exposure and the corresponding wording of the integrative model items. The findings of this study indicated that operationalizing foreground and background TV/video exposure in terms of "more than one hour a day on at least several days each week" was preferable to framing them in terms of keeping children from being exposed at all. This was due largely to the rarity of mothers who intended or actually kept their children from either type of TV/video exposure, as well as practical considerations of the feasibility of aiming to eliminate children's total TV/video exposure. The results also provided preliminary insights into the relationships between exposure and the integrative model constructs, which garnered further support for moving forward with the larger study.

The survey conducted in phase three comprised the main dissertation research. The survey itself asked mothers to report the extent of time weekly their infants and toddlers spent in the presence of foreground and background television and video programming, as well as the expected outcomes, attitudes, perceived normative pressure, perceived behavioral control, and intentions associated with children's exposure. To compete these constructs (i.e., the integrative model) against the basic, unalterable, realities of mothers' lives as explanation for their children's TV/video exposure, the survey inquired about their structural life circumstances as well. Finally, survey items addressed mothers' beliefs about the nature of children's brain/intellectual development and measured their regulatory focus orientation in order to examine how these constructs might contribute to the prediction of children's TV/video-viewing. The findings, summarized below, indicate that each of these constructs plays a role in mothers' decision-making and children's exposure to television and video content.

Infant/toddler exposure to foreground TV/videos. Most scholarly research and popular interest in young children's exposure to screen media focuses on their viewing of foreground television and video programming. This type of programming, produced specifically for young children, is turned on with the intention that young children will watch it. Chapters Six and Seven examined the extent to which infants' and toddlers' reported rates of foreground TV/video exposure could be differentiated as a function of their mothers' demographics, structural life circumstances, and cognitions. The findings within these chapters indicated that mothers' structural life circumstances and cognitions (i.e., attitudes, perceived normative pressure, and perceived behavioral control) contributed independent predictive power, while demographic variables explained very little of the variance in children's estimated exposure to foreground TV/videos. In short, neither the integrative model nor structural life circumstances account for mothers' behavior (as measured by their reports of children's exposure) as fully alone as these models explain together.

Of the integrative model constructs, mothers' attitudes toward infant/toddler foreground TV/video viewing constituted the strongest predictor of children's estimated exposure and of mothers' intentions regarding future viewing. This was true regardless of whether or not the structural circumstance variables were included in models, suggesting that mothers' perceptions that foreground TV/video-viewing is mostly a good or bad thing for their children is the strongest determinant of their children's viewing. Moreover, mothers who perceived greater personal control over that viewing had children who spent less time with foreground TV/videos and also intended to let them watch less in the future, above and beyond the influence of actual structural life circumstances. Perceived descriptive norms also played a role such that mothers who felt that most other mothers were allowing their infants and toddlers to spend time watching foreground TV/videos also had children who spent more time viewing, regardless of structural life circumstances.

As mentioned above, the daily milieu of mothers' lives also played a role in their intentions and the reported time their children spent viewing foreground television and videos. Particularly predictive structural life circumstance variables included those which are believed to influence the availability of media for the child and others. For example, having access to more sources through which to view video content (e.g., TV in the car; portable DVD player), childcare arrangements that use TV/videos, and a mother who watches a lot of TV/video programming herself were all related to higher rates of television and video exposure among infants and toddlers in this study. Moreover, those relationships held even after accounting for mothers' cognitions regarding children's foreground TV/video exposure. Several factors which were believed to impact mothers' need for and control over children's TV/video use were also predictive of children's exposure rates. The most strongly predictive of these variables was child's age, suggesting that children may show more interest in television and videos and be harder to keep from this exposure as they advance from infancy into toddlerhood.

Despite the persistence of these relationships, many were found to be partially mediated through the cognitive constructs of the integrative model. In particular, mothers' attitudes appeared to intervene in relationships between circumstances regarding the access to video media among target children and others in the home (e.g., non-traditional sources for video-viewing; mothers' time spent viewing TV/videos) and children's estimated weekly foreground exposure as well as mothers' intentions regarding future exposure. That is, structural circumstances of mothers' lives were found to influence children's viewing by impacting mothers' attitudes toward that viewing, as well as by directly affecting children's exposure. While mothers largely act in ways that are consistent with their perceptions, then, many also act in ways that are not in-line with their perceptions due to the structural realities of their daily lives.

Behavioral beliefs. In the eighth chapter, analyses focused on mothers' discrete behavioral beliefs regarding infant/toddler foreground television and video use. These beliefs constitute mothers' favorable and unfavorable expected outcomes associated with their children's TV/video-viewing, and were elicited from a sample of mothers through the preliminary interview study described in Chapter Three. As anticipated, the analyses in Chapter Eight indicated that the predominant nature of mothers' underlying expectations was strongly predictive of their general attitudes toward TV/video use with their infants and toddlers. Analyses of individual behavioral beliefs suggested that beliefs about the cognitive and educational value of television and videos for children were not the most discriminating beliefs among mothers. That is, they did not distinguish as strongly between mothers whose children spent more or less time viewing compared to several other beliefs, despite the fact that these cognitive/educational value beliefs have been the only ones addressed in prior research (e.g., Rideout & Hamel, 2006; Zimmerman, Christakis & Meltzoff, 2007).

What is more, the findings in this chapter indicated a multidimensional structure to mothers' behavioral beliefs. Various behavioral belief dimensions were differently predictive of intentions and children's exposure and not always mediated through mothers' attitudes. Thus, understanding the nature of mothers' beliefs along certain dimensions (e.g., negative beliefs; instrumental parenting function beliefs) contributes explanatory power in accounting for children's foreground TV/video exposure rates, beyond knowing merely whether their beliefs are predominantly favorable or unfavorable. The importance of understanding the relationships between behavioral beliefs and mothers' behavior is reinforced by the fact that these beliefs would constitute the direct goals of potential exposure-reduction campaign messages (i.e., enroute to changing parents' behavior).

Perceptions of brain/cognitive development. Chapter Nine evaluated the influence of mothers' perceptions of the nature of children's brain and intellectual development in determining their behavioral beliefs and the relationships between behavioral beliefs and attitudes, intentions, and estimates of children's foreground TV/video exposure. One goal of this chapter was to develop a measure of mothers' beliefs in a "critical window" of children's brain development during which experiences were particularly crucial and impacted lifelong intellectual potential. The findings indicated that the majority of mothers believed that experiences between birth and three were crucial for brain development and intelligence, but that more variability existed among their beliefs in the role of genes in that development. Still, stronger perceptions of the role of experiences between birth and age three were predictive of stronger beliefs that television and video programming had favorable cognitive and educational value for infants and toddlers. Conversely, those who believed strongly in the role of children's genes in determining their brain development and intelligence had more neutral beliefs about this potential.

Despite the fact that mothers who believed more strongly in the role of experiences between birth and three had stronger perceptions that TV/videos could be educational for their babies and toddlers, these mothers did not have attitudes, intentions, or estimates of their children's actual exposure that were more in-line with their beliefs of the cognitive/educational value of television and videos. In fact, the most consistent moderating relationships suggested that mothers with a stronger belief in the role of genes in determining brain and intellectual development were less likely to have attitudes, intentions, and estimates of their children's exposure that were in-line with their beliefs about unfavorable health and lifestyle implications of that exposure. The results suggested instead that beliefs in the instrumental value of infant/toddler foreground TV/video use for parenting were more predictive of actual reported use among these mothers.

The overall findings of this chapter revealed that many mothers do perceive a "critical window" of their children's brain development between birth and age three. Further, their general beliefs about the nature of children's brain and intellectual development vary, as evidenced by the variability on the "belief in the role of genes" subscale. Given these findings, as well as the extent to which the "critical window" is referenced to market baby and toddler products of all kinds, this is an area that warrants continued focus. Additional efforts should be made to develop a stronger measure of these beliefs among parents, and further examine how they may influence beliefs about and use of television and video programming with infants and toddlers.

Regulatory focus. Chapter Ten investigated the possible influence of mothers' regulatory focus orientation on their behavioral beliefs, attitudes, intentions, and estimates of their children's weekly time spent viewing foreground TV/videos. Mothers who had a particularly high motivation to pursue possible rewards (i.e., promotion-focused) tended to have lower endorsements of beliefs regarding the possible negative outcomes of TV/video viewing for their children (i.e., prevention-oriented beliefs). Conversely, those who were more motivated to avoid possible failures or undesirable outcomes (i.e., prevention-focused) tended to have lower endorsements of beliefs regarding the benefits of viewing for young children (i.e., promotion-oriented beliefs).

What is more, mothers who were highly prevention-focused were found to have attitudes, intentions, and estimates of their children's exposure that were more consistent with their prevention-oriented beliefs, compared to those with a weaker prevention focus. Highly promotion-focused mothers also had attitudes that were particularly in-line with their prevention-oriented beliefs. This suggests that prevention-focused and promotion-focused mothers may be generally more conscientious about seeking information about possible implications of children's TV/video-viewing, which may also lead them to rely on their perceptions of possible undesirable outcomes if they have encountered warnings about negative effects of infant/toddler television and video use.

In predictions of intentions to keep children from viewing TV/videos at all, however, mothers who were highly promotion-focused relied on their promotion-focused beliefs more than did other mothers. These findings imply that the beliefs that mothers bring to bear in deciding on their infants' and toddlers' foreground TV/video use depend not only on their regulatory focus and the nature of their underlying beliefs, but also how the specific behavior is defined. That is, the same mother might consider the possible benefits of her child's viewing most strongly when considering whether to let the child view at all, and the possible harms of viewing when considering how much her child should view.

Infant/toddler exposure to background TV/videos. This dissertation study also examined mothers' perceptions and structural life circumstances as predictors of their children's estimated exposure to background television and video programming. This form of exposure consists of time when infants and toddlers are in the presence of programming intended for adults or substantially older children. Background media in the lives of young children is a very recent area of research focus, and the findings from chapters Eleven and Twelve offer important early insights about the maternal perceptions and structural life circumstances that impact the extent of children's exposure to this media. Children in this study spent more than 20 hours a week in the presence of background TV/video programming, reinforcing the need for more attention to this area. Given that the full model predicted more than a third of the variance in children's estimated background exposure, using the integrative model and structural circumstance frameworks to further investigate parent-level influences on that exposure seems appropriate.

In fact, the findings in these chapters indicated notable similarity in the operation of the integrative model in accounting for children's background and foreground TV/video exposure. Specifically, attitudes and descriptive normative pressure were strong predictors of background exposure and mothers' intentions regarding children's future background exposure, as they were of foreground exposure and intentions. One divergence concerned perceived behavioral control, which was predictive of children's foreground TV/video exposure but not of background TV/video exposure. This may have been due in part to the particularly high degree of personal control mothers' felt over their children's exposure to background television and video programming.

Despite mothers' high perceptions of behavioral control, structural life circumstances as a set contributed the most independent variance to the prediction of children's estimated background TV/video exposure, compared to mothers' intentions regarding background exposure and foreground TV/video exposure and intentions. Especially predictive of more weekly background exposure was the reported amount of time that mothers spent viewing their own television and video programming. Though some of the influence of this variable was mediated through mothers' higher attitudes and perceived descriptive norms, the majority of the relationship was unmediated by the integrative model constructs. For many mothers, then, their own TV/video viewing contributes substantially to their infants' and toddlers' exposure to background television and videos, and in ways that are often not consistent with their perceptions of the benefits, harms, or normativity of that exposure. A particular remaining question is whether the bulk of young children's background TV/video exposure happens when their mothers are present, or mothers only know about (and thus only report) the background exposure that occurs while they are present.

Additionally, children who had their own bedroom, apart from parents or siblings, tended to have lower estimated exposure to background TV/videos. This finding held regardless of whether the integrative model constructs were in the model, suggesting that merely having space away from areas where others are watching television may shield children to a certain extent from excessive background exposure. Similarly, having more sources for video-viewing (e.g., portable DVD player; laptop) was associated with lower exposure to background TV/videos among children in this study. As this "access" variable was related to higher exposure to foreground TV/videos in Chapter Seven, it seems young children with many available video technologies in the home may be less subjected to others' viewing because they can view their own foreground programming instead. Thus, potential campaigns targeting one form of exposure among infants/toddlers would have to be designed with the understanding that changes to children's media access could have repercussions for the other form of exposure as well.

Limitations and directions for future research

Despite the wealth of lessons learned from the analyses described above, this study has various limitations which leave some questions unanswered and point to important next steps for follow-up research. Perhaps the foremost limitation of this study is the cross-sectional nature of the data. Because participants were surveyed only once the true causal order of relationships cannot be conclusively determined in this study. For example, it remains possible that mothers' prior behavior (i.e., TV/video use with their infants and toddlers) is in fact driving their attitudes, perceived norms, and perceived behavioral control regarding their children's television and video exposure, rather than the reverse. Additionally, it is possible that one or more factors that were not measured in this study may be causing both children's TV/video exposure and mothers' cognitions (i.e., relationships could be spurious). Given the lack of existing research regarding explanations of young children's media exposure, however, findings from this cross-sectional study represent a valuable launching point for follow-up confirmation and exploration of identified relationships using diverse methodologies.

Due to the importance of matching the explicit features of a behavior (i.e., time, action, context, and target) to the measurement of the intentions, attitudes, perceived norms, perceived behavioral control, and underlying beliefs related to that behavior within the integrated model framework (Fishbein & Ajzen, 2009), it was necessary to choose some quantity of TV/video exposure time in which to frame survey questions. Unfortunately, this method sacrifices the examination of these psycho-social constructs related to TV/video use as continuous variables for the sake of greater model efficiency and predictive ability. “More than an hour a day during at least several days each week” was chosen because this frequency and duration was the closest approximation of the mean and median of young children’s foreground media use determined by existing surveys (e.g., Anand & Krosnick, 2005; Linebarger & Walker, 2005; Rideout & Hamel, 2006; Rideout, Vandewater & Wartella, 2003; Thompson & Christakis, 2005; Zimmerman, Christakis & Meltzoff, 2007) and reflected in the preliminary elicitation interview study. This quantity frame also constituted the most robust predictive model in the pilot study. As such, framing questions around this exposure time-frame emerged as the best way to distinguish between those who intend (and do) expose their infant or toddler to more or less media in relation to the best estimate of the population mean.

Moreover, the definition of mothers’ “behavior” as children’s estimated TV/video exposure is also potentially problematic in this study. It is possible that asking mothers to report the full extent of their children’s exposure to television and video content, rather than merely the amount that mothers themselves turn on for the children, may have introduced extra error into estimates of children's exposure. Furthermore, mothers' cognitions and structural life circumstances may have yielded stronger predictions of the amount of exposure that mothers directly turn on (i.e., compared to children's full exposure), since this amount of viewing reflects mothers' actual behavior. If either of these things is true then relationships in this study would likely have been under-estimated in comparison to relationships with the amount of children's exposure for which mothers are directly responsible.

The decision to use children's total exposure as a proxy for mothers' behavior was made based on several considerations. The first consideration was practical value. That is, children's total foreground media exposure is of more practical concern than merely the amount of time their mothers put on TV/videos for them to watch. Additionally, measuring only the time that mothers specifically turn on the television for the target children to watch could have biased findings on the basis of the amount of time mothers spend in the home with their children. This operationalization could have led to higher estimates among children of stay-at-home mothers, for example, although the present study indicates that these children are not reported to view more foreground programming than their peers. Of final consideration were the results of the elicitation interview study which suggested that the amount of time that mothers specifically put on TV/videos for their infants/toddler would overlap substantially with the total amount of time children are exposed to foreground TV/videos. Future studies should use diverse methodologies to determine how well mothers can estimate children's total exposure to TV/video content, including that which occurs when children are in the care of others, as well as the extent to which mothers are in control of their children's total exposure. Additional remaining questions include the extent to which fathers' use of TV/videos with young children can be predicted from their cognitions and life circumstances.

Furthermore, in this research, analyses pertained to the total use of foreground TV/video programming with infants and toddlers, rather than segmenting that exposure by content (e.g., children's educational; children's entertainment programming). Because this research relied upon parent report, it seemed likely that mothers would be more accurate in predicting their children's total amount of typical exposure. While they were asked to report on the percent of that viewing that fell within certain content-types, it seemed probable that those estimates would have greater inaccuracies compared to a global estimate. Furthermore, since existing research has not verified that infants and toddlers learn more from commercially available programs billed as "educational," compared to those that are merely for entertainment, there was not a strong practical reason to predict viewing within content-types. Still, it is conceivable that various maternal cognitions would differently predict children's exposure to foreground programming across content categories, and future research should examine this possibility.

There are also a number of factors that may impact children's exposure to foreground and background television and video programming which were not included in this study. For example, mothers may rely more or less heavily upon foreground TV/video use with children of different temperaments or cognitive abilities. In fact, one recent study suggested that toddlers with more difficult temperaments (e.g., more difficult to soothe; lower attentional control) had higher rates of foreground TV/video-viewing (Brand, 2011). Unfortunately, child-level predictors like temperament and cognitive development could not be measured in this study due to survey space limitations. Similarly, measuring the other categories of underlying beliefs (i.e., normative beliefs; control beliefs) would have enabled greater understanding of how mothers' cognitions influence children's exposure to television and videos but were omitted due to space limitations. Given that this study supports the further application of the integrative model in this research domain, follow-up research should include these categories of underlying beliefs as well.

Implications

It is clear that spending time in the presence of television and video programming has become a normative behavior among American infants and toddlers, though prior research provides scant illumination of how parents perceive of TV/video in the lives of their young children or what their perceptions mean for the extent of children's exposure. Results of this dissertation project fill gaps in our understanding of the maternal and family factors which influence infants' and toddlers' exposure to foreground and background television and video programming. These findings have numerous implications, both theoretical and practical.

Theoretical implications

In particular, this research tests and extends the boundaries of several popular behavioral and communication theories. The results indicate that the integrative model works quite well in explaining infants' and toddlers' foreground and background television and video exposure. Its components account for a substantial amount of variance in these behaviors, despite the fact that the behaviors are other-oriented (i.e., pertains to mothers' use of TV/video with their children) and do not constitute mothers' "behavior" per se, but rather children's exposure as a proxy for mothers' behavior. Of particular note is the finding that the integrative model predicts children's background exposure relatively well – a form of exposure that, based on logic and commentary from the elicitation study, seems to be largely unintended and not explicitly considered by many parents.

While it is a useful tool for predicting young children's TV/video exposure, results suggest that the integrative model is not an adequate instrument for explaining their exposure by itself. Keeping in mind the fact that these analyses did not constitute the truest test of the model (i.e., because data was cross-sectional; mothers' "behavior" was inferred from total children's exposure), it seems that accounting for the structural realities of mothers' lives is also important in explaining children's TV/video exposure. Given that the majority of research using the integrative model and its antecedents has focused on self-oriented behaviors (e.g., exercise; safe sex behaviors), it is possible that factors considered "distal" in the model intervene more directly in the performance of other-oriented behaviors.

Additionally, this is the first known study to apply regulatory focus theory within the domain of children's TV/video exposure. In fact, like the integrative model of behavioral prediction, very few instances were found in the literature where this theory was employed to predict other-oriented behaviors. Though mothers' regulatory focus orientations did not contribute substantial explanatory power alone in this study, they were found to influence the underlying beliefs that mothers drew upon in decisions regarding their children's foreground TV/video exposure. These findings, combined with those pertaining to mothers' perception of the nature of brain and intellectual development, indicate that decision-making and use of television and video programming with young children does not exist in a vacuum. Rather, other aspects of mothers' personalities and beliefs about childhood play a role in influencing their beliefs about children's TV/video use and the extent to which they allow their children to view TV/video programming.

Practical implications

The results of this dissertation research also have practical implications for the design of future campaigns aimed at reducing infant/toddler exposure to television and videos. As stated by integrative model founder, Dr. Martin Fishbein, "All too often, behavior change interventions are based on intuition concerning what needs to be changed and unverified assumptions about how these changes can be accomplished" (in Backer, David & Saucy, 1995; p. 255). Though they have not comprised full-scale campaigns, several organizations like the American Academy of Pediatrics and the White House Taskforce on Childhood Obesity have already set out to reduce early childhood exposure to television and videos through parent-directed messages. These and other endeavors would benefit from the knowledge gained from the present research. The more campaign designers are aware of and address the various predictive factors uncovered here, the more successful their interventions are likely to be.

In particular, the present findings suggest that interventions intended to reduce mothers' use of TV/video programs with their infants and toddlers should address their beliefs about young children's TV/video exposure as well as their structural life circumstances, as neither set of factors is fully mediated through the other. Particularly important cognitions to target are the behavioral beliefs underlying attitudes, as attitudes were relatively strong predictors of both foreground and background TV/video exposure estimates and also partially mediated some of the structural circumstance factors. These data further suggest that, when aiming to reduce young children's foreground exposure, it might be particularly fruitful to target mothers' beliefs that using TV/videos with infants and toddlers can help them learn and have instrumental value for parenting. Some of the most predictive discrete beliefs within these categories had not been previously uncovered in published research, underscoring the necessity of conducting elicitation and survey research with the population of interest prior to the design of an intervention.

Among the structural life circumstance variables examined in the present study, the amount of time mothers themselves spend viewing television and video programs was particularly predictive of estimates of their infants' and toddlers' weekly foreground and background TV/video exposure. Thus, this factor seems to be an important behavior for a future intervention to address when aiming to reduce young children's TV/video exposure. Messages may seek to raise awareness among mothers of what their own viewing means for their children's exposure. Additionally, campaign messages should provide practical advice for reducing mothers' own viewing or minimizing the relationship between mothers' and children's exposure (e.g., suggest recording programs to watch while the child is sleeping).

Findings regarding mothers' chronic regulatory focus suggest that campaign designers should think carefully about the wording of intervention messages. Additional research regarding information processing is needed, but these data indicate that prevention- and promotion-focused mothers are somewhat likely to endorse different types of beliefs (i.e., prevention-oriented or promotion-oriented). These beliefs have different weights in the determination of their attitudes as well. As such, potential campaigns may need to include messages framed around possible rewards associated with limiting children's TV/video exposure (i.e., gain-framed) as well as messages framed around avoiding unfavorable child outcomes by limiting exposure (i.e., loss-framed) in order to effectively change or reinforce key behavioral beliefs among both promotion- and prevention-focused mothers.

Conclusion

This study and others reveal that American babies and toddlers have widely ranging rates of exposure to foreground and background television and video programming. The present research takes a closer look than related previous studies by employing theory to examine aspects of mothers' lives and cognitions that help explain the differences in their children's estimated exposure. Given the unprecedented number of media products created for children under two and marketed heavily to their parents, the current generation of children of infants and toddlers is a position unlike any generation before it. More than ever, continued efforts to understand the underlying factors and associated outcomes of media exposure for very young children is greatly needed to help parents make informed decisions about their media diets.

Appendix A. Mothers' descriptions of sources of injunctive normative pressure to use or not use foreground media with their infants and toddlers.

Perceived support/approval from people/groups
"*Oh yeah, everyone, you know? My whole family, his father's family, my friends, yeah.*" (1)
"My sister." [She has kids too?] *"Yeah she has 3 kids."* [Anybody else?] *"His father, he picks out the movies for the kids. I mean the doctor told me that it was ok, so, you know it was fine to show them television, just not too much. And I guess he knows."* (2)
"Her dad. Her dad was the one that noticed that she likes Sesame Street. He started sitting there watching TV with her at first, and then he told me what shows she likes, what shows she really pays attention to - stuff like that." [Anybody else?] *"My mom. She used to babysit her too some."*
"*Our friends with the 7 month old who watches - she thinks I'm crazy and it won't last, because it didn't work for them.*" [Anybody else*?] "My sister... People who read the [baby] books tend not to let their kids watch. I'm in a playgroup and they all let their kids watch. We went to a party at one of their houses and the TV was on during the whole party and no one was really watching. I faced him away from it."* (5)
"*Well, my sister, definitely. I mean she did it with her kids, but she has the same philosophy. I mean I have my philosophy because I watched my sister raise her kids and I think she did a fabulous job, so it works for her and so I've sort of adopted her philosophy, so she would agree with me."* (9)
"Everybody. Absolutely everybody. Everybody either doesn't mind or says 'hey, let her watch such and such' or 'why are you being mean? Let her watch Elmo right now.'" "Everybody thinks TV is not a big deal - even my fiancé." (17)
"Yes my girlfriend's daughter does it [your baby can read] and she's 16 months and she talks... like talks. Her vocabulary is extensive. Not even 2, she can talk well. She talks in sentences. And she reads." [Anybody else?] *"My sister. And the babysitter."* (19)
"*My family is pretty good about it, they know, you know, with this amount of kids that it's easier for me.*" (22)
"Yes. We've got a good friend with 2 young children, unfortunately just outside of your age group, who are huge fans of educational TV. And they're constantly getting her... that's why she's got the toy with the TV characters on it." (26)
"*Oh my mom. Well, when I call my mom and I'm like you know 'I'm trying to get stuff done and I can't do anything' she's like 'well, why don't you just turn on the TV? You know, set them on the couch and they'll be fine.' You know? I'm more-so trying to get a babysitter out of her, like 'hey can I drop my kids off for an hour or two,' and she's just 'oh turn the TV on, that works!'* (27)
"I mean, I'm a part of a moms' group, and they all laugh because they say, you know "wait until you have, you know wait until you have your 2nd or you have more", I mean people have no problem, I mean literally they put their kids in front of the television while they're in the shower." (35)
"I have a lot of female clients, so I know a lot of moms, and a lot of them have said, you know 'use the videos, because as he gets older he'll recognize the video and might have his favorite video and...when he's interactive with the video – you can now do a load of laundry, or you can take a shower, or you can wash some dishes. It helps because when they start to get older you don't want them to have a sense of 'I'm always going to be with Mommy'." (36)
"One thing is when we go to friends' – we have like playdates, and the other kids talk about – again they can't pick it up right now they're so young, at least I don't think they're able to, but they talk about the other characters and you know I'm like 'oh yeah, that could be fun' or 'oh that's an explorer! Oh maybe I should do that!' And it's more like peer pressure. " (3)
"*It actually, it came from both, it was family and also a bunch of friends that said 'oh, you've got to get these videos! They're great!'*" (12)

Perceived neutrality from people/groups
"…no one has really said to me like 'oh you shouldn't be watching TV' or 'you shouldn't have her sitting in front of the TV' or anything, so, I haven't really felt that yet." (32)
"No, I mean I… actually the only person I was kind of nervous about was my mom. And then one time I talked to her about it and she said 'honey, you watched Sesame Street every single day,' so it seems like as long as you, it seems to be reasonably socially acceptable to let your children watch TV as long as you pick the better programs." (15)
"I also think that like my grandparents, or her grandparents wouldn't be opposed to it, so you know I don't feel pressure from my peers or my parents really one way or another, at this point. Maybe that will come later when she's older. And I guess that would answer the next question too, as far as disapproving." (31)
"Not that I know, no. Not that I really pay attention to – it's basically my own choice." (25)
Perceived disapproval/non-support from people/groups
"Like, for instance I was getting WIC for them, and they were telling me not to let them watch so much TV." (28)
"Well I think that there are certain people within like the church community or our community who are you know fairly critical of people who let their smaller children watch TV. So, it's true there's a little bit of that." (23)
"I don't know where this comes from, but I feel a little bit embarrassed that she does watch an hour and a half, you know even if it's indirect… So, there's something there, about the social norms I guess with, or in my community that I am in that makes me feel that way… I think there's just a sense that… 'if you were a better parent you wouldn't you know show them any TV,' or you know?"(31)
"I would say not with my son's age group. Actually, maybe with my son's age group – there's always those people out there with obesity. I mean, there's people who will be like "oh, well if your kid's getting too fat he's watching too much TV. Don't put your kid in front of the TV." (33)
"That would be most of the other people in our life. My parents are early childhood educators, and most of the rest of our friends are in the education system, and they're not big fans of television." (26)
"Yes, her father. He doesn't let her watch TV at all." (18)
"My mom would definitely disapprove. I think most other people would be kind of neutral… "I think my husband would generally disapprove of you know excessive amounts of television." (13)
"Pretty much my husband's whole family is, they're pretty anti-that sort of thing. They're more like outdoorsy people. Kinda like shop at the organic food store, don't shave their armpits. But I like it – I think it's great. I mean, not so much armpit hair, but… But they're healthy." (34)
"Like I said just our pediatrician, you know really follows the Academy's recommendation, so." (35)
"Maybe like my grandmother – she's old fashioned and she thinks…you learn by experience and you should interact with him to teach him these things. And she doesn't understand why everybody's always playing videos… Like she feels like you should be doing it the way that they did it with games and you know, like nursery rhymes and songs and you know, you personally interacting with your baby – not you know a screen with something on it." (37)
"…I think there's that negative stereotype that like sitting your kids in front of the TV is bad, so I think that if a parent openly admits that, it makes them seem like a worse parent… But I think we all try to be super-parents, and for us like sitting a kid in front of the TV might mean in some crazy twisty world that we're a bad parent for doing that." (32)

Appendix B. Mothers' descriptive normative beliefs about foreground media use with infants and toddlers.

Few parents of infants/toddlers use TV/videos
"Not very many." [they don't use TV?] "No. Half of them probably read books to their babies." (7)
"It's probably like… actually I think like three quarters of my friends don't like the TV. Pretty much everybody that I know has little kids, and…most of them I don't think… of course they don't get it either, these are like their first kids they're workin on and I'm like 'oh my God, just wait.'" (22)
Some/half parents of infants/toddlers use TV/videos
"I'd say probably about 50/50." (2)
"I'd say about 50% of my friends." [and 50% don't show them anything?] *"Yeah. 50% of my friends don't even have TV." (16)*
"Most of the people that I know choose not to show them a lot of television at all. But I know another majority of people who most of them work full-time jobs who show them enormous amounts of TV – like it's on all day long. So I guess there's probably a middle of the road for each. I guess it could go one way or the other…" (25)
Most or all parents of infants/toddlers use TV/videos
"Probably 99%. And the 1% would be the ones that send their kids to daycare, most of my friends that have kids are stay-at-home moms, so, I think I know one that has her kids in daycare, and I don't know what they do in daycare." (11)
"I would say 90% of the people I know. And I'm only leaving the 10% because I can't think of anyone right now, but there probably is someone. I guess I should just say everybody." (14)
"If I have 10 friends that have kids my kids' age, then 11 of them do, literally. I'm kind of the odd friend, I'm the 'all my kids have to eat fruits and veggies' you know, we don't use the TV to babysit. I'm like the only one that I know that's like that." (27)
"I know most of my mothers, or most of my friends that are mothers watch TV with their children – everyday. Much longer than I do." (29)
"*I don't want to say everybody - that's not good, that's generalizing. I would say…98 %. Most of the parents with the kids under 2, they're showing their children some type of DVD or TV program."* (36)
"But I think that if you're having kids in the now, that you most likely are playing stuff for your kids. I would say pretty much everybody that I know that has at least 6months on, I know I'm doing it kind of early on, but that's the way I wanted it to be…" (37)
Depends on the age of the child
"I'm not really sure. I don't know. I know that most like around the 2 age, like 1 and a half to 2, use television." (13)
"It's usually those that have a child that's at least a year. That seems to be, that's just from what I'm sensing, that seems to be when at least when my friends are showing more TV to their children." (31)
"I guess it's a little different because she's only 6 months, it's more for the moms I know that have babies that are little don't use it. But when you broaden it up to 2, I feel like it's a lot. I guess that like most of the parents I know of toddlers who are you know 15 months or whatever, older, I feel like they do show them television. I would say, maybe that would be like 75% of those people…" (10)
Don't know
"I honestly don't know." [It's not something you talk about?] *"No – it's more like 'alright, we're away from kids!' And I don't know that many people with children in that age group. I had to think, I'm like… since his birthday is in 2 weeks, I was like 'ok, I want kids at the party…and…who's got kids? Who has kids??'"* (21)
""Under 2? I honestly don't know a whole lot of kids under the age of 2. I mean I know kids, but I don't really hang out with them to know how much TV they watch." [and it's not something you talk about with other parents?] *"No."* (28)
"I don't really honestly know that. I would probably say 0. I don't really know anybody else with kids under 2 other than my niece. (34)

Appendix C: Mothers' responses to: *"To what extent do you believe the experiences that children have as babies/ toddlers impacts what they'll be like when they're older?"*

Infant/toddler experiences mold brain structure/function
"A large extent. The child's brain is known to be amorphous- all paths and options are open to it. The paths that get used regularly become the preferential paths of choice. So, if you train young children to use their fast-switch paths- lots of short attention span, lots of sugar – you start firming them up into those short-switch modes of behavior, which in my mind is a large cause of why we've seen a massive increase in ADHD." (26) *"I think it greatly influences how they are going to develop. And they don't totally forget… since they are at the stage where they absorb everything and pretty much most of their brain development happens at this age, and then it slows down. So I feel that you know all our positive influences- as much as we can in the current environment, whatever we give them – it's definitely going to shape them as individuals."* (30) *"I mean I do think the more stimulation a child has the more capable they are of learning, I mean if they're, if the brain is, you know, not exposed to a lot of things, then… I mean I do think that it is a permanent effect."* (34) *"100%. Like those first 3 years I believe are the most critical, crucial. It has to do with courses that I've taken, and they have so many neurons, and that you need to make all those connections, and then as a part of the natural process they, you know, you have so many brain cells and then they start to die off as they get older. And so you want to give them many connections, and stimulate the 5 senses and everything as much as you can as early as you can." (35)*
Infant/toddler experiences start establishing patterns of learning-related behavior
"Usually, unless there's a trauma, kids don't remember anything before the age of 4, but it sets a pattern for the rest of their life." (5) *"Everything you're doing with your baby right now they're not going to remember. But, I think that it…sets the groundwork I guess for, you know, a good relationship later and to have them be sort of secure in themselves and like how they explore and that type of thing."* (10) *"Huge impact – yeah… You're basically setting up their entire way of life, right from the beginning, you know? And every little thing you do is creating their path."* (25)
Impact of genes is stronger than infant/toddler experiences for brain development/learning
"They turn out how they turn out. I don't think it's the television, I don't think it's the books. I didn't know my 4-year-old was going to be autistic, but it happened. Because he wasn't always like that, he was smart too when he was 1 to 2." (7) *"…I think brains and intelligence has a lot to do with genetics, and you know, smart parents have smart kids generally, and dumb parents have dumb kids… If you're going to have a smart baby – the wiring is already there. If you are going to have a dumb baby – it's already wired."* (9) *"… you have all of these toys and things that are supposed to help them develop all these skills, and it really will just happen when it's going to happen… And you'll notice that there's no product in the market that's supposed to help your children cut their teeth any faster? And so I've always sort of thought about it that way – that it's like cutting your teeth, that a kid's going to learn how to walk when they learn how to walk, and they're going to learn how to talk when they learn how to talk."* (15)

Impact of later childhood experiences is stronger than infant/toddler experiences for brain development/learning
"At this age? Not really." (4) *"As for being under 3 and having that influence them for when they're older, I don't know if it really influences them all that much I guess. Mainly school-age I suppose."* (24) *"Yeah, I would say that, I haven't really thought about these I guess, I think that the 0 to 3 is not as important as like the 4 to 7 or like the preschool/school-age, only because you see so many kids that are like classified as 'late bloomers,' or they do things a little bit later, and they still turn out to be perfectly fine, and seem to be as normal as everyone else."* (32)
Unsure of the impact of infant/toddler experiences on brain development/learning later in life
"I think their environment really contributes to their personalities. I just don't really know to what extent. I think if they are subjected to like abuse that would be really damaging. But, being in a caring and loving home, and being in a different caring and loving home – I'm not sure how much different that would make." (14) *"I'm not sure because I don't remember. I'm not sure how early I have my earliest memories. So, it's uncertain… I'm not sure how this will influence his development, I just, you know, try and make it positive and spread things out a little bit so he's open to a variety of different things."* (21) *"I don't know. I think, like I said, I watched a lot of TV when I was, you know, younger, and now I just feel like, you know, I missed out on a lot."* (27)

Appendix D

OFFICIAL SURVEY

SCREENER (ElgScrn)**:** Are you the mother of at least one child who is between 3 months and 24 months old?

1 YES [Directed to privacy/consent message]

2 NO [Ineligible – directed out of the survey]

----New Page---

[Privacy/consent message to eligible participants (directly following screener question)]

You are eligible to participate in this study.

You are being asked to join this study because you are the parent of a child who is between 3 months and 24 months old. We are interested in learning what parents of infants and toddlers think about young children's television and video viewing, as well as how much they use television and videos with their children.

If you decide to participate you will be asked to complete a questionnaire about your background, and your beliefs and behaviors related to your child's television and video use. The survey takes about 20 minutes to complete. You will be one of 750 people in the study.

There are no risks associated with participating in this study. If you are uncomfortable answering any of the questions you are free to not answer them. There is no direct benefit to you. However, your participation could help us understand the role of media in the lives of infants and toddlers and their families, which can benefit you and other families indirectly in the future.

All information that you provide will be treated in the strictest confidence and will only be used for academic research purposes.

Your participation is voluntary. There is no penalty if you choose not to join the research study. You have the right to drop out of the research study at anytime during your participation.

The Institutional Review Board (IRB) at the University of Pennsylvania is responsible for protecting the rights and welfare of research volunteers like you. The IRB has access to study information. All documents with your responses will have only code numbers on them and not your name to ensure confidentiality. You may contact the Office of Regulatory Affairs with any question, concerns or complaints at the University of Pennsylvania by calling (215) 898-2614.

Click below to take part in this research study. Participation in this survey will earn you entry into our quarterly prize draw.

Would you like to participate in this survey?

(1) Yes [DIRECTED TO FULL SURVEY]

(2) No [DIRECTED OUT OF SURVEY]

----New Page---

[Demographics and family structure.]

“We are interested in some background information about you and your family.

Remember, your responses to all questions will be completely anonymous.”

1. (Babies) How many children do you have who are between 3 months and 24 months of age?

(1) 1

(2) 2

(3) 3

(4) 4 or more

(99) prefer not to answer

[if respondent answers (1) show the following message for question #2: "Below, please type the first name of your child who is between 3 months and 24 months of age."]

[if respondent answers (2), (3) or (4) to question 1 show the following message for question 2: "Please think of your child between 3 months and 24 months of age **whose name comes first in the alphabet**. Please type the first name of that child below."]

2. ________________________ [space to write in child's first name].

"For the rest of this survey please think only of ______[type child's first name]_______. Please respond to questions **with only that child in mind**."

----New Page---

3. (ChildGend) What is [child's name]'s gender?

(1) boy

(2) girl

(99) prefer not to answer

4. What was [child's name's] date of birth?

16a. (ChildMonth) Month [Drop down menu – (1) January through (12) December; (99) prefer not to answer]

16b. (ChildDay) Day [Drop down menu – (1) 1 through (31) 31; (99) prefer not to answer]

16c. (ChildYear) Year [Drop down menu - (1) 2009 (2) 2010; (99) prefer not to answer]

5. (BrthOrdr) What is [child's name's] birth order?

(1) first and only child

(2) first with one or more younger siblings

(3) second child

(4) third child

(5) fourth child

(6) fifth child or later

(99) prefer not to answer

----New Page---

6. What is the month and year of **<u>your</u>** date of birth?

1a. (RespMonth) Month [Drop down menu – (1) January through (12) December; (99) prefer not to answer]

1b. (RespYear) Year [Drop down menu – (1) "1992 or later" through (52) "1940 or earlier;" (99) prefer not to answer]

7. (Relatnshp) What is your relationship to the [child's name]?

(1) Mother

(2) Step-mother

(3) Grandmother or Aunt

(4) Other mother figure

(99) prefer not to answer

8. (AddlChld) Besides [child's name], how many additional children are living in your home?

(1) 0

(2) 1

(3) 2

(4) 3

(5) 4

(6) 5 or more

(99) prefer not to answer

9. (AddlAdult) Besides you, how many additional adults are living in your home (by "adult" we mean an individual 18 years old or older)?

(1) 0

(2) 1

(3) 2

(4) 3

(5) 4 or more

(99) prefer not to answer

----New Page---

Sleeping Time

10. (waketime) About what time does [child's name] wake up on a typical morning to start his or her day? (Please choose the closest time estimate)

(1) 4:30 am or earlier

(2) 5:00 am

(3) 5:30 am

(4) 6:00 am

(5) 6:30 am

(6) 7:00 am

(7) 7:30 am

(8) 8:00 am

(9) 8:30 am

(10) 9:00 am

(11) 9:30 am

(12) 10:00 am

(13) 10:30 am

(14) 11:00 am

(15) 11:30 am or later

11. (sleeptime) About what time does [child's name] go to sleep on a typical night? (Please choose the closest time estimate)

(1) 5:30 pm or earlier

(2) 6:00 pm

(2) 6:30 pm

(3) 7:00 pm

(4) 7:30 pm

(5) 8:00 pm

(6) 8:30 pm

(7) 9:00 pm

(8) 9:30 pm

(9) 10:00 pm

(10) 10:30 pm

(11) 11:00 pm

(12) 11:30 pm or later

12. (childbdrm) Which option best describes [child's name]'s nighttime sleeping arrangement?

(1) [child's name] sleeps in a room with parent(s)/caregiver(s)

(2) [child's name] sleeps in his/her own room alone

(3) [child's name] sleeps in a room with one sibling

(4) [child's name] sleeps in a room with several siblings

----*New Page*---

13. (wakeups) How many times does [child's name] wake each night and need resettling on average?

(1) does not wake
(2) once a night
(3) twice a night
(4) 3 times a night
(5) 4 times a night
(6) 5 or more times a night

14. (bcktosleep) When [child's name] wakes in the night, about how long does it take for him/her to go back to sleep on average?

(1) less than 10 minutes
(2) 10 to 20 minutes
(3) 20 to 30 minutes

(4) 30 to 40 minutes
(5) 40 to 50 minutes
(6) 50 to 60 minutes
(7) 1 hour or longer

15. (naptime) How long does [child's name] spend napping during a typical day?

(1) my child does not nap at all

(2) less than 1 hour

(3) at least 1 hour but less than an hour and a half

(4) at least 1.5 hours but less than 2 hours

(5) at least 2 hours but less than 2.5 hours

(6) at least 2.5 hours but less than 3 hours

(7) at least 3 hours but less than 3.5 hours

(8) at least 3.5 hours but less than 4 hours

(9) at least 4 hours but less than 4.5 hours

(10) 4.5 hours or more

----New Page---

MEDIA EXPOSURE

[Foreground media exposure]

"The following questions are about **your child's television/video viewing** – that is, television programs and videos made for children that you or someone else turn on with the intention that your child will watch it at least a little. Your child may watch these programs or videos on any type of a screen- such as a television, computer or portable DVD player."

(16) (WkDayNum) On how many **weekdays** (Monday through Friday) in a typical week does [child's name] watch at least some television programming or video content?

(1) 0 days [SKIP TO QUESTION 21 – WEEKEND DAYS]

(2) 1 day

(3) 2 days

(4) 3 days

(5) 4 days

(6) 5 days

(99) prefer not to answer

(17) (WkdayBroad) Think of the last typical weekday when [child's name] watched at least some television/video programming.

How much time **on a typical weekday** does [child's name] spend watching television or videos? (If you are not quite sure please just take your best guess).

(1) less than 2 hours [SKIP TO 17A]

(2) at least 2 hours but less than 4 hours [SKIP TO 17B]

(3) at least 4 hours but less than 6 hours [SKIP TO 17C]

(4) at least 6 hours but less than 8 hours [SKIP TO 17D]

(5) 8 hours or more [SKIP TO 17E]

(99) prefer not to answer

(88) Not applicable [not asked bc of skip pattern]

17A) (WkdayNarrw1) Would that be:

(1) Less than 30 minutes

(2) At least 30 minutes but less than 1 hour

(3) At least 1 hour but less than 1.5 hours

(4) At least 1.5 hours but less than 2 hours

(99) prefer not to answer

(88) Not applicable [not asked bc of skip pattern]

17B) (WkdayNarrw2) Would that be:

(1) At least 2 hours but less than 2.5 hours

(2) At least 2.5 hours but less than 3 hours

(3) At least 3 hours but less than 3.5 hours

(4) At least 3.5 hours but less than 4 hours

(99) prefer not to answer

(88) Not applicable [not asked bc of skip pattern]

17C) (WkdayNarrw3) Would that be:

(1) At least 4 hours but less than 4.5 hours

(2) At least 4.5 hours but less than 5 hours

(3) At least 5 hours but less than 5.5 hours

(4) At least 5.5 hours but less than 6 hours

(99) prefer not to answer

(88) Not applicable [not asked bc of skip pattern]

17D) (WkdayNarrw4) Would that be:

(1) At least 6 hours but less than 6.5 hours

(2) At least 6.5 hours but less than 7 hours

(3) At least 7 hours but less than 7.5 hours

(4) At least 7.5 hours but less than 8 hours

(99) prefer not to answer

(88) Not applicable [not asked bc of skip pattern]

17E) (WkdayNarrw5) Would that be:

(1) At least 8 hours but less than 8.5 hours

(2) At least 8.5 hours but less than 9 hours

(3) At least 9 hours but less than 9.5 hours

(4) 9.5 hours or more

(99) prefer not to answer

(88) Not applicable [not asked bc of skip pattern]

----New Page---

"The following questions are about **your child's television/video viewing** – that is, programs that you or someone else turn on with the intention that your child will watch it at least a little. Your child may watch these programs or videos on any type of a screen- such as a television, computer or portable DVD player."

(18) (Wkdaybabvid) On a **typical weekday**, how much of [child's name]'s total television/video viewing is of **videos created specifically for babies** (like "Baby Einstein," "Brainy Baby" or "Your Baby Can Read")? (If you are not sure please make your best guess).

(1) None of his/her viewing

(2) A little of his/her viewing

(3) About half of his/her viewing

(4) Most of his/her viewing

(5) All of his/her viewing

(99) prefer not to answer

(88) Not applicable [not asked bc of skip pattern]

(19) (Wkdaychedu) On a **typical weekday**, how much of [child's name]'s total television/video viewing is of **children's educational programs or videos** (like "Sesame Street," "Dora the Explorer," "Barney" or "The Wiggles")? (If you are not sure please make your best guess).

(1) None of his/her viewing

(2) A little of his/her viewing

(3) About half of his/her viewing

(4) Most of his/her viewing

(5) All of his/her viewing

(99) prefer not to answer

(88) Not applicable [not asked bc of skip pattern]

(20) (Wkdaychent) On a **typical weekday**, how much of [child's name]'s total television/video viewing is of **<u>children's entertainment programs or videos</u>** (like "Spongebob Squarepants," "Scoobydoo" or Disney movies)? (If you are not sure please make your best guess).

(1) None of his/her viewing

(2) A little of his/her viewing

(3) About half of his/her viewing

(4) Most of his/her viewing

(5) All of his/her viewing

(99) prefer not to answer

(88) Not applicable [not asked bc of skip pattern]

----New Page---

"The following questions are also about **your child's television/video viewing**."

(21) (WkndNum) On <u>how many **weekend days**</u> (Saturday and Sunday) in a typical week does [child's name] watch at least some television programming or video content?

(1) 0 days [SKIP TO NEXT SECTION – CHILDCARE – Question 26]

(2) 1 day

(3) 2 days

(99) prefer not to answer

(22) (WkndBrd) Think of the last **<u>typical weekend day</u>** when [child's name] watched at least some television/video programming.

How much time on a **<u>typical weekend day</u>** does [child's name] spend watching television or videos? (If you are not quite sure please just take your best guess).

(1) less than 2 hours [SKIP TO 22A]

(2) at least 2 hours but less than 4 hours [SKIP TO 22B]

(3) at least 4 hours but less than 6 hours [SKIP TO 22C]

(4) at least 6 hours but less than 8 hours [SKIP TO 22D]

(5) 8 hours or more [SKIP TO 22E]

(99) prefer not to answer

(88) Not applicable [not asked bc of skip pattern]

22A) (WkndNarrw1) Would that be:

(1) Less than 30 minutes

(2) At least 30 minutes but less than 1 hour

(3) At least 1 hour but less than 1.5 hours

(4) At least 1.5 hours but less than 2 hours

(99) prefer not to answer

(88) Not applicable [not asked bc of skip pattern]

22B) (WkndNarrw2) Would that be:

(1) At least 2 hours but less than 2.5 hours

(2) At least 2.5 hours but less than 3 hours

(3) At least 3 hours but less than 3.5 hours

(4) At least 3.5 hours but less than 4 hours

(99) prefer not to answer

(88) Not applicable [not asked bc of skip pattern]

22C) (WkndNarrw3) Would that be:

(1) At least 4 hours but less than 4.5 hours

(2) At least 4.5 hours but less than 5 hours

(3) At least 5 hours but less than 5.5 hours

(4) At least 5.5 hours but less than 6 hours

(99) prefer not to answer

(88) Not applicable [not asked bc of skip pattern]

22D) (WkndNarrw4) Would that be:

(1) At least 6 hours but less than 6.5 hours

(2) At least 6.5 hours but less than 7 hours

(3) At least 7 hours but less than 7.5 hours

(4) At least 7.5 hours but less than 8 hours

(99) prefer not to answer

(88) Not applicable [not asked bc of skip pattern]

22E) (WkndNarrw5) Would that be:

(1) At least 8 hours but less than 8.5 hours

(2) At least 8.5 hours but less than 9 hours

(3) At least 9 hours but less than 9.5 hours

(4) 9.5 hours or more

(99) prefer not to answer

(88) Not applicable [not asked bc of skip pattern]

----New Page---

"The following questions are also about **your child's television/video viewing**."

(23) (Wkndbabvid) On a **typical weekend day**, how much of [child's name]'s total television/video viewing is of **<u>videos created specifically for babies</u>** (like "Baby Einstein," "Brainy Baby" or "Your Baby Can Read")? (If you are not sure please make your best guess).

(1) None of his/her viewing

(2) A little of his/her viewing

(3) About half of his/her viewing

(4) Most of his/her viewing

(5) All of his/her viewing

(99) prefer not to answer

(88) Not applicable [not asked bc of skip pattern]

(24) (Wkndchedu) On a **typical weekend day**, how much of [child's name]'s total television/video viewing is of **children's educational programs or videos** (like "Sesame Street," "Dora the Explorer," "Barney" or "The Wiggles")? (If you are not sure please make your best guess).

(1) None of his/her viewing

(2) A little of his/her viewing

(3) About half of his/her viewing

(4) Most of his/her viewing

(5) All of his/her viewing

(99) prefer not to answer

(88) Not applicable [not asked bc of skip pattern]

(25) (Wkndchent) On a **typical weekend day**, how much of [child's name]'s total television/video viewing is of **children's entertainment programs or videos** (like "Spongebob Squarepants," "Scoobydoo" or Disney movies)? (If you are not sure please make your best guess).

(1) None of his/her viewing

(2) A little of his/her viewing

(3) About half of his/her viewing

(4) Most of his/her viewing

(5) All of his/her viewing

(99) prefer not to answer

(88) Not applicable [not asked bc of skip pattern]

----New Page---

"The following questions are about your child's time in childcare."

26. (Childcare) Is [child's name] currently in any type of childcare, either in the home or out of the home?

(1) yes

(2) no [SKIP TO NEXT SECTION- BACKGROUND MEDIA EXPOSURE – Question 30]

(99) prefer not to answer

27. (ChldcrType) What type of childcare do you currently use for [child's name]?

(1) in home care with a nanny or relative (your home or nanny/relative's home)

(2) family-based home childcare (outside your home and with other children)

(3) childcare center, early learning center, or other non-home group program

(99) prefer not to answer

(88) Not applicable [not asked bc of skip pattern]

28. (ChldcrTime) How much time in a typical week does [child's name] spend in childcare?

(1) 10 hours or less per week

(2) 11 to 20 hours per week

(3) 21 to 30 hours per week

(4) 31 hours to 40 hours per week

(5) 41 hours or more per week

(99) prefer not to answer

(88) Not applicable [not asked bc of skip pattern]

29. (ChldcrTV) Does [child's name] ever watch television programming or videos while in childcare?

(1) yes

(2) no

(3) I don't know

(99) prefer not to answer

(88) Not applicable [not asked bc of skip pattern]

----New Page---

[Background media exposure]

"The following questions are about **background television/video** in your child's life. These are programs that you or others may watch that are ***not* turned on with the intention that your child will watch**, but are **instead merely on "in the background"** for him/her. Examples include programs like Hannah Montana, American Idol, or the news. (Background television/videos **do not** include cable music channels that show only the album cover or a picture of the artist on the screen.)

(30) (WkdayBckNum) On <u>how many **weekdays**</u> (Monday through Friday) in a typical week is [child's name] in the room with background television or videos at least for a few minutes?

(1) 0 days [SKIP TO QUESTION 9 – WEEKEND DAYS – Question 32]

(2) 1 day

(3) 2 days

(4) 3 days

(5) 4 days

(6) 5 days

(99) prefer not to answer

(31) (WkdayBckBrd) Think of <u>the **last typical weekday**</u> when [child's name] was in a room at least for a few minutes with while background television or videos were on.

How much time on a typical weekday does [child's name] spend in a room with background television or videos? (If you are not sure please make your best guess).

(1) less than 2 hours [SKIP TO 31A]

(2) at least 2 hours but less than 4 hours [SKIP TO 31B]

(3) at least 4 hours but less than 6 hours [SKIP TO 31C]

(4) at least 6 hours but less than 8 hours [SKIP TO 31D]

(5) 8 hours or more [SKIP TO 31E]

(99) prefer not to answer

(88) Not applicable [not asked bc of skip pattern]

31A) (WkdayBckNar1) Would that be:

(1) Less than 30 minutes

(2) At least 30 minutes but less than 1 hour

(3) At least 1 hour but less than 1.5 hours

(4) At least 1.5 hours but less than 2 hours

(99) prefer not to answer

(88) Not applicable [not asked bc of skip pattern]

31B) (WkdayBckNar2) Would that be:

(1) At least 2 hours but less than 2.5 hours

(2) At least 2.5 hours but less than 3 hours

(3) At least 3 hours but less than 3.5 hours

(4) At least 3.5 hours but less than 4 hours

(99) prefer not to answer

(88) Not applicable [not asked bc of skip pattern]

31C) (WkdayBckNar3) Would that be:

(1) At least 4 hours but less than 4.5 hours

(2) At least 4.5 hours but less than 5 hours

(3) At least 5 hours but less than 5.5 hours

(4) At least 5.5 hours but less than 6 hours

(99) prefer not to answer

(88) Not applicable [not asked bc of skip pattern]

31D) (WkdayBckNar4) Would that be:

(1) At least 6 hours but less than 6.5 hours

(2) At least 6.5 hours but less than 7 hours

(3) At least 7 hours but less than 7.5 hours

(4) At least 7.5 hours but less than 8 hours

(99) prefer not to answer

(88) Not applicable [not asked bc of skip pattern]

31E) (WkdayBckNar5) Would that be:

(1) At least 8 hours but less than 8.5 hours

(2) At least 8.5 hours but less than 9 hours

(3) At least 9 hours but less than 9.5 hours

(4) 9.5 hours or more (99) prefer not to answer

(88) Not applicable [not asked bc of skip pattern]

----New Page---

"The following questions are also about **background television/video in your child's life**.".

(32) (WkndBckNum) On <u>how many **weekend days**</u> (Saturday and Sunday) in a typical week is [child's name] in the room at least for a few minutes while background television or videos are on?

(1) 0 days [SKIP TO NEXT SECTION – Foreground media IM items – Question 34]

(2) 1 day

(3) 2 days

(99) prefer not to answer

(33) (WkndBckBrd) Think of the last <u>**typical weekend day**</u> when [child's name] was in the room at least for a few minutes while there was background television or videos on.

How much time on a <u>**typical weekend day**</u> does [child's name] spend in a room with background television or videos? (If you are not sure please make your best guess).

(1) less than 2 hours [SKIP TO 33A]

(2) at least 2 hours but less than 4 hours [SKIP TO 33B]

(3) at least 4 hours but less than 6 hours [SKIP TO 33C]

(4) at least 6 hours but less than 8 hours [SKIP TO 33D]

(5) 8 hours or more [SKIP TO 33E]

(99) prefer not to answer

(88) Not applicable [not asked bc of skip pattern]

33A) (WkndBckNar1) Would that be:

(1) Less than 30 minutes

(2) At least 30 minutes but less than 1 hour

(3) At least 1 hour but less than 1.5 hours

(4) At least 1.5 hours but less than 2 hours

(99) prefer not to answer

(88) Not applicable [not asked bc of skip pattern]

33B) (WkndBckNar2) Would that be:

(1) At least 2 hours but less than 2.5 hours

(2) At least 2.5 hours but less than 3 hours

(3) At least 3 hours but less than 3.5 hours

(4) At least 3.5 hours but less than 4 hours

(99) prefer not to answer

(88) Not applicable [not asked bc of skip pattern]

33C) (WkndBckNar3) Would that be:

(1) At least 4 hours but less than 4.5 hours

(2) At least 4.5 hours but less than 5 hours

(3) At least 5 hours but less than 5.5 hours

(4) At least 5.5 hours but less than 6 hours

(99) prefer not to answer

(88) Not applicable [not asked bc of skip pattern]

33D) (WkndBckNar4) Would that be:

(1) At least 6 hours but less than 6.5 hours

(2) At least 6.5 hours but less than 7 hours

(3) At least 7 hours but less than 7.5 hours

(4) At least 7.5 hours but less than 8 hours

(99) prefer not to answer

(88) Not applicable [not asked bc of skip pattern]

33E) (WkndBckNar5) Would that be:

(1) At least 8 hours but less than 8.5 hours

(2) At least 8.5 hours but less than 9 hours

(3) At least 9 hours but less than 9.5 hours

(4) 9.5 hours or more

(99) prefer not to answer

(88) Not applicable [not asked bc of skip pattern]

----*New Page*--- [FOREGROUND MEDIA – IM ITEMS]

"Please think again about **your child's television/video viewing** –programs turned on with the intention that your child will watch at least a little."

[Foreground screen media – Intention].

34. (IntentFor1) I <u>will keep [child's name] from watching any</u> television or videos during the next month.

unlikely :__1__:__2__:__3__:__4__:__5__:__6__:__7__: likely

(99) prefer not to answer

35. (IntentFor2) I <u>will let</u> [child's name] watch television or videos <u>for more than an hour a day on at least several days each week</u> during the next month.

unlikely :__1__:__2__:__3__:__4__:__5__:__6__:__7__: likely

(99) prefer not to answer

----New Page---

“The following questions are also about **your child’s television/video viewing**.

[Foreground screen media – Beliefs]

Letting [child’s name] watch child-directed television and/or video programming for more than an hour a day on at least several days each week :

36.(bblearn)	could help [child’s name] learn	unlikely :__1__:__2__:__3__:__4__:__5__:__6__:__7___: likely; (99) prefer not to answer
37. (bboccupy)	could keep [child’s name] busy and allow me to get things done around the house or have a break	unlikely :__1__:__2__:__3__:__4__:__5__:__6__:__7___: likely; (99) prefer not to answer
38. (bbengage)	could engage [child’s name] and keep him/her entertained	unlikely :__1__:__2__:__3__:__4__:__5__:__6__:__7___: likely; (99) prefer not to answer

39. (bbexpose)	could expose [child's name] to different things in the outside world	unlikely :__1__:__2__:__3__:__4__:__5__:__6__:__7___: likely; (99) prefer not to answer
40. (bbteach)	could teach [child's name]some things better than I can	unlikely :__1__:__2__:__3__:__4__:__5__:__6__:__7___: likely; (99) prefer not to answer
41. (bbcalm)	could calm [child's name], or distract him/her from crying	unlikely :__1__:__2__:__3__:__4__:__5__:__6__:__7__: likely; (99) prefer not to answer
42. (bbstimfocus)	could help stimulate [child's name] attention, or ability to focus	unlikely :__1__:__2__:__3__:__4__:__5__:__6__:__7__: likely; (99) prefer not to answer
43. (bbstimvis)	could help stimulate [child's name] vision and/or hearing	unlikely :__1__:__2__:__3__:__4__:__5__:__6__:__7__: likely; (99) prefer not to answer

----New Page---

"The following questions are also about **your child's television/video viewing**.

Letting [child's name] watch child-directed television and/or video programming for more than an hour a day on at least several days each week:

44. (bbroutine)	could help to structure [child's name] day or establish a daily routine	unlikely :__1__:__2__:__3__:__4__:__5__:__6__:__7__: likely; (99) prefer not to answer
45. (bbsocemo)	could help [child's name] learn social and/or emotional skills, like how to share, and understanding other people's emotions	unlikely :__1__:__2__:__3__:__4__:__5__:__6__:__7__: likely; (99) prefer not to answer

46. (bbstimcreat)	could help stimulate [child's name] creativity	unlikely :__1__:__2__:__3__:__4__:__5__:__6__:__7__: likely; (99) prefer not to answer
47. (bbtogeth)	could be a good way for me to spend time with [child's name]	unlikely :__1__:__2__:__3__:__4__:__5__:__6__:__7 ___: likely; (99) prefer not to answer
48. (bbactiv)	could give [child's name] a chance to be actively involved with the music or other parts of the program	unlikely :__1__:__2__:__3__:__4__:__5__:__6__:__7__: likely; (99) prefer not to answer

----New Page---

"The following questions are also about **your child's television/video viewing**.

Letting [child's name] watch child-directed television and/or video programming for more than an hour a day on at least several days each week:

49. (bbhealth)	could take away from the time [child's name] spends getting healthy physical activity	unlikely :__1__:__2__:__3__:__4__:__5__:__6__:__7__: likely; (99) prefer not to answer
50. (bbhabit)	could be habit-forming [child's name]	unlikely :__1__:__2__:__3__:__4__:__5__:__6__:__7__: likely; (99) prefer not to answer
51. (bbentself)	could make [child's name] less able to entertain himself/herself with other activities	unlikely :__1__:__2__:__3__:__4__:__5__:__6__:__7__: likely; (99) prefer not to answer
52. (bbnosoc)	could take away from the time [child's name] is getting social	unlikely :__1__:__2__:__3__:__4__:__5__:__6__:__7__: likely; (99) prefer not to answer

	interaction with others	
53. (bbdistrct)	could make [child's name] distracted or hypnotized by what is on the screen	unlikely :__1__:__2__:__3__:__4__:__5__:__6__:__7__: likely; (99) prefer not to answer
54. (bbtantrm)	could make [child's name] throw temper tantrums or beg to watch when the TV is turned off.	unlikely :__1__:__2__:__3__:__4__:__5__:__6__:__7__: likely; (99) prefer not to answer
55. (bbbadvis)	could be bad for [child's name] vision and/or hearing	unlikely :__1__:__2__:__3__:__4__:__5__:__6__:__7__: likely; (99) prefer not to answer
56. (bbbadcreat)	could hurt [child's name] creativity	unlikely :__1__:__2__:__3__:__4__:__5__:__6__:__7__: likely; (99) prefer not to answer

----New Page---

"The following questions are also about **your child's television/video viewing**.

Letting [child's name] watch child-directed television and/or video programming for more than an hour a day on at least several days each week:

57. (bbaggrss)	could teach [child's name] aggressive behaviors, like hitting or saying mean things	unlikely :__1__:__2__:__3__:__4__:__5__:__6__:__7__: likely; (99) prefer not to answer
58. (bbnolearn)	could take away from the time [child's name] is participating in valuable learning opportunities	unlikely :__1__:__2__:__3__:__4__:__5__:__6__:__7__: likely; (99) prefer not to answer
59. (bbbadbrain)	could hurt [child's name] brain development	unlikely :__1__:__2__:__3__:__4__:__5__:__6__:__7__: likely; (99) prefer not to answer

60. (bbhurtIQ)	could hurt [child's name] later intelligence	unlikely :__1__:__2__:__3__:__4__:__5__:__6__:__7___: likely; (99) prefer not to answer
61. (bbnoread)	could make [child's name] less interested in reading	unlikely :__1__:__2__:__3__:__4__:__5__:__6__:__7___: likely; (99) prefer not to answer
62. (bbboring)	could be under-stimulating or "boring" for [child's name]	unlikely :__1__:__2__:__3__:__4__:__5__:__6__:__7___: likely; (99) prefer not to answer
63. (bbnointrct)	could cause me to spend less time interacting with [child's name]	unlikely :__1__:__2__:__3__:__4__:__5__:__6__:__7___: likely; (99) prefer not to answer
64. (bbrathteach)	could mean that [child's name] would learn things (like ABCs or colors) in a less	unlikely :__1__:__2__:__3__:__4__:__5__:__6__:__7___: likely; (99) prefer not to answer

	meaningful way than if he/she learned them from me or other caregivers.	
65. (bbwaste)	could cause [child's name] to be wasting time by just "zoning out"	unlikely :__1__:__2__:__3__:__4__:__5__:__6__:__7__: likely; (99) prefer not to answer

----New Page---

"The following questions are also about **your child's television/video viewing**.

[Foreground screen media - Attitude.]

----New Page---

"The following questions are also about **your child's television/video viewing**.

66. (ForeAtt4) <u>Letting</u> [child's name] watch television or videos for <u>more than an hour a day on several days each week</u> during the next month would be:

bad :__1__:__2__:__3__:__4__:__5__:__6__:__7___: good

(99) prefer not to answer

67. (ForeAtt5) <u>Letting</u> [child's name] watch television or videos for <u>more than an hour a day on at least several days each week</u> during the next month would be

foolish :__1__:__2__:__3__:__4__:__5__:__6__:__7___: wise

(99) prefer not to answer

68. (ForeAtt6) <u>Letting</u> [child's name] watch television or videos for <u>more than an hour a day on at least several days each week</u> during the next month would be:

harmful :__1__:__2__:__3__:__4__:__5__:__6__:__7___: beneficial

(99) prefer not to answer

----New Page---

"The following questions are also about **your child's television/video viewing**.

69. (ForeInj3) Most people who are important to me think that I <u>should let</u> [child's

name] watch television or videos for <u>more than an hour a day on at least several days each week</u> during the next month.

false :__1__:__2__:__3__:__4__:__5__:__6__:__7___: true

(99) prefer not to answer

70. (ForeInj4) Most people whose opinions I value think that I <u>should let</u> [child's name] watch television or videos <u>for more than an hour a day on at least several days each week</u> during the next month.

unlikely :__1__:__2__:__3__:__4__:__5__:__6__:__7___: likely

(99) prefer not to answer

----New Page---

"The following questions are also about **your child's television/video viewing**."

71. (ForeDesc3) Most people like me with children 2 and under <u>let</u> their children watch television or videos for <u>more than an hour a day on at least several days each week</u>.

unlikely :__1__:__2__:__3__:__4__:__5__:__6__:__7___: likely

(99) prefer not to answer

72. (ForeDesc4) More specifically, <u>how many</u> of the people who are most similar to you with children 2 and under <u>let</u> their children watch television programs or videos for <u>more than an hour a day on at least several days each week</u>?

(1) None or very few
(2) Some
(3) About half
(4) Most
(5) Almost all or all
(99) prefer not to answer

----New Page---

"The following questions are also about **your child's television/video viewing**."

[Foreground screen media - Perceived behavioral control.]

73. (ForePBC1) I am confident that I can control how much television- and video-watching [child's name] does during the next month.

false :__1__:__2__:__3__:__4__:__5__:__6__:__7___: true

(99) prefer not to answer

74. (ForePBC2) The amount [child's name] watches television and videos during the next month is under my control.

not at all :__1__:__2__:__3__:__4__:__5__:__6__:__7___: completely

(99) prefer not to answer

----New Page---

BACKGROUND MEDIA – IM ITEMS

"Please think again about about **background television/video** in your child's life–programs that are *not* turned on with the intention that your child will watch, but are instead merely on "in the background" for him/her."

[Background screen media - Intention.]

75. (BckIntent1) I will keep [child's name] from spending any time in a room with background television or videos during the next month.

unlikely :__1__:__2__:__3__:__4__:__5__:__6__:__7__: likely

(99) prefer not to answer

76. (BackIntent2) I will let [child's name] spend time in a room with background television or for more than an hour a day on at least several days each week during the next month.

unlikely :__1__:__2__:__3__:__4__:__5__:__6__:__7__: likely

(99) prefer not to answer

----New Page---

"The following questions are also about **background television/videos.**

77. (BackAtt4) Letting [child's name] spend time in a room with background television or videos for more than an hour a day on at least several days each week during the next month would be:

bad :__1__:__2__:__3__:__4__:__5__:__6__:__7__: good

(99) prefer not to answer

78. (BackAtt5) Letting [child's name] spend time in a room with background television or videos for more than an hour a day on at least several days each week during the next month would be:

foolish :__1__:__2__:__3__:__4__:__5__:__6__:__7__: wise

(99) prefer not to answer

79. (BackAtt6) Letting [child's name] spend time in a room with background television or videos for more than an hour a day on at least several days each week during the next month would be:

harmful :__1__:__2__:__3__:__4__:__5__:__6__:__7__: beneficial

(99) prefer not to answer

----New Page---

"The following questions are also about **background television/videos.** .

80. (BackInj3) Most people who are important to me think that I should let [child's name] spend time in a room with background television or videos for more than an hour a day on at least several days each week during the next month.

false :__1__:__2__:__3__:__4__:__5__:__6__:__7__: true

(99) prefer not to answer

81. (BackInj4) Most people whose opinions I value think that I should let [child's name] spend time in a room with background television or videos for more than an hour a day on at least several days each week during the next month.

unlikely :__1__:__2__:__3__:__4__:__5__:__6__:__7___: likely

(99) prefer not to answer

----New Page---

"The following questions are also about **background television/videos.**

82. (BackDesc3) Most people like me with children 2 and under let their children spend time in a room with background television or videos for more than an hour a day on at least several days each week.

unlikely :__1__:__2__:__3__:__4__:__5__:__6__:__7___: likely

(99) prefer not to answer

83. (BackDesc4) More specifically, how many of the people who are most similar to you with children 2 and under let their children spend time in a room with background television or videos for more than an hour a day on at least several days each week?

(1) None or very few
(2) Some
(3) About half
(4) Most
(5) Almost all or all
(99) prefer not to answer

----New Page---

"The following questions are also about **background television/videos**.

[Background screen media - Perceived behavioral control.]

84. (BackPBC1) I am confident that I can control how much [child's name] is in a room with background television or videos during the next month.

false :__1__:__2__:__3__:__4__:__5__:__6__:__7___: true

(99) prefer not to answer

85. (BackPBC2) The amount of time [child's name] is in a room with background television or videos during the next month is under my control.

not at all :__1__:__2__:__3__:__4__:__5__:__6__:__7___: completely

(99) prefer not to answer

----New Page---

[Child's Media Environment]

"Please answer the following questions regarding **your family's current home."**

86. (Hometype) How would you describe the home in which you currently reside?

1. Single-family house
2. Two-family house / duplex
3. Row house or town house
4. Apartment or condo

5. Mobile home / trailer

6. Other

(99) prefer not to answer

87. (Homerooms) How many rooms do you have for your family, **not** counting bathrooms?

1. 1 – 2

2. 3 – 4

3. 5 – 6

4. 7 – 8

5. 9 – 10

6. 11 or more

(99) prefer not to answer

88. (HomeTVs) How many rooms in your home contain **at least one** television set?

1. 0

2. 1

3. 2

4. 3

5. 4

6. 5

7. 6 or more

(99) prefer not to answer

89. (BdrmTV) Do you have a television in your child's bedroom?

(1) yes

(2) no

(99) prefer not to answer

90. (TValwyson) When someone is at home in your household, how often is the TV on, even if no one is actually watching it?

(1) always

(2) Most of the time

(3) About half of the time

(4) Less than half of the time

(5) Hardly ever

(6) Never

(99) prefer not to answer

----New Page---

"Please estimate how many of the following toys [child's name] has in your home to play with (these may be shared with a brother or sister)."

91. (Softtoys) About how many, if any, **cuddly or soft toys**, like stuffed animals or dolls does [child's name] have to play with? (If you are not sure please just take your best guess).

(1) None

(2) 1 or 2

(3) 3 to 5

(4) 5 to 10

(5) 10 to 15

(6) 15 to 20

(7) more than 20

(99) prefer not to answer

92. (Electoy) About how many non-television **electronic toys** does [child's name] have to play with, like a leapfrog or a pretend piano? (If you are not sure please just take your best guess).

(1) None

(2) 1 or 2

(3) 3 to 5

(4) 5 to 10

(5) 10 to 15

(6) 15 to 20

(7) more than 20

(99) prefer not to answer

93. (bookstoy) About how many **children's books** does [child's name] have to play with? (If you are not sure please just take your best guess).

(1) None

(2) 1 or 2

(3) 3 to 5

(4) 5 to 10

(5) 10 to 15

(6) 15 to 20

(7) more than 20

(99) prefer not to answer

94. (Pushtoy) About how many toys does [child's name] have that he/she can **push, pull or ride on**, like a car or a push-along popper toy? (If you are not sure please just take your best guess).

(1) None

(2) 1 or 2

(3) 3 to 5

(4) 5 to 10

(5) 10 to 15

(6) 15 to 20

(7) more than 20

(99) prefer not to answer

----New Page---

"Please estimate how many of the following toys [child's name] has in your home to play with (these may be shared with a brother or sister)."

95. (Noisetoy) About how many toys does [child's name] have to play with that make **noise when you shake them**, like a rattle or a set of plastic keys? (If you are not sure please just take your best guess).

(1) None

(2) 1 or 2

(3) 3 to 5

(4) 5 to 10

(5) 10 to 15

(6) 15 to 20

(7) more than 20

(99) prefer not to answer

96. (Stacktoy) About how many toys does [child's name] have to play with that are **stackable, or insertable**, like stacking rings, blocks, or a shape sorter? (If you are not sure please just take your best guess).

(1) None

(2) 1 or 2

(3) 3 to 5

(4) 5 to 10

(5) 10 to 15

(6) 15 to 20

(7) more than 20

(99) prefer not to answer

97. (Videotoy) About how many about how many videos does [child's name] have in your home, counting both VHS tapes and DVDs and including any shared with brothers or sisters?

(1) None

(2) 1 or 2

(3) 3 to 5

(4) 5 to 10

(5) 10 to 15

(6) 15 to 20

(7) more than 20

(99) prefer not to answer

98. (babyvidtoy) About how many videos does [child's name] have in your home that are made specifically for babies and toddlers, such as *Baby Einstein* or *Your Baby Can Read*?

(1) None

(2) 1 or 2

(3) 3 to 5

(4) 5 to 10

(5) 10 to 15

(6) 15 to 20

(7) more than 20

(99) prefer not to answer

99. (sitintoy) Does [child's name] have one or more **indoor toys that he/she sits in**, like an exersaucer, swing or a vibrating chair?

(1) yes

(2) no

(99) refuse to answer

----New Page---

"Please answer the following questions about various ways your child may watch television or videos."

How often does your child:

100. (CarTV) watch television or videos on a screen built into your family's car?

1	2	3	4
Never	Less than once a week	About once a week	More than once a week

(99) prefer not to answer

101. (CompTV) watch television or videos on a computer (for example, on a DVD or through websites like Hulu, Netflix or Youtube)?

1	2	3	4

Never Less than once a week About once a week More than once a week

(99) prefer not to answer

102. (PhoneTV) watch television or videos on an iphone or other cellular telephone screen?

1 2 3 4

Never Less than once a week About once a week More than once a week

(99) prefer not to answer

103. (DVDTV) watch videos on a portable DVD player?

1 2 3 4

Never Less than once a week About once a week More than once a week

(99) prefer not to answer

104. (TivoTV) watch television programs recorded on DVR or Tivo by you or someone else?

1 2 3 4

Never Less than once a week About once a week More than once a week

(99) prefer not to answer

----New Page---

[BELIEF IN CRITICAL WINDOW OF BRAIN DEVELOPMENT]

"Please indicate how much you agree or disagree with each of the following statements."

105. (critwin1) The first three years of a child's life are the most crucial for their brain development.

Strongly disagree: __1__:__2__:__3__:__4__:__5__:__6__:__7__: strongly agree

(99) prefer not to answer

106. (critwin2) The experiences that children have in the first few years of life build the pathways in their brains.

Strongly disagree: __1__:__2__:__3__:__4__:__5__:__6__:__7__: strongly agree

(99) prefer not to answer

107. (critwin3) Brain development is determined mostly by a person's genes.

Strongly disagree: __1__:__2__:__3__:__4__:__5__:__6__:__7__: strongly agree

(99) prefer not to answer

108. (critwin4) How smart a child is depends mostly on the genes that they have.

Strongly disagree: __1__:__2__:__3__:__4__:__5__:__6__:__7__: strongly agree

(99) prefer not to answer

----New Page---

109. (critwin5) How smart a child is depends a lot on the learning experiences that they have early on.

Strongly disagree: __1__:__2__:__3__:__4__:__5__:__6__:__7__: strongly agree

(99) prefer not to answer

"Please indicate how much you agree or disagree with each of the following statements."

110. (critwin6) The majority of a person's brain development happens after age three.

Strongly disagree: __1__:__2__:__3__:__4__:__5__:__6__:__7__: strongly agree

(99) prefer not to answer

111. (critwin7) The experiences that children have between the ages of birth and 3 years are not as crucial to their intelligence as their experiences in later years.

Strongly disagree: __1__:__2__:__3__:__4__:__5__:__6__:__7__: strongly agree

(99) prefer not to answer

112. (critwin9) My child's brain and intellect will develop appropriately through the play and interaction that children experience automatically.

Strongly disagree: __1__:__2__:__3__:__4__:__5__:__6__:__7___: strongly agree

(99) prefer not to answer

----New Page---

[REGULATORY FOCUS]

[Regulatory Focus Questionnaire (Higgins et al., 2001)]

"The next few questions ask about specific **events in your life**. Please indicate your answer to each question."

113. (regfoc1) Compared to most people, are you typically unable to get what you want out of life?

1	2	3	4	5
never or seldom		sometimes		very often

(99) prefer not to answer

114. (regfoc2) Growing up, would you ever ``cross the line" by doing things that your parents would not tolerate?

1	2	3	4	5
never or seldom		sometimes		very often

(99) prefer not to answer

115. (regfoc3) How often have you accomplished things that got you ``psyched" to work even harder?

1	2	3	4	5
never or seldom		sometimes		very often

(99) prefer not to answer

116. (regfoc4) Did you get on your parents' nerves often when you were growing up?

1	2	3	4	5
never or seldom		sometimes		very often

(99) prefer not to answer

117. (regfoc5) How often did you obey rules and regulations that were established by your parents?

1	2	3	4	5
never or seldom		sometimes		very often

(99) prefer not to answer

118. (regfoc6) Growing up, did you ever act in ways that your parents thought were objectionable?

1	2	3	4	5
never or seldom		sometimes		very often

(99) prefer not to answer

----New Page---

119. (regfoc7) Do you often do well at different things that you try?

1	2	3	4	5

never or seldom — sometimes — very often

(99) prefer not to answer

120. (regfoc8) Not being careful enough has gotten me into trouble at times.

1	2	3	4	5

never or seldom — sometimes — very often

(99) prefer not to answer

121. (regfoc9) When it comes to achieving things that are important to me, I find that I don't perform as well as I ideally would like to do.

1	2	3	4	5

never true — sometimes true — very often true

(99) prefer not to answer

121. (regfoc10) I feel like I have made progress toward being successful in my life. [0.81]

1	2	3	4	5

certainly false — certainly true

(99) prefer not to answer

123. (regfoc11) I have found very few hobbies or activities in my life that capture my interest or motivate me to put effort into them.

1	2	3	4	5
certainly false				certainly true

(99) prefer not to answer

----New Page---

The final set of questions is about you and your background. Remember, your responses to these questions will be completely anonymous.

(124) (RspWkDayNum) On how many **weekdays** (Monday through Friday) in a typical week do you watch at least some television programming or video content?

(1) 0 days [SKIP TO QUESTION 9 – WEEKEND DAYS]

(2) 1 day

(3) 2 days

(4) 3 days

(5) 4 days

(6) 5 days

(99) prefer not to answer

(125) (RspWkdayAmt) Think of the last typical weekday when you watched at least some television/video programming.

How much time **on a typical weekday** do you spend watching television or videos? (If you are not quite sure please just take your best guess).

(1) less than 30 minutes

(2) between 30 minutes and 1 hour (60 minutes)

(3) at least 1 hour but less than 2 hours

(4) at least 2 hours but less than 3 hours

(5) at least 3 hours but less than 4 hours

(6) at least 4 hours but less than 5 hours

(7) at least 5 hours but less than 6 hours

(8) 6 hours or more

(99) prefer not to answer

(88) Not applicable [not asked bc of skip pattern]

----New Page---

(126) (RspWkndNum) On how many **weekend days** (Saturday and Sunday) in a typical week do you watch at least some television programming or video content?

(1) 0 days [SKIP TO QUESTION 9 – WEEKEND DAYS]

(2) 1 day

(3) 2 days

(99) prefer not to answer

(127) (RspWkndAmt) Think of the last typical weekend day when you watched at least some television/video programming.

How much time **on a typical weekend day** do you spend watching television or videos? (If you are not quite sure please just take your best guess).

(1) less than 30 minutes

(2) between 30 minutes and 1 hour (60 minutes)

(3) at least 1 hour but less than 2 hours

(4) at least 2 hours but less than 3 hours

(5) at least 3 hours but less than 4 hours

(6) at least 4 hours but less than 5 hours

(7) at least 5 hours but less than 6 hours

(8) 6 hours or more

(99) prefer not to answer

(88) Not applicable [not asked bc of skip pattern]

----New Page---

128. (RespHisp) Are you of Hispanic, Latino, or Spanish origin?

1 Yes
2 Not of Hispanic, Latino, or Spanish Origin
3 Don't know
(99) prefer not to answer

129. (RespRace) How would you describe your race? (SELECT ALL THAT APPLY)

1 White
2 Black or African American
3 Native American / American Indian or Alaska Native
4 Asian
5 Native Hawaiian and other Pacific Islander
6 Other race
(99) prefer not to answer

130. (RespLang) What language is spoken the most in your home?

1 English
2 Spanish
3 Other language
(99) prefer not to answer

----New Page---

131. (RespEdu) What is the last grade that you completed in school?

1 Didn't go to school
2 Less than 8th grade
3 8th grade
4 Some high school
5 High school diploma / GED
6 Some college, no four year degree
7 Vocational degree or trade school
8 Bachelor's Degree (B.S., B.A., or other four year degree)
9 Master's Degree (e.g. M.S., M.A.)
10 Ph.D, M.D., J.D., etc.
(99) prefer not to answer

132. (RespEmpl) What is your current employment status?

1 Employed full time
2 Employed part time
3 Homemaker
4 Student
5 Retired
6 Disabled
7 Unemployed
(99) prefer not to answer

133. (RespInc) Which of the following categories best describes your **family's yearly income** before taxes for 2009?

1 Less than $10,000
2 Between $10,000 but under $20,000

3 Between $20,000 but under $30,000
4 Between $30,000 but under $40,000
5 Between $40,000 but under $50,000
6 Between $50,000 but under $75,000
7 Between $75,000 but under $100,000
8 $100,000 or more
9 Don't know
(99) prefer not to answer

134. (RespMarit) How would you describe your marital status? Are you married, living as married, divorced, separated, widowed, or have you never been married?

1 Married
2 Living as married
3 Divorced [SKIP TO QUESTION 14]
4 Separated [SKIP TO QUESTION 14]
5 Widowed [SKIP TO QUESTION 14]
6 Never married / single [SKIP TO QUESTION 14]
(99) prefer not to answer [SKIP TO QUESTION 14]

----New Page---

135. What is the month and year of **your spouse or partner's** date of birth?

9a. (PartMonth) Month [Drop down menu – (1) January through (12) December; (13) don't know; (99) prefer not to answer; (88) Not Applicable (not asked bc of skip pattern)]

9b. (PartYear) Year [Drop down menu – (1) "1992 or later" through (52) "1940 or earlier"; (53) don't know; (99) prefer not to answer; (88) Not Applicable (not asked bc of skip pattern)]

136. (PartHisp) Is **your spouse or partner** of Hispanic, Latino, or Spanish origin?

1 Yes

2 Not of Hispanic, Latino, or Spanish Origin
3 Don’t know
(99) prefer not to answer
(88) Not Applicable (not asked bc of skip pattern)

137. (PartRace) How would you describe **your spouse or partner’s** race? (SELECT ALL THAT APPLY)

1 White
2 Black or African American
3 Native American / American Indian or Alaska Native
4 Asian
5 Native Hawaiian and other Pacific Islander
6 Other race
7 Don’t know
(99) prefer not to answer
(88) Not Applicable (not asked bc of skip pattern)

138. (PartEdu) What is the last grade that **your spouse or partner** completed in school?

1 Didn’t go to school
2 Less than 8th grade
3 8th grade
4 Some high school
5 High school diploma / GED
6 Some college, no four year degree
7 Vocational degree or trade school
8 Bachelor’s Degree (B.S., B.A., or other four year degree)
9 Master’s Degree (e.g. M.S., M.A.)
10 Ph.D, M.D., J.D., etc.
(99) prefer not to answer
(88) Not Applicable (not asked bc of skip pattern)

139. (PartEmp) What is **your spouse or partner’s** current employment status?

1 Employed full time

2 Employed part time
3 Homemaker
4 Student
5 Retired
6 Disabled
7 Unemployed
(99) prefer not to answer
(88) Not Applicable (not asked bc of skip pattern)

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