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Understanding the Relationship Between Mothers' Attitudes Toward Television and Children's Television Exposure: A Longitudinal Study of Reciprocal Patterns and the Moderating Role of Maternal Stress

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This two-wave panel study among mothers (N = 508) of children between ages six months and six years investigated a) the possibility of a reciprocal relationship between mothers' attitudes toward television and children's television viewing, and b) the conditional probability of this reciprocal relationship. Two-wave multigroup cross-lagged analyses provided evidence for reciprocal patterns that depend on the level of maternal stress. The findings indicated that mothers' attitudes toward television predicted children's subsequent television viewing among non-stressed mothers, but not among stressed mothers. Children's television viewing predicted mothers' subsequent negative attitudes toward television among stressed mothers, but not among non-stressed mothers. Implications for the role of parents' attitudes regarding children's television viewing are discussed.

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Research investigating parents' decision making around children's television viewing largely rests on the dominant assumption that parents' attitudes drive children's television viewing (e.g., Vaala & Hornik, 2014; Vandewater, Park, Huang, & Wartella, 2005). Yet, propositions about the reverse assumption that children's television viewing drives parents' attitudes regarding the medium have not been considered, due in part to a lack of longitudinal studies. Also, under what conditions these relationships occur is unknown. The purpose of this study was to explore how mothers' attitudes toward television and children's television viewing relate to each other, with a particular focus on a) the possibility of a reciprocal relationship between these factors, and b) the conditional probability of these relationships. This involved a two-wave, multigroup, cross-lagged study that examined the role of mothers' attitudes toward television as a predictor and as an outcome of television viewing among infants, toddlers, and preschoolers and the role of maternal stress (i.e., mental distress and time pressure) as a moderator of the relationship between mothers' attitudes and children's television viewing.

THE RELATIONSHIP BETWEEN MOTHERS' ATTITUDES AND CHILDREN'S TELEVISION VIEWING

Gaining a clear understanding of the relationship between parents' attitudes and children's television viewing is important, for instance because parental attitudes are important components in prevention campaigns (Ajzen, 1991) and predict parents' intention to limit children's screen time (Bleakley, Piotrowski, Hennessy, & Jordan, 2013; Hamilton, Thomson, & White, 2013). Moreover, parental attitudes toward television play an important role in the establishment of parental mediation strategies, as parents who endorse negative attitudes toward children's television exposure are more likely to use active and restrictive mediation strategies (Nathanson, 2001; Warren, Gerke, & Kelly, 2002).

Research has extensively explored the assumption that parents' television attitudes drive children's television viewing. Studies have shown that positive attitudes are related to more permissiveness and negative attitudes are related to more restrictiveness toward children's television exposure (Cohen, Brown, & Clark, 1981; Vandewater, Park, et al., 2005; Warren, 2001). Others found that parents with negative attitudes are less likely to use television as a babysitter (Austin, Bolls, Fujioka, & Engelbertson, 1999; Beyens & Eggermont, 2014). Finally, studies showed that infants, toddlers, and preschoolers are more likely to live in a heavy television household when their parents have positive attitudes regarding children's television viewing (Vaala & Hornik, 2014; Vandewater, Park, et al., 2005).

However, partially because many of these studies are of a cross-sectional nature, previous studies did not present a complete picture of the relationship between parents' attitudes toward television and children's television viewing. One of the limitations of previous studies is that they focused on the role of attitudes as driving children's television viewing. However, children's television viewing could drive parents' attitudes toward television (Cohen et al., 1981; Vaala, 2014). Research that investigates the possibility of a reciprocal relationship between parent's attitudes toward television and children's television use is thus lacking, partially due to a lack of longitudinal studies.

THE POSSIBILITY OF A RECIPROCAL RELATIONSHIP BETWEEN MOTHERS' ATTITUDES AND CHILDREN'S TELEVISION VIEWING

In order to provide a more complete picture of the relationship between mothers' attitudes and children's television viewing, the first purpose of this study was to investigate the possibility of a reciprocal relationship between mothers' attitudes toward television and children's television use. In particular, we aimed to investigate to what extent mothers' attitudes toward television predict children's television viewing and to what extent children's television viewing predicts mothers' attitudes toward television.

The proposition that children's television use drives parents' attitudes toward television draws on self-perception theory (Bem, 1972) and cognitive dissonance theory (Festinger, 1957). Both theories are based on the principle that people derive their attitudes from their behavior. Self-perception theory is based on a deductive reasoning process in which past behavior drives attitudes about the behavior (Bem, 1972). After performance of the behavior, people will express more positive attitudes toward that behavior. Cognitive dissonance theory posits that people feel a need for cognitive consistency: They seek consistency between the behavior and their attitudes and try to reduce any potential dissonance (Festinger, 1957). Research on parents' attitudes has described these processes as justification, arguing that parents' attitudes justify the actions that precede them (Goodnow, 1988).

These theoretical assumptions suggest that mothers derive their attitudes toward television from their children's television behaviors and that they are motivated to maintain consistency between their children's television viewing and their attitudes about children's television viewing. In this respect, scholars have suggested that mothers who regularly use television with their children, will develop positive attitudes toward children's viewing (Nathanson, 2013; Vaala & Hornik, 2014). The observation of positive consequences from children's television viewing could lead mothers to express more positive attitudes about their children's viewing (Vaala & Hornik, 2014).

Empirical evidence indicates that this process is very likely to occur, given that mothers are more inclined to observe positive consequences from children's viewing (Evans, Jordan, & Horner, 2011; Rideout & Hamel, 2006). For instance, mothers see television as an excellent parenting tool for occupying their children (Evans et al., 2011; Zimmerman, Christakis, & Meltzoff, 2007), believe in the educational benefits and entertainment value of their children's television viewing (Evans et al., 2011; Rideout, 2014; Rideout & Hamel, 2006), and often overestimate what their children learn from television (DeLoache et al., 2010).

Furthermore, scholars have suggested that mothers may adjust their attitudes about children's viewing in order to avoid cognitive dissonance (Nathanson, 2013). Because they aim to maintain consistency between their behaviors and attitudes (Festinger, 1957; Goodnow, 1988), mothers will likely align their attitudes to their children's viewing: Mothers may try to convince themselves that children's television viewing brings along benefits and opportunities, even though they may sometimes observe negative consequences from television viewing (Nathanson, 2013).

Together, given the theoretical and empirical evidence, we investigated the possibility of a reciprocal relationship between mothers' attitudes and children's television viewing and predicted that mothers' attitudes toward television positively predict children's television viewing (Hypothesis 1) and that children's television viewing positively predicts mothers' television attitudes (Hypothesis 2).

THE CONDITIONAL PROBABILITY OF THE RELATIONSHIP BETWEEN MOTHERS' ATTITUDES AND CHILDREN'S TELEVISION VIEWING

The second purpose of this study was to investigate under what conditions mothers' attitudes toward television drive children's television viewing and under what conditions children's television viewing drives mothers' attitudes toward the medium. In particular, we aimed to investigate whether maternal stress would moderate the relationship between mothers' attitudes and children's television viewing, focusing on two indicators of stress that are known to be associated with children's television viewing: mental distress and time pressure.

Scholars investigating the relationships between attitudes and behavior have emphasized that it is important to acknowledge that the level of consistency between attitudes and behavior may depend on moderating variables (Fazio, 1986; Kraus, 1995) and, thus, to examine under what conditions such relationships occur. Only then we can provide a complete picture of the relationships and precisely predict the relevance of particular attitudes for behavior (Bybee, Robinson, & Turow, 1982; Glasman & Albarracín, 2006;

Goodnow, 1988; Zanna & Fazio, 1982). With respect to children's television viewing, the identification of such conditions is also needed to develop better targeted interventions to reduce children's television viewing and provide suitably tailored advice for effective guidance of children's viewing. Yet, we know little about the conditions under which maternal attitudes about television drive children's viewing and the conditions under which children's television viewing predicts mothers' attitudes toward the medium.

The relationships between attitudes and behavior are often moderated by personality factors or by situational conditions (Fazio, 1986). In the case of children's television viewing, such conditions can relate to the child, the parent, or characteristics of the family. In this study, we focused on conditions of the parent, in particular the role of maternal stress. Stress is a multi-dimensional construct and certain aspects of maternal stress are likely to be related to children's viewing behaviors and parents' attitudes (Conners, Tripathi, Clubb, & Bradley, 2007).

First, mothers' experience of mental distress may be crucial. Maternal mental distress has a negative impact on mothers' parenting behavior (Lovejoy, Graczyk, O'Hare, & Neuman, 2000; Psychogiou & Parry, 2014), perceptions of their children (Webster-Stratton, 1990), and children's development (Cummings & Davies, 1994). Mothers who are depressed show poorer parenting abilities and exhibit fewer interactions with their children (Lovejoy et al., 2000; Psychogiou & Parry, 2014) and their children are more likely to develop problematic symptoms such as behavior problems (Barry, Dunlap, Cotten, Lochman, & Wells, 2005; Cummings & Davies, 1994) and sleep problems (Caldwell & Redeker, 2014).

Second, mothers' experience of time pressure may be important. Mothers who feel rushed and concerned about the time available to complete life tasks experience feelings of frustration, worry, and agitation, and often express negative emotional reactions (Roxburgh, 2012; Szollos, 2009). When experiencing time pressure, and in particular stress from coordinating work and family demands, mothers make less healthy lifestyle choices for their children (Stenhammar, Sarkadi, & Edlund, 2007) and develop depressive symptoms (Roxburgh, 2004, 2012).

Mental distress and time pressure are two aspects of maternal stress that are typically associated with each other (Roxburgh, 2004, 2012). Time pressure is an important aspect of the experience of stress in everyday life and is an important stressor that affects individuals' well-being (Szollos, 2009). Research has shown that time pressure may have important mental health consequences (Roxburgh, 2004). In particular, time pressure is distressing, and individuals who feel rushed typically feel more mentally distressed (Roxburgh, 2004, 2012).

Research has also found that maternal stress is related to children's television viewing (Bank et al., 2012; Conners et al., 2007; Thompson &

Christakis, 2007). For example, maternal depression is related to higher levels of personal viewing as well as children's viewing (Bank et al., 2012; Beyens & Eggermont, *in press*; Conners et al., 2007; Thompson & Christakis, 2007). Recently, Beyens and Eggermont (*in press*) found that maternal depression and time pressure from coordinating the demands of parenting and long working hours are related to increased television viewing among children. Feeling depressed, mothers may use television for their children so that they can attend to their personal needs or compensate for their lack of energy or motivation for interacting with their children (Potts & Sanchez, 1994). Mothers who experience time pressure and feel rushed and concerned about the time available may use television to occupy their children so that household chores can be accomplished (Beyens & Eggermont, *in press*).

Both sources of stress may alter the relationship between parents' attitudes toward television and children's actual television viewing. In particular, the reciprocal patterns between mothers' attitudes and children's television viewing may vary according to mothers' level of stress. First, the possibility that parental attitudes toward television predict children's television viewing may be strongest among mothers without significant stress. As long as mothers do not experience mental distress or time pressure, children will watch more television if their mothers hold positive attitudes toward the medium (Cohen et al., 1981; Vandewater, Park, et al., 2005; Warren, 2001). In line with expectancy value theories (e.g., theory of reasoned action; Ajzen & Fishbein, 1980), among mothers without significant mental distress or time pressure the relationship between mothers' attitudes and children's television viewing may be more of a reasoned path, characterized by deliberate decision making (Gerrard, Gibbons, Stock, Lune, & Cleveland, 2005).

However, for mothers who experience significant mental distress or time pressure, the social reaction path (Gerrard et al., 2005) may be more relevant. According to this perspective, the circumstances in which one finds herself facilitates behavior rather than perceptions about the behavior itself. As a result, mothers' mental distress or time pressure may facilitate children's television viewing, rather than their attitudes toward television. Under conditions of maternal stress, mothers' decision making around children's television use may be less deliberate and less influenced by their attitudes but more responsive to the needs of their stressed feelings. According to earlier research results using the same data set that is analyzed here (Beyens & Eggermont, *in press*), children watch more television because their mothers' mood is depressed and because their mothers feel rushed for time, but not as much because their mothers hold positive attitudes toward television. Because children's television viewing may be more a marker of mothers' stress than of mothers' attitudes toward

television (Beyens & Eggermont, *in press*), it is likely that children do watch large amounts of television even though their mothers have negative attitudes toward the medium, precisely because mothers are stressed. That is, maternal stress may outweigh mothers' attitudes.

Thus, it is likely that the role of mothers' attitudes toward television as a predictor of children's television viewing will be more pronounced among mothers without stress. Therefore, we predicted that mothers' attitudes toward television would predict children's subsequent viewing more strongly among non-stressed mothers than among stressed mothers (Hypothesis 3).

Second, the possibility that young children's television viewing predicts mothers' attitudes toward television may be strongest for stressed mothers. Mothers who experience mental distress or time pressure may see television more as a personally useful tool compared to mothers without significant mental distress or time pressure (Potts & Sanchez, 1994), for instance, because they regularly use television to occupy or entertain their children (Conners et al., 2007). Mothers who are stressed may express more positive feelings toward children's television viewing because their children's television viewing allows themselves to refrain from interactions with their children or because stressed mothers believe that their children's television viewing is beneficial for their children (Conners et al., 2007; Lovejoy et al., 2000; Potts & Sanchez, 1994). Therefore, mothers who experience mental distress or time pressure may form their attitudes about television in line with these benefits. Children's television viewing may thus play an important role in the formation of stressed mothers' attitudes toward television.

Furthermore, many mothers who are stressed also have negative perceptions of themselves and feel guilty because they are unable to meet the demands of their various roles, including their role as a mother (Rossiter, Fowler, McMahon, & Kowalenko, 2012). The fact that children's television viewing may be associated with feelings of guilt among mothers (Rideout & Hamel, 2006), may, thus, be especially salient among mothers with mental distress or time pressure. In line with the predictions of cognitive dissonance theory (Festinger, 1957), these feelings of guilt create cognitive dissonance, which is likely to be followed by attempts to reduce the dissonance and establish consistency between behaviors and attitudes. As such, the need to reduce feelings of guilt about imperfect parenting and relying on television for children might be driving the consistency between children's viewing and mothers' attitudes, especially for stressed mothers.

Less stressed mothers may view television as less beneficial for their children than stressed mothers, for instance, because these mothers use television less often to replace interactions with their children (Conners et al., 2007; Lovejoy et al., 2000). Mothers without significant mental distress or time pressure may form their attitudes about television not so much in

response to children's television viewing. That is, children's television viewing may predict mothers' attitudes toward television to a more limited extent among mothers without significant stress.

Based on this evidence, it is likely that the role of children's television viewing as a predictor of mothers' attitudes toward television will be more pronounced among mothers with stress. Therefore, we predicted that young children's television viewing would predict mothers' attitudes toward television more strongly among stressed mothers than among non-stressed mothers and that there would be more consistency between children's television viewing and mothers' attitudes among stressed mothers than among non-stressed mothers (Hypothesis 4).

METHOD

Participants and Procedure

A two-wave panel study with a one-year interval was conducted among mothers ($N = 508$) of children aged 6 months to 6 years old ($M = 32.03$ months old, $SD = 19.58$; 45.3% boys and 54.7% girls). Data were collected using a two-step sampling method. First, public and private daycare centers and preschools in different regions in Belgium were randomly selected and asked to participate. Second, participants were recruited from the 47 daycare centers and preschools that agreed to participate. After the daycare administrators and school principals granted the investigators permission, research assistants visited the centers and schools and distributed questionnaire packages including a questionnaire, an informational letter, and a consent form. Mothers were guaranteed that participation in the study was voluntary, anonymous, and confidential and were invited to complete the questionnaire at home. Mothers returned their completed questionnaires in sealed envelopes to their daycare center or kindergarten, where the questionnaires were collected by research assistants. Mothers provided consent to participate by completing and signing consent forms. Participants were offered a chance to win a raffle (gift vouchers).

Follow-up surveys were administered after one year. Mothers who had provided their e-mail address were sent an online survey and two reminders if the survey was not yet completed (total design method; Dillman, 1978). Mothers who had not provided an e-mail address were sent a paper questionnaire and a stamped return envelope at their home address. A total of 1,144 mothers completed the first questionnaire and 508 of them also completed the follow-up questionnaire (44.41%). Most of the mothers who did not complete the follow-up questionnaire were lost to follow-up due to relocation or inability to be located and due to disinterest in continued participation. The response rate at Wave 2 was similar to other longitudinal

studies with one-year intervals involving children (e.g., Atkin, Corder, & van Sluijs, 2013; Oprea, Buijzen, van Reijmersdal, & Valkenburg, 2014).

Mothers predominantly identified themselves as Caucasian (98.88%), which is representative of the Belgian society (Child and Family, 2012). The majority of mothers had graduate degrees (47.5%) or college graduate degrees (31.1%), one fifth held high school degrees (20.1%), 0.8% held elementary school degrees, and 0.4% had no degree.

A multivariate analysis of variance (MANOVA) using Pillai's Trace revealed significant differences at Time 1 between respondents and nonrespondents of Time 2 ($V = .052$, $F(6, 723) = 6.59$, $p < .001$, $\eta_p^2 = .05$). Tests of between-subjects effects indicated that the children of mothers participating in only the first wave watched more television ($M = 8.34$, $SD = 6.16$) than the children of mothers who participated in both waves ($M = 7.30$, $SD = 5.77$), $F(1, 728) = 7.33$, $p = .007$, $\eta_p^2 = .01$. In addition, the mothers participating in both waves were more highly educated ($M = 4.15$, $SD = .73$) than mothers participating in only the first wave ($M = 3.81$, $SD = .85$), $F(1, 728) = 36.25$, $p < .001$, $\eta_p^2 = .05$, as were the mothers' partners (only first wave: $M = 3.65$, $SD = .95$; both waves: $M = 3.84$, $SD = .87$), $F(1, 728) = 6.52$, $p = .011$, $\eta_p^2 = .01$. No further significant differences were found.

Main Measures

Children's Television Viewing Time. Mothers reported when their child watches television on an average weekday, an average Wednesday, and an average weekend day. Three timelines were presented ranging from 6 a.m. until 5 a.m. the next day, each representing the weekday (Timeline 1), Wednesday (Timeline 2), and weekend day (Timeline 3). Wednesday was singled out because children do not attend preschool on Wednesday afternoons in Belgium, which typically creates extra opportunities to watch television. Each hour on the timeline was divided into four checkboxes, each representing 15 minutes. Mothers marked a checkbox if their child was watching television during the corresponding 15 minutes. Television viewing time was calculated by summing all of the marked checkboxes per timeline. To convert these estimates into hours, the total sum was divided by four. Weekly television viewing time in hours was calculated by multiplying the weekday viewing hours by four and adding the result to the number of hours reported for Wednesday and the weekend day times two ($[\text{weekday hours} \times 4] + [\text{Wednesday hours}] + [\text{weekend day hours} \times 2]$). This procedure has been applied successfully in prior television research (e.g., Van den Bulck, 2006; Van den Bulck & Hofman, 2009).

Mothers' Attitudes Toward Television. Following previous measures of parental attitudes toward television (Rideout & Hamel, 2006; Vandewater, Park, et al. 2005; Vandewater, Rideout, et al., 2007), mothers indicated whether television mostly helps children's learning, using three items (i.e., "Watching television is beneficial for children's development," "Watching television helps children's learning," and "Watching television teaches children new things"). Response options ranged from *strongly disagree* (1) to *strongly agree* (5; Time 1 Cronbach's $\alpha = .77$, $M = 3.13$, $SD = .56$; Time 2 Cronbach's $\alpha = .81$, $M = 3.26$, $SD = .60$). Higher scores reflect more positive attitudes toward television.

Moderator Variables

Mothers' Mental Distress. The Mental Health Inventory (MHI-5; Berwick et al., 1991), a scale employed in previous research on maternal mental health and children's television viewing (Thompson & Christakis, 2007), was used to measure whether mothers had mental distress. Mothers indicated on a 6-point scale ranging from *(almost) none of the time* (1) to *(almost) all of the time* (6) how much of the time during the past month they "had been a very nervous person" (reverse coded), "felt calm and peaceful," "felt downhearted and blue" (reverse coded), "felt so down in the dumps that nothing could cheer them up" (reverse coded), and "had been a happy person." Responses were summed so that higher scores indicate better mental health (Cronbach's $\alpha = .84$, $M = 22.68$, $SD = 3.60$). Prior research has identified a score of 21 as a cutoff point for having mental distress (Rumpf, Meyer, Hapke, & John, 2001). Mothers with scores of 21 or lower were identified as having mental distress; mothers with scores of 22 and higher were identified as not having mental distress.

Mothers' Time Pressure. We used Roxburgh's (2004) time pressure scale. Mothers indicated their agreement with ten items, including "I often feel rushed to do the things that I have to do," "I feel that too much is expected of me," and "I often feel pressed for time," using a five-point scale ranging from *totally disagree* (1) to *totally agree* (5). Responses were averaged into an overall time pressure score (Cronbach's $\alpha = .88$, $M = 3.37$, $SD = .69$). Higher scores indicate higher time pressure. We divided the sample into a group of mothers with low time pressure and a group of mothers with high time pressure by means of a median split.

Control Variables

Based on previous research on young children's television exposure (Bickham et al., 2003; Certain & Kahn, 2002), the children's age, the mothers' education level as well as their partners' education level (ranging from *no*

degree [1] to *graduate degree* [5]), and the mothers' television viewing at baseline and at follow-up were included as control variables in the models. We measured mothers' television viewing time by using the same procedure as for children's television viewing time (i.e., using timelines).

Analysis

The hypothesized relationships were investigated using Amos (Arbuckle, 2010). We conducted two-wave cross-lagged analyses (Little, Bovaird, & Slegers, 2006) to investigate the predicted reciprocal relationships between mothers' television attitudes and children's television exposure. To investigate the predicted conditional probability of the relationships, we conducted two-wave multigroup cross-lagged analyses (Little et al., 2006). Two multigroup models were tested: the first multigroup model compared two groups based on mothers' level of mental distress, comparing mothers with mental distress and mothers without mental distress; the second multigroup model compared two groups based on mothers' level of time pressure, comparing mothers experiencing high time pressure and mothers experiencing low time pressure.

The analysis procedure of the multigroup analyses involved two steps. First, we investigated the measurement model by testing a configural model and by testing the metric invariance across mothers with mental distress and mothers without mental distress, as well as the metric invariance across mothers with low time pressure and mothers with high time pressure, by comparing each configural model with the corresponding metric invariance model (Little, 2013). In order to control for common method variance and for the impact of potential third variables, we allowed error terms of corresponding indicators and outcomes measured at the same time point to be correlated (Kline, 2011; Little, 2013).

Second, multigroup cross-lagged models were tested, constraining the paths from attitudes to subsequent television exposure to be equal across the two mental distress groups and across the two time pressure groups, and by constraining the paths from television exposure to subsequent attitudes to be equal across the two mental distress groups and across the two time pressure groups (Little, 2013). Chi-square difference tests were computed to investigate differences in model fit between models with constrained and unconstrained paths (Kline, 2011). All models controlled for the children's age, the mothers' education level and their partners' education level at baseline, and the mothers' television viewing at all time points.

RESULTS

The children watched television about 7.5 hours a week on average ($M = 7.41$, $SD = 5.79$) at baseline and about 8 hours and 20 minutes on average one year later ($M = 8.36$, $SD = 6.87$). At baseline, one in four mothers believed that watching television mostly helps children's learning (26.3%). One year later, one in three mothers believed that children's television exposure mostly helps children's learning (34%). One in three mothers were identified as having mental distress (33.9%) and 46% of the mothers were identified as having high time pressure. Mothers' mental health was strongly correlated with mothers' level of time pressure (mental health T1 and time pressure T1: $r = -.47$, $p = .00$; mental health T1 and time pressure T2: $r = -.31$, $p = .01$; mental health T2 and time pressure T1: $r = -.33$, $p = .01$; mental health T2 and time pressure T2: $r = -.47$, $p = .01$).

Zero-order correlations between all relevant variables included in the models are presented in Table 1 for mothers with mental distress and mothers without mental distress and in Table 2 for mothers with high time pressure and mothers with low time pressure.

Testing the Hypothesized Reciprocal Relationship

Hypothesis 1. The hypothesized cross-lagged model for the relationship between children's television viewing and mothers' television attitudes yielded a good fit ($\chi^2(39) = 69.01$, $\chi^2/df = 1.77$, $p = .00$, CFI = .97, RMSEA = .05, GFI = .97). Hypothesis 1 predicted that mothers' attitudes toward television would predict children's subsequent television viewing. Yet, the analyses showed that mothers' attitudes did not predict children's subsequent television viewing ($\beta = .08$, $B = 1.04$, $SE = .76$, $p = .17$). Thus, no support was found for Hypothesis 1.¹

Hypothesis 2. Hypothesis 2 predicted that children's television viewing would predict mothers' attitudes toward the medium. However, the findings showed that children's television viewing did not predict mothers' attitudes toward television ($\beta = -.06$, $B = -0.01$, $SE = 0.01$, $p = .32$). Hence, Hypothesis 2 was not supported.² This suggests that the relationship between mothers' attitudes and children's television viewing may be conditional. This assumption was tested in the multigroup cross-lagged panel models.

Testing the Hypothesized Conditional Probability

The multigroup configural invariance model with mental distress as the moderator yielded a good fit ($\chi^2(78) = 105.47$, $\chi^2/df = 1.35$, $p = .02$, CFI = .98, RMSEA = .04, GFI = .95), as well did the metric invariance model ($\chi^2(82) = 107.49$, $\chi^2/df = 1.31$, $p = .03$, CFI = .98, RMSEA = .04, GFI = .95). The data

TABLE 1 Zero-Order Correlations, Means, and Standard Deviations for Mothers With Mental Distress and Mothers Without Mental Distress

	Mothers with mental distress										Mothers without mental distress									
	Mothers' attitudes toward television T1	Mothers' attitudes toward television T2	Children's television viewing T1	Children's television viewing T2	Children's age T1	Mothers' education T1	Partners' education T1	Mothers' television viewing T1	Mothers' television viewing T2		Mothers' attitudes toward television T1	Mothers' attitudes toward television T2	Children's television viewing T1	Children's television viewing T2	Children's age T1	Mothers' education T1	Partners' education T1	Mothers' television viewing T1	Mothers' television viewing T2	
Mothers' attitudes toward television T1	-.60***	-.58***	.12**	.16*	-.00	-.04	-.01	.06	.13*		.60***	-.58***	.05	.10	-.05	.09	-.02	.00	.05	
Mothers' attitudes toward television T2	.14*	.12	-.05	.47***	.35***	-.33***	-.35***	.42***	.30***		.14*	.12	-.05	.47***	.35***	-.33***	-.35***	.42***	.30***	
Children's television viewing T1	.26***	.24**	.59***	-.05	.24***	-.28***	-.29***	.31***	.45***		.26***	.24**	.59***	-.05	.24***	-.28***	-.29***	.31***	.45***	
Children's television viewing T2	.06	.04	.33***	.28***	-.13**	-.13**	-.15***	-.00	.03		.06	.04	.33***	.28***	-.13**	-.13**	-.15***	-.00	.03	
Mothers' education T1	-.04	.02	-.31***	-.18*	-.13**	-.05	.51***	-.33***	-.37***		-.04	.02	-.31***	-.18*	-.13**	-.05	.51***	-.33***	-.37***	
Partners' education T1	.01	-.05	-.34***	-.32***	-.18***	.46***	-.05	-.22***	-.23***		.01	-.05	-.34***	-.32***	-.18***	.46***	-.05	-.22***	-.23***	
Mothers' television viewing T1	.08	.02	.45**	.27**	.00	-.28***	-.17**	-.05	.56***		.08	.02	.45**	.27**	.00	-.28***	-.17**	-.05	.56***	
Mothers' television viewing T2	.19*	.09	.34***	.50***	.05	-.34***	-.25**	.52***	-.05		.19*	.09	.34***	.50***	.05	-.34***	-.25**	.52***	-.05	
<i>M</i>	3.15/3.11	3.26/3.21	6.94/7.95	8.13/9.78	31.59/33.53	4.17/4.11	3.84/3.84	13.45/14.11	14.14/14.98		3.15/3.11	3.26/3.21	6.94/7.95	8.13/9.78	31.59/33.53	4.17/4.11	3.84/3.84	13.45/14.11	14.14/14.98	
<i>SD</i>	.56/.53	.62/.56	5.54/6.13	5.08/9.70	19.48/20.04	.72/.72	.86/.88	7.68/7.68	7.04/8.31		.56/.53	.62/.56	5.54/6.13	5.08/9.70	19.48/20.04	.72/.72	.86/.88	7.68/7.68	7.04/8.31	

Note. **p* < .05. ***p* < .01. ****p* < .001.

TABLE 2 Zero-Order Correlations, Means, and Standard Deviations for Mothers With High Time Pressure and Mothers With Low Time Pressure

	Mothers with high time stress									
Mothers with low time stress	Mothers' attitudes toward television T1	Mothers' attitudes toward television T2	Children's television viewing T1	Children's television viewing T2	Children's age T1	Mothers' education T1	Partners' education T1	Mothers' television viewing T1	Mothers' television viewing T2	
Mothers' attitudes toward television T1	–	.60***	.06	-.06	-.06	-.09	-.00	.11	.09	
Mothers' attitudes toward television T2	.57***	–	-.05	.13	-.09	-.02	-.00	.08	.08	
Children's television viewing T1	.16**	.11	–	.45***	.41***	-.24***	-.23***	.21**	.31**	
Children's television viewing T2	.25**	.09	.48***	–	.34***	-.12	-.27**	.26**	.42***	
Children's age T1	.04	-.01	.29***	.21*	–	-.11*	-.08	-.01	.05	
Mothers' education T1	-.01	.16*	-.38***	-.36***	-.14**	–	.48***	-.28***	-.43***	
Partners' education T1	-.02	-.04	-.42***	-.28**	-.20***	.54***	–	-.13*	-.19*	
Mothers' television viewing T1	.05	-.05	.52***	.37***	-.02	-.39***	-.28***	–	.59***	
Mothers' television viewing T2	.18*	.04	.29**	.50***	.01	-.32***	-.28**	.52***	–	
<i>M</i>	3.12/3.16	3.25/3.22	7.36/7.28	8.89/8.52	32.09/32.75	4.12/4.18	3.87/3.80	13.84/13.36	14.81/13.94	
<i>SD</i>	.55/.55	.60/.61	6.15/5.39	8.09/5.21	19.23/20.46	.71/.75	.85/.90	7.47/7.77	7.34/7.58	

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

supported full metric invariance across groups, as the difference between the configural and metric invariance models was not significant ($\Delta\chi^2(4) = 2.02, p = .73$). The observed cross-lagged model for mothers without mental distress and with mental distress is shown in Figure 1.

Both the multigroup configural invariance model ($\chi^2(78) = 109.09, \chi^2/df = 1.400, p = .01, CFI = .97, RMSEA = .04, GFI = .95$), and the metric invariance model with time pressure as the moderator yielded a good fit ($\chi^2(82) = 112.86, \chi^2/df = 1.38, p = .01, CFI = .97, RMSEA = .04, GFI = .95$). Full metric invariance across groups was supported, according to the lack of significant difference between the configural and metric invariance models ($\Delta\chi^2(4) = 3.77, p = .44$). Figure 2 shows the observed cross-lagged model for mothers with low time pressure and mothers with high time pressure.

Hypothesis 3. The analyses showed that the path from mothers' attitudes to children's subsequent television viewing did not significantly differ across mental distress groups ($\Delta\chi^2(1) = .35, p = .55$). However, while mothers' attitudes toward television significantly predicted children's television exposure one year later for mothers without mental distress ($\beta = .12, B = 1.07, SE = .56, p = .05$), mothers' attitudes toward television did not significantly predict children's television exposure for mothers with mental distress ($\beta = .12, B = 2.51, SE = 2.35, p = .29$). When mothers did not experience mental distress, mothers' positive attitudes toward television were associated with more television viewing among children one year later.

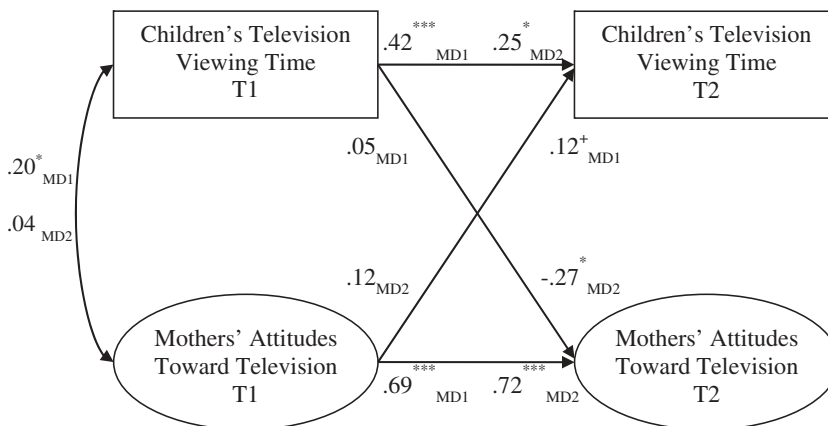


FIGURE 1. Observed two-wave cross-lagged model on the relationship between children's television viewing time and mothers' attitudes toward television for mothers without mental distress and mothers with mental distress. (Note: Path coefficients are presented in standardized form. Ovals represent latent constructs. For clarity of presentation, control variables, observed indicators and error terms are not shown. MD1 = mothers without mental distress; MD2 = mothers with mental distress; ⁺ $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$).

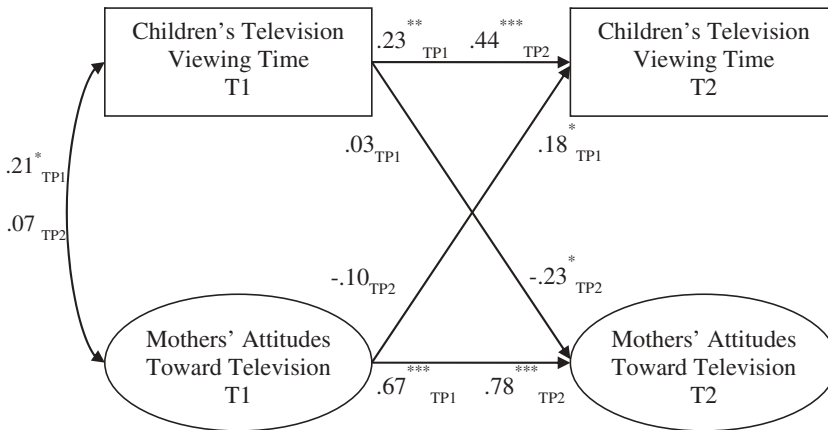


FIGURE 2. Observed two-wave cross-lagged model on the relationship between children's television viewing time and mothers' attitudes toward television for mothers with low time pressure and mothers with high time pressure. (Note: Path coefficients are presented in standardized form. Ovals represent latent constructs. For clarity of presentation, control variables, observed indicators and error terms are not shown. TP1 = mothers with low time pressure; TP2 = mothers with high time pressure; ^{*}*p* < .10. ^{*}*p* < .05. ^{**}*p* < .01. ^{***}*p* < .001).

In addition, the findings showed that the path from mothers' attitudes to children's subsequent television viewing differed significantly across time pressure groups ($\Delta\chi^2(1) = 6.55, p = .01$). The results indicated that mothers' attitudes toward television positively and significantly predicted children's television exposure one year later for mothers experiencing low time pressure ($\beta = .18, B = 2.83, SE = 1.23, p = .02$). Thus, the more positive mothers' attitudes toward television were, the more television children watched one year later. However, mothers' attitudes toward television did not predict children's television exposure for mothers experiencing high time pressure ($\beta = -.10, B = -1.04, SE = .84, p = .22$). Overall, Hypothesis 3 was supported.³

Hypothesis 4. The path from television viewing to subsequent attitudes differed significantly across mental distress groups ($\Delta\chi^2(1) = 4.10, p = .04$). More specifically, the findings showed that for mothers without mental distress, children's television exposure at Time 1 did not predict mothers' attitudes one year later ($\beta = .05, B = .01, SE = .01, p = .50$). However, for mothers with mental distress, children's television exposure negatively and significantly predicted mothers' attitudes toward television one year later ($\beta = -.27, B = -.02, SE = .01, p = .04$). This indicates that the more television children watched, the more negative mothers' attitudes toward television became one year later if mothers experienced mental distress.

Furthermore, the path from television viewing to subsequent attitudes was also significantly different across time pressure groups ($\Delta\chi^2(1) = 3.88, p = .05$). The analyses indicated that for mothers experiencing low time pressure, children's television exposure at Time 1 did not predict mothers'

attitudes one year later ($\beta = .03$, $B = .00$, $SE = .01$, $p = .75$). Yet, for mothers experiencing high time pressure, children's television exposure negatively and significantly predicted mothers' attitudes toward television one year later ($\beta = -.23$, $B = -.02$, $SE = .01$, $p = .02$). Thus, the more television children watched, the more negative mothers' attitudes toward television became.

Hence, as we expected, both mental distress and time pressure moderated the relationship from children's television viewing to mothers' subsequent attitudes, showing that young children's television viewing predicted mothers' attitudes toward television more strongly among stressed mothers than among non-stressed mothers, as we expected (Hypothesis 4). However, while we found that young children's television viewing did not predict mothers' attitudes toward television among non-stressed mothers, we found that children's television viewing negatively predicted mothers' attitudes toward television among stressed mothers, and not positively, as we expected (Hypothesis 4). As such, Hypothesis 4 was partially supported.⁴

DISCUSSION

Prior research has repeatedly demonstrated that parents' decisions regarding their children's television viewing stem from their attitudes toward the medium (Cohen et al., 1981; Vandewater, Park, et al., 2005; Warren, 2001). Yet, no studies to date have looked at the possibility of a reciprocal relationship between parents' attitudes toward television and children's television viewing and the conditional probability of the relationship. The findings of this two-wave panel study showed that mothers' attitudes toward television function as a predictor as well as an outcome of young children's television viewing, depending on mothers' level of stress. In this sense, our study adds to the literature stating that the level of consistency between attitudes and behavior depends on other, moderating variables (Kraus, 1995).

First, mothers' attitudes toward television predicted children's television viewing if mothers did not experience significant stress. Thus, for mothers who do not experience stress, the findings are in line with prior research showing that positive attitudes are related to higher television viewing (Cohen et al., 1981; Vandewater, Park, et al., 2005; Warren, 2001). Yet, an important nuance has to be made. Our study shows that stressed mothers' decisions relating to children's television viewing do not stem from their evaluation of television. That is, children's television viewing levels are unrelated to mothers' attitudes about television viewing. Thus, other processes explain why mothers who have significant stress choose television for their children and more research is needed to understand stressed mothers' decisions around children's television viewing. For instance, it is plausible that mothers with stress choose television for their

children because these mothers lack energy or motivation to involve in mother–child interactions (Potts & Sanchez, 1994; Psychogiou & Parry, 2014), regardless of their attitudes.

Second, children's television viewing predicted mothers' attitudes toward the medium if mothers experienced significant stress. However, the results do not confirm what we might expect from self-perception theory (Bem, 1972) and cognitive dissonance theory (Festinger, 1957). That is, mothers' attitudes about children's television viewing are inconsistent with children's television viewing levels. Contrary to our expectations, young children's television viewing did not predict mothers' subsequent positive attitudes toward television. Instead, the findings showed that young children's television viewing negatively predicted mothers' subsequent attitudes toward television among children whose mothers had significant stress, indicating that these mothers expressed more negative attitudes about their children's television viewing.

Beck's (1976) cognitive distortion theory provides an explanation for this unexpected inconsistency. According to Beck (1976), depressed individuals exhibit negative cognitive styles that are characterized by a distortion in thinking and negatively biased perceptions of personal experiences. More generally, stressed or depressed individuals often engage in negative cycles of thinking that perpetuate mental distress and create a general negative view of life (Beck, 2002; Psychogiou & Parry, 2014). The cognitive distortion that is implicated in cognitive theories of depression (Beck, 1976, 2002) is also manifest in stressed or depressed parents' perceptions of themselves as parents. That is, stressed or depressed parents tend to hold negatively biased perceptions and negative views of themselves as parents (Goodman, Sewell, Cooley, & Leavitt, 1993). Extending this evidence to parents' views about children's television use, it is likely that mothers with significant stress display negatively biased perceptions of children's television use and hold negative attitudes regarding children's television viewing.

In addition, studies have demonstrated that depressed individuals show difficulties in learning from positive events (Conklin, Strunk, & Fazio, 2009) and do not fully appreciate positive situations (Shook, Fazio, & Vasey, 2007). It is possible that depressed mothers pay more attention to the negative aspects of children's television viewing than to the positive aspects and overvalue the negative experiences with children's television viewing over the positive experiences (Shook et al., 2007). Although mothers are more inclined to observe positive consequences from children's viewing (Evans et al., 2011; Rideout & Hamel, 2006) and may enjoy positive benefits of children's television viewing, for instance, because it allows them to have some time for themselves (Connors et al., 2007), it is possible that mothers fail to appreciate the potential personal benefits associated with children's viewing (Conklin et al., 2009). That is, it is likely that the observation of

negative consequences from children's television viewing could have produced negative attitudes among depressed mothers. In particular, given the one-year interval in this study, it is possible that mothers may have had ample opportunity to consider the potential negative effects of television exposure on their children. As such, one potential explanation for our findings may be that mothers' consideration of the negative effects of television on their children could have produced more of an effect on their attitudes than cognitive dissonance would have produced consistency. Because the current study does not allow us to draw any definite conclusions in this respect, this explanation needs to be explored further in future research.

The role of maternal stress as a moderator of the relationship between mothers' attitudes toward television and children's television viewing was supported for two different indicators of stress (i.e., mental distress and time pressure). Moreover, both sources of stress moderated the relationship between mothers' attitudes toward television and children's television viewing in almost identical ways. However, a comparison of the multigroup model based on mothers' level of mental distress with the multigroup model based on mothers' level of time pressure reveals a remarkable difference concerning the autoregressive path between children's television viewing at Time 1 and children's television viewing at Time 2. While children's television viewing at Time 1 was more strongly associated with children's television viewing at Time 2 among mothers without mental distress compared with mothers with mental distress, children's television viewing at Time 1 was more strongly associated with children's television viewing at Time 2 among mothers who experienced high time pressure compared with mothers who experienced low time pressure. Future research is needed to explore potential explanations for why the two indicators of stress affect the consistency in children's television viewing in different ways.

This study has several implications for our understanding of the role of parents' attitudes about young children's television viewing. The reciprocal and conditional nature of the relationship between mothers' attitudes regarding children's television viewing and children's television viewing provides important perspectives. First, with regard to the conditional nature of the relationship, our study adds to the "when approach" in attitudes research (Zanna & Fazio, 1982) by identifying conditions under which the relationships between mothers' attitudes toward television and children's television viewing are more or less likely to occur and extends the research on situational explanations of behavior (Kraus, 1995) to research on children's television viewing.

In particular, the findings of our study emphasize the need for a life logistics perspective that looks at the role of parents' life circumstances in shaping children's television viewing (Beyens & Eggermont, *in press*). Our

study demonstrates that mothers' life circumstances, in particular the level of mental distress and time pressure, moderate the relationship between children's television viewing and mothers' attitude toward the medium. The fundamental role that has been ascribed to parents' attitudes toward television seems to be less relevant under certain life circumstances and conditions.

The conditionality of the impact of mothers' attitudes toward television on children's television viewing and the importance of life logistics in that respect might also apply to parental mediation practices around television. Studies have shown that parents who endorse negative attitudes toward children's television exposure are more likely to use active and restrictive mediation strategies (Nathanson, 2001; Warren et al., 2002). However, Bybee and colleagues (1982) argued that parents' attitudes toward television do not necessarily predict parental guidance of children's television viewing. Perhaps, mothers who endorse negative attitudes toward television may ultimately be less likely to use active and restrictive mediation strategies for their children if they feel depressed or feel rushed for time.

Second, with regard to the reciprocal nature of the relationship, our study emphasizes the importance of examining processes of reverse socialization in children's television use (Van den Bulck & Van Den Bergh, 2005). For mothers with significant stress a reverse socialization process or child effect (Van den Bulck & Van Den Bergh, 2005) may occur in the sense that children's television viewing influences parents' attitudes. This emphasizes that it is crucial to consider both parent and child effects in order to fully understand socialization processes around children's television viewing.

These findings have important implications for intervention studies that aim to reduce children's television viewing. By identifying the conditions under which mothers' attitudes are relevant for children's television viewing, this study increases our understanding about which intervention strategies might be most suitable. The findings provide useful information for the development of targeted interventions for mothers with or without stress. We agree with Thompson and Christakis (2007) that the social context of children's television viewing, and mothers' stress in particular, deserves more attention in intervention studies and counseling by pediatricians. Our findings highlight the importance of screening for maternal stress to understand how mothers and their children should be addressed. For mothers who face significant stress, targeting mothers' attitudes for change may not be relevant to reduce children's television viewing. Overall, studying the conditions that determine the relationship between mothers' attitudes toward television and children's television viewing seems an effective approach to improve the development of targeted interventions for reducing children's television viewing.

Several limitations of this study deserve consideration. First, while the longitudinal design of this study is one of the key strengths, it should be noted that differences existed between follow-up participants and dropouts. More specifically, children of mothers who dropped out in the second wave watched more television. This might have led to an underestimation of the impact of children's television viewing on mothers' attitudes.

Second, our data came from a relatively highly educated and White sample. This may restrict the generalizability of the present findings. For instance, it is unclear how our understanding about the relations between mothers' attitudes and children's television viewing as well as about the moderating role of stress might translate to a sample of lower educated parents. Mothers with different educational backgrounds might experience different types of stress. Studies have found that more highly educated mothers tend to experience more work-related stress and stress due to balancing job demands and family demands, as well as stress due to family demands and stress related to child care than mothers with less education (Mathiesen, Tambs, & Dalgard, 1999; Sperlich, Arnhold-Kerri, & Geyer, 2011). Sampling parents with less education seems especially challenging, though, because particularly those mothers who were less educated dropped out in the second wave of our study.

Further, the type of stress that mothers experience might also differ according to their ethnicity. For instance, among ethnic minority women depression is often caused by discrimination and acculturation stress (Jackson & Williams, 2006). Moreover, scholars have found ethnic differences in the rate of depressive symptoms that women report, showing, for instance, that White women show lower rates of depressive symptoms than Black women (Jackson & Williams, 2006; Plant & Sachs-Ericsson, 2004). As such, the moderating role of stress that we uncovered in this study might be more pronounced among Black mothers.

Third, the attitudes measure used in our study asked about the educational value of television for children because many mothers strongly believe in the educational value of their children's television viewing (DeLoache et al., 2010; Evans et al., 2011; Rideout, 2014; Rideout & Hamel, 2006). While this method of measuring television attitudes has been validated and extensively used in previous studies (e.g., Rideout & Hamel, 2006; Vandewater, Park, et al., 2005; Vandewater, Rideout, et al., 2007), other attitudes toward television exist. For instance, other researchers have asked parents about their attitude toward positive and negative outcomes of television among children (e.g., Austin et al., 1999), or about their concerns about the effects of exposure to specific television content (Warren, 2005). Also, mothers' attitudes regarding the usefulness of television in parenting could be more predictive of children's television viewing behaviors. Future research should seek to investigate whether these

dimensions of mothers' television attitudes relate differently to children's television behaviors and would yield different results.

Finally, the prevalence rate of mental distress was rather high in this study. One in three mothers was identified as having depressive symptoms. This is higher than the prevalence rate in the study of Thompson and Christakis (2007), but comparable to the prevalence rates found in studies of Burdette, Whitaker, Kahn, and Harvey-Berino (2003) and Giles, Davies, Whitrow, Warin, and Moore (2011). However, additional frequency analyses showed that most of the mothers that were identified as having mental distress clustered near the 21 cutoff point, with 1 in 10 mothers (10.8%) having a score equal to the cutoff point. Therefore, future research could investigate the relationships and models of our study in samples of more highly distressed mothers to see whether mothers with higher distress scores would display the relationships more clearly.

Replication of our findings is needed. This is particularly important because the relationships that we observed were relatively weak and because only by replicating the relationships that were tested in our study can we alleviate any concerns about false discoveries or false negatives (Koole & Lakens, 2012; O'Keefe, 2007; Weber, 2007). While some scholars advocate for alpha-level-adjustment in order to control for false discoveries, in particular in the case of multiple tests (e.g., Benjamini & Hochberg, 1995; Cribbie, 2007), other scholars have criticized alpha adjustment practices for reducing statistical power (e.g., O'Keefe, 2003), increasing the risk of missing potentially important findings (i.e., false negatives; e.g., Chew, Bradley & Boyko, 2004), and, more broadly, causing undesirable research practices (e.g., O'Keefe, 2003; Schulz & Grimes, 2005). In order to minimize the risk of false discoveries, we followed Jöreskog and Sörbom's advice (1993) to only investigate the relationships and models that were derived from the literature. In addition, we conducted additional analyses that corrected for multiple testing using the Benjamini–Hochberg procedure to control false discovery rate (Benjamini & Hochberg, 1995).

In conclusion, this study is the first to provide evidence on the reciprocal and conditional nature of the relationship between parents' attitudes regarding children's television viewing and children's television viewing. While prior research has largely rested on the unidimensional assumption that parents' attitudes drive children's television viewing and has failed to consider the possibility of the reciprocity and the conditional probability of the relationship, this two-wave panel study shows that mothers' attitudes toward television and children's television viewing are differently related to each other depending on mothers' level of stress. We recommend that future research examine other conditions that might moderate the relationships between mothers' attitudes toward television and children's television viewing. In addition, we encourage more work to examine

longitudinal relationships and moderators when studying children's television behaviors.

NOTES

1. The Benjamini–Hochberg adjusted p value for the relationship that was investigated to test Hypothesis 1 is 0.34.

2. The Benjamini–Hochberg adjusted p value for the relationship that was investigated to test Hypothesis 2 is 0.4.

3. Hypothesis 3 remained significant after correcting for multiple testing using the Benjamini–Hochberg procedure to control false discovery rate (Benjamini & Hochberg, 1995). The Benjamini–Hochberg adjusted p values for the relationship from mothers' attitudes toward television (T1) to children's television exposure (T2) are 0.13 for mothers without mental distress; 0.40 for mothers with mental distress; 0.10 for mothers experiencing low time pressure; and 0.37 for mothers experiencing high time pressure.

4. Hypothesis 4 remained significant after correcting for multiple testing using the Benjamini–Hochberg procedure to control false discovery rate (Benjamini & Hochberg, 1995). The Benjamini–Hochberg adjusted p values for the relationship from children's television exposure (T1) to mothers' attitudes toward television (T2) are 0.56 for mothers without mental distress; 0.13 for mothers with mental distress; 0.75 for mothers experiencing low time pressure; and 0.10 for mothers experiencing high time pressure.

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