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# Parenting Behaviors of Sleepy Parents: Associations with Emotion Regulation and Stress

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Dr. David Berry, Director of Graduate Studies

PARENTING BEHAVIORS OF SLEEPY PARENTS:  
ASSOCIATIONS WITH EMOTION REGULATION AND STRESS

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DISSERTATION

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A dissertation submitted in partial fulfillment of the  
requirements for the degree of Doctor of Philosophy in the  
College of Arts and Sciences  
at the University of Kentucky

By

Lauren Rogers Gilbert

Lexington, Kentucky

Director: Dr. Peggy S. Keller, Professor of Psychology

Lexington, Kentucky

2015

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## ABSTRACT OF DISSERTATION

### PARENTING BEHAVIORS OF SLEEPY PARENTS: ASSOCIATIONS WITH EMOTION REGULATION AND STRESS

Over the last decade, the topic of sleep has garnered a great deal of interest from psychologists, due to the physiological, emotional, and behavioral outcomes associated with its deprivation. However, questions remain to be answered regarding sleep's influence in the day-to-day life of families. The current study examines the importance of sleep deprivation for parents' parenting behaviors during problem solving discussions with their children; emotion regulation and stress reactivity are examined as mediators of these associations. Participants were 196 families with a child between the ages of 6-11. Parents filled out diaries for 7 days prior to their in-lab visit, reporting on their sleep quality and quantity. During the lab visit, parents participated individually in a 5-minute problem-solving task with their child. Parent respiratory sinus arrhythmia was attained throughout the interaction task and videos were recorded for later coding. Following the interaction, parents reported on their experiences of emotion during the task. Results supported the author's hypothesis regarding the importance of parent emotional experience for parent changes in behavior. Stress reactivity and parent sleep, however, did not reveal significant associations to parenting practices. Limitations and future directions are discussed.

KEYWORDS: Sleep, Parenting, Stress, Respiratory Sinus Arrhythmia, Emotion

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June 1, 2015

Date

PARENTING BEHAVIORS OF SLEEPY PARENTS:  
ASSOCIATIONS WITH EMOTION REGULATION AND STRESS

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## Chapter 1

### INTRODUCTION

#### **Background & Significance**

The parent-child relationship is a highly salient context for children's and adolescents' psychosocial and emotional development (Steinberg et al., 1994; Bretherton, 1992; Baumrind, 1967; Collins, Maccoby, Steinberg, Hetherington, & Bornstein, 2000). Research has consistently demonstrated the detrimental impact of harsh and unsupportive parenting behaviors on the development of parent-child relational difficulties and short and long-term deficits in child functioning (Darling & Steinberg, 1993; Forgatch, 1989; Kim et al., 2010; Murdock, Lovejoy, & Oddi, 2014). Traditionally, researchers have looked to more stable, individual differences, such as parent personality (McCabe, 2014; Huver, Otten, de Vries, & Engels, 2010; Belsky, 1984) and marital satisfaction (Erel & Burman, 1995) to explain and predict parents' use of maladaptive parenting practices. However, over the last few years, a body of research has emerged on the importance of day-to-day individual, health-related behaviors, such as sleep, on intra and inter-individual differences in interpersonal functioning (Keller et al., 2014; Gilbert et al., 2015). Despite growing interest in the impact of sleep, however, very little research has examined the implications of sleep deprivation for family relationship functioning. Due to the far-reaching effects of negative parenting behaviors, identifying factors, such as sleep, that may be amenable to intervention and prevention efforts is an important next step in improving the outcomes of children and families. The study of sleep and family interactions may be especially timely, as almost two-thirds of American adults report obtaining less

than the recommended 8 hours of sleep per night during the workweek (National Sleep Foundation, 2002). In the current study we examine the implications of parent sleep deprivation for parent emotional and physiological stress experiences and parenting behaviors during a parent-child problem-solving task, due to the importance of sleep for physiological and emotional reactivity and self-regulation.

### **Parent-Child Conflict and Parenting Stress**

Parents may experience some of their greatest joys in the context of the parent-child relationship. However, parenting can also be a highly stressful and exhausting experience, especially when the demands placed on parents exceed the resources available to meet those demands (Abidin, 1995). Conflicts between parents and children are regular occurrences that may provoke feelings of anger and frustration even in healthy parent-child relationships (Dix, 1991). Further, the intense negative affect provoked during these conflicts (Martini, Root, & Jenkins, 2004) may elicit disruptions to positive parenting behaviors. Research has demonstrated that even anticipating child noncompliance and negative affect may have ramifications for parents' interaction patterns (Brunk & Henggeler, 1984). These findings are in line with Sameroff's (2009) transactional model of development, which stresses the active role of the child in shaping his/her environment, partly through his/her impact on the parent. Dix (1991) postulated that decreases in parent psychological resources (e.g. energy and motivation) stemming from intense and/or prolonged negative affect provoked by the child may mediate the association between child behavior and subsequent parent

behaviors. For example, Mash and Johnston (1990) found that parents of difficult children exhibit increased stress responses in the context of parent-child interactions (Webster-Stratton, 1990). Further, cognitive and/or emotional overload are associated with decreases in positive parenting behaviors and substitution of more “minimal” parenting strategies (e.g. decreased parent responsiveness, warmth, and attention) (Zussman, 19080; Goodman & Gotlib, 1999; Abidin, 1992) as well as increased use of more authoritarian parenting styles and parental negativity (Crnic, Gaze, & Hoffman, 2005). In some extreme cases, parenting behaviors may even escalate to violence (Karazsia & Wildman, 2009; Rueger et al., 2011; Emery & Laumann-Billings, 1998). These maladaptive parenting practices have been found to mediate the associations between parent affect and child behavior problems (Karazsia & Wildman, 2008; Deater-Deckard, 1998), thus perpetuating a bidirectional cycle of child behavior problems and negative parenting practices.

### **Emotional Risk Factors for Maladaptive Parenting Behaviors**

However, not all parents react to stress and negative affective experiences in the same way. Even depressed parents exhibit high behavioral diversity in neutral and mildly stressful conditions (Lovejoy, 1991). Belsky (1984), in his Process Model of Parenting, regarded psychological resources as being highly predictive of parenting practices, emphasizing their potential to buffer parents from the behavioral outcomes associated with interpersonal difficulties in the parent- child relationship. Gross and John (1998) present a number of psychological processes by which a person may regulate his or her

emotional experiences, thereby influencing his/her levels of stress. Strategies of self-regulation, such as cognitive change, may help augment desired emotions and suppress less desired emotions (Gross & John, 1998). Thus, parents with poorer emotion regulation capabilities may be more likely to experience stress during parent-child interactions. Research on emotion demonstrates the importance of emotion-regulation during experiences of parent-child stress. Remmes & Ehrenreich- May (2014) found that parents who utilize reappraisal as an emotion regulation strategy during difficult parent-child interactions have increased ability to control their negative emotions and purposely utilize positive parenting practices despite their frustrations. Moreover, fathers who engage in positive coping strategies report less stress and negative expressivity in the parent-child interaction than those with less adaptive emotion-regulation abilities (Foster, Reese-Weber, & Kahn, 2007).

Though differences in emotion-regulation are most often studied within the context of individual differences in personality (Kochanska, Clark, & Goldman, 1997; Belsky, Crnic, & Woodworth, 1995), emotion-regulation and its behavioral outcomes may also differ as a result of situational changes in psychological resources (Muraven & Baumeister, 2000; Miu, Heilman, & Miclea, 2009). Researchers have shown through experimental manipulation that parents asked to engage in competing cognitive activities decrease their use of purposeful parenting strategies, such as support and responsiveness, compared to non-competing conditions (Zussman, 1980). As another example, researchers also suggest that self-regulation may alter as a result of individual changes in fatigue

(Baumeister & Heatherton, 1996). Consequently, greater examination and understanding of potential situational factors that may compromise parents' self-regulation and parenting behaviors is needed.

### **Sleep and Emotion Regulation**

Sleep loss may be one such factor. Sleep is vital for the restoration and regulation of cognitive, affective, and physiological processes. Without sufficient sleep—quantity and quality—cognitive and affective systems become dysregulated (Walker, 2009; Choo et al., 2005). This dysregulation has important implications for the internal experience of emotion and the individual's subsequent self-regulation strategies day to day (Yoo et al., 2007; Meerlo, Sgoifo, & Suchecki, 2008). Research has shown that the decrease in self-regulation that accompanies sleep loss occurs as a result of neural dysregulation in two separate brain regions, resulting in: 1) decreased top down control of affective experiences in the prefrontal cortex and 2) increased bottom up emotional reactivity to negative stimuli in the amygdala (Yoo et al., 2007; Van der Helm & Walker, 2011). This combination may place a sleep-deprived individual at a two-fold disadvantage, increasing the intensity of the internal emotional experience while simultaneously compromising his or her ability to regulate these strong feelings (Van der Helm & Walker, 2011; Motomura et al., 2013). A number of studies have demonstrated the substantial detriment that sleep deprivation has on individual self-regulation in the context of interpersonal and/or environmental challenges (Keller et al., 2014; Gilbert et al., 2015; Zohar et al., 2005). Less research, however, has examined this in the context of the family.

## Overview of Individual Differences in Autonomic Stress Responses

Individual differences in stress reactions to interpersonal challenge are also a product of the individual's subconscious physiological processes.

Physiological systems, such as the autonomic nervous system (ANS), serve as the primary means through which the human body responds to stress. These systems are also influenced by sleep.

The ANS exerts control over the involuntary muscles—such as the cardiac muscles and glands—allowing rapid adaptation to environmental demands. The ANS supports sustained attention and engagement with the surrounding environment when no threat is present and mobilizes resources in order to react by fighting or fleeing in the presence of environmental challenge or threat. As such, this system may be especially important to consider when examining risk factors for parent behaviors.

This dynamic response of the ANS is attained through two sub-systems: the sympathetic nervous system (SNS) and the parasympathetic nervous system (PNS). These two systems interact to maintain physiological homeostasis in the body. The SNS is responsible for mobilizing the body's physiological resources in preparation for the "fight or flight" response. The PNS, by contrast, counters the effects of the SNS, by returning the body to a state of rest following cessation of a threat. The SNS and PNS systems serve complementary functions. The PNS can become deactivated to permit increases in arousal of the SNS, as needed. On the other hand, an increase in PNS activity and suppression of the SNS allows organisms to engage in behaviors that are incompatible with the intense

emotional experiences that accompany a heightened “fight or flight” response (Porges, 2007).

One pathway through which the PNS exerts influence on arousal is through neural innervation of the heart by the vagus nerve. The vagus nerve slows heart rate, serving the purpose of a “vagal brake” (Beauchaine, 2001). This vagal influence can be assessed via respiratory sinus arrhythmia (RSA), the fluctuation in heart rate that accompanies inhalation and exhalation. Greater fluctuation of heart rate (high RSA) serves the function of reducing arousal when needed—corresponding to a sort of pressing down of the vagal “brake” (Porges, 2009).

Though appropriate increase in arousal (moderate withdrawal of RSA / a release of the brake) is an adaptive response to stress in the environment, extreme or chronic decreases in RSA may be pathological. Excessive decreases in vagal tone in reaction to challenge have been implicated in emotional dysregulation and lability, more specifically with experiences of panic and anger (Beauchaine, 2001). For instance, experimentally-induced worry is associated with significant decreases in RSA in persons with generalized anxiety disorder and in healthy controls. Moreover, older adult women who display greater RSA reduction in response to stress report less social competence than those who displayed lesser RSA reduction (Egizio et al., 2008).

### **Physiological Risk Factors for Maladaptive Parenting Behaviors**

Despite recent findings regarding the associations between physiological response and behavior, very little research has been conducted on the

implications of RSA for parent emotion regulation and behavioral functioning (Connell, Hughes-Scalise, Klostermann, Azem, 2011). In one previous study, greater withdrawal of RSA in abusive mothers predicted increases in maternal use of hostile control in parent-preschooler interactions. RSA withdrawal, however, in non-maltreating mothers resulted in increases in positive parenting strategies. These contradictory findings support the need for additional research.

### **Sleep and Physiological Dysregulation**

Sleep may be one critical factor that influences intra-individual fluctuations in RSA reactivity. The wear-and-tear that occurs as a result of sleep deprivation increases blood pressure, elevates stress hormones and compromises ANS function (McEwen, 2006). Decreases in sleep quality and quantity increase activation of the SNS and decrease RSA, which may be especially important for subsequent functioning under stressful and challenging conditions (Meerlo, Sgoifo, & Suchecki, 2008; McEwen, 2006).

### **Previous Findings on Sleep and Parenting**

Though no studies, to our knowledge, have examined sleep deprivation and parenting in the context of these underlying physiological and emotional processes, previous research has demonstrated a potential link between parent sleep problems and parenting behavior. Though examination into these associations is very limited, the research that does exist suggests that sleep loss may compromise the regularity with which parents engage in adaptive parenting strategies. In a recent study by Australian researchers, mothers reporting increased sleep disturbance also reported experiencing poorer affect and greater

stress than well-rested mothers (Meltzer & Mindell, 2007). Parent-reported fatigue is also associated with decreased parental involvement and warmth and increased irritability (Cooklin, Giallo, & Rose, 2011). A study by Gregory and colleagues (2012) examined maternal experiences of insomnia and experimenter-rated parent behaviors and socialization practices. Controlling for SES and depression, insomnia was related to greater family chaos, increased child neglect, less expression of positive affect, and less child stimulation. In more extreme cases, poor parental sleep has been suggested to increase the likelihood of child abuse (Owens, 2000). Moreover, parents seem to recognize the disruption that sleep deprivation may cause: 62% of parents reported that ‘tiredness gets in the way of being the parent I would like to be’ (Cooklin, Giallo, & Rose, 2012). More work is needed in understanding the mechanisms underlying this association.

### **The Current Study**

The majority of work on parent sleep problems has examined direct associations between self-reported parent sleep and parent affect and/or behavior. Due to the affective and cognitive dysregulation characteristic of sleep deprivation (Durmer & Dinges, 2005), self-report of affect and behavior from individuals who are sleep deprived may be less reliable than self-reports from individuals who are less sleep deprived. More objective reports of parenting behavior may be more suited to identify maladaptive parenting behaviors. Previous research also does not examine the importance of sleep under stressful conditions. The role of sleep deprivation may be especially important in the

context of interpersonal challenges (Keller et al., 2014), due to the role of sleep in self-regulation abilities. Further, these interpersonal challenges between parents and children are common occurrences in every parent-child relationship (Dix, 1991). Individuals who are not experiencing stress require less activation of self-regulatory resources than stressed persons, reducing the observed effect of sleep (Martini, Root, & Jenkins, 2004). The current study will attempt to replicate previous findings, which suggest that parent RSA and affective experiences mediate the associations between child behavior and parent behavior. Further, the current study will examine sleep deprivation as a moderator of these associations. More specifically, we predict that parents who are sleep deprived will exhibit greater RSA withdrawal and more negative affect in response to difficult child behaviors. These reactions will subsequently predict increases in negative parenting behaviors (e.g. rejection, coercion, withdrawal) and decreases in positive parenting behaviors (e.g. behaviors characteristic of an authoritative parenting style: emotional support and demandingness) during the parent-child problem-solving task. Mother and father behaviors will be examined separately for additional exploratory analyses. No hypotheses are made regarding parent gender differences in the current study.

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## Chapter 2

### **METHOD**

#### **Participants**

Data for this study were obtained from a larger study on parental problem drinking and child sleep. Participants were 196 families. One-third of participating families at the time of recruitment were classified as heavy drinkers, one-third were classified as moderate drinkers, and one-third of families were classified as light drinkers, according to guidelines set forth by the Center for Disease Control. Families were recruited utilizing radio advertisements, flyers posted in public places or online, old birth announcements, and referrals. To pass eligibility criteria, heterosexual partners were required to be older than 21 years of age, to have been cohabiting for a minimum of 2 years, and to have a typically developing child living at home between the ages of 6 and 11, free from acute or chronic illnesses. Eligibility criteria were determined by maternal or paternal report. Each family was compensated \$150 for their time.

The majority of the couples who participated in this study were married (86%). Mean time of cohabitation was 13.4 years. Approximately 83% of the current sample were biological parents of the children participating—86.6% of women, 78.5% of men. The sample was demographically representative of the community from which it was drawn. The majority of participants (81%) were European American; 14.1% were African American, 2.5% Other and 2.4% of the sample did not give a response concerning their ethnicity. Child gender was fairly equally distributed (48.7% male, 49.7% female, 1.6% not identified). The mean age of the participating children was approximately 8.4 years old ( $SD=2.5$  years).

## Procedure

This study was conducted with the approval of the University of Kentucky Internal Review Board. This section will discuss only those procedures and activities used in the proposed dissertation project. Additional measures that are part of the larger study are not described.

One week before the laboratory portion of the visit, an experimenter attended a scheduled 1-hour visit at the family's home. During this time, adult participants were given individual daily diaries to fill out regarding subjective sleep duration, sleep quality, daily sleepiness, and naps. Parental compliance for filling out the sleep diaries was good: 78.8% of parent participants turned in 6 days of diaries or more.

A week later participating families came in to the university laboratory for one, 2.5-3 hour appointment. Families were instructed to return their daily diaries at this time. Upon a family's arrival to the Family and Child Development Laboratory, the parents and child were introduced to the experimenters and were each taken to separate rooms to obtain informed consent and assent and to begin questionnaire completion. While working on these questionnaires, one parent of the dyad was selected to participate in a problem-solving task with his/her child. Upon completion of this task, parents returned to filling out their questionnaires and the second member of the parent dyad was brought in to engage with the child in the problem-solving task. The order in which the mother and father were selected to complete the interactive task with the child was counterbalanced between participating families.

Before beginning the problem-solving task, 6 electrodes were attached to the parent participant following standard guidelines for electrode placement (see explanation below). Parents and children were then asked to sit quietly for 3 minutes while a physiological baseline was obtained. Following baseline, the problem-solving task occurred. Physiological data was attained during the task in order to calculate changes in physiological patterns under interpersonal stress. Problem-solving interactions were also video recorded for later coding purposes.

For the problem-solving task, the parent and child dyad were instructed to have a discussion regarding a parent-selected topic that was considered to be especially problematic in the parent-child relationship. Parents were provided a list of options from which they might choose, if they so desired. This list contained example topics such as the completion of chores, grades, and communicating with respect. These topics were chosen by the parent before the physiological baseline was attained. Parents were asked to discuss their chosen topic with their child for a period of five minutes. Both individuals were encouraged to try to work towards a resolution or compromise regarding the difficult topic.

Upon completion of the discussion task, parents completed a post discussion questionnaire regarding their personal experiences of emotion, and judgments about the problem. Parents and children were then fully debriefed as to the nature of the study, and were dismissed with a written explanation sheet and monetary compensation for their participation. Videos were then coded by advanced undergraduates for parent behaviors, child behaviors, and child affect.

## Measures

### Daily Sleepiness:

Participants rated on a scale of 1-10 (1= not at all – 10= very much) how sleepy they were during the day. They also rated on the same scale how difficult it was to get up that morning, how alert they were when they first woke up, and how rested and refreshed they felt upon waking. Each of these daily ratings were averaged over the course of the week to form 1 score of sleepiness, 1 score of difficulty waking, 1 score of waking alertness, and 1 score of rested feelings.

### Daily Naps:

Participants answered 1 question regarding nap-taking on the specified day. Participants estimated how many minutes they napped during the day. These daily ratings were averaged over the course of the week to form 1 aggregate score of naps.

### Daily Sleep Duration:

Participants answered open-ended questions indicating the time they laid down to sleep, the time they think they fell asleep, the time they woke up the next morning, and the time that they got out of bed from the previous night. Nightly sleep duration was attained by calculating the number of minutes from the time they fell asleep to the time they awoke the next morning. These daily ratings were averaged over the course of the week to form 1 aggregate score of sleep duration.

### Daily Sleep Quality:

Participants indicated how many times they believed that they woke up during the middle of the night and how long they were awake after initially falling asleep. Participants similarly ranked the subjective quality of their sleep on a scale of 1-10, with 10 being the best quality. Nightly wakings were calculated by adding the number of minutes per night that participants were awake after initially falling asleep. These wakings were averaged over the course of the week to form 1 aggregate score. Similarly, subjective sleep quality was also averaged over the course of the week to form 1 subjective sleep quality score.

### Physiological Data Acquisition and Scoring

RSA (also known as heart rate variability; HRV) is determined by rhythmic fluctuations in heart period that are accompanied by phases of the respiratory cycle (Grossman, Karemaker, & Weiling, 1991). Standard guidelines (Bernston, Cacioppo, & Quigley, 1991) were followed to assess RSA in this study. Heartbeat was acquired by placing one electrode on top of the participants' right collarbone. A second and third electrode was placed upon the side of the participant's lowest left and lowest right rib. A custom bioamplifier from Mindware Technologies (BioNex Model 3711-08; Gahanna, OH) was used during data collection, and the signal was digitized with the Mindware acquisition system BioLab 2.5 at a sampling rate of 1,000 readings per second. The bioamplifier was set for bandpass filtering with half power cutoff frequencies of .1 and 1,000 Hz and the signal was amplified with a gain of 500. The signal was then processed using an analysis system from Mindware, HRV 3.0.10. Identification of the R-waves was

provided using an automated algorithm. R-waves may be thought of as the electrical activity associated with the closing of the atrioventricular valve. Manual correction of the rare potentially misidentified R-waves may occur utilizing an interactive graphical program. R-waves times are then converted to IBIs (interbeat intervals). One IBI is equal to the time between two heart beats. IBIs vary both within individual (e.g., due to the respiratory cycle) and between individuals. Within individual variability due to respiratory cycle is the measure of RSA. This variability is computed using spectral analysis, the most commonly used and most widely accepted approach to assessing RSA (Porges & Byrne, 1992; Wawryk, Bates, & Couper, 1997). RSA during baseline is averaged across the entire 3 minutes, RSA during the task is then averaged across 5 minutes, and the residualized change scores between baseline RSA and task RSA were computed for use as a measure of RSA reactivity. In the current study, RSA reactivity from the parent-child discussion condition was used to calculate the parents' RSA residualized change scores.

#### Parent Emotional Experience

On the post-discussion form, parents were asked to rate their experience of the following emotions during the discussion with their child: a) anger, b) sadness, c) fear or worry, and d) happiness. Parents rated their responses on a 5 point likert scale of 0 (not at all) to 4 (a whole lot).

#### Coding of Behavior and Emotion

Videotapes were coded for parent and child behaviors and affect expressions using the SCIFF (Lindahl & Malik, 2000). Parent demandingness

(control) and autonomy granting were coded using student created codes adapted from Rodriguez, Donovanick, and Crowley (2009).

System for Coding Problem: Solving Interactions and Family Functioning (SCIFF) (Lindahl & Malik, 2000):

See Appendix A. This coding procedure is designed to code triadic or dyadic parent-child interactions during a problem solving discussion. It has strong reliability when coded by trained undergraduates. Codes address macro level behaviors at the family level and individual level. Only the codes relevant to the current study are listed here, which include: Parent: a) rejection and invalidation, b) coerciveness, c) emotional support, and d) withdrawal; Child: a) anger and frustration, b) sadness, c) withdrawal, d) opposition and defiance, and e) positive affect.

#### Parent Autonomy Granting and Demandingness

See Appendix B. The graduate candidate additionally created 2 codes for autonomy granting and demandingness--2 characteristics deemed of special importance in parent-child problem-solving interactions (Darling & Steinberg, 1993). This code was largely adapted from Rodriguez, Donovanick, and Crowley (2009), however, it was altered to correspond stylistically to codes as presented in the SCIFF, for ease of use for the coders.

Each global characteristic was coded using Windows Media Player and Microsoft Excel. Coders (N = 6) were trained by the Ph.D. candidate. Training included four, 2-hour sessions in which the codes were defined, examples were provided and coded, and procedures were explained. Following explanation of

the codes and process, 3 example tasks were coded separately by students and then coded together as a group. Next, students were required to complete four, 5-minute videos individually for homework. Groups then met to compare results. Discrepancies were discussed and additional homework tasks were coded in this manner on 3 occasions, until coders established the necessary skill to code each of the codes independently. A random 20% of the actual tasks were coded by all coders to establish reliability, which was determined by intraclass correlations (ICC). Inter-rater correlations ranged from .77-.96, all falling within the acceptable range.

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## Chapter 3

### RESULTS

#### **Preliminary Data Analysis**

Prior to further analyses, preliminary data analyses were conducted to screen for outliers, distributional normality, and missing data of study variables. The percent of missing cases ranged from 2.2%-21.6% per variable. Analyzing the data for patterns of missingness using Little's MCAR test indicated that data were not missing completely at random,  $\chi^2(3606)=3836.70, p < .05$ . Missing cases were replaced using the Expectation Maximization (EM) algorithm in SPSS (Schafer, 1999; Schlomer, Bauman, & Card, 2010). EM is a type of imputation that is superior to many other forms of handling missing data (e.g. casewise deletion, nonstochastic imputation, etc.) (Schlomer, et al., 2010). Since it imputes values, it allows for bootstrapping, whereas FIML does not. Next, frequency distributions for study variables were examined to isolate and remove items with low variability (e.g. that were zero-inflated). Variables for which 75% or more cases had the same value were excluded. These variables included: mothers' child-directed coercive behaviors, mothers' feelings of anger, sadness, and worry during the discussion, and fathers' feelings of anger, sadness, and worry during the discussion. Next, z scores for each study variable were created to search for outliers. Those scores that were above or below 3 standard deviations from the mean were trimmed to 3 standard deviations from the mean (<1% of values). Next, examination of study data suggested significant skew among the proposed endogenous variables (anything above a skew/ SE= 2 in a small sample is

considered to be problematic) (Cohen, Cohen, West, & Aiken, 2003). As a result, Asymptotic Distribution Free (ADF) estimation was used to estimate path analyses in AMOS, as it makes no assumptions regarding the distributional properties of data.

### **Data Analyses**

Analyses were conducted utilizing structural equation modeling (SEM) using AMOS version 21 (Arbuckle & Wothke, 2012) following replacement of data. Child behaviors, parenting behaviors, parent emotional experience and aggregated sleep variables were originally conceptualized as latent variables for the current study. Initial measurement models were composed of theoretically similar indicators and fit to examine model fit and factor loadings. For the initial measurement models, latent variables were represented with the following indicators: a) child behavior: withdrawal, opposition and defiance, and positive affect, sadness, and anger, b) parenting behavior: rejection and invalidation, coerciveness (for fathers only), emotional support, withdrawal, autonomy-granting, and demandingness, c) parent affective experience: parent happiness, or positive affect, and d) parent sleep: week long aggregated reports of sleepiness, sleep quality, difficulty waking, waking alertness, rested feelings, sleep duration, and nightly wakings. However, due to poor fit, low factor loadings, and/or model misspecification of the proposed measurement models, parent behaviors, parent sleep, and child behaviors were modeled as observed variables for the remainder of analyses. Model parsimony is important when conducting complex path analyses with small sample sizes, as such the

dependent variables of parent behaviors were retained in all analyses while independent variables, mediators, and moderators were modeled in separate analyses. As a result of the sheer number of variables to be modeled in separate analyses, constructs that were considered to be the most theoretically meaningful were retained, while less theoretically relevant constructs were removed. The variables retained for the remainder of the analyses included: 1) child behaviors: opposition and defiance, withdrawal, sadness, anger, and positive affect, 2) parent behaviors: emotional support, demandingness, rejection, and coerciveness (for fathers only), 3) parent emotion and stress experience: RSA and positive affect, and 4) parent sleep: duration, quality, and sleepiness. This resulted in 10 separate analyses for initial direct effect models, 30 separate analyses for mediation models, and 90 separate analyses for moderation models, resulting in a total of 130 separate models for the current study.

Parent caffeine consumption and time of day in which the interactions occurred were included as covariates in the original models. However, as they did not contribute significant variance to the parent emotions or behaviors, they were not retained for subsequent analyses. Disturbance terms for parent behaviors were allowed to correlate in each separate model. All models controlled for parental drinking group (low, moderate, or heavy), child age, and child gender. Analyses were conducted separately for mother-child interactions and father-child interactions. Models were considered an acceptable fit if they met the majority of the following criteria: non-significant model  $\chi^2$ ,  $\chi^2/df < 2$ , CFI >

.90, RMSEA < .08, and 90% CI for the RMSEA < .10 (Kline, 2005). Bootstrapping of 1,000 bootstrap samples was conducted to test indirect associations between variables.

Means, standard deviations, and correlations between study variables are presented in Table 2.1. All results are included in Tables 2.2- Table 2.32. As such, only results related to the study hypotheses will be described below. All findings presented below should be interpreted net the influence of parent drinking, child age, and child gender.

### **Direct Effects of Child Behavior on Parent Behavior**

Initial models were fit in which direct effects of child behavior on parent behavior were assessed to provide estimates on the total effect of child behavior on parent behavior. See Figure 2.1 for an example. See Tables 2.2 for model coefficients and fit.

Less mother emotional support was predicted by greater child opposition,  $B = -.23, p < .05, \beta = -.23$ , greater child withdrawal (marginally),  $B = -.10, p < .10, \beta = -.13$ , and greater child anger,  $B = -.14, p < .05, \beta = -.17$ . Less mother demandingness was predicted by greater child opposition (marginally),  $B = -.13, p < .10, \beta = -.16$ , and greater child withdrawal,  $B = -.11, p < .05, \beta = -.17$ . Greater mother rejection was predicted by greater child anger,  $B = .08, p < .05, \beta = .13$ . Thus, more difficult child behaviors were related to less mother emotional support, less mother demandingness, and greater mother rejection.

Less father emotional support was predicted by greater child opposition,  $B = -.21, p < .05, \beta = -.18$ , child withdrawal,  $B = -.28, p < .05, \beta = -.28$ , child sadness,

$B = -.41, p < .05, \beta = -.26$ , child anger,  $B = -.40, p < .05, \beta = -.34$ , and less child positive affect,  $B = .59, p < .05, \beta = .54$ . Less father demandingness was predicted by greater child opposition,  $B = -.32, p < .05, \beta = -.32$ , child withdrawal,  $B = -.21, p < .05, \beta = -.22$ , and less child sadness,  $B = .33, p < .05, \beta = .24$ . Greater father rejection was predicted by greater child sadness,  $B = .52, p < .05, \beta = .39$ , child anger,  $B = .22, p < .05, \beta = .22$ , and less child positive affect,  $B = -.34, p < .05, \beta = -.37$ . Greater father coercion was predicted by greater child opposition,  $B = .16, p < .05, \beta = .17$ , greater child sadness,  $B = .51, p < .05, \beta = .39$ , greater child anger,  $B = .29, p < .05, \beta = .30$ , and less child positive affect,  $B = -.28, p < .05, \beta = -.30$ . Thus, more difficult child behaviors were related to less emotional support, less father demandingness, greater father rejection, and greater father coercion.

### **Parent Positive Affect and Physiological Reactivity as Mediators of Associations**

Next, models were fit in which RSA reactivity or parent affective experience was included as mediators of the association between child behavior and parenting behaviors. See Figures 2.2 and 2.3 for examples. Mediators were tested separately in order to parcel out individual effects and later together to examine the total influence of intervening variables. See Tables 2.3-2.12 for model coefficients and fit.

Mother positive affect significantly mediated the association between child behavior and mother emotional support for the following child behaviors: child opposition,  $ab = -.04, p < .05, \beta = -.04$ , child withdrawal,  $ab = -.04, p < .05, \beta = -.06$ ,

child sadness,  $ab = -.06, p < .05, \beta = -.05$ , child anger,  $ab = -.03, p < .05, \beta = -.03$ , and child positive affect,  $ab = .05, p < .05, \beta = .05$ . Mother positive affect significantly mediated the association between child behavior and mother demandingness for the following child behaviors: child opposition,  $ab = -.03, p < .05, \beta = -.04$ , child withdrawal (marginally),  $ab = -.02, p < .10, \beta = -.05$ , child sadness,  $ab = -.05, p < .05, \beta = -.05$ , child anger,  $ab = -.02, p < .05, \beta = -.03$ , and child positive affect,  $ab = .04, p < .05, \beta = .04$ .

Father positive affect mediated the association between child behavior and father emotional support for the following child behaviors: child opposition (marginally),  $ab = -.03, p < .05, \beta = -.03$ , child withdrawal,  $ab = -.05, p < .05, \beta = -.04$ , and child anger,  $ab = -.03, p < .05, \beta = -.03$ . Father positive affect mediated the association between child behaviors and father rejection for the following child behaviors: child opposition,  $ab = .03, p < .05, \beta = .03$ , child withdrawal,  $ab = .06, p < .05, \beta = .06$ , and child anger,  $ab = .04, p < .05, \beta = .04$ . Father positive affect mediated the association between child behaviors and father coercion for the following child behaviors: child opposition (marginally),  $ab = .03, p < .05, \beta = .03$ , child withdrawal,  $ab = .05, p < .05, \beta = .05$ , child anger,  $ab = .03, p < .05, \beta = .03$ , and child positive affect,  $ab = -.05, p < .05, \beta = -.05$ . Thus, parental less positive affect mediated the association between difficult child behavior and less optimal parenting.

No evidence for RSA as a mediator was observed. Significant direct associations were found between vagal withdrawal and mother behaviors, however, such that, greater vagal withdrawal was associated with: greater

mother emotional support,  $B = -.11$ ,  $p < .05$ ,  $\beta = -.15$ , and greater demandingness,  $B = -.10$ ,  $p < .05$ ,  $\beta = -.16$  in the context of child opposition and defiance, with greater emotional support (marginally),  $B = -.10$ ,  $p < .10$ ,  $\beta = -.12$ , in the context of child withdrawal, and with greater emotional support,  $B = -.10$ ,  $p < .05$ ,  $\beta = -.15$ , in the context of child sadness. Mother vagal withdrawal was also associated with greater emotional support,  $B = -.11$ ,  $p < .05$ ,  $\beta = -.15$ , and with greater demandingness (marginally),  $B = -.10$ ,  $p < .10$ ,  $\beta = -.14$ , in the context of child anger and with greater emotional support (marginally),  $B = -.10$ ,  $p < .10$ ,  $\beta = -.13$ , and greater demandingness (marginally),  $B = -.10$ ,  $p < .10$ ,  $\beta = -.14$ , in the context of child positive affect. See Figure 2.7. Significant associations were also found between vagal withdrawal and father behaviors. Greater vagal withdrawal was associated consistently with greater father demandingness (marginally),  $B = -.03$ ,  $p < .10$ ,  $\beta = -.13$ , in the context of child opposition, with greater father demandingness,  $B = -.03$ ,  $p < .10$ ,  $\beta = -.15$ , in the context of child anger, and with greater father demandingness,  $B = -.03$ ,  $p < .10$ ,  $\beta = -.14$ , in the context of child positive affect. Lack of significant mediation does not preclude the possibility that associations between child behavior and parent RSA or between parent RSA and parent behavior are moderated by sleep variables. Sleep will therefore be considered as a moderator of associations involving both parent affect and RSA in subsequent analyses.

### **Parent Sleep Deprivation as a Moderator of Associations**

Next, models were fit in which parent sleep was included as a moderator of the association between child behavior and parenting behaviors. Models were

tested separately for parent RSA and parent positive affect. See Figures 2.4 and 2.5 for examples. See Tables 2.13- 2.32 for model coefficients and fit.

Correlations between exogenous variables were altered throughout, as needed, in order to encourage model convergence and fit. Models that were unable to converge due to Heywood cases—with which statistical attempts were fully exhausted—were left blank in the tables attached. These included the following models: mother sleepiness moderating the association between child opposition and defiance and mother rsa and behavior (Table 2.15), mother sleepiness moderating the association between child withdrawal and mother emotion and behaviors (Table 2.16), and father sleep duration moderating the association between child withdrawal and father rsa and behavior (Table 2.26).

Examination of study findings showed that significant pathways between child behavior, parent emotion, parent RSA, and parent behavior remained significant following the inclusion of sleep as a moderator (See Tables 2.6 and Table 2.7). However, results demonstrated that only 4 out of 120 paths (or 3.3% of paths) proposed for mothers and 7 out of 150 paths proposed for fathers (or 4.6% of paths) involving the interactions of parent sleep and behavior were significant. Inconsistent patterns of interactions between parent behavior and parent sleep between models of parent positive affect and RSA are additional evidence supporting the high probability of Type 1 error. Consequently, these pathways were not further probed or interpreted.

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Figure 2.1: Total Effects of Child Behavior on Parent Behavior, Controlling for Child Age, Gender, and Parent Drinking

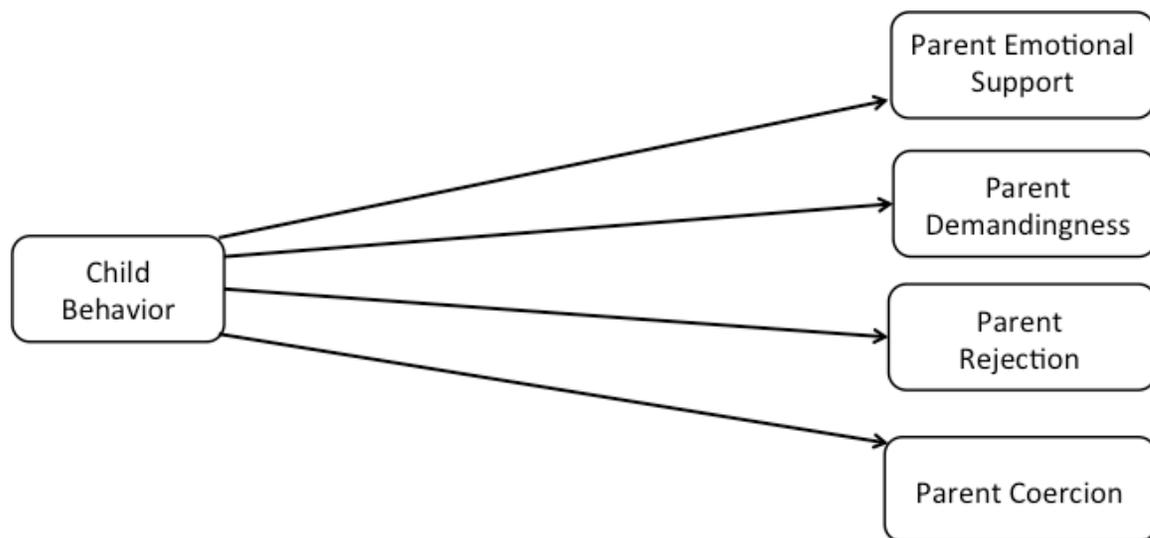


Figure 2.2: Indirect Effects of Child Behavior on Mother Behavior Through Mother Emotion and RSA Reactivity, Controlling for Child Age, Child Gender, and Mother Drinking

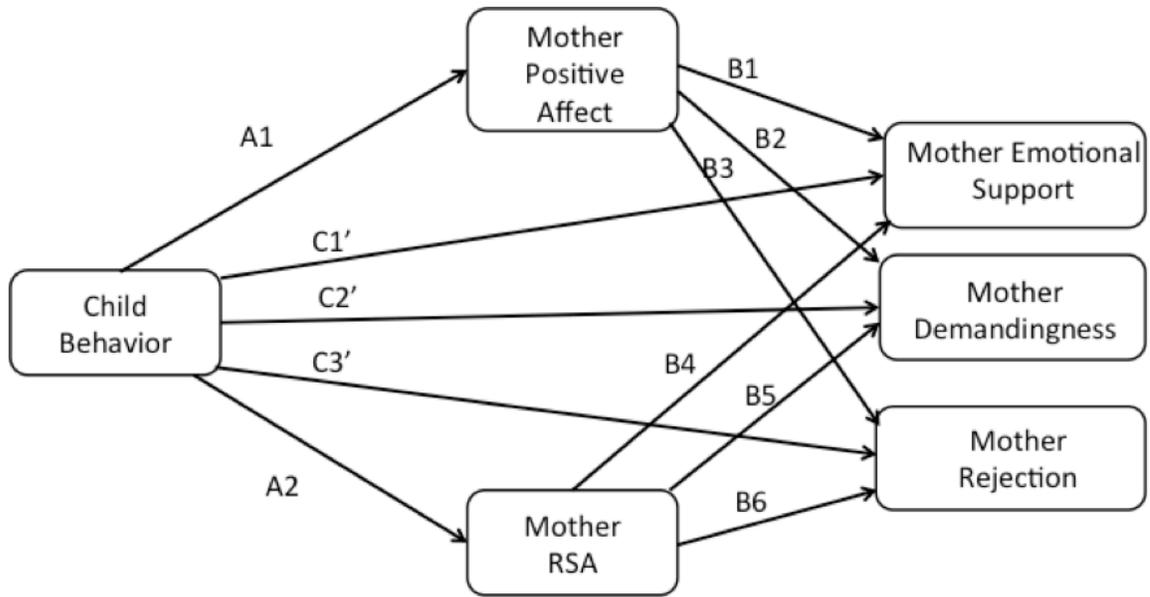


Figure 2.3: Indirect Effects of Child Behavior on Father Behavior Through Father Emotion and RSA Reactivity, Controlling for Child Age, Child Gender, and Father Drinking

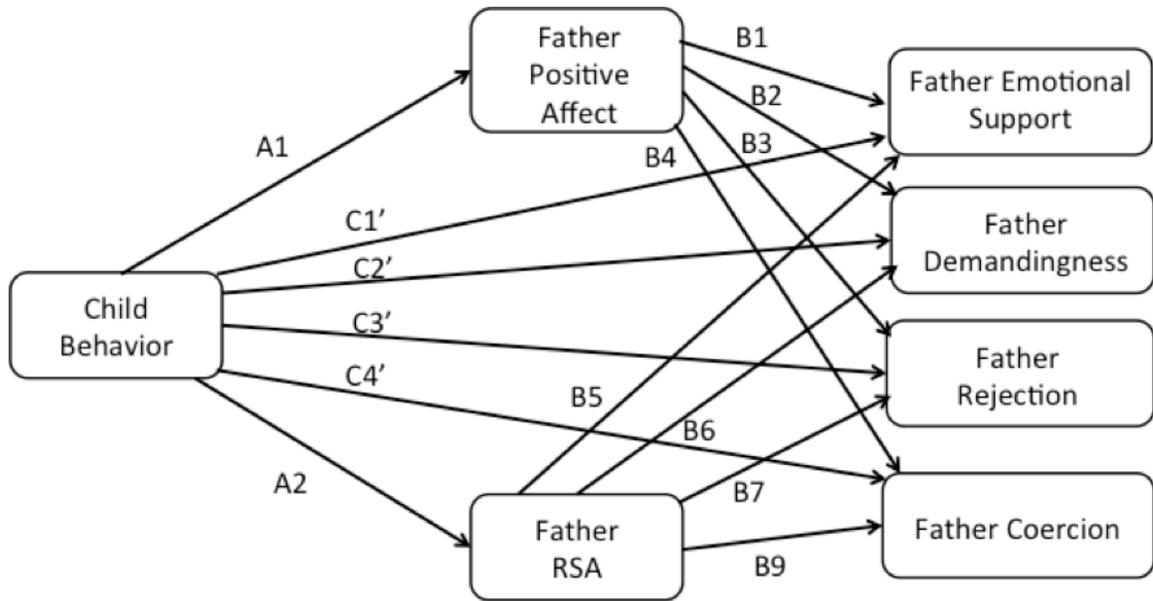


Figure 2.4: Mother Sleep as a Moderator of Associations of Child Behavior on Mother Behavior through Mother Emotion and RSA Reactivity, Controlling for Child Age, Child Gender, and Mother Drinking

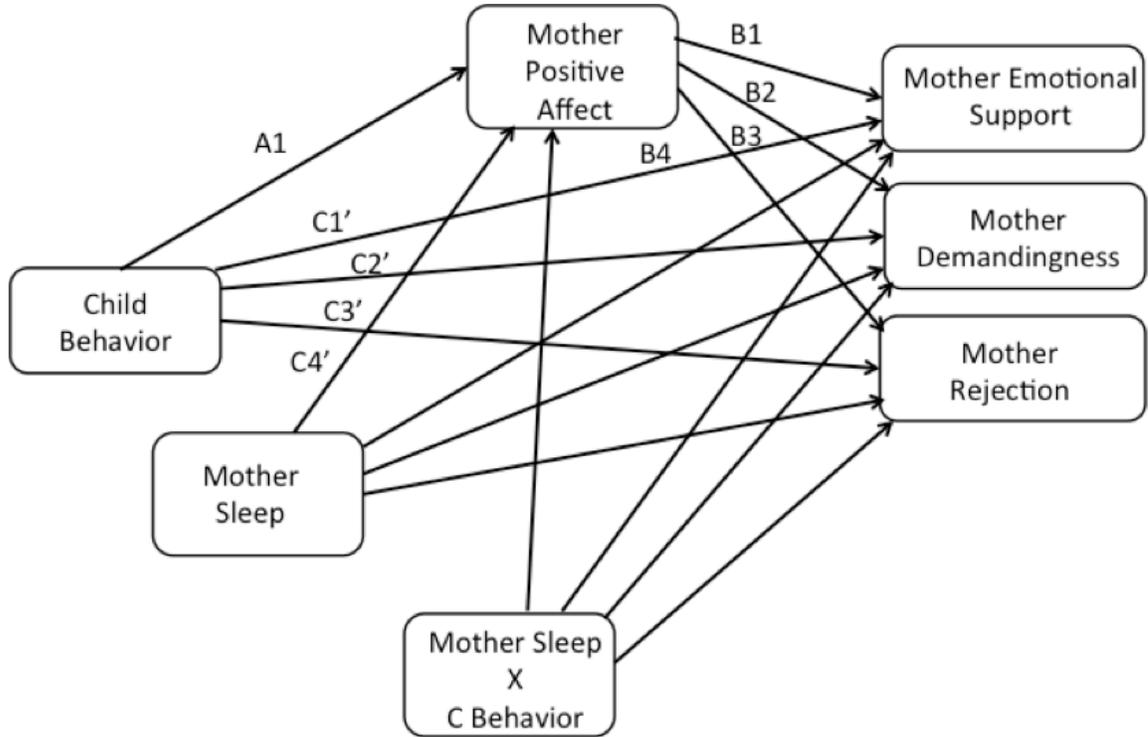


Figure 2.5: Father Sleep as a Moderator of Associations of Child Behavior on Father Behavior through Father Emotion and RSA Reactivity, Controlling for Child Age, Child Gender, and Father Drinking

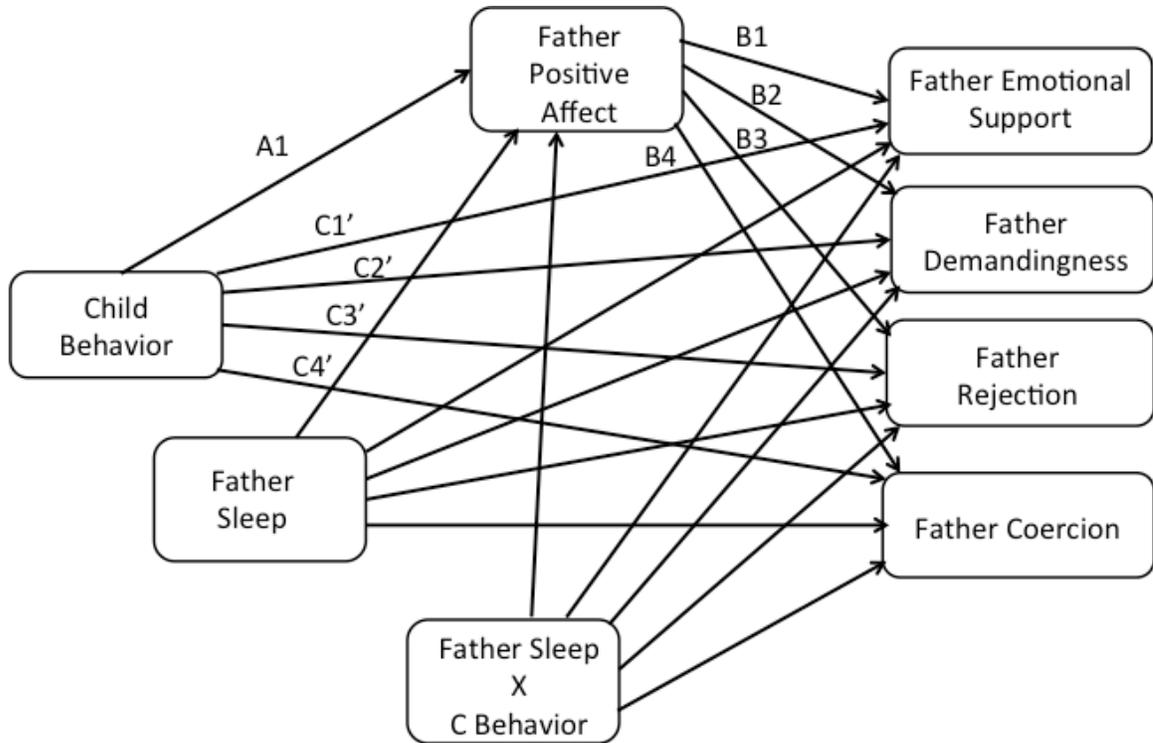
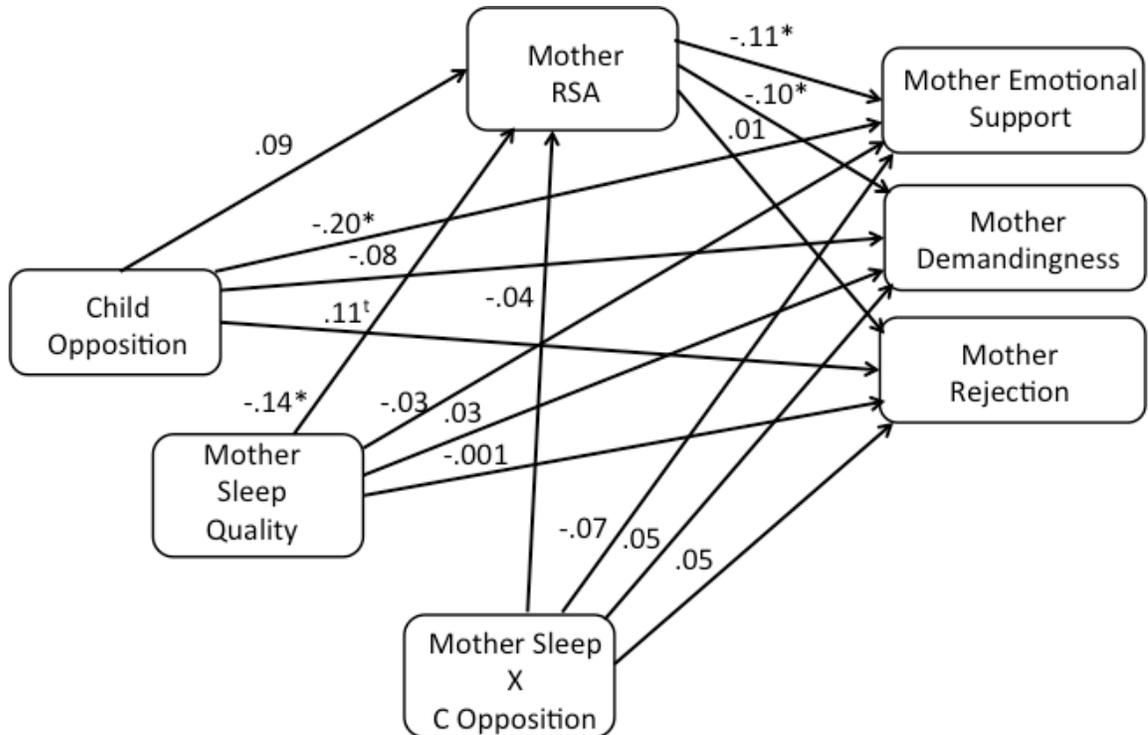
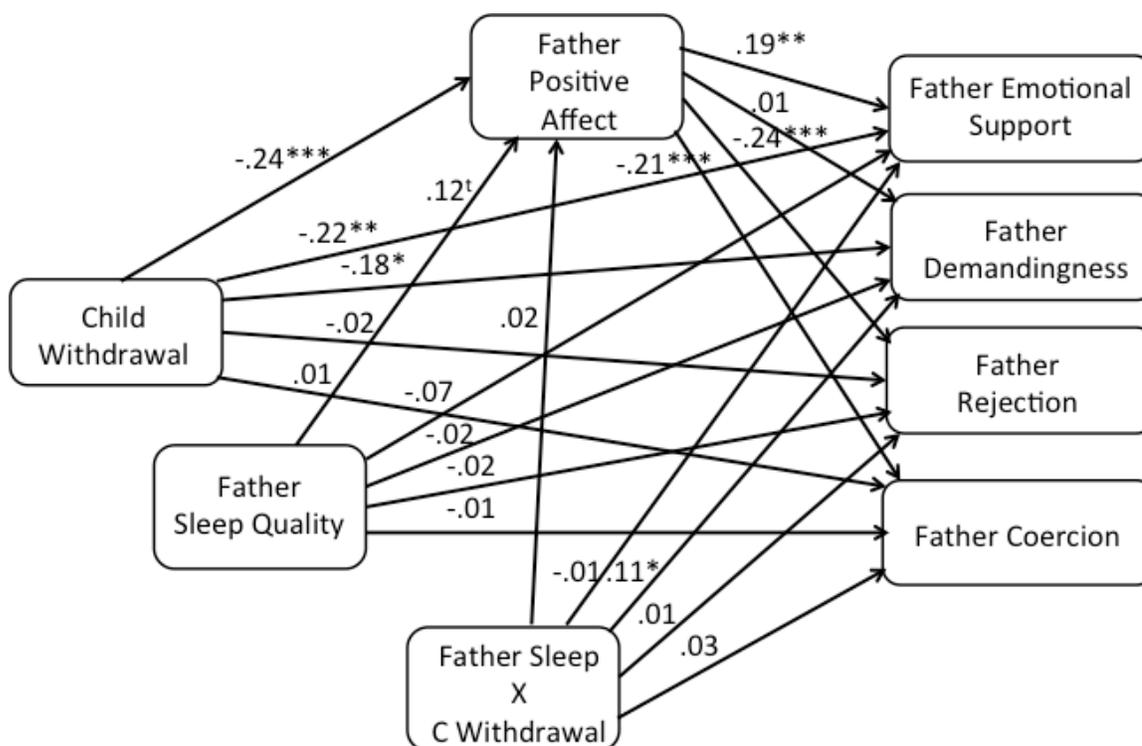


Figure 2.6: Unstandardized Path Estimates for Mother Sleep Quality as a Moderator of Associations of Child Opposition on Mother Behavior through her RSA Reactivity



Note: \*  $p < .05$ , \*\*\*  $p < .001$ , \*\*  $p < .01$ , <sup>t</sup> $p < .10$ ; Model covariates for parent drinking, child age, and child gender were included in the actual model, however, were not presented above for ease of the reader.

Figure 2.7: Unstandardized Path Estimates for Father Sleep Quality as a Moderator of Associations of Child Withdrawal on Father Behavior through his Positive Affect



Note: \*  $p < .05$ , \*\*\*  $p < .001$ , \*\*  $p < .01$ ,  $^t p < .10$ ; Model covariates for parent drinking, child age, and child gender were included in the actual model, however, were not presented above for ease of the reader.

Table 2.1: Means, Standard Deviations, and Correlations Between Study Variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. CF Oppose	1														
2. CF Withdraw	.15*	1													
3. CF Sadness	-.07	.22**	1												
4. CF Anger	.60**	.17*	.17*	1											
5. CF Pos Aff	-.11	-.30*	-.27**	-.30**	1										
6. CM Oppose	.26**	.04	.11	.26**	.06	1									
7. CM Withdraw	.11	.28**	.09	.07	-.09	.28**	1								
8. CM Sadness	.03	.14*	-.13 <sup>t</sup>	.03	-.06	-.18*	.15*	1							
9. CM Anger	.04	.02	.11	.19**	-.10	.63**	.33**	.04	1						
10. CM Pos Aff	.04	-.15*	.07	-.02	.13 <sup>t</sup>	-.16*	-.49**	-.34**	-.50*	1					
11. F Emo Sup	-.22**	-.12	-.07	-.19**	.10	-.06	.02	-.07	.07	-.01	1				
12. F Demand	-.14*	-.20**	.07	-.01	.05	-.02	-.10	-.16*	.04	.12	.48**	1			
13. F Rejection	.12 <sup>t</sup>	-.05	-.01	.15*	-.02	-.03	-.12 <sup>t</sup>	.10	-.002	.00	-.58**	-.34**	1		
14. M Emo Sup	-.08	.05	.08	-.002	.09	-.19**	-.26**	-.26**	-.36**	.54**	.19**	.13 <sup>t</sup>	-.19**	1	
15. M Demand	-.17*	-.02	-.11	-.15*	.08	-.32**	-.21**	.23**	-.11	.01	.08	-.11	-.06	.28**	1
16. M Rejection	.01	-.003	-.03	.05	-.02	.06	.02	.40**	.22**	-.34**	-.14	-.19**	.19**	-.58**	.003
17. M Coercion	.11	.04	-.01	.09	-.16*	.17*	.07	.29**	.29**	-.29**	-.21**	-.16*	.22**	-.53**	.003
18. F RSA	.01	.12 <sup>t</sup>	-.09	-.08	-.02	-.07	-.06	.06	-.07	.02	-.18*	-.18*	.09	-.02	.10
19. M RSA	.24**	.09	-.04	.06	-.01	.05	.14 <sup>t</sup>	-.13 <sup>t</sup>	-.01	-.02	-.09	-.09	.05	-.01	-.14 <sup>t</sup>
20. F Pos Aff	-.23**	-.28**	-.21**	-.18*	.30**	.01	-.11	-.07	.03	-.001	.24**	.18*	-.03	-.10	-.12
21. M Pos Aff	-.05	-.09	-.02	-.01	.10	-.12 <sup>t</sup>	-.23**	-.07	-.15*	.27**	-.04	.10	-.07	.23**	.07
22. F Sleepy	-.06	-.01	.06	-.02	.02	.02	.03	.08	.01	-.06	-.02	-.09	.06	-.04	-.02
23. F Quality	-.02	-.10	.01	.09	-.07	.06	-.06	-.11	-.01	.04	-.09	.01	.07	-.05	-.08
24. F Duration	.04	.09	-.06	.08	.07	.02	-.05	-.05	-.003	-.07	.07	-.01	-.11	.12 <sup>t</sup>	.18*
25. M Sleepy	.08	-.08	.05	.02	.03	.13 <sup>t</sup>	.04	.06	.10	.03	-.02	-.05	.05	.05	-.003
26. M Quality	-.06	.06	-.10	.10	-.16*	-.04	-.08	-.18*	.001	.06	-.05	.01	.07	.01	-.05

[34]

Table 2.1: Means, Standard Deviations, and Correlations Between Study Variables (Continued)

27. M Duration	-.002	-.11	.02	.07	-.01	.01	-.11	.04	.16*	-.10	-.004	-.04	.03	-.07	.16*
28. F Drinking	.12 <sup>t</sup>	-.20**	-.01	.09	-.02	.05	-.17*	-.06	-.02	.18*	-.10	.13 <sup>t</sup>	.20**	.01	-.06
29. M Drinking	.06	.02	.04	.05	-.16*	-.06	-.13 <sup>t</sup>	.08	-.06	.09	-.17*	.07	.16*	-.02	-.03
30. Child age	-.09	-.01	-.09	.08	.01	.03	-.11	.06	.11	.06	-.07	-.003	.03	-.14*	-.03

Note: \*  $p < .05$ , \*\*  $p < .01$ , <sup>t</sup> $p < .10$ ; M= Male Parent; F= Female Parent; CM= Child- Male Interactions; CF= Child- Female Interactions; Pos Aff= Positive Affect; Emo Sup= Emotional Support; Oppose= Opposition & defiance; Withdraw= Withdrawal

Table 2.1: Means, Standard Deviations, and Correlations Between Study Variables (Continued)

	16	17	18	19	20	21	22	23	24	25	26	27	28	29	M(SD)
1. CF Oppose															1.66(.91)
2. CF Withdraw															2.45(1.17)
3. CF Sadness															1.39(.73)
4. CF Anger															1.88(1.13)
5. CF Pos Aff															2.24(1.10)
6. CM Oppose															1.87(1.06)
7. CM Withdraw															1.25(.47)
8. CM Sadness															1.54(.75)
9. CM Anger															2.06(1.04)
10. CM Pos Aff															2.24(1.11)
11. F Emo Sup															4.26(.92)
12. F Demand															4.52(.77)
13. F Rejection															1.41(.65)
14. M Emo Sup															2.72(1.20)
15. M Demand															3.21(1.07)
16. M Rejection	1														1.85(1.01)
17. M Coercion	.74**	1													1.69(1.00)
18. F RSA	.05	.16*	1												-.02(1.40)
19 M RSA	-.07	-.05	.10	1											-.07(5.40)
20. F Pos Aff	.05	-.03	-.20**	-.06	1										1.66(1.15)
21. M Pos Aff	-.26**	-.21**	.02	-.05	-.06	1									1.76(1.17)
22. F Sleepy	.09	-.01	-.02	-.12 <sup>t</sup>	.12 <sup>t</sup>	.02	1								3.37(1.61)
23. F Quality	.04	-.04	-.02	.14 <sup>t</sup>	-.15*	-.04	-.41**	1							6.99(1.31)
24. F Duration	-.10	-.04	.004	.05	.05	.10	-.23**	.16*	1						419.80(60.75)
25. M Sleepy	.03	-.09	.08	-.15*	-.14 <sup>t</sup>	.03	.29**	-.05	-.21**	1					3.37(1.61)
26. M Quality	-.07	.06	.001	.09	.07	.10	-.12	.13 <sup>t</sup>	.04	-.30**	1				7.04(1.22)

[36]

Table 2.1: Means, Standard Deviations, and Correlations Between Study Variables (Continued)

27. M Duration	.08	.04	-.08	-.15*	.14 <sup>t</sup>	-.01	.05	-.03	.26**	-.19**	.19**	1			414.49(58.35)
28. F Drinking	.02	.03	.05	-.01	-.13 <sup>t</sup>	-.003	.04	.06	-.11	.01	-.03	-.09	1		1.21(.99)
29. M Drinking	.09	.03	.22	.08	-.05	-.07	.06	.04	-.10	-.04	.12*	.01	.49**	1	1.39(.91)
30. Child age	.15*	.03	-.17*	-.04	.07	-.03	-.05	-.01	-.03	-.10	-.10	.02	-.02	-.09	8.45(2.49)

Note: \*  $p < .05$ , \*\*  $p < .01$ , <sup>t</sup> $p < .10$ ; M= Male Parent; F= Female Parent; CM= Child- Male Interactions; CF= Child- Female Interactions; Pos Aff= Positive Affect; Emo Sup= Emotional Support; Oppose= Opposition & defiance; Withdraw= Withdrawal

Table 2.2: Direct Effects Between Child Behavior and Parent Behavior

	Opposition	Withdrawal	Sadness	Anger	Positive Affect
	B ( $\beta$ )	B ( $\beta$ )	B ( $\beta$ )	B ( $\beta$ )	B ( $\beta$ )
<b><i>Mother Behaviors</i></b>					
Emo Support	-.23*(-.23)	-.10 <sup>t</sup> (-.13)	-.10(-.08)	-.14*(-.17)	.08*(.10)
Demandingness	-.13 <sup>t</sup> (-.16)	-.11*(-.17)	.07(.07)	-.01(-.01)	.04(.06)
Rejection	.07 (.11)	-.01(-.02)	-.01(-.01)	.08*(.13)	-.004(-.01)
$\chi^2(3)$	.49	.49	.49	.49	.49
$\chi^2/df$	.16	.16	.16	.16	.16
CFI	1.00	1.00	1.00	1.00	1.00
RMSEA	.00	.00	.00	.00	.00
RMSEA 90% CI	.00-.04	.00-.04	.00-.04	.00-.04	.00-.04
<b><i>Father Behaviors</i></b>					
Emo Support	-.21*(-.18)	-.28*(-.28)	-.41*(-.26)	-.40*(-.34)	.59***(.54)
Demandingness	-.32*(-.32)	-.21*(-.22)	.33*(.24)	-.11(-.11)	.001(.001)
Rejection	.07(.08)	.05(.05)	.52*(.39)	.22*(.22)	-.34***(-.37)
Coercion	.16*(.17)	.08(.08)	.51*(.39)	.29*(.30)	-.28***(-.30)
$\chi^2(3)$	2.73	2.73	2.73	2.73	4.09
$\chi^2/df$	.91	.91	.91	.91	.64
CFI	1.00	1.00	1.00	1.00	1.00
RMSEA	.00	.00	.00	.00	.00

Note: <sup>t</sup> $p < .10$ , \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ ; F= Female, C= Child

Table 2.3: Mother Emotion and RSA as Mediators of the Association Between Child Opposition and Mother Behavior

	<i>Positive Affect</i>	<i>RSA</i>	<i>Combined</i>
	B ( $\beta$ )	B ( $\beta$ )	B ( $\beta$ )
C Opposition to F Emo Support (C1')	-.19*(-.19)	-.21*(-.21)	-.18*(-.18)
C Opposition to F Demand (C2')	-.11 <sup>t</sup> (-.13)	-.14 <sup>t</sup> (-.17)	-.13*(-.15)
C Opposition to F Rejection (C3')	.07(.10)	.05(.06)	.04(.05)
C Opposition to F Positive Affect (A1)	-.28**(-.22)		-.28**(-.22)
C Opposition to F RSA (A2)		.01(.01)	.02(.02)
F Positive Affect to F Emo Support (B1)	.15*(.19)		.14*(.17)
F Positive Affect to F Demand (B2)	.11*(.16)		.10 <sup>t</sup> (.13)
F Positive Affect to F Rejection (B3)	.004(.01)		.01(.01)
F RSA to F Emotional Support (B4)		-.11*(-.15)	-.10 <sup>t</sup> (-.12)
F RSA to F Demand (B5)		-.10*(-.16)	-.09 <sup>t</sup> (-.14)
F RSA to F Rejection (B6)		.03(.05)	.03(.05)
Indirect to F Emo Support (A1B1+ A2B4)	-.04*(-.04)	-.001(-.001)	-.04 <sup>t</sup> (-.04)
Indirect to F Demand (A1B2 + A2B5)	-.03*(-.04)	-.001(-.001)	-.03 <sup>t</sup> (-.04)
Indirect to F Rejection (A1B3 + A2B6)	-.001(-.001)	.00(.00)	.002(-.004)
$\chi^2$	3.82	12.13	15.23
DF	6	6	9
$\chi^2/df$	.64	2.02	1.69
CFI	1.00	.91	.930
RMSEA	.00	.07	.06
RMSEA 90% CI	.00-.07	.00-.13	.00- .10

Note: <sup>t</sup> $p < .10$ , \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ ; F= Female, C= Child

Table 2.4: Mother Emotion and RSA as Mediators of the Association Between Child Withdrawal and Mother Behavior

	Positive Affect B ( $\beta$ )	RSA B ( $\beta$ )	Combined B ( $\beta$ )
C Withdrawal to F Emo Support (C1')	-.07(-.09)	-.12*(.15)	-.09(-.11)
C Withdrawal to F Demand (C2')	-.10*(-.15)	-.12*(-.19)	-.10*(-.16)
C Withdrawal to F Rejection (C3')	-.02(-.03)	.01(.01)	.01(.02)
C Withdrawal to F Pos Affect (A1)	-.27***(-.28)		-.24***(-.25)
C Withdrawal to F RSA (A2)		.05(.05)	.05(.05)
F Positive Affect to F Emo Support (B1)	.16*(.19)		.15**(.18)
F Positive Affect to F Demand (B2)	.08(.12)		.09*(.14)
F Positive Affect to F Rejection (B3)	-.01(-.02)		.00(.003)
F RSA to F Emotional Support (B4)		-.10 <sup>t</sup> (-.12)	-.06(-.09)
F RSA to F Demand (B5)		-.10(-.13)	.06(-.09)
F RSA to F Rejection (B6)		.02(.04)	.01(.03)
Indirect to F Emo Support (A1B1+ A2B4)	-.04*(-.06)	-.01(-.01)	-.04(-.05)
Indirect to F Demand (A1B2 + A2B5)	-.02 <sup>t</sup> (-.05)	-.004(-.01)	-.02(-.04)
Indirect to F Rejection (A1B3 + A2B6)	.003(.01)	.001(.002)	.00(.001)
$\chi^2$	9.45	11.79	15.11
DF	6	6	8
$\chi^2/df$	1.57	1.96	1.89
CFI	.96	.91	.92
RMSEA	.05	.07	.07
RMSEA 90% CI	.00-.12	.00-.13	.07- .12

Note: <sup>t</sup> $p < .10$ , \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ ; F= Female, C= Child

Table 2.5: Mother Emotion and RSA as Mediators of the Association Between Child Sadness and Mother Behavior

	Positive Affect	RSA	Combined
	B ( $\beta$ )	B ( $\beta$ )	B ( $\beta$ )
C Sadness to F Emo Support (C1')	-.04(-.03)	-.13(-.20)	-.07(-.06)
C Sadness to F Demandingness (C2')	.13*(.12)	-.08(-.02)	.14*(.13)
C Sadness to F Rejection (C3')	-.01(-.01)	.02(.16)	.004(.03)
C Sadness to F Positive Affect (A1)	-.32*(-.20)		-.31**(-.20)
C Sadness to F RSA (A2)		-.11(-.09)	-.10(-.07)
F Positive Affect to F Emo Support (B1)	.18**(.22)		.16**(.20)
F Positive Affect to F Demandingness (B2)	.14(.21)		.14**(.21)
F Positive Affect to F Rejection (B3)	-.01(-.01)		.004(.01)
F RSA to F Emo Support (B4)		-.10 <sup>t</sup> (-.15)	-.07(-.10)
F RSA to F Demandingness (B5)		-.08(-.14)	-.05(-.09)
F RSA to F Rejection (B6)		.02(.05)	.02(.04)
Indirect to F Emo Support (A1B1+ A2B4)	-.06*(-.05)	.01(.01)	-.04(-.03)
Indirect to F Demandingness (A1B2 + A2B5)	-.05*(-.05)	.01(.01)	-.04(-.04)
Indirect to F Rejection (A1B3 + A2B6)	.003(.003)	-.002(-.003)	-.003(-.01)
$\chi^2$	6.39	12.11	15.41
DF	6	6	8
$\chi^2/df$	1.07	2.02	1.93
CFI	.99	.90	.90
RMSEA	.02	.07	.07
RMSEA 90% CI	.00-.10	.00-.13	.00-.12

Note: <sup>t</sup> $p < .10$ , \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ ; F= Female, C= Child

Table 2.6: Mother Emotion and RSA as Mediators of the Association Between Child Anger and Mother Behavior

	Positive Affect	RSA	Combined
	B ( $\beta$ )	B ( $\beta$ )	B ( $\beta$ )
C Anger to F Emo Support (C1')	-.12*(-.15)	-.16**(.20)	-.14*(-.18)
C Anger to F Demand (C2')	.01(.01)	-.01(-.02)	.004(.01)
C Anger to F Rejection (C3')	.08 <sup>t</sup> (.13)	.09*(.16)	.10*(.16)
C Anger to F Positive Affect (A1)	-.17*(-.17)		-.17**(-.17)
C Anger to F RSA (A2)		-.09(-.09)	-.10(-.08)
F Positive Affect to F Emo Support (B1)	.17**(.20)		.14*(.17)
F Positive Affect to F Demand (B2)	.13**(.19)		.11*(.16)
F Positive Affect to F Rejection (B3)	.002(.003)		.02(.03)
F RSA to F Emotional Support (B4)		-.11*(-.15)	-.09(-.12)
F RSA to F Demandingness (B5)		-.10 <sup>t</sup> (.14)	-.07(-.11)
F RSA to F Rejection (B6)		.03(.05)	.03(.05)
Indirect to F Emo Support (A1B1+ A2B4)	-.03*(-.03)	-.01(-.02)	-.02(-.02)
Indirect to F Demand (A1B2 + A2B5)	-.02*(-.03)	.01(.00)	-.01(-.02)
Indirect to F Rejection (A1B3 + A2B6)	.001(-.001)	-.003(-.01)	-.01(-.01)
$\chi^2$	6.15	12.05	17.06
DF	6	6	9
$\chi^2/df$	1.03	2.01	1.89
CFI	1.00	.92	.92
RMSEA	.01	.07	.07
RMSEA 90% CI	.00-.09	.00-.13	.01- .12

Note: <sup>t</sup> $p < .10$ , \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ ; F= Female, C= Child

Table 2.7: Mother Emotion and RSA as Mediators of the Association Between Child Positive Affect and Mother Behavior

	Positive Affect	RSA	Combined
	B ( $\beta$ )	B ( $\beta$ )	B ( $\beta$ )
C Positive Affect to F Emo Support (C1')	.03(.04)	.06(.08)	.01(.02)
C Positive Affect to F Demand (C2')	.01(.02)	.02(.04)	-.01(-.02)
C Positive Affect to F Rejection (C3')	-.004(-.01)	-.01(-.01)	-.004(-.01)
C Positive Affect to F Positive Affect (A1)	.29***(.31)		.32***(.33)
C Positive Affect to F RSA (A2)		-.01(-.01)	-.04(-.06)
F Positive Affect to F Emo Support (B1)	.17**(.21)		.16***(.20)
F Positive Affect to F Demand (B2)	.12*(.17)		.12**(.18)
F Positive Affect to F Rejection (B3)	-.01(-.01)		.002(.003)
F RSA to F Emo Support (B4)		-.10 <sup>†</sup> (-.13)	-.08(-.10)
F RSA to F Demand (B5)		-.10 <sup>†</sup> (-.14)	-.06(-.10)
F RSA to F Rejection (B6)		.02(.04)	.02(.04)
Indirect to F Emo Support (A1B1+ A2B4)	.05*(.05)	.001(.002)	.06*(.07)
Indirect to F Demand (A1B2 + A2B5)	.04*(.04)	.001(.002)	.04*(.06)
Indirect to F Rejection (A1B3 + A2B6)	.00(-.002)	.00(.00)	.00(.00)
$\chi^2$	5.91	11.79	15.29
DF	6	6	8
$\chi^2/df$	.985	1.97	1.92
CFI	1.00	.89	.90
RMSEA	.00	.07	.07
RMSEA 90% CI	.00-.09	.00-.13	.01- .12

Note: <sup>†</sup> $p < .10$ , \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ ; F= Female, C= Child

Table 2.8: Father Emotion and RSA as Mediators of the Association Between Child Opposition and Father Behavior

	Positive Affect B ( $\beta$ )	RSA B ( $\beta$ )	Combined B ( $\beta$ )
C Opposition to M Emo Support (C1')	-.17**(-.15)	-.19**(-.17)	-.17**(-.14)
C Opposition to M Demand (C2')	-.32***(-.31)	-.34***(-.33)	-.32***(-.32)
C Opposition to M Rejection (C3')	.04(.04)	.07(.07)	.04(.04)
C Opposition to M Coercion (C4')	.14 <sup>†</sup> (.14)	.17*(.17)	.14 <sup>†</sup> (.14)
C Opposition to M Positive Affect (A1)	-.14*(-.13)		-.14*(-.13)
C Opposition to M RSA (A2)		.18(.04)	.16(.03)
M Positive Affect to M Emot Support (B1)	.21*(.21)		.21**(.21)
M Positive Affect to M Demand (B2)	.03(.03)		.03(.03)
M Positive Affect to M Rejection (B3)	-.23***(-.26)		-.23***(-.26)
M Positive Affect to M Coercion (B4)	-.18**(-.20)		-.17**(-.20)
M RSA to M Emotional Support (B5)		-.003(-.01)	.00(.00)
M RSA to M Demandingness (B6)		-.03 <sup>†</sup> (-.13)	-.03 <sup>†</sup> (-.13)
M RSA to M Rejection (B7)		-.02(-.08)	-.02(-.09)
M RSA to M Coercion (B8)		-.01(-.06)	-.01(-.07)
Indirect to M Emo Support (A1B1+ A2B5)	-.03 <sup>†</sup> (-.03)	-.001(.00)	-.03(-.03)
Indirect to M Demand (A1B2 + A2 B6)	-.004(-.004)	-.01(-.01)	-.01(-.01)
Indirect to M Rejection (A1B3 + A2B7)	.03*(.03)	-.003(-.003)	.03 <sup>†</sup> (.03)
Indirect to M Coercion (A1B4 + A2B9)	.03 <sup>†</sup> (.03)	-.002(-.002)	.02(.02)
$\chi^2$	4.60	4.89	6.12
DF	6	6	9
$\chi^2/df$	.66	.70	.68

CFI	1.00	1.00	1.00
RMSEA	.00	.00	.00
RMSEA 90% CI	.00-.07	.00-.07	.00- .06

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Note: <sup>†</sup> $p < .10$ , \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ ; M= Male, C= Child

Table 2.9: Father Emotion and RSA as Mediators of the Association Between Child Withdrawal and Father Behavior

	Positive Affect	RSA	Combined
	B ( $\beta$ )	B ( $\beta$ )	B ( $\beta$ )
C Withdrawal to M Emo Support (C1')	-.24***(-.23)	-.28***(-.28)	-.24***(-.24)
C Withdrawal to M Demand (C2')	-.20**(-.21)	-.19**(-.21)	-.18**(-.19)
C Withdrawal to M Rejection (C3')	-.01(-.01)	.07(.07)	.01(.01)
C Withdrawal to M Coercion (C4')	.02(.02)	.08(.09)	.04(.04)
C Withdrawal to M Positive Affect (A1)	-.24***(-.24)		-.24***(-.24)
C Withdrawal to M RSA (A2)		.57(.13)	.56(.13)
M Positive Affect to M Emo Support (B1)	.18*(.17)		.17*(.17)
M Positive Affect to M Demand (B2)	.02(.02)		.02(.02)
M Positive Affect to M Rejection (B3)	-.23***(-.27)		-.23***(-.27)
M Positive Affect to M Coercion (B4)	-.20**(-.23)		-.19**(-.22)
M RSA to M Emotional Support (B5)		.004(.02)	.004(.02)
M RSA to M Demandingness (B6)		-.02(-.19)	-.03(-.12)
M RSA to M Rejection (B7)		-.02(-.09)	-.02(-.09)
M RSA to M Coercion (B8)		-.02(-.08)	-.01(-.07)
Indirect to M Emo Support (A1B1+ A2B5)	-.05*(-.04)	.002(.002)	-.04(-.04)
Indirect to M Demand (A1B2 + A2 B6)	-.004(-.004)	-.01(-.02)	-.02(-.02)
Indirect to M Rejection (A1B3 + A2B7)	.06**(.06)	-.01(-.01)	.05 <sup>t</sup> (.05)
Indirect to Coercion (A1B4 + A2B9)	.05**(.05)	-.01(-.01)	.04 <sup>t</sup> (.04)
$\chi^2$	6.15	5.22	9.07
DF	6	6	9

$\chi^2/df$	1.09	.87	1.01
CFI	1.00	1.00	1.00
RMSEA	.02	.00	.01
RMSEA 90% CI	.00-.10	.00-.09	.00- .08

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Note: <sup>t</sup> $p < .10$ , \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ ; M= Male, C= Child

Table 2.10: Father Emotion and RSA as Mediators of the Association Between Child Sadness and Father Behavior

	Positive Affect	RSA	Combined
	B ( $\beta$ )	B ( $\beta$ )	B ( $\beta$ )
C Sadness to M Emo Support (C1')	-.37***(-.24)	-.44***(-.28)	-.41***(-.26)
C Sadness to M Demand (C2')	.35***(.31)	.32**(.23)	.33***(.24)
C Sadness to M Rejection (C3')	.51(.40)	.53***(.40)	.52***(.38)
C Sadness to M Coercion (C4')	.50(.40)	.53***(.38)	.51***(.38)
C Sadness to M Positive Affect (A1)	-.13(-.13)		-.11(-.13)
C Sadness to M RSA (A2)		-1.02(-.15)	-1.04(-.03)
M Positive Affect to M Emo Support (B1)	.22*(.21)		.21*(.21)
M Positive Affect to M Demand (B2)	.09(.03)		.08(.03)
M Positive Affect to M Rejection (B3)	-.21***(-.26)		-.21***(-.26)
M Positive Affect to M Coercion (B4)	-.17**(-.20)		-.17***(-.20)
M RSA to M Emotional Support (B5)		-.01(-.04)	-.01(.00)
M RSA to M Demand (B6)		-.02(-.10)	-.02(-.13)
M RSA to M Rejection (B7)		-.004(-.03)	-.01(-.09)
M RSA to M Coercion (B8)		-.001(-.02)	-.003(-.07)
Indirect to M Emo Support (A1B1+ A2B5)	-.03(-.02)	.01(.01)	-.01(-.01)
Indirect to M Demand (A1B2 + A2 B6)	-.01(-.01)	.02(.02)	.02(.01)
Indirect to M Rejection (A1B3 + A2B7)	.03(.02)	.004(.003)	.03(.02)
Indirect to Coercion (A1B4 + A2B9)	.02(.02)	.001(.001)	.02(.02)
$\chi^2$	4.11	4.74	6.10
DF	6	6	9
$\chi^2/df$	.69	.79	.68
CFI	1.00	1.00	1.00

RMSEA	.00	.00	.00
RMSEA 90% CI	.00-.07	.00-.08	.00- .06

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Note: <sup>t</sup> $p < .10$ , \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ ; M= Male, C= Child

Table 2.11: Father Emotion and RSA as Mediators Between Child Anger and Father Behavior

	Positive Affect	RSA	Combined
	B ( $\beta$ )	B ( $\beta$ )	B ( $\beta$ )
C Anger to M Emo Support (C1')	-.36***(-.31)	-.38***(-.32)	-.34***(-.30)
C Anger to M Demand C2')	-.10(-.10)	-.13 <sup>†</sup> (-.13)	-.12(-.12)
C Anger to M Rejection (C3')	.18**(.19)	.21**(.21)	.17**(.17)
C Anger to M Coercion (C4')	.26***(.27)	.29***(.30)	.26***(.27)
C Anger to M Positive Affect (A1)	-.17**(-.16)		-.17*(-.15)
C Anger to M RSA (A2)		-.18(-.04)	-.18(-.03)
M Positive Affect to M Emo Support (B1)	.19**(.18)		.19*(.18)
M Positive Affect to M Demand (B2)	.05(.10)		.05(.05)
M Positive Affect to M Rejection (B3)	-.21***(-.24)		-.21***(-.24)
M Positive Affect to M Coercion (B4)	-.16**(-.18)		-.16**(-.18)
M RSA to M Emotional Support (B5)		-.01(-.03)	-.003(-.01)
M RSA to M Demandingness (B6)		-.03*(-.15)	-.03 <sup>†</sup> (-.15)
M RSA to M Rejection (B7)		-.01(-.08)	-.02(-.09)
M RSA to M Coercion (B8)		-.01(-.05)	-.01(-.07)
Indirect to M Emo Support (A1B1+ A2B5)	-.03*(-.03)	.001(.001)	-.03(-.03)
Indirect to M Demand (A1B2 + A2 B6)	-.01(-.01)	.01(.01)	-.003(-.003)
Indirect to M Rejection (A1B3 + A2B7)	.04*(.04)	.003(.003)	.04*(.04)
Indirect to M Coercion (A1B4 + A2B9)	.03*(.03)	.002(.002)	.03 <sup>†</sup> (.03)
$\chi^2$	4.43	4.23	5.86
DF	6	6	9
$\chi^2/df$	.74	.71	.65

CFI	1.00	1.00	1.00
RMSEA	.00	.00	.00
RMSEA 90% CI	.00-.08	.00-.08	.00- .06

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Note: <sup>t</sup> $p < .10$ , \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ ; M= Male, C= Child

Table 2.12: Father Emotion and RSA as Mediators of the Association Between Child Positive Affect and Father Behavior

	Positive Affect	RSA	Combined
	B ( $\beta$ )	B ( $\beta$ )	B ( $\beta$ )
C Positive Affect to M EmoSupport (C1')			
C Positive Affect to M Demand (C2')	.55***(.52)	.59***(.32)	.55***(.52)
C Positive Affect to M Rejection (C3')	-.02(-.02)	.01(.13)	-.02(-.02)
C Positive Affect to M Coercion (C4')	-.29***(-.32)	-.34***(-.21)	-.30***(-.32)
C Positive Affect to M Positive Affect (A1)	-.23***(-.26)	-.28***(-.30)	-.23***(-.26)
C Positive Affect to M RSA (A2)	.29***(.28)		.29***(.28)
M Positive Affect to M Emotional Support (B1)		-.13(-.04)	-.15(-.03)
M Positive Affect to M Demanding (B2)	.09(.09)		.09(.08)
M Positive Affect to M Rejection (B3)	.07(.07)		.06(.07)
M Positive Affect to M Coercion (B4)	-.15**(-.18)		-.16**(-.18)
M RSA to M Emo Support (B5)		-.14*(-.16)	-.14*(-.16)
M RSA to M Demand B6)		.00(.001)	.001(-.01)
M RSA to M Rejection (B7)		-.03*(-.14)	-.03*(-.15)
M RSA to M Coercion (B8)		-.02(-.09)	-.02(-.09)
Indirect to M Emo Support (A1B1+ A2B5)		-.07(-.07)	-.01(-.07)
Indirect to M Demand (A1B2 + A2 B6)	.03(.02)	.00(.00)	.02(.02)
Indirect to M Rejection (A1B3 + A2B7)	.02(.02)	.004(.004)	.02(.02)
Indirect to M Coercion (A1B4 + A2B9)	-.05*(-.05)	.002(.003)	-.04 <sup>t</sup> (-.05)
$\chi^2$	5.56	4.45	7.31
DF	6	6	9
$\chi^2/df$	.93	.74	.81
CFI	1.00	1.00	1.00
RMSEA	.00	.00	.00

RMSEA 90% CI	.00-.09	.00-.08	.00- .07
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Note: <sup>†</sup> $p < .10$ , \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ ; M= Male, C= Child

Table 2.13: Mother Sleep as a Moderator of Child Opposition to Mother Emotion and Behavior

	Sleepiness	Quality	Duration
	B ( $\beta$ )	B ( $\beta$ )	B ( $\beta$ )
<b><i>First Order Effects of Child Behavior</i></b>			
C Opposition to F Emotional Support	-.23**(-.21)	-.17 <sup>t</sup> (-.16)	-.23**(-.21)
C Opposition to F Demandingness	-.09(-.10)	-.06(-.06)	-.09(-.10)
C Opposition to F Rejection	.12*(.16)	.13*(.17)	.12*(.16)
C Opposition to F Positive Affect	-.27**(-.20)	-.30**(-.22)	-.27**(-.20)
<b><i>First Order Effects of Sleep</i></b>			
F Sleep to F Emotional Support	.001(.01)	-.01(-.02)	.001(.07)
F Sleep to F Demandingness	.00(.01)	.05(.08)	.00(.01)
F Sleep to F Rejection	-.001(-.08)	.02(.04)	-.001(-.08)
F Sleep to F Positive Affect	.001(.06)	-.14*(-.15)	.001(.06)
<b><i>Interactions</i></b>			
C Opp x F Sleep to F Positive Affect	-.002(-.10)	-.09 <sup>t</sup> (-.09)	-.002(-.10)
C Opp x F Sleep to F Emotional Support	-.001(-.06)	-.02(-.02)	-.001(-.06)
C Opp x F Sleep to F Demandingness	-.001(-.04)	.08(.08)	-.001(-.04)
C Opp X F Sleep to F Rejection	.00(-.01)	.04(.07)	.00(-.08)
<b><i>Positive Affect Predicting Parent Behavior</i></b>			
F Positive Affect to F Emotional Support	.14*(.18)	.14*(.18)	.14*(.18)
F Positive Affect to F Demandingness	.11*(.16)	.11*(.17)	.11*(.16)
F Positive Affect to F Rejection	.004(.01)	.02(.04)	.004(.01)
<b><i>Indirect Effects of Child Behavior</i></b>			
C Opposition to F Emotional Support	-.04*(-.04)	-.04*(-.04)	-.04*(-.04)
C Opposition to F Demandingness	-.03*(-.03)	-.03*(-.04)	-.03*(-.03)

C Opposition to F Rejection	-.001(-.001)	-.01(-.01)	-.001(-.001)
<b>Indirect Effects of Sleep</b>			
F Sleep to F Emotional Support	.00(.01)	-.02(-.03)	.00(.01)
F Sleep to F Demandingness	.00(.01)	-.02(-.02)	.00(.01)
F Sleep to F Rejection	.00(.00)	-.003(-.01)	.00(.00)
<b>Indirect Effects of Sleep by Child Behavior Interactions</b>			
C Opp x F Sleep to F Emotional Support	.00(-.02)	-.01(-.02)	.00(-.02)
C Opp x F Sleep to F Demandingness	.00(-.02)	-.01(-.02)	.00(-.02)
C Opp x F Sleep to F Rejection	.00(-.001)	-.002(-.003)	.00(-.001)
$\chi^2$	10.33	10.48	10.33
DF	15	15	15
$\chi^2/df$	.69	.70	.69
CFI	1.00	1.00	1.00
RMSEA	.00	.00	.00
RMSEA 90% CI	.00-.04	.00-.04	.00-.04

Note: <sup>†</sup> $p < .10$ , \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ ; F= Female, C= Child

Table 2.14: Mother Sleep as a Moderator of Child Opposition to Mother RSA and Behavior

	Sleepiness	Quality	Duration
	B ( $\beta$ )	B ( $\beta$ )	B ( $\beta$ )
<b><i>First Order Effects of Child Behavior</i></b>			
C Opposition to F Emotional Support		-.20*(-.19)	-.19*(-.18)
C Opposition to F Demandingness		-.08(-.09)	-.09(-.11)
C Opposition to F Rejection		.11 <sup>†</sup> (.14)	.07(.10)
C Opposition to F RSA		.09(.06)	.06(.04)
<b><i>First Order Effects of Sleep</i></b>			
F Sleep to F Emotional Support		-.03(-.04)	.001(.06)
F Sleep to F Demandingness		.03(.05)	.00(-.01)
F Sleep to F Rejection		.02(.03)	-.001(-.08)
F Sleep to F RSA		-.14*(-.04)	.00(-.01)
<b><i>Interactions</i></b>			
C Opp x F Sleep to F RSA		-.04(-.04)	.00(.01)
C Opp x F Sleep to F Emotional Support		-.07(-.08)	-.002 <sup>†</sup> (-.11)
C Opp x F Sleep to F Demandingness		.05(.08)	-.001(-.10)
C Opp X F Sleep to F Rejection		.05(.10)	.00(-.01)
<b><i>RSA Predicting Parent Behavior</i></b>			
F RSA to F Emotional Support		-.11*(-.15)	-.14*(-.13)
F RSA to F Demandingness		-.10*(-.17)	-.09*(-.16)
F RSA to F Rejection		.01(.03)	.03(.05)
<b><i>Indirect Effects of Child Behavior</i></b>			
C Opposition to F Emotional Support		-.01(-.01)	-.01(-.01)
C Opposition to F Demandingness		-.01(-.01)	-.01(-.01)

C Opposition to F Rejection	.01(.001)	.001(.002)
<b>Indirect Effects of Sleep</b>		
F Sleep to F Emotional Support	.004(.01)	.00(.002)
F Sleep to F Demandingness	.004(.01)	.00(.002)
F Sleep to F Rejection	-.001(-.001)	.00(-.001)
<b>Indirect Effects of Sleep by Child Behavior Interactions</b>		
C Opp x F Sleep to F Emotional Support	.01(.01)	.00(-.001)
C Opp x F Sleep to F Demandingness	.004(.01)	.00(-.002)
C Opp x F Sleep to F Rejection	-.001(-.001)	.00(.001)
$\chi^2$	17.58	19.06
DF	13	12
$\chi^2/df$	1.35	1.59
CFI	.94	.90
RMSEA	.04	.06
RMSEA 90% CI	.00-.09	.00-.10

Note: <sup>t</sup> $p < .10$ , \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ ; F= Female, C= Child

Table 2.15: Mother Sleep as a Moderator of Child Withdrawal to Mother Emotion and Behavior

	Sleepiness	Quality	Duration
	B ( $\beta$ )	B ( $\beta$ )	B ( $\beta$ )
<b><i>First Order Effects of Child Behavior</i></b>			
C Withdrawal to F Emotional Support		-.08(-.28)	.01(-.11)
C Withdrawal to F Demandingness		-.09 <sup>†</sup> (-.13)	.07(.10)
C Withdrawal to F Rejection		.002(.003)	.01(-.02)
C Withdrawal to F Positive Affect		-.28***(-.28)	-.37***(-.36)
<b><i>First Order Effects of Sleep</i></b>			
F Sleep to F Emotional Support		-.06(-.08)	.00(.03)
F Sleep to F Demandingness		.02(.03)	.00(.01)
F Sleep to F Rejection		.01(.02)	-.001(-.08)
F Sleep to F Happy		-.14(-.16)	.001(.05)
<b><i>Interactions</i></b>			
C With x F Sleep to F Positive Affect		-.04(-.05)	-.001(-.07)
C With x F Sleep to F Emotional Support		-.01(-.01)	-.001(-.07)
C With x F Sleep to F Demandingness		.01(.01)	-.002*(-.14)
C With x F Sleep to F Rejection		.00(.01)	.00(-.05)
<b><i>Positive Affect Predicting Parent Behavior</i></b>			
F Positive Affect to F Emotional Support		.14(.18)	.16*(.19)
F Positive Affect to F Demandingness		.10(.15)	.07(.10)
F Positive Affect to F Rejection		.002(.003)	-.01(-.02)
<b><i>Indirect Effects of Child Behavior</i></b>			
C Withdrawal to F Emotional Support		-.04*(-.05)	-.06*(-.07)

C Withdrawal to F Demandingness	-0.03*(-.04)	-0.03(-.04)
C Withdrawal to F Rejection	.00(-.001)	.01(.01)
<b>Indirect Effects of Sleep</b>		
F Sleep to F Emotional Support	-.02 <sup>t</sup> (-.03)	.00(.01)
F Sleep to F Demandingness	-.01 <sup>t</sup> (-.02)	.00(.01)
F Sleep to F Rejection	.00(-.01)	.00(-.001)
<b>Indirect Effects of Sleep by Child Behavior Interactions</b>		
C With x F Sleep to F Emotional Support	-.01(-.01)	.00(-.01)
C With x F Sleep to F Demandingness	-.004(-.01)	.00(-.01)
C With x F Sleep to F Rejection	.00(.001)	.00(.002)
$\chi^2$	13.54	27.31*
DF	15	16
$\chi^2/df$	.90	1.71
CFI	1.00	.88
RMSEA	.00	.06
RMSEA 90% CI	.00-.06	.01-.10

Note: <sup>t</sup> $p < .10$ , \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ ; F= Female, C= Child

Table 2.16: Mother Sleep as a Moderator of Child Withdrawal to Mother RSA and Behavior

	Sleepiness	Quality	Duration
	B ( $\beta$ )	B ( $\beta$ )	B ( $\beta$ )
<b><i>First Order Effects of Child Behavior</i></b>			
C Withdrawal to F Emotional Support	-.13*(-.16)	-.16*(-.19)	-.10 <sup>t</sup> (-.13)
C Withdrawal to F Demandingness	-.12*(-.17)	-.08 <sup>t</sup> (-.12)	-.06(-.10)
C Withdrawal to F Rejection	.03(.06)	.05(.09)	.03(.04)
C Withdrawal to F RSA	.08(.07)	.09(.08)	.13(.12)
<b><i>First Order Effects of Sleep</i></b>			
F Sleep to F Emotional Support	-.001(-.001)	-.09 <sup>t</sup> (-.11)	.00(.03)
F Sleep to F Demandingness	-.05(-.11)	.05(.02)	.00(.02)
F Sleep to F Rejection	.01(.02)	-.01(-.08)	-.001(-.08)
F Sleep to F RSA	-.01(-.01)	-.02(-.15)	.00(.02)
<b><i>Interactions</i></b>			
C With x F Sleep to F RSA	.02(.03)	.06(.08)	-.002(-.01)
C With x F Sleep to F Emotional Support	.01(.03)	.01(.02)	-.001(-.10)
C With x F Sleep to F Demandingness	-.001(-.001)	.01(.02)	-.002(-.16)
C With X F Sleep to F Rejection	.00(.001)	-.04(-.08)	-.001(-.08)
<b><i>RSA Predicting Parent Behavior</i></b>			
F RSA to F Emotional Support	-.10 <sup>t</sup> (-.13)	-.10 <sup>t</sup> (-.13)	-.14*(-.13)
F RSA to F Demandingness	-.11*(-.19)	-.10 <sup>t</sup> (-.17)	-.11*(-.17)
F RSA to F Rejection	.02(.04)	.02(.03)	.004(.02)
<b><i>Indirect Effects of Child Behavior</i></b>			
C Withdraw to F Emotional Support	-.01(-.01)	-.01(-.01)	-.01(-.02)

C Withdraw to F Demandingness	-.01(-.01)	-.01(-.01)	-.01(-.02)
C Withdraw to F Rejection	.001(.003)	.002(.003)	.001(.003)
<b>Indirect Effects of Sleep</b>			
F Sleep to F Emotional Support	.001(.002)	.002(.003)	.00(-.002)
F Sleep to F Demandingness	.001(.003)	.002(.004)	.00(-.003)
F Sleep to F Rejection	.00(.00)	.00(-.001)	.00(.00)
<b>Indirect Effects of Sleep by Child Behavior Interactions</b>			
C With x F Sleep to F Emotional Support	-.002(-.004)	-.01(-.01)	.00(.01)
C With x F Sleep to F Demandingness	-.002(-.01)	-.01(-.01)	.00(.02)
C With x F Sleep to F Rejection	.00(.001)	.001(.002)	.00(-.002)
$\chi^2$	24.04*	27.32*	22.14
DF	14	15	13
$\chi^2/df$	1.72	1.82	1.70
CFI	.89	.80	.89
RMSEA	.06	.07	.06
RMSEA 90% CI	.00-.10	.02-.10	.00-.10

Note: <sup>†</sup> $p < .10$ , \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ ; F= Female, C= Child

Table 2.17: Mother Sleep as a Moderator of Child Sadness to Mother Emotion and Behavior

	Sleepiness	Quality	Duration
	B ( $\beta$ )	B ( $\beta$ )	B ( $\beta$ )
<b><i>First Order Effects of Child Behavior</i></b>			
C Sadness to F Emotional Support	-.03(-.02)	-.002(.002)	-.05(-.04)
C Sadness to F Demandingness	.13*(.12)	.08(.07)	.10(.10)
C Sadness to F Rejection	-.01(-.01)	-.06(-.06)	-.01(-.01)
C Sadness to F Positive Affect	-.33**(-.21)	-.24*(-.14)	-.31(-.19)
<b><i>First Order Effects of Sleep</i></b>			
F Sleep to F Emotional Support	.001(.002)	-.05(-.07)	.001(.04)
F Sleep to F Demandingness	-.06 <sup>t</sup> (-.12)	-.02(.00)	.00(-.01)
F Sleep to F Rejection	-.02(-.004)	-.001(-.002)	.00(-.07)
F Sleep to F Positive Affect	.07(.09)	-.14*(-.15)	.00(.01)
<b><i>Interactions</i></b>			
C Sad x F Sleep to F Positive Affect	.05(.05)	.13(.08)	-.002(-.05)
C Sad x F Sleep to F Emotional Support	.02(.02)	.11(.09)	.00(.003)
C Sad x F Sleep to F Demandingness	.02(.02)	-.02(-.02)	.00(.003)
C Sad x F Sleep to F Rejection	-.02(-.03)	.09(.10)	.00(.00)
<b><i>Positive Affect Predicting Parent Behavior</i></b>			
F Positive Affect to F Emotional Support	.18**(.22)	.16**(.20)	.18**(.22)
F Positive Affect to F Demandingness	.16**(.24)	.15**(.22)	.14**(.21)
F Positive Affect to F Rejection	-.01(-.01)	-.01(-.02)	-.01(-.02)
<b><i>Indirect Effects of Child Behavior</i></b>			

C Sadness to F Emotional Support	-.06(-.05)	-.04 <sup>†</sup> (-.03)	-.06*(-.04)
C Sadness to F Demandingness	-.05(-.05)	-.04 <sup>†</sup> (-.03)	-.04*(-.04)
C Sadness to F Rejection	.004(.005)	.002(.002)	.003(.003)
<b><i>Indirect Effects of Sleep</i></b>			
F Sleep to F Emotional Support	.01(.02)	-.02 <sup>†</sup> (-.03)	.00(.002)
F Sleep to F Demandingness	.01(.02)	-.02 <sup>†</sup> (-.03)	.00(.002)
F Sleep to F Rejection	-.001(-.002)	.001(.003)	.00(.00)
<b><i>Indirect Effects of Sleep by Child Behavior Interactions</i></b>			
C Sad x F Sleep to F Emotional Support	.01(.01)	.02(.02)	.00(-.01)
C Sad x F Sleep to F Demandingness	.01(.01)	.02(.02)	.00(-.01)
C Sad x F Sleep to F Rejection	-.001(-.001)	-.001(.001)	.00(.00)
$\chi^2$	15.81	13.89	9.97
DF	13	15	13
$\chi^2/df$	1.22	1.00	.77
CFI	1.00	.93	.77
RMSEA	.03	.00	.00
RMSEA 90% CI	.00-.08	.00-.06	.00-.06

Note: <sup>†</sup> $p < .10$ , \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ ; F= Female, C= Child

Table 2.18: Mother Sleep as a Moderator of Child Sadness to Mother RSA and Behavior

	Sleepiness	Quality	Duration
	B ( $\beta$ )	B ( $\beta$ )	B ( $\beta$ )
<b><i>First Order Effects of Child Behavior</i></b>			
C Sadness to F Emotional Support	-.13(-.10)	-.10(-.08)	-.13(-.10)
C Sadness to F Demandingness	.07(.07)	.02(.02)	.05(.05)
C Sadness to F Rejection	.03(.03)	-.01(-.01)	.01(.01)
C Sadness to F RSA	-.15(-.09)	-.15(-.08)	-.10(-.06)
<b><i>First Order Effects of Sleep</i></b>			
F Sleep to F Emotional Support	.01(.02)	-.07(-.10)	.00(.01)
F Sleep to F Demandingness	-.05(-.10)	-.001(-.001)	.00(-.02)
F Sleep to F Rejection	.01(.01)	.01(.01)	-.001(-.06)
F Sleep to F RSA	.001(.002)	-.03(-.03)	.00(-.06)
<b><i>Interactions</i></b>			
C Sad x F Sleep to F RSA	.02(.02)	-.05(-.04)	.002(.06)
C Sad x F Sleep to F Emotional Support	.03(.04)	.13(.11)	.001(.03)
C Sad x F Sleep to F Demandingness	-.04(-.05)	-.03(-.04)	.001(.04)
C Sad x F Sleep to F Rejection	-.04(-.06)	.03(.04)	.00(-.01)
<b><i>RSA Predicting Parent Behavior</i></b>			
F RSA to F Emotional Support	-.11*(-.15)	-.10 <sup>t</sup> (-.13)	-.11 <sup>t</sup> (-.15)
F RSA to F Demandingness	-.09 <sup>t</sup> (-.16)	-.08(-.14)	-.10*(-.17)
F RSA to F Rejection	.03(.01)	.01(.01)	.02(.04)
<b><i>Indirect Effects of Child Behavior</i></b>			
C Sadness to F Emotional Support	.02(.01)	.01(.01)	.01(.01)

C Sadness to F Demandingness	.01(.01)	.01(.01)	.01(.01)
C Sadness to F Rejection	-.004(-.01)	-.001(-.001)	-.002(-.002)
<b>Indirect Effects of Sleep</b>			
F Sleep to F Emotional Support	.00(.00)	.002(.003)	.00(.002)
F Sleep to F Demandingness	.00(.00)	.002(.004)	.00(.002)
F Sleep to F Rejection	.00(.00)	.00(.00)	.00(.00)
<b>Indirect Effects of Sleep by Child Behavior Interactions</b>			
C Sad x F Sleep to F Emotional Support	-.002(-.002)	.01(.01)	.00(-.01)
C Sad x F Sleep to F Demandingness	-.01(-.003)	.01(.01)	.00(-.01)
C Sad x F Sleep to F Rejection	.002(.001)	.00(-.001)	.00(.002)
$\chi^2$	20.53	20.77	18.05
DF	12	12	12
$\chi^2/df$	1.71	1.73	1.50
CFI	.90	.86	.91
RMSEA	.06	.06	.05
RMSEA 90% CI	.00-.10	.00-.10	.00-.10

Note: <sup>t</sup> $p < .10$ , \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ ; M= Male, C= Child

Table 2.19: Mother Sleep as a Moderator of Child Anger to Mother Emotion and Behavior

	Sleepiness	Quality	Duration
	B ( $\beta$ )	B ( $\beta$ )	B ( $\beta$ )
<b><i>First Order Effects of Child Behavior</i></b>			
C Anger to F Emotional Support	-.12*(-.15)	-.14(-.17)	-.16*(-.20)
C Anger to F Demandingness	-.002*(.22)	-.03(-.04)	-.02(-.03)
C Anger to F Rejection	.07 <sup>†</sup> (.12)	.09*(.14)	.10*(.17)
C Anger to F Positive Affect	.05(.07)	-.12 <sup>†</sup> (-.11)	-.16*(-.16)
<b><i>First Order Effects of Sleep</i></b>			
F Sleep to F Emotional Support	.002(.003)	-.02(-.03)	.00(.004)
F Sleep to F Demandingness	-.002*(.22)	.02(.03)	.00(-.03)
F Sleep to F Rejection	.01(.02)	.03(.06)	.00(-.06)
F Sleep to F Positive Affect	.05(.07)	-.08(-.09)	.001(.04)
<b><i>Interactions</i></b>			
C Anger x F Sleep to F Positive Affect	-.01(-.01)	-.08(-.07)	-.003*(-.17)
C Anger x F Sleep to F Emo Support	.002(.003)	-.06(-.07)	-.003*(-.17)
C Anger x F Sleep to F Demandingness	-.04(-.08)	-.02(-.02)	-.002*(-.14)
C Anger x F Sleep to F Rejection	.01(.02)	-.05(-.07)	.001(.09)
<b><i>Positive Affect Predicting Parent Behavior</i></b>			
F Positive Affect to F Emotional Support	.16*(.19)	.15**(.19)	.16*(.19)
F Positive Affect to F Demandingness	.15**(.22)	.14**(.21)	.14*(.21)
F Positive Affect to F Rejection	-.01(.12)	-.01(-.02)	.01(.02)
<b><i>Indirect Effects of Child Behavior</i></b>			
C Anger to F Emotional Support	-.03(-.03)	-.02(-.02)	-.03*(-.03)

C Anger to F Demandingness	-.03(-.04)	-.02(-.02)	-.02*(-.03)
C Anger to F Rejection	.002(.004)	.00(.00)	-.002(-.003)
<b>Indirect Effects of Sleep</b>			
F Sleep to F Emotional Support	.01(.01)	-.02(-.03)	.00(.01)
F Sleep to F Demandingness	.01(.02)	-.02(-.03)	.00(.01)
F Sleep to F Rejection	-.001(-.002)	.00(.00)	.00(.001)
<b>Indirect Effects of Sleep by Child Behavior Interactions</b>			
C Anger x F Sleep to F Emotional Support	-.001(-.001)	-.01(-.01)	-.001(-.03)
C Anger x F Sleep to F Demandingness	-.001(-.001)	-.01(-.01)	.00 <sup>t</sup> (-.03)
C Anger x F Sleep to F Rejection	.00(.00)	.00(.00)	.00 <sup>t</sup> (-.004)
$\chi^2$	18.27	26.02*	20.78
DF	13	15	15
$\chi^2/df$	1.4	1.74	1.39
CFI	.95	.90	.96
RMSEA	.05	.06	.04
RMSEA 90% CI	.00-.09	.01-.10	.00-.09

Note: <sup>t</sup> $p < .10$ , \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ ; F= Female, C= Child

Table 2.20: Mother Sleep as a Moderator of Child Anger to Mother RSA and Behavior

	Sleepiness	Quality	Duration
	B ( $\beta$ )	B ( $\beta$ )	B ( $\beta$ )
<b><i>First Order Effects of Child Behavior</i></b>			
C Anger to F Emotional Support	-.15**(-.18)	-.14**(-.17)	-.18***(-.20)
C Anger to F Demandingness	-.03(-.04)	-.02(-.03)	-.03(-.03)
C Anger to F Rejection	.08 <sup>t</sup> (.13)	.09*(.16)	.10**(.17)
C Anger to F RSA	-.14 <sup>t</sup> (-.12)	-.09(-.09)	-.06(-.16)
<b><i>First Order Effects of Sleep</i></b>			
F Sleep to F Emotional Support	.004(.01)	-.04(-.05)	.00(.004)
F Sleep to F Demandingness	-.03(-.05)	.02(.03)	-.001(-.03)
F Sleep to F Rejection	.01(.03)	.00(-.001)	-.001(-.06)
F Sleep to F RSA	-.001(-.002)	-.04(-.04)	.00(.04)
<b><i>Interactions</i></b>			
C Anger x F Sleep to F RSA	.03(.03)	-.05(-.06)	.00(-.17)
C Anger x F Sleep to F Emotional Support	.01(.01)	-.06(-.09)	-.002 <sup>t</sup> (-.17)
C Anger x F Sleep to F Demandingness	-.04(-.08)	-.02(-.04)	-.001(-.14)
C Anger x F Sleep to F Rejection	.003(.01)	-.04(-.08)	.001(.09)
<b><i>RSA Predicting Parent Behavior</i></b>			
F RSA to F Emotional Support	-.13*(-.18)	-.12*(-.15)	-.12*(.19)
F RSA to F Demandingness	-.11*(-.18)	-.11*(-.17)	-.11*(.21)
F RSA to F Rejection	.04(.07)	.01(.02)	.03(.02)
<b><i>Indirect Effects of Child Behavior</i></b>			
C Anger to F Emotional Support	.02(.02)	.01(.01)	.01*(.01)

C Anger to F Demandingness	.02(.02)	.01(.02)	.01*(.01)
C Anger to F Rejection	-.01(-.01)	-.001(-.002)	-.002(-.004)
<b>Indirect Effects of Sleep</b>			
F Sleep to F Emotional Support	.00(.00)	.004(.01)	.00(.002)
F Sleep to F Demandingness	.00(.00)	.004(.01)	.00(.003)
F Sleep to F Rejection	.00(.00)	.00(-.001)	.00(-.001)
<b>Indirect Effects of Sleep by Child Behavior Interactions</b>			
C Anger x F Sleep to F Emotional Support	-.004(-.01)	.01(.01)	.00(.00)
C Anger x F Sleep to F Demandingness	-.003(-.01)	.01(.01)	.00(.00)
C Anger x F Sleep to F Rejection	.001(.002)	-.001(-.001)	.00(.00)
$\chi^2$	26.28	22.77	26.06*
DF	15	15	13
$\chi^2/df$	1.7	1.52	2.00
CFI	.87	.92	.88
RMSEA	.06	.05	.07
RMSEA 90% CI	.02-.10	.00-.09	.03-.11

Note: <sup>†</sup> $p < .10$ , \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ ; F= Female, C= Child

Table 2.21: Mother Sleep as a Moderator of Child Positive Affect to Mother Emotion and Behavior

	Sleepiness	Quality	Duration
	B ( $\beta$ )	B ( $\beta$ )	B ( $\beta$ )
<b><i>First Order Effects of Child Behavior</i></b>			
C Positive Affect to F Emotional Support	.03(.04)	.02(.03)	.05(.06)
C Positive Affect to F Demandingness	.002(.003)	-.01(-.01)	.03(.04)
C Positive Affect to F Rejection	.004(.01)	-.001(-.001)	.02(.03)
C Positive Affect to F Positive Affect	.25***(.35)	.28***(.29)	.34***(.34)
<b><i>First Order Effects of Sleep</i></b>			
F Sleep to F Emotional Support	-.03(-.04)	-.05(-.07)	.001(.05)
F Sleep to F Demandingness	-.07 <sup>i</sup> (-.12)	.04(.07)	.00(.02)
F Sleep to F Rejection	.01(.02)	.05(.09)	.00(-.04)
F Sleep to F Positive Affect	.08(.10)	-.08(-.09)	.00(.003)
<b><i>Interactions</i></b>			
C Pos x F Sleep to F Positive Affect	.02(.03)	.003(.004)	.00(.02)
C Pos x F Sleep to F Emotional Support	-.04(-.08)	-.09(-.13)	.00(.03)
C Pos x F Sleep to F Demandingness	-.02(-.05)	-.02(-.03)	.00(.08)
C Pos x F Sleep to F Rejection	.01(.02)	.02(.05)	.001(.07)
<b><i>Parent Positive Affect Predicting Parent Behavior</i></b>			
F Positive Affect to F Emotional Support	.19**(.23)	.16**(.19)	.17**(.21)
F Positive Affect to F Demandingness	.15**(.22)	.12*(.17)	.11**(.17)
F Positive Affect to F Rejection	-.004(-.02)	-.002(-.003)	-.02(-.03)
<b><i>Indirect Effects of Child Behavior</i></b>			
C Pos to F Emotional Support	.07*(.08)	.04*(.06)	.06**(.07)
C Pos to F Demandingness	.05*(.08)	.03*(.05)	.04*(.06)

C Pos to F Rejection	-0.01(-.01)	-0.001(-.001)	-0.01(-.01)
<b><i>Indirect Effects of Sleep</i></b>			
F Sleep to F Emotional Support	.01(.02)	-.01(-.02)	.00(.001)
F Sleep to F Demandingness	.01(.02)	-.01(-.02)	.00(.001)
F Sleep to F Rejection	-.001(-.002)	.00(.00)	.00(.00)
<b><i>Indirect Effects of Sleep by Child Behavior Interactions</i></b>			
C Pos x F Sleep to F Emotional Support	.004(.01)	.00(.001)	.00(.003)
C Pos x F Sleep to F Demandingness	.003(.01)	.00(.001)	.00(.003)
C Pos x F Sleep to F Rejection	.00(-.001)	.00(.00)	.00(-.001)
$\chi^2$	25.56*	12.33	16.77
DF	15	15	15
$\chi^2/df$	1.70	.82	1.11
CFI	.90	1.00	.98
RMSEA	.06	.00	.02
RMSEA 90% CI	.01-.09	.00-.06	.00-.07

Note: <sup>†</sup> $p < .10$ , \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ ; F= Female, C= Child

Table 2.22: Mother Sleep as a Moderator of Child Positive Affect to Mother RSA and Behavior

	Sleepiness	Quality	Duration
	B ( $\beta$ )	B ( $\beta$ )	B ( $\beta$ )
<b><i>First Order Effects of Child Behavior</i></b>			
C Positive Affect to F Emotional Support	.08(.10)	.01(.05)	.08(.09)
C Positive Affect to F Demandingness	.05(.07)	.04(.01)	.05(.07)
C Positive Affect to F Rejection	.001(.002)	.003(.01)	.01(.02)
C Positive Affect to F RSA	-.004*(-.004)	-.04(-.04)	-.04 (-.03)
<b><i>First Order Effects of Sleep</i></b>			
F Sleep to F Emotional Support	-.01(-.02)	-.06(-.08)	.00(.03)
F Sleep to F Demandingness	-.06(-.11)	.05(.02)	.00(-.002)
F Sleep to F Rejection	.02(.03)	.05 <sup>†</sup> (.09)	-.001(-.05)
F Sleep to F RSA	.03(.03)	.01(.01)	.00(.00)
<b><i>Interactions</i></b>			
C Pos x F Sleep to F RSA	.08(.10)	.11(.12)	.003(.13)
C Pos x F Sleep to F Emotional Support	-.01(-.02)	-.09*(-.13)	.001(.05)
C Pos x F Sleep to F Demandingness	.01(.03)	-.01(.02)	.001(.11)
C Pos x F Sleep to F Rejection	.01(.01)	.02(.05)	.00(.04)
<b><i>Parent RSA Predicting Parent Behavior</i></b>			
F RSA to F Emotional Support	-.12*(-.17)	-.09 <sup>†</sup> (-.12)	-.13**(-.17)
F RSA to F Demandingness	-.12*(-.21)	-.08(-.14)	-.14**(-.22)
F RSA to F Rejection	.03(.05)	.02(.03)	.02(.03)
<b><i>Indirect Effects of Child Behavior</i></b>			
C Pos to F Emotional Support	.00(.001)	.003(.004)	.01(.01)

C Pos to F Demandingness	.001(.00)	.003(.01)	.01(.01)
C Pos to F Rejection	.00(.001)	-.001(-.001)	-.001(-.001)
<b>Indirect Effects of Sleep</b>			
F Sleep to F Emotional Support	-.003(-.01)	-.001(-.001)	.00(.00)
F Sleep to F Demandingness	-.004(-.01)	-.001(-.001)	.00(.00)
F Sleep to F Rejection	.001(.002)	.00(.00)	.00(.00)
<b>Indirect Effects of Sleep by Child Behavior Interactions</b>			
C Pos x F Sleep to F Emotional Support	-.01(-.01)	-.01(-.01)	.00(-.02)
C Pos x F Sleep to F Demandingness	-.01(-.02)	-.01(-.02)	.00(.004)
C Pos x F Sleep to F Rejection	.002(.01)	.002(.004)	.00(-.03)
$\chi^2$	27.14*	19.16	20.24
DF	13	15	13
$\chi^2/df$	2.09	1.28	1.56
CFI	.81	.95	.89
RMSEA	.07	.04	.05
RMSEA 90% CI	.03-.11	.00-.08	.00-.10

Note: <sup>t</sup> $p < .10$ , \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ ; F= Female, C= Child

Table 2.23: Father Sleep as a Moderator of Child Opposition to Father Emotion and Behavior

	Sleepiness	Quality	Duration
	B ( $\beta$ )	B ( $\beta$ )	B ( $\beta$ )
<b><i>First Order Effects of Child Behavior</i></b>			
C Opposition to M Emotional Support	-.17*(-.14)	-.17*(-.14)	-.16*(.52)
C Opposition to M Demandingness	-.30***(-.29)	-.30***(-.29)	-.30***(-.02)
C Opposition to M Rejection	.04(.04)	.05(.05)	.04(-.32)
C Opposition to M Coercion	.16*(.16)	.17*(.16)	.13 <sup>t</sup> (-.26)
C Opposition to M Positive Affect	-.17*(-.15)	-.12(-.10)	-.15*(-.13)
<b><i>First Order Effects of Sleep</i></b>			
M Sleep to M Emotional Support	.04(.05)	-.04(-.03)	-.001(-.06)
M Sleep to M Demandingness	.03(.05)	-.06(-.06)	.003*(.17)
M Sleep to M Rejection	.03(.04)	-.03(-.03)	.001(.08)
M Sleep to M Coercion	.06(.09)	.05(.06)	.002(.11)
M Sleep to M Positive Affect	.04(.04)	.08(.08)	-.001(-.03)
<b><i>Interactions</i></b>			
C Opp x M Sleep to M Positive Affect	.00(.00)	.02(.02)	.00(.01)
C Opp x M Sleep to M Emotional Support	.06(.08)	-.004(-.004)	.001(.04)
C Opp x M Sleep to M Demandingness	.03(.04)	.09(.10)	.00(.01)
C Opp x M Sleep to M Rejection	-.04(-.05)	-.06(-.06)	-.001(-.04)
C Opp x M Sleep to M Coercion	-.08(-.13)	.06(.06)	.00(-.01)
<b><i>Positive Affect Predicting Parent Behavior</i></b>			
M Positive Affect to M Emotional Support	.22**(.21)	.25***(.24)	.22*(.09)
M Positive Affect to M Demandingness	.04(.04)	.04(.05)	.04(.07)

M Positive Affect to M Rejection	-.24***(-.27)	-.24***(-.27)	-.23***(-.18)
M Positive Affect to M Coercion	-.19**(-.21)	-.21***(-.24)	-.18**(-.16)
<b>Indirect Effects of Child Behavior</b>			
C Opposition to M Emotional Support	-.04 <sup>†</sup> (-.07)	-.03(-.02)	-.03 <sup>†</sup> (-.02)
C Opposition to M Demandingness	-.01(-.03)	-.01(-.01)	-.01(-.02)
C Opposition to M Rejection	.04*(.01)	.03(.03)	.04*(.05)
C Opposition to M Coercion	.03 <sup>†</sup> (.003)	.03(.02)	.03 <sup>†</sup> (.05)
<b>Indirect Effects of Sleep</b>			
M Sleep to M Emotional Support	-.02(-.02)	.02(.02)	.00(.00)
M Sleep to M Demandingness	-.01(-.01)	.004(.004)	.00(.00)
M Sleep to M Rejection	-.04(-.05)	-.02(-.02)	.00(.00)
M Sleep to M Coercion	-.03(-.04)	-.02(-.02)	.00(.00)
<b>Indirect Effects of Sleep by Child Behavior Interactions</b>			
C Opp x M Sleep to M Emotional Support	-.03(-.04)	.01(.01)	.00(.00)
C Opp x M Sleep to M Demandingness	-.01(-.01)	.001(.001)	.00(.00)
C Opp x M Sleep to M Rejection	.00(-.03)	-.01(-.01)	.00(.00)
C Opp x M Sleep to M Coercion	.00(-.02)	-.004(-.01)	.00(.00)
$\chi^2$	17.15	12.82	5.05
DF	13	13	13
$\chi^2/df$	1.32	.97	.39
CFI	.98	1.00	1.00
RMSEA	.04	.00	.00
RMSEA 90% CI	.00-.09	.00-.07	.00-.00

Note: <sup>†</sup> $p < .10$ , \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ ; M= Male, C= Child

Table 2.24: Father Sleep as a Moderator of Child Opposition to Father RSA and Behavior

	Sleepiness	Quality	Duration
	B ( $\beta$ )	B ( $\beta$ )	B ( $\beta$ )
<b><i>First Order Effects of Child Behavior</i></b>			
C Opposition to M Emotional Support	-.21**(-.17)	-.19**(-.16)	-.20***(-.18)
C Opposition to M Demandingness	-.31***(-.30)	-.31***(-.30)	-.32***(-.33)
C Opposition to M Rejection	.08(.08)	.08(.08)	.07(.08)
C Opposition to M Coercion	.20**(.20)	.21**(.20)	.15*(.16)
C Opposition to M RSA	.25*(.05)	.26(.05)	.28(.06)
<b><i>First Order Effects of Sleep</i></b>			
M Sleep to M Emotional Support	.06(.07)	.00(.00)	-.001(-.06)
M Sleep to M Demandingness	.02(.03)	-.05(-.05)	.003*(.15)
M Sleep to M Rejection	-.002(-.003)	-.05(-.05)	.001(.07)
M Sleep to M Coercion	.04(.05)	.03(.04)	.002(.10)
M Sleep to M RSA	-.75***(.05)	.34(.07)	-.01(-.12)
<b><i>Interactions</i></b>			
C Opp x M Sleep to M RSA	-.26(-.08)	.14(.10)	.02(.21)
C Opp x M Sleep to M Emotional Support	.05(.07)	-.01(-.01)	.001(.04)
C Opp x M Sleep to M Demandingness	.01(.01)	.11 <sup>t</sup> (.13)	.001(.15)
C Opp x M Sleep to M Rejection	-.03(-.04)	-.05(-.05)	-.001(-.08)
C Opp x M Sleep to M Coercion	-.08*(-.19)	.08(.08)	.00(-.01)
<b><i>RSA Predicting Parent Behavior</i></b>			
M RSA to M Emotional Support	.00(.001)	.001(.01)	-.003(-.01)
M RSA to M Demandingness	-.02(-.12)	-.03(-.13)	-.02(-.10)

M RSA to M Rejection	-0.02(-.08)	-.02 <sup>t</sup> (-.10)	-.01(-.07)
M RSA to M Coercion	-.01(-.06)	-.02(-.09)	-.01(-.07)
<b>Indirect Effects of Child Behavior</b>			
C Opposition to M Emotional Support	.00(.00)	.00(.00)	-.001(-.001)
C Opposition to M Demandingness	-.01(-.01)	-.01(-.01)	-.01(-.01)
C Opposition to M Rejection	-.004(-.004)	-.01(-.01)	-.004(-.004)
C Opposition to M Coercion	-.003(-.003)	-.01(-.01)	-.003(-.004)
<b>Indirect Effects of Sleep</b>			
M Sleep to M Emotional Support	.00(.00)	.00(.00)	.00(.001)
M Sleep to M Demandingness	.02(.02)	-.01(-.01)	.00(.01)
M Sleep to M Rejection	.01(.02)	-.01(-.01)	.00(.01)
M Sleep to M Coercion	.01(.01)	-.01(-.01)	.00(.01)
<b>Indirect Effects of Sleep by Child Behavior Interactions</b>			
C Opp x M Sleep to M Emotional Support	.00(.00)	.00(.00)	.00(-.003)
C Opp x M Sleep to M Demandingness	.01(.01)	-.01(-.01)	.00(-.02)
C Opp x M Sleep to M Rejection	.004(.01)	-.01(-.01)	.00(-.01)
C Opp x M Sleep to M Coercion	.003(.01)	-.01(-.01)	.00(-.01)
$\chi^2$	16.54	12.51	6.07
DF	15	15	15
$\chi^2/df$	1.10	.83	.41
CFI	.99	1.00	1.00
RMSEA	.02	.00	.00
RMSEA 90% CI	.00-.07	.00-.06	.00-.00

Note: <sup>t</sup> $p < .10$ , \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ ; M= Male, C= Child

Table 2.25: Father Sleep as a Moderator of Child Withdrawal to Father Emotion and Behavior

	Sleepiness	Quality	Duration
	B ( $\beta$ )	B ( $\beta$ )	B ( $\beta$ )
<b><i>First Order Effects of Child Behavior</i></b>			
C Withdrawal to M Emotional Support	-.25***(-.23)	-.22**(-.20)	-.25***(-.23)
C Withdrawal to M Demandingness	-.19**(-.21)	-.18*(-.19)	-.18**(-.18)
C Withdrawal to M Rejection	-.01(-.01)	-.02(-.03)	-.002(-.002)
C Withdrawal to M Coercion	.003(.003)	.01(.02)	.05(.06)
C Withdrawal to M Positive Affect	-.26*(-.27)	-.24***(-.23)	-.23*(-.22)
<b><i>First Order Effects of Sleep</i></b>			
M Sleep to M Emotional Support	.05(.06)	-.07(-.07)	-.002(-.08)
M Sleep to M Demandingness	.03(.04)	-.02(-.09)	.002*(.13)
M Sleep to M Rejection	.02(.03)	-.02(-.02)	.001(.07)
M Sleep to M Coercion	.01(.01)	-.01(-.01)	.00(.01)
M Sleep to M Positive Affect	.01(.01)	.12 <sup>t</sup> (.12)	-.001(-.07)
<b><i>Interactions</i></b>			
C With x M Sleep to M Positive Affect	-.03(-.04)	.02(.02)	.001(.07)
C With x M Sleep to M Emotional Support	-.03(-.04)	-.01(-.02)	.00(-.01)
C With x M Sleep to M Demandingness	-.03(-.05)	.11*(.14)	.001(.05)
C With x M Sleep to M Rejection	.05(.08)	.01(.01)	.00(-.002)
C With x M Sleep to M Coercion	.08 <sup>t</sup> (.14)	.03(.04)	.00(.01)
<b><i>Positive Affect Predicting Parent Behavior</i></b>			
M Positive Affect to M Emotional Support	.17**(.16)	.19**(.19)	.17*(.16)
M Positive Affect to M Demandingness	.04(.04)	.01(.01)	.02(.02)

M Positive Affect to M Rejection	-.23***(-.26)	-.24***(-.27)	-.23***(-.27)
M Positive Affect to M Coercion	-.18**(-.21)	-.21***(-.24)	-.18**(-.21)
<b>Indirect Effects of Child Behavior</b>			
C Withdrawal to M Emotional Support	-.04 <sup>†</sup> (-.04)	-.04*(-.04)	-.04*(-.04)
C Withdrawal to M Demandingness	-.01(-.01)	-.003(-.003)	-.01(-.01)
C Withdrawal to M Rejection	.06*(.07)	.06**(.06)	.05*(.06)
C Withdrawal to M Coercion	.05 <sup>†</sup> (.05)	.05**(.05)	.04*(.05)
<b>Indirect Effects of Sleep</b>			
M Sleep to M Emotional Support	.002(.002)	.02(.02)	.00(-.01)
M Sleep to M Demandingness	.00(.001)	.001(.002)	.00(-.001)
M Sleep to M Rejection	-.003(-.004)	-.03(-.03)	.00(.02)
M Sleep to M Coercion	-.002(-.003)	-.02(-.03)	.00(.01)
<b>Indirect Effects of Sleep by Child Behavior Interactions</b>			
C With x M Sleep to M Emotional Support	-.004(-.01)	.003(.004)	.00(.01)
C With x M Sleep to M Demandingness	-.001(-.002)	.00(.00)	.00(.002)
C With x M Sleep to M Rejection	.006(.01)	-.004(-.005)	.00(-.02)
C With x M Sleep to M Coercion	.005(.01)	-.003(-.005)	.00(-.01)
$\chi^2$	14.95	14.60	3.99
DF	13	13	8
$\chi^2/df$	1.15	1.12	.50
CFI	.99	1.00	1.00
RMSEA	.03	.03	.00
RMSEA 90% CI	.00-.08	.00-.08	.00-.05

Note: <sup>†</sup> $p < .10$ , \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ ; M= Male, C= Child

Table 2.26: Father Sleep as a Moderator of Child Withdrawal to Father RSA and Behavior

	Sleepiness	Quality	Duration
	B ( $\beta$ )	B ( $\beta$ )	B ( $\beta$ )
<b><i>First Order Effects of Child Behavior</i></b>			
C Withdrawal to M Emotional Support	-.31***(-.28)	-.28***(-.26)	
C Withdrawal to M Demandingness	-.18**(-.19)	-.20**(-.20)	
C Withdrawal to M Rejection	.09(.10)	.08(-.10)	
C Withdrawal to M Coercion	.08(.09)	.08(.09)	
C Withdrawal to M RSA	.70*(.15)	.82*(.17)	
<b><i>First Order Effects of Sleep</i></b>			
M Sleep to M Emotional Support	.05(.06)	-.04(-.04)	
M Sleep to M Demandingness	-.004(-.01)	-.07(-.03)	
M Sleep to M Rejection	.004(.01)	-.05(-.06)	
M Sleep to M Coercion		.03(.03)	
M Sleep to M RSA	-.51*(-.14)	.35(.08)	
<b><i>Interactions</i></b>			
C With x M Sleep to M RSA	-.34(-.10)	.19(.05)	
C With x M Sleep to M Emotional Support	-.07(-.08)	-.02(-.02)	
C With x M Sleep to M Demandingness	-.05(-.07)	.11 <sup>t</sup> (.14)	
C With x M Sleep to M Rejection	.08(.11)	-.01(-.01)	
C With x M Sleep to M Coercion	.10 <sup>t</sup> (.14)	.03(.02)	
<b><i>RSA Predicting Parent Behavior</i></b>			
M RSA to M Emotional Support	-.002(-.01)	.01(.03)	
M RSA to M Demandingness	-.03 <sup>t</sup> (-.14)	-.02(-.11)	

M RSA to M Rejection	-0.01(-.07)	-0.02(-.10)
M RSA to M Coercion	-0.01(-.03)	-0.02(-.08)
<b>Indirect Effects of Child Behavior</b>		
C Withdrawal to M Emotional Support	-0.001(-.001)	.01(.01)
C Withdrawal to M Demandingness	-0.02(-.02)	-0.02(-.02)
C Withdrawal to M Rejection	-0.01(-.01)	-0.02(-.02)
C Withdrawal to M Coercion	-0.004(-.01)	-0.01(-.01)
<b>Indirect Effects of Sleep</b>		
M Sleep to M Emotional Support	.001(.001)	.002(.002)
M Sleep to M Demandingness	.02(.02)	-0.01(-.01)
M Sleep to M Rejection	.01(.01)	-0.01(-.01)
M Sleep to M Coercion	.003(.01)	-0.01(-.01)
<b>Indirect Effects of Sleep by Child Behavior Interactions</b>		
C With x M Sleep to M Emotional Support	.001(.001)	.001(.001)
C With x M Sleep to M Demandingness	.01(.01)	-0.004(-.01)
C With x M Sleep to M Rejection	.01(.01)	-0.004(-.01)
C With x M Sleep to M Coercion	.002(.003)	-0.003(-.004)
$\chi^2$	20.96	18.23
DF	16	16
$\chi^2/df$	1.31	1.14
CFI	.97	.98
RMSEA	.04	.03
RMSEA 90% CI	.00-.08	.00-.07

Note: <sup>†</sup> $p < .10$ , \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ ; M= Male, C= Child

Table 2.27: Father Sleep as a Moderator of Child Sadness to Father Emotion and Behavior

	Sleepiness	Quality	Duration
	B ( $\beta$ )	B ( $\beta$ )	B ( $\beta$ )
<b><i>First Order Effects of Child Behavior</i></b>			
C Sadness to M Emotional Support	-.35***(-.22)	-.42***(-.26)	-.37***(-.24)
C Sadness to M Demandingness	.40**(.28)	.37***(.25)	.34***(.25)
C Sadness to M Rejection	.51***(.37)	.53***(.38)	.48***(.36)
C Sadness to M Coercion	.51***(.37)	.55***(.39)	.47***(.34)
C Sadness to M Positive Affect	-.12(-.08)	-.10(-.07)	-.08(-.05)
<b><i>First Order Effects of Sleep</i></b>			
M Sleep to M Emotional Support	.04(.05)	-.05(-.04)	-.001(-.05)
M Sleep to M Demandingness	-.04(-.05)	-.05(-.04)	.003*(.15)
M Sleep to M Rejection	.02(.04)	.03(.02)	.001(.04)
M Sleep to M Coercion	.04(.05)	.02(.08)	.001(.08)
M Sleep to M Positive Affect	.02(.03)	.12(.12)	.00(-.01)
<b><i>Interactions</i></b>			
C Sad x M Sleep to M Positive Affect	.05(.04)	.10(.06)	.002(.08)
C Sad x M Sleep to M Emotional Support	-.03(-.02)	-.10(-.07)	.00(-.01)
C Sad x M Sleep to M Demandingness	-.04(-.04)	-.05(-.04)	-.001(-.03)
C Sad x M Sleep to M Rejection	.004(.004)	.03(.02)	.001(.02)
C Sad x M Sleep to M Coercion	-.02(-.02)	.02(.02)	.00(.01)
<b><i>Positive Affect Predicting Parent Behavior</i></b>			
M Positive Affect to M Emotional Support	.22**(.22)	.21**(.21)	.22**(.22)
M Positive Affect to M Demandingness	.12 <sup>†</sup> (.12)	.06(.06)	.09(.10)

M Positive Affect to M Rejection	-.20***(-.23)	-.19***(-.22)	-.21***(-.24)
M Positive Affect to M Coercion	-.17**(-.19)	-.19***(-.21)	-.17**(-.19)
<b>Indirect Effects of Child Behavior</b>			
C Sadness to M Emotional Support	-.03(-.02)	-.02(-.01)	-.01(-.01)
C Sadness to M Demandingness	-.01(-.01)	-.01(-.004)	-.01(-.01)
C Sadness to M Rejection	.03(.02)	.02(.01)	.02(.01)
C Sadness to M Coercion	.02(.02)	.02(.01)	.04(.01)
<b>Indirect Effects of Sleep</b>			
M Sleep to M Emotional Support	.002(.01)	.02(.02)	-.01(-.002)
M Sleep to M Demandingness	.002(.003)	.01(.01)	.00(-.001)
M Sleep to M Rejection	-.01(-.01)	-.02(-.02)	.00(.002)
M Sleep to M Coercion	-.004(-.01)	-.02(-.02)	.00(.002)
<b>Indirect Effects of Sleep by Child Behavior Interactions</b>			
C Sad x M Sleep to M Emotional Support	.01(.01)	-.02(-.01)	.00(.02)
C Sad x M Sleep to M Demandingness	.01(.01)	-.01(-.004)	.00(.01)
C Sad x M Sleep to M Rejection	-.01(-.01)	.02(.01)	.00(-.02)
C Sad x M Sleep to M Coercion	-.01(-.01)	.02(.01)	.00(-.01)
$\chi^2$	14.09	16.96	6.54
DF	13	13	13
$\chi^2/df$	1.08	1.30	.50
CFI	.99	1.00	1.00
RMSEA	.02	.04	.00
RMSEA 90% CI	.00-.08	.00-.09	.00-.02

Note: <sup>†</sup> $p < .10$ , \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ ; M= Male, C= Child

Table 2.28: Father Sleep as a Moderator of Child Sadness to Father RSA and Behavior

	Sleepiness	Quality	Duration
	B ( $\beta$ )	B ( $\beta$ )	B ( $\beta$ )
<b><i>First Order Effects of Child Behavior</i></b>			
C Sadness to M Emotional Support	-.42***(-.27)	-.46***(-.29)	-.42***(-.26)
C Sadness to M Demandingness	.36**(.26)	.35***(.24)	.33***(.23)
C Sadness to M Rejection	.53***(.39)	.55***(.39)	.48***(.36)
C Sadness to M Coercion	.55***(.40)	.58***(.41)	.47***(.35)
C Sadness to M RSA	-1.09*(-.16)	-.74(-.10)	-1.16**(-.16)
<b><i>First Order Effects of Sleep</i></b>			
M Sleep to M Emotional Support	.03(.04)	-.02(-.01)	-.001(-.06)
M Sleep to M Demandingness	-.04(-.06)	-.01(-.01)	.002*(.13)
M Sleep to M Rejection	.02(.02)	-.003(-.003)	.001(.04)
M Sleep to M Coercion	.03(.05)	.04(.05)	.001(.07)
M Sleep to M RSA	-.48*(-.13)	.18(.04)	-.01(-.11)
<b><i>Interactions</i></b>			
C Sad x M Sleep to M RSA	.09(.02)	.25(.04)	-.02 <sup>†</sup> (-.13)
C Sad x M Sleep to M Emotional Support	-.01(-.01)	-.11(-.08)	.00(.003)
C Sad x M Sleep to M Demandingness	-.04(-.04)	-.06(-.02)	.001(.05)
C Sad x M Sleep to M Rejection	.02(.002)	-.05(-.003)	.00(.04)
C Sad x M Sleep to M Coercion	-.03(-.03)	.03(.05)	-.001(-.03)
<b><i>RSA Predicting Parent Behavior</i></b>			
M RSA to M Emotional Support	-.01(-.06)	-.01(-.04)	-.02(-.07)
M RSA to M Demandingness	-.03 <sup>†</sup> (-.14)	-.02(-.10)	-.02(-.08)
M RSA to M Rejection	-.04(-.02)	-.01(-.03)	-.002(-.01)

M RSA to M Coercion	-.002(-.01)	-.004(-.02)	.001(.004)
<b><i>Indirect Effects of Child Behavior</i></b>			
C Sadness to M Emotional Support	.02(.01)	.01(.004)	.02(.01)
C Sadness to M Demandingness	.03(.02)	.01(.01)	.02(.01)
C Sadness to M Rejection	.01(.003)	.004(.003)	.002(.002)
C Sadness to M Coercion	.002(.002)	.003(.002)	-.001(-.001)
<b><i>Indirect Effects of Sleep</i></b>			
M Sleep to M Emotional Support	.01(.01)	-.001(-.001)	.00(.01)
M Sleep to M Demandingness	.013 <sup>t</sup> (.02)	-.003(-.004)	.00(.01)
M Sleep to M Rejection	.002(.003)	-.001(-.001)	.00(.001)
M Sleep to M Coercion	.001(.001)	-.001(-.001)	.00(.00)
<b><i>Indirect Effects of Sleep by Child Behavior Interactions</i></b>			
C Sad x M Sleep to M Emotional Support	-.001(-.001)	-.002(-.001)	.00(.01)
C Sad x M Sleep to M Demandingness	-.003(-.003)	-.01(-.004)	.00(.01)
C Sad x M Sleep to M Rejection	.00(.00)	-.001(-.001)	.00(.001)
C Sad x M Sleep to M Coercion	.00(.00)	-.001(-.001)	.00(-.001)
$\chi^2$	14.73	18.47	7.58
DF	14	14	14
$\chi^2/df$	1.05	1.32	.54
CFI	1.00	.97	1.00
RMSEA	.02	.04	.00
RMSEA 90% CI	.00-.07	.00-.09	.00-.03

Table 2.29: Father Sleep as a Moderator of Child Anger to Father Emotion and Behavior

	Sleepiness	Quality	Duration
	B ( $\beta$ )	B ( $\beta$ )	B ( $\beta$ )
<b><i>First Order Effects of Child Behavior</i></b>			
C Anger to M Emotional Support	-.35***(-.30)	-.37***(-.31)	-.34***(-.30)
C Anger to M Demandingness	-.07(-.07)	-.10(-.10)	.11***(.07)
C Anger to M Rejection	.18**(.17)	.19**(.19)	.19**(.20)
C Anger to M Coercion	.26***(.26)	.29***(.28)	.24***(.25)
C Anger to M Positive Affect	-.18**(-.16)	-.15*(-.13)	-.19*(-.17)
<b><i>First Order Effects of Sleep</i></b>			
M Sleep to M Emotional Support	.02(.03)	-.03(-.03)	-.001(-.03)
M Sleep to M Demandingness	.02(.02)	-.04(-.04)	.003*(.17)
M Sleep to M Rejection	.04(.05)	-.02(-.02)	.00(.03)
M Sleep to M Coercion	.08(.10)	.07(.07)	.001(.05)
M Sleep to M Positive Affect	.04(.05)	.09(.09)	.00(-.004)
<b><i>Interactions</i></b>			
C Ang x M Sleep to M Positive Affect	-.02(-.03)	-.01(-.01)	.001(.03)
C Ang x M Sleep to M Emotional Support	.09*(.12)	-.05(-.05)	.00(.004)
C Ang x M Sleep to M Demandingness	-.002(-.003)	.12(.12)	.002(.11)
C Ang x M Sleep to M Rejection	-.05(-.08)	.004(.004)	.002(.11)
C Ang x M Sleep to M Coercion	-.09*(-.14)	.08(.09)	.001(.06)
<b><i>Positive Affect Predicting Parent Behavior</i></b>			
M Positive Affect to M Emotional Support	.20**(.19)	.21**(.21)	.19**(.19)
M Positive Affect to M Demandingness	.07(.08)	.06(.06)	.06(.07)
M Positive Affect to M Rejection	-.22***(-.24)	-.23***(-.25)	-.20***(-.23)

M Positive Affect to M Coercion	-.17**(-.19)	-.19***(-.22)	-.16**(-.18)
<b>Indirect Effects of Child Behavior</b>			
C Anger to M Emotional Support	-.04*(-.03)	-.03 <sup>†</sup> (-.03)	-.04 <sup>†</sup> (-.03)
C Anger to M Demandingness	-.01(-.01)	-.01(-.01)	-.01(-.01)
C Anger to M Rejection	.04*(.04)	.03 <sup>†</sup> (.03)	.04*(.04)
C Anger to M Coercion	.03*(.03)	.03 <sup>†</sup> (.03)	.03 <sup>†</sup> (.03)
<b>Indirect Effects of Sleep</b>			
M Sleep to M Emotional Support	.01(.01)	.02(.02)	.00(-.001)
M Sleep to M Demandingness	.003(.004)	.01(.01)	.00(.00)
M Sleep to M Rejection	-.01(-.01)	-.02(-.02)	.00(.001)
M Sleep to M Coercion	-.01(-.01)	-.02(-.02)	.00(.001)
<b>Indirect Effects of Sleep by Child Behavior Interactions</b>			
C Ang x M Sleep to M Emotional Support	-.004(-.01)	-.003(-.003)	.00(.01)
C Ang x M Sleep to M Demandingness	-.002(-.003)	-.001(-.001)	.00(.002)
C Ang x M Sleep to M Rejection	.01(.008)	.003(.003)	.00(-.01)
C Ang x M Sleep to M Coercion	.004(.01)	.003(.003)	.00(-.01)
$\chi^2$	15.22	12.78	11.18
DF	13	13	13
$\chi^2/df$	1.17	.94	.50
CFI	.99	1.00	.90
RMSEA	.03	.00	.00
RMSEA 90% CI	.00-.08	.00-.07	.00-.06

Note: <sup>†</sup> $p < .10$ , \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ ; M= Male, C= Child

Table 2.30: Father Sleep as a Moderator of Child Anger to Father RSA and Behavior

	Sleepiness	Quality	Duration
	B ( $\beta$ )	B ( $\beta$ )	B ( $\beta$ )
<b><i>First Order Effects of Child Behavior</i></b>			
C Anger to M Emotional Support	-.38***(-.31)	-.40***(-.33)	-.37***(-.33)
C Anger to M Demandingness	-.07(-.07)	-.12(-.12)	-.08 <sup>t</sup> (-.13)
C Anger to M Rejection	.23**(.22)	.22**(.21)	.22**(.23)
C Anger to M Coercion	.32***(.31)	.33***(.32)	.27***(.29)
C Anger to M RSA	-.20*(-.04)	-.21(-.04)	.13(.03)
<b><i>First Order Effects of Sleep</i></b>			
M Sleep to M Emotional Support	.04(.04)	.01(.01)	-.001(-.03)
M Sleep to M Demandingness	-.001(-.001)	-.02(-.03)	.003*(.14)
M Sleep to M Rejection	.04(.01)	-.04(-.05)	.00(.02)
M Sleep to M Coercion	.32(.07)	.04(.05)	.001(.04)
M Sleep to M RSA	-.74**(-.19)	.41(.09)	-.01(-.15)
<b><i>Interactions</i></b>			
C Ang x M Sleep to M RSA	-.13(-.03)	.71 <sup>t</sup> (.15)	.01(.10)
C Ang x M Sleep to M Emotional Support	.08(.08)	-.04(-.04)	.00(.02)
C Ang x M Sleep to M Demandingness	.001(.002)	.13 <sup>t</sup> (.14)	.00(.13)
C Ang x M Sleep to M Rejection	-.06(-.08)	.01(.01)	.00(.10)
C Ang x M Sleep to M Coercion	-.06(-.08)	.09(.10)	.001(.06)
<b><i>RSA Predicting Parent Behavior</i></b>			
M RSA to M Emotional Support	-.001(-.01)	-.001(-.002)	-.01(-.05)
M RSA to M Demandingness	-.03 <sup>t</sup> (-.15)	-.03*(-.16)	-.03*(-.15)
M RSA to M Rejection	-.02(-.09)	-.02(-.09)	-.01(-.06)

M RSA to M Coercion	-.01(-.06)	-.01(-.07)	-.01(-.04)
<b>Indirect Effects of Child Behavior</b>			
C Anger to M Emotional Support	.00(.00)	.00(.00)	-.001(-.001)
C Anger to M Demandingness	.01(.01)	.01(.01)	-.004(-.004)
C Anger to M Rejection	.004(.003)	.004(.003)	-.002(-.002)
C Anger to M Coercion	.002(.002)	.003(.003)	-.001(-.001)
<b>Indirect Effects of Sleep</b>			
M Sleep to M Emotional Support	.001(.001)	.00(.00)	.00(.01)
M Sleep to M Demandingness	.02*(.03)	-.01(-.01)	.00(.02)
M Sleep to M Rejection	.01(.02)	-.01(-.01)	.00(.01)
M Sleep to M Coercion	.01(.01)	-.01(-.01)	.00(.01)
<b>Indirect Effects of Sleep by Child Behavior Interactions</b>			
C Ang x M Sleep to M Emotional Support	.00(.00)	.00(.00)	.00(-.01)
C Ang x M Sleep to M Demandingness	.004(.01)	-.02(-.02)	.00(-.02)
C Ang x M Sleep to M Rejection	.002(.003)	-.01(-.01)	.00(-.01)
C Ang x M Sleep to M Coercion	.001(.002)	-.01(-.01)	.00(-.004)
$\chi^2$	19.20	12.48	10.72
DF	14	14	14
$\chi^2/df$	1.37	.89	.77
CFI	.97	1.00	1.00
RMSEA	.04	.00	.00
RMSEA 90% CI	.00-.09	.00-.06	.00-.05

Note: <sup>t</sup> $p < .10$ , \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ ; M= Male, C= Child

Table 2.31: Father Sleep as a Moderator of Child Positive Affect to Father Emotion and Behavior

	Sleepiness	Quality	Duration
	B ( $\beta$ )	B ( $\beta$ )	B ( $\beta$ )
<b><i>First Order Effects of Child Behavior</i></b>			
C Positive Affect to M Emotional Support	.35***(.30)	.37***(.31)	.56***(.52)
C Positive Affect to M Demandingness	.07(.07)	.10(.10)	.01(.08)
C Positive Affect to M Rejection	-.18**(-.17)	-.19**(-.19)	-.30**(-.17)
C Positive Affect to M Coercion	-.26***(-.26)	-.29***(-.28)	-.24***(-.15)
C Positive Affect to M Positive Affect	.18**(.16)	.15*(.13)	.29*(.14)
<b><i>First Order Effects of Sleep</i></b>			
M Sleep to M Emotional Support	.02(.03)	-.03(-.03)	-.001(-.03)
M Sleep to M Demandingness	.02(.02)	-.04(-.04)	.002*(.13)
M Sleep to M Rejection	.04(.05)	-.02(-.02)	.00(.03)
M Sleep to M Coercion	.08(.10)	.07(.07)	.001(.08)
M Sleep to M Positive Affect	.04(.05)	.09(.09)	-.001(-.03)
<b><i>Interactions</i></b>			
C Pos x M Sleep to M Positive Affect	-.02(-.03)	-.01(-.01)	-.003*(-.14)
C Pos x M Sleep to M Emotional Support	.09*(.12)	-.05(-.05)	.00(.002)
C Pos x M Sleep to M Demandingness	-.002(-.003)	.12(.12)	-.001(-.06)
C Pos x M Sleep to M Rejection	-.05(-.08)	.004(.004)	-.001(-.06)
C Pos x M Sleep to M Coercion	-.09*(-.14)	.08(.09)	-.001(-.04)
<b><i>Positive Affect Predicting Parent Behavior</i></b>			
M Positive Affect to M Emotional Support	.20**(.19)	.21**(.21)	.10(.10)
M Positive Affect to M Demandingness	.07(.08)	.06(.06)	.08(.08)

M Positive Affect to M Rejection	-.22***(-.24)	-.23***(-.25)	-.15*(-.17)
M Positive Affect to M Coercion	-.17**(-.19)	-.19***(-.22)	-.13*(-.15)
<b>Indirect Effects of Child Behavior</b>			
C Positive Affect to M Emotional Support	-.04*(-.03)	-.03 <sup>†</sup> (-.03)	.03(.03)
C Positive Affect to M Demandingness	-.01(-.01)	-.01(-.01)	.02(.02)
C Positive Affect to M Rejection	.04*(.04)	.03 <sup>†</sup> (.03)	-.04(-.05)
C Positive Affect to M Coercion	.03*(.03)	.03 <sup>†</sup> (.03)	-.04(-.04)
<b>Indirect Effects of Sleep</b>			
M Sleep to M Emotional Support	.01(.01)	.02(.02)	.00(.03)
M Sleep to M Demandingness	.003(.004)	.01(.01)	.00(-.0003)
M Sleep to M Rejection	-.01(-.01)	-.02(-.02)	.00(.01)
M Sleep to M Coercion	-.01(-.01)	-.02(-.02)	.00(.004)
<b>Indirect Effects of Sleep by Child Behavior Interactions</b>			
C Pos x M Sleep to M Emotional Support	-.004(-.01)	-.003(-.003)	.00(-.01)
C Pos x M Sleep to M Demandingness	-.002(-.003)	-.001(-.001)	.00(-.01)
C Pos x M Sleep to M Rejection	.01(.008)	.003(.003)	.00(.03)
C Pos x M Sleep to M Coercion	.004(.01)	.003(.003)	.00(.02)
$\chi^2$	15.22	12.78	9.32
DF	13	13	13
$\chi^2/df$	1.17	.94	.72
CFI	.99	1.00	1.00
RMSEA	.03	.00	.00
RMSEA 90% CI	.00-.08	.00-.07	.00-.05

Note: <sup>†</sup> $p < .10$ , \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ ; M= Male, C= Child

Table 2.32: Father Sleep as a Moderator of Child Positive Affect to Father RSA and Behavior

	Sleepiness	Quality	Duration
	B ( $\beta$ )	B ( $\beta$ )	B ( $\beta$ )
<b><i>First Order Effects of Child Behavior</i></b>			
C Positive Affect to M Emotional Support	.59***(.54)	.59***(.54)	.59***(.55)
C Positive Affect to M Demandingness	.01(.01)	.03(.03)	.02(.02)
C Positive Affect to M Rejection	-.36***(-.38)	-.33**(-.11)	-.35***(-.38)
C Positive Affect to M Coercion	-.27***(-.30)	-.28***(-.30)	-.28***(-.31)
C Positive Affect to M RSA	-.23(-.05)	-.14(-.03)	-.07(-.02)
<b><i>First Order Effects of Sleep</i></b>			
M Sleep to M Emotional Support	-.02(-.02)	.01(.01)	-.001(-.03)
M Sleep to M Demandingness	-.04(-.06)	-.03(-.03)	.002 <sup>t</sup> (.10)
M Sleep to M Rejection	.02(.02)	-.05(-.05)	-.001(.02)
M Sleep to M Coercion	.05(.06)	.05(.06)	.001(.06)
M Sleep to M RSA	-.72**(-.19)	.30(.06)	-.01(-.16)
<b><i>Interactions</i></b>			
C Pos x M Sleep to M RSA	-.04(-.01)	-.35(-.08)	.01(.07)
C Pos x M Sleep to M Emotional Support	-.02(-.03)	.01(.01)	.00(-.01)
C Pos x M Sleep to M Demandingness	-.06(-.08)	-.05(-.06)	-.001(-.07)
C Pos x M Sleep to M Rejection	.003(.004)	-.02(-.02)	-.001(-.05)
C Pos x M Sleep to M Coercion	.01(.02)	-.03(-.04)	-.001(-.04)
<b><i>RSA Predicting Parent Behavior</i></b>			
M RSA to M Emotional Support	-.01(-.02)	.003(.01)	-.01(-.05)
M RSA to M Demandingness	-.03*(-.17)	-.03 <sup>t</sup> (-.13)	-.03 <sup>t</sup> (-.13)
M RSA to M Rejection	-.01(-.09)	-.02 <sup>t</sup> (-.11)	-.02(-.07)

M RSA to M Coercion	.01(-.05)	-.02(-.08)	-.01(-.05)
<b><i>Indirect Effects of Child Behavior</i></b>			
C Positive Affect to M Emotional Support	.001(.001)	.00(.00)	.001(.001)
C Positive Affect to M Demandingness	.01(.01)	.004(.004)	.002(.002)
C Positive Affect to M Rejection	.004(.01)	.003(.003)	.001(.001)
C Positive Affect to M Coercion	.002(.002)	.002(.002)	.001(.001)
<b><i>Indirect Effects of Sleep</i></b>			
M Sleep to M Emotional Support	.003(.004)	.001(.001)	.00(.01)
M Sleep to M Demandingness	.02*(.03)	-.01(-.01)	.00(.02)
M Sleep to M Rejection	.01(.02)	-.01(-.01)	.00(.01)
M Sleep to M Coercion	.01(.01)	-.01(-.01)	.00(.01)
<b><i>Indirect Effects of Sleep by Child Behavior Interactions</i></b>			
C Pos x M Sleep to M Emotional Support	.00(.01)	-.001(-.001)	.00(-.004)
C Pos x M Sleep to M Demandingness	.001(.002)	.01(.01)	.00(-.01)
C Pos x M Sleep to M Rejection	.001(.001)	-.01(.01)	.00(-.01)
C Pos x M Sleep to M Coercion	.00(.001)	-.01(.01)	.00(-.003)
$\chi^2$	22.18	13.51	9.63
DF	14	14	14
$\chi^2/df$	1.59	.97	.69
CFI	.97	1.00	1.00
RMSEA	.06	.00	.00
RMSEA 90% CI	.00-.10	.00-.07	.00-.05

Note: <sup>t</sup> $p < .10$ , \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ ; M= Male, C= Child

## Chapter 4

### **DISCUSSION**

The purpose of the current study was to examine the importance of parent sleep for parent emotional experience, physiological reactivity, and parenting practices in the context of a parent-child problem solving activity. Results of the current study provided partial support for the hypotheses. As predicted, difficult child behaviors were significantly associated with less positive and more negative parenting behaviors. Additionally, parent emotional experience—specifically their experience of less positive affect—served as a mediator of many of the proposed child-parent associations. Findings were largely consistent across parent gender. Contrary to our predictions, however, results did not support parent RSA as a mediator or parent sleep as a moderator of these associations.

#### **The Effect of Child Behavior on Parenting Practices**

Significant associations were found between child and parent behaviors, such that children's negative emotions and conduct elicited greater negative parenting practices. More specifically, children's anger, opposition and defiance, withdrawal, and sadness, were consistently associated with decreased demandingness and emotional support for mothers and fathers and increased rejection and coercion for fathers. Child positive affect, on the other hand, was associated with greater emotional support from both parents and with less rejection and coercion for fathers. These results are in line with Sameroff's transactional theory of development (2009), which emphasizes the active role a child plays in shaping his or her environment. Though research in the area of

child development has traditionally focused on the impact of parent behaviors on child outcomes, transactional models of development (Bell, 1974; Sameroff, 2009) emphasize the mutual and reciprocal influence of parents and children. Parenting can be a highly stressful experience, especially when the demands placed on parents exceed the resources available to meet those demands (Abidin, 1995). Distressing child behaviors or emotions may evoke more negative parenting practices, due in part to the impact of difficult child behaviors on parents' self-regulatory depletion and distress (Brunk & Henggeler, 1984; Scaramella & Levi, 2004). Research has supported the evocative nature of child behaviors and emotions. A recent meta-analysis of child emotionality and parenting style, for example, showed that heightened negative emotionality in children elicited less supportive and more controlling parenting styles, especially for young mothers and for mothers of lower socioeconomic status (Paulussen-Hoogeboom, 2007). Conflicts between parents and children are common occurrences in day-to-day life (Dix, 1991). Parent-child interactions characterized by prolonged and/or heightened child problem behaviors and emotions may be highly taxing on parents' emotional and psychophysiological resources, which may impede positive parenting practices (Paulussen-Hoogeboom, 2007; Abidin, 1992; Martini, Root, & Jenkins, 2004).

Previous research, however, has also demonstrated the opposite direction of effects, emphasizing the role of parent influence (Lengua & Kovacs, 2005, Belsky, 1984, Patterson, Chamberlain, & Reid, 1982). For example, Newton, Laible, Carlo, and Steele (2012) found that maternal sensitivity in early

childhood (at 54 months) was associated with changes in child prosocial behavior in 3<sup>rd</sup> grade, suggesting that associations between parents and children are bidirectional in nature. Though many researchers believe that parent-child relative influence changes over time, with children gaining greater influence in middle childhood and adolescence as they begin to take on more functional independence (Pardini, 2008; Scarr & McCartney, 1983), more research is needed to parcel out the relative impact of parents and children on one another's behavior across development (Pardini, 2008). Consequently, findings should be interpreted with caution, as the opposite direction of association (e.g. parent to child) is both theoretically as well as statistically plausible, due in part to the use of a cross sectional study design.

### **Parent Affect as a Mediator of Associations**

Study results suggest that many of the associations between parent and child behaviors were mediated through parents' self-reported positive affect. Both mothers and fathers experienced less positive affect in the context of child opposition, withdrawal, and anger. Mothers also experienced less positive affect in response to children's displays of sadness. Furthermore, less parent positive affect was associated with less adaptive parenting practices, such as emotional support and demandingness, behaviors characteristic of authoritative parenting styles (Darling & Steinberg, 1993). Study findings support Dix's (1991) theory of parent affective organization, which suggests that decreases in parent psychological resources and degradation of affect may mediate the association between negative child behaviors and maladaptive parenting practices. All

parents experience parenting stress to some degree; however, strong or prolonged parenting stress may place parents at risk for displaying harsh and/or unsupportive parenting behaviors, which may have serious long-term implications for child adjustment in multiple domains of functioning (Deater-Deckard, 1998; Amato & Fowler, 2002).

Unfortunately, the other parent emotional experiences proposed in the current study--sadness, anger, and worry--were not retained in analyses, due to the low variability of these variables. Despite high variability in parent positive affect, parents reported little-to-no negative emotions. Diener and Emmons (1984) argue that positive affect and negative affect do not lie at opposite ends of a unipolar spectrum and instead should be classified as two separate dimensions. In this sense, a lack of positive affect is a neutral state, rather than a negative one. This explanation may partly account for differences in reporting. Low variability of negative affective codes may also reflect poor retrospective reporting or parent social desirability bias. A lack of variability in parent negative affect may also reflect poor ecological validity of the problem-solving discussion task. Parent-child interactions in a laboratory setting may not strongly mimic spontaneous disagreements between parents and children in daily life. Both parents and children may behave differently in this artificial and abbreviated context, provoking less negative emotion in parents during the parent-child discussion task.

## Parent RSA As a Mediator of Associations

Though moderate withdrawal of the vagal brake is an adaptive reaction to interpersonal challenge that prompts changes in behavior and emotion, variations in vagal control of the heart did not mediate the associations between child difficult behaviors and parent behaviors in the current study. More research is needed to elucidate the role of parent RSA, as very little research to date has examined changes in parent RSA during stressful parent-child interactions. Theory suggests that under conditions of social stress, vagal withdrawal and sympathetic arousal should precipitate decreases in parent warmth and support ('tend and befriend' behaviors) in favor of garnering resources for the 'fight and flight' response (Porges, 2006). Study results provide only partial support for existing theory, with changes in RSA being associated with changes in parent behavior.

Results of the current study provide support for the association between parent RSA and parent behavior. Contrary to expectations, however, parent vagal withdrawal was associated with increases in emotional support and demandingness for mothers and fathers as well as with increases in rejection for fathers. Study hypotheses predicted decreased positive parenting and increased negative parenting practices in the context of vagal withdrawal, in accordance with Porges' polyvagal theory (2006). Previous findings in the field, however, are less consistent in their support of polyvagal theory and often lack agreement regarding the most adaptive pattern of vagal reactivity. For example, some studies have reported vagal augmentation to be most socially adaptive—

interpreting this direction of reactivity as a manifestation of increased self-regulation; other researchers have demonstrated the benefit of vagal withdrawal—interpreting this direction of reactivity as a sign of active engagement; still others have reported both extremes to be highly maladaptive and model associations curvilinearly (Skowron, Cipriano-Essel, Benjamin, Pincus, & Ryzin, 2013; El-Sheikh et al., 2009; Calkins, Graziano, Keene, 2007; Marcovitch et al., 2011). Findings of the present study support vagal withdrawal as a sign of active engagement with the environment, as parents who had higher levels of RSA withdrawal demonstrated more adaptive parenting with their children during the problem-solving task. Curvilinear associations, however, were not investigated and therefore especially high levels of withdrawal cannot be ruled out as maladaptive. More research is needed to further examine the importance of parent RSA, especially in light of some of the contradictions present in the field.

Unfortunately, the association between social stress and parent RSA withdrawal was not supported in the current study, despite substantial evidence documenting the occurrence of vagal withdrawal following perceived social stress (Croizet et al., 2004; Rottenberg, Salomon, Gross, & Gotlib, 2005; El-Sheikh & Whitson, 2006). Interpretations of null results are generally not encouraged in research. Nevertheless, speculations regarding potential limitations of the current study may better inform future research. Inconsistent findings involving RSA are common. Experts in the field have attributed many of these inconsistencies to extraneous individual difference variables that lack appropriate experimental or

statistical control in research paradigms. These individual difference factors include: age, genetic variability (Cacioppo, Uchino, Bernston, 1994), chronic stress (Schubert et al., 2009), posture (Cacioppo, Uchino, & Bernston, 1994), and presence/ absence of mood disorders (Bylsma, Morris, & Rottenberg, 2007). Substantial inter-individual variability in any of these domains may mask a direct, linear association between an individual's experience of stress and his or her physiological reactivity and, therefore, should be controlled to the greatest extent possible. More complex relations between RSA and stress may also need to be considered. According to El-Sheikh and colleagues (2009), simultaneous consideration of the complex interacting nature of both the sympathetic and parasympathetic branches of the autonomic nervous system, in accordance with autonomic space theory (Bernston, Caccioppo, & Quigley, 1991) is needed to fully capture and understand changes in physiological regulation.

### **Parent Sleep Deprivation as a Moderator of Associations**

Contrary to previous findings that sleep deprivation influences stress reactivity through dysregulation of the ANS systems (McEwen, 2006), there were no consistent patterns found between parent RSA reactivity and sleep. Similarly, hypotheses regarding the importance of sleep for parent emotion and behavior were not supported. Though occasional marginal and significant associations between sleep and RSA and positive affect were reported, they were inconsistent and rare. As such, findings should be interpreted in light of the high probability of Type 1 error. Inconsistent directions of effect also suggest the potential role of chance. Some associations existed in the predicted direction, with sleep serving

as a risk factor for decreased positive affect and positive parenting behaviors, while others suggest that poorer sleep and increased sleepiness were associated with better parenting. These results contradict previous research conducted by the PhD candidate and others, which demonstrates an association between decreased sleep quality and quantity and negative emotional experience during interpersonal interaction (Gilbert et al., 2015; Gordon & Chen, 2014).

One possible explanation for these findings is that sleep deprived parents are less cognizant of their child's misbehavior, due to decreased attention which is characteristic of acute and chronic sleep deprivation (Durmer & Dinges, 2005). Another potential explanation involves the complex association between sleep and emotion. Sleep attainment (too much and/or too little) is highly correlated with mood disorders, such as depression (Dahl, 1996). Furthermore, for individuals suffering from depression, chronic mood disturbance has been to shown to be somewhat amenable to total and/or partial sleep deprivation paradigms (Giedke & Schwarzler, 2002). A report by the National Institutes of Mental Health from 2012 showed the prevalence of major depressive disorder in the population to be approximately 7%. As such, future examination of these effects may remove and/or control for the influences of adult mood disorders in the sleep- behavior association, which may contribute to more consistent findings.

Moderating effects in the current study may also be difficult to detect given the artificial nature of the social stress task. Previous research has found that sleep has the most profound effects on emotion and stress experiences during

stressful conditions (Zohar et al., 2005; Gilbert et al., 2015), as individuals who are not experiencing stress require less activation of the self-regulatory resources impacted by sleep than stressed persons (Martini, Root, & Jenkins, 2004). As such, a lack of findings may indicate that the problem-solving task was insufficient to test these associations. That very few parents endorsed negative emotions during the task is evidence of this. Future research with more stressful and ecologically valid measures of parenting stress may be better able to detect associations. At-home observations by experimenters have been used in previous research examining the importance of sleep on parent-child interactions (Gregory et al., 2012) and may be a more valid alternative to laboratory-based procedures.

Another limitation of the current study includes the method of sleep measurement. Subjective sleep reports are not ideal for measuring sleep quality or quantity, as individuals tend to underreport and overreport different measures of sleep problems (Lockley, Skene, Arendt, 2002; Baker, Maloney, & Driver, 1999). Consequently, future research should utilize objective measures of sleep quality and quantity, such as actigraphy or polysomnography, if possible. Sleep need is also highly varied between individuals. Factors like age, gender, morningness-eveningness, sleep architecture, and individual differences in propensity toward sleepiness (regardless of sleep attainment) also highly impact an individual's ideal sleep requirement (Ferrara & De Gennaro, 2001; Deliens, Gilson, & Peigneux, 2014). As such, sleep need should be taken into account in future research.

## Contributions of the Current Study

Despite its limitations, the current study has also made a number of notable contributions. Study findings supported previous research linking child and parent behaviors; further, parent affect was found to be a significant mediator of these associations. Parent emotional experience in the context of the parent-child relationship is a highly neglected area of study. Research in the field of developmental psychology tends to focus on parents' efforts to teach positive emotion regulation skills to their children. However, less research has examined the importance of parents' own emotion regulation capabilities for their behaviors and emotional expressivity during parent-child interactions. Parent stress response represents a similar gap in research. The current study highlighted the association between changes in parent RSA and changes in parenting behavior. Due to the importance of individual physiological reactivity and emotion for behavioral functioning, understanding these mechanisms as underlying parent differences in behavior is an important next step in research (Steinberg et al., 1994). Lastly, the current study examined the impact of parent health-related behaviors, in this case sleep, for changes in parent functioning. Further examination into the association between parent health behaviors and changes in parenting may provide valuable information for prevention and intervention efforts, as sleep is highly amenable to change. Sixty two percent of parents acknowledge that tiredness gets in the way of being the parent that they want to be (Cooklin et al., 2012). Previous research has shown that parents who are sleep deprived are less capable of providing a structured and supportive

environment for their children and are less capable of engaging in supportive parenting behaviors (Gregory et al., 2012; Cooklin, Giallo, & Rose, 2011). More research, however, is needed to replicate and extend these findings as well as provide physiological and socioemotional explanations for these associations.

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## Appendix A: SYSTEM FOR CODING INTERACTIONS AND FAMILY

### FUNCTIONING (SCIFF):

#### PARENT CODE: REJECTION & INVALIDATION

This is primarily a content code based on the frequency and intensity with which a parent makes cruel, critical, insulting, blaming, unkind, rude, or insensitive statements to the child. It also includes parental behaviors that are dismissive or ignoring of the child's feelings. This code assesses the overall level of rejection and/or invalidation expressed by the parent. At the lowest end of the scale, the parent neither rejects nor invalidates the child. At the top end of the scale, the parent is clearly both rejecting and invalidating. Parents usually will express rejection or invalidation of the child through verbalizations (e.g., "It makes me sick just to look at you," "You're such a slob, how can you stand to have your room that messy?" "Sometimes you act like an idiot," "You made a fool out of yourself in front of your classmates and your teacher," "You embarrass me, with how rude you are to your grandmother," "Stop crying like a baby/a little girl," "Only sissies get upset like that," or "Stop acting like such a spoiled brat"). Rejection and invalidation may also be expressed through emotional tone (e.g., sounding disgusted, dismissing, or condescending about a child's complaint, behavior, or expression of emotion). Other signs of rejection and invalidation include putting child down in some way or directly telling the child not to experience an emotion. When discussing a problem, the parent may criticize the child's character, rather than focusing only on the child's behavior. Invalidation also involves minimizing the importance of, disregarding, denying, or dismissing the child's feelings, needs, and opinions. It may involve ignoring the child's emotional state when the child is visibly upset. Anger, impatience, frustration, and irritation are emotions that do not necessarily carry a rejecting and invalidating message (e.g., parents can be frustrated, etc., without being overtly cruel or attacking to their child). When the above emotions are expressed without cruelty, criticism, condescension, etc., code it under Family Negativity and Conflict.

1 - Very Low. The parent does not reject or invalidate the child in any way throughout the interaction.

2 - Low. There are one or two times in the interaction when a parent makes rejecting or invalidating statements, such as put-downs, criticisms, etc., that appear to be mild in intensity, such that the comment is or the comments are about a child's behavior (and a relatively minor behavior, such as complaining, not putting clothes away or completing chores), rather than his or her personality. With regard to tone of voice, a rating of 2 should be given if the tone has a bit of a "bite" or "edge" to it, but it is not overtly attacking.

3 - Moderate. There are several instances when the parent makes rejecting and/or invalidating statements. These statements are mild in intensity, such that

a put-down, critical comment, etc., is about a child's behavior (and a relatively minor behavior, such as complaining, not putting clothes away or completing chores), rather than his or her personality. As with a rating of 2, with regard to tone of voice, a rating of 3 should be given if the tone has a bit of a "bite" or "edge" to it, but is not overtly attacking. The difference between assigning a code of 2 or 3 is one of frequency, as noted above.

4 - Moderately High. The parent's rejecting and/or invalidating behavior at times reaches moderate intensity, though not more than one or two times. Moderately intense rejecting/invalidating statements include insults, put-downs, etc., that are about the child's personality or character, rather than behavior. The tone of voice used typically is such that the comment may come across as moderately attacking, disgusted, mocking, spiteful, and/or hostile (though a fairly rejecting and invalidating statement may be made without any overt change in tone of voice).

5 - High. There are three or more instances in the interaction when the parent's rejecting and invalidating behavior is of moderate to high intensity, and insults, put-downs, critical comments, etc., are about the child's character. The tone of voice used typically is such that the comment may come across as attacking, disgusted, mocking, and/or spiteful (though a very rejecting or invalidating statement may be made without any overt change in tone of voice). If a parent swears at the child, the parent should automatically be given a rating of 5.

#### PARENT CODE: COERCIVENESS

This is a content code that is based on the frequency with which a parent makes threatening or manipulative statements to the child or uses a threatening tone or body language with the child. Coerciveness represents aversive or unpleasant methods that a parent uses to direct or control the child's behavior. Coerciveness refers to threatening, bullying, shaming, embarrassing, or manipulative behaviors used by the parent. Threatening or overly punitive statements such as, "I have absolutely had it with your behavior -- do not push me! I have had it!" "The next time you do that, you won't like the punishment," or, "If you're going to act like a spoiled brat, you're going to get treated like one." A parent may manipulate, shame, or embarrass the child by saying things like, "Well, we would love to take you out to dinner more often, but we can't because of your behavior." In addition, setting up questions so that there is only one right answer (and the right answer is to agree with the parent) is also coercive. Parental threat may also be expressed by saying in a bullying or superior tone, "I make the rules, you follow them." Bullying can also take the form of harsh, repetitive commands or demands such as, "Look at me! Look here! Look at me when I am talking to you!" In conjunction with threatening statements, threats can also take the form of a menacing, frightening tone, or a body posture that indicates intimidation, such as getting overly or uncomfortably close to the child (e.g. "invading their space"), making threatening gestures, such as pointing into the child's face, poking them

in a threatening way, or gesturing such that it appears that the child might actually be struck, whether on purpose or not, by the movement. The parent may physically force the child to change his/her position or posture. For example, the parent may grasp the child's shoulders to make the child look at the parent, or restrain the child from getting out of his/her chair, turning away, etc.

NOTE: Each tape should be watched a separate time in order to code Coerciveness, Rejection and Invalidation, because coders need to count exactly how many times each of these types of statements occur. Frequency counts are based on an approximately 10 minute interaction. For researchers who conduct longer interactions, multiply the below frequency counts proportionately by length of total interaction (e.g., for a 15 minute interaction, multiply the frequencies by 1.5; for a 20 minute interaction, multiply by 2, etc.). Also, note that insults, put-downs, and criticisms about the child's behavior or character should be coded under Rejection & Invalidation, not here.

1 - Very Low. The parent is not coercive.

2 - Low. The partner makes one coercive statement or once uses a threatening tone or gesture.

3 - Moderate. The partner twice is observed to make coercive statements, use a threatening tone, or make threatening gestures in the interaction.

4 - Moderately High. The partner 3 times is observed to make coercive statements, use a threatening tone, or make threatening gestures in the interaction.

5 - High. The partner 4 or more times is observed to be coercive in statements, tone, or gestures

#### PARENT CODE: EMOTIONAL SUPPORT

This code assesses several aspects of the supportiveness of the parent-child relationship, including emotional support and affective attunement or sensitivity. Emotional support refers to the parent's ability to 1) recognize and 2) meet the child's emotional needs and provide comfort or reassurance. This can be done verbally or through actions. This code assesses how sensitive, or attuned, the parent is to the child's emotional state, needs, and perspective, and how well s/he modifies his/her behavior accordingly. Affective attunement can be displayed either verbally (I can tell this is really frustrating) or nonverbally (e.g., facial expression, tone of voice). A parent who is emotionally supportive is one who is able to respond in a helpful or nurturing way, when the child expresses or seems to be feeling upset, distressed, hurt, etc. The parent may say things like, "I understand why that hurt your feelings, that must have been hard." When a parent is affectively attuned, the parent is able to "read" the child's verbal and/or nonverbal signals of emotions. Whether the child's emotions are positive or

negative, an affectively attuned parent is able to tailor his or her comments, behavior, and emotional expression to fit the child's best interests, always helping the child to regulate emotions and feel as good as the child can, given the situation. For example, an attuned parent may soften his/her voice, lean over and touch the child, or otherwise modify his/her behavior to indicate awareness of the child's affective state.

A parent who is not well attuned to his/her child can be identified when there is a mismatch between the child's needs and the parent's behavior. In other words, the parent seems oblivious to or unaware of the child's needs. For example, a parent may be extremely affectionate with his/her child when the child is withdrawn, oppositional, or needy of structure. If the parent does not change his/her behavior to meet the child's needs, that parent is not attuned to the child.

It may at first be difficult to distinguish between the low end of Emotional Support and the code of Parental Rejection and Invalidation. Remember that low Emotional Support includes missed opportunities or too much passivity on the part of parents in showing support to their children, whereas to be rated as rejecting or invalidating, a parent must actively respond to a child's emotional expression with dismissal, rejection, or invalidation. Thus, an unsupportive parent may or may not also be rejecting and invalidating.

1 - Very Low. The parent expresses little to no emotional support, or no attunement to the child's feelings. The parent does not provide emotional support, even if the child shows some distress. The parent does not openly validate the child's ideas or feelings. Very little or no sensitivity to the child's emotional state, needs, or perspective is shown. In other words, there is not a good fit or match between the child's emotional state and the parent's behavior. The parent may show passive acceptance of child's ideas and attempts but offers no open acknowledgment of the value of the child's ideas and attempted contributions.

2 - Low. The parent expresses some support or attunement toward the child, but it is minimal in terms of its quantity and quality (e.g., the moments of emotional support/affective attunement are fleeting and sometimes not obviously sincere). The parent is not characteristically supportive but may show some acceptance for at least a few of the child's feelings and/or ideas. Acceptance may be mild and somewhat passive at times (versus enthusiastic). The parent may miss obvious occasions to show acceptance or sensitivity or provide comfort and reassurance to the child. The parent may show signs of being aware of the child's emotional needs but has some difficulty modifying his or her own behavior to meet the child's needs. For example, there may be times when the parent is somewhat hapless, trying to meet the child's needs or be sensitive and accepting, but those attempts are typically off-base and ineffective. In other words, the parent, though trying at times, cannot seem to figure out how to help the child or meet the child's needs.

3 - Moderate. The parent expresses a moderate amount of emotional support and/or affective attunement toward the child, which is clearly genuine when it occurs. The parent about half the time shows support and acceptance for the child's ideas and feelings. The parent is inconsistent: he/she is generally "tuned in" but not always (e.g., the parent sometimes is too directive, detached, abrupt, passive, or otherwise "out of sync").

4 - Moderately High. The parent generally expresses emotional support and affective attunement toward the child. The parent generally values and shows acceptance for the child's feelings and/or ideas. The parent is usually competent at reading child's emotional signals and responds supportively most of the time. The parent is usually caring when responding, but sometimes these qualities seem a little lacking. On rare occasions, the parent may miss some opportunities to show acceptance and sensitivity to the child or provide the child with comfort. Despite occasionally "missing the mark" in trying to be attuned to the child's emotional state, the parent does not seem to be ignoring or insensitive to child.

5 - High. The parent expresses emotional support and affective attunement virtually throughout the interaction. The parent is very aware of the child's emotional needs and finds effective ways of providing support. The parent is competent at reading the child's emotional signals and tailors his or her behavior to meet the needs of the child. The parent rarely or never misses times to provide support. The parent shows consistent acceptance and support for the child's feelings and/or ideas. The parent encourages the child to articulate and express his/her ideas.

#### PARENT CODE: WITHDRAWAL

This code assesses the degree to which a parent removes him/herself from the interaction or avoids the interaction or discussion. The parent may evade the issue or may seem to pull him/herself out of the discussion. The parent may seem to retreat into a shell, become detached, back off, or shut down, physically or emotionally (in other words, through body language, tone of voice, and/or attitude). In this code, tone of voice refers to when a parent sounds flat, bored, disinterested, tired, or distracted when speaking. A withdrawn attitude is more displayed, in addition to body language, in what the parent says. A parent may display a withdrawn attitude by saying things like, "This isn't my problem," "You two figure it out," "I don't care," "Do whatever you want," or, "I have nothing else to say." A parent also may withdraw by avoiding eye contact, turning his/her body away, changing his/her body position to create more distance, crossing arms, fidgeting with hair, glasses, nails, etc., or becoming indifferent, nonchalant, disinterested, or unresponsive.

Note: Be sure not to code parents who seem to be somewhat shy, reserved, or quiet as withdrawn, unless they are clearly also withdrawn.

1 - Very Low. The parent is not withdrawn from the interaction/discussion. The parent remains actively engaged, interested, and involved throughout the course of the discussion (e.g., by speaking, listening, or leaning body forward). The parent does not disengage, retreat, shut down, or distance him/herself from the others or from the discussion.

2 - Low. The parent is minimally withdrawn from the interaction. The parent for the most part is involved, but there may be moments when he/she briefly disengages or shuts down during the discussion (e.g., he/she loses eye contact for a little while, looks away for a bit, or fidgets for a few moments). When a parent disengages, however, he/she resumes active involvement a short time thereafter. In this code, this rating can be given if the parent is generally talkative and genuinely involved, but at times has a bit of indifference in tone when speaking.

3 - Moderate. There are one or two blocks of time when the parent seems somewhat withdrawn, but this is clearly less than half the time. The parent for the most part is involved, but there are definite parts of the discussion that the parent does not take part in. That is, the parent is for the most part an active listener and/or active speaker but when withdrawn, appears as if he/she may be listening but is not otherwise involved. That is, it may be unclear as to whether or not he/she is listening, but he/she is not obviously ignoring what other people are saying. When attempts are made to re-engage the parent, the parent generally responds appropriately (e.g., answers a question or responds to a touch).

4 - Moderately High. For about half the time, the parent is actively withdrawn. Again, it may be difficult to determine how closely the parent is attending to or following the discussion, but there are clear ways in which the parent is uninvolved. When attempts are made to re-engage the parent, the parent generally responds appropriately, but there are likely to be one or two times in which the parent is unresponsive or responds inappropriately (e.g., does not answer or answers a question sullenly or indifferently, does not laugh at a joke or ignores it, or ignores a touch).

5- High. For more than half the time, the parent is actively withdrawn. When attempts are made to re-engage the parent, the parent often delay an answer to a question and answer sullenly or indifferently, ignore a joke, or ignore or brush off a touch).

#### CHILD CODE: ANGER AND FRUSTRATION

This code assesses the overall level of negative affect (e.g., anger, frustration, tension, and irritation) expressed by the child through tone of voice, facial expressions, and body language during the interaction. Consider what the child says as well as how s/he says it. In other words, children may express frustration or tension either through verbalizations (e.g., I hate talking about this), overt behavior (e.g., yelling, pouting, banging on chair), or emotional tone (e.g., whining, frustrated, impatient, irritated, or angry). The lower end of this scale is

characterized by an absence of negative affect behaviors. However, this does not mean that the child is necessarily expressing positive affect. In fact, a child who expresses little affect at all (i.e., unemotional, flat affect) will score low on both negative and positive affect. At the higher end, the child shows frustration, tension, irritation, or anger.

1 - Very Low. The child expresses virtually no negative affect. The child very rarely (if ever) expresses frustration, tension, or anger. If the child shows rare glimpses of frustration or anger, these are fleeting and are extremely mild in intensity (i.e., barely noticeable). The child does not whine or complain.

2 - Low. The child expresses a small amount of negative affect, such as occasional frustration, tension, anger, or irritation that is mild in intensity. The child occasionally whines or complains.

3 - Moderate. The child expresses some negative affect, including some frustration, tension, anger, or irritation that is clear and obvious, but not very intense. The child may occasionally whine or complain.

4 - Moderately High. The child expresses some negative affect that is clear, obvious, and of mixed intensity (e.g., for the most part the child's negative affect is mild but clearly escalates at times). At no time does the negativity get out of control. The child may whine or complain several times.

5 - High. The child expresses frequent negative affect, which is clear, obvious, and of moderate to high intensity. The child may whine or complain repeatedly. The child's negativity may appear to be on the verge of being out of control.

#### CHILD CODE: SADNESS

This code is primarily an affect or emotional/behavioral code, though at times children may be observed to make statements of sadness. It assesses the overall quantity of sadness, sorrow, anguish, grief, pain, regret, and remorse displayed by each partner. These emotions may be displayed in the following manner: facial expressions such as tearfulness, sad frowns, or pained expressions, or looking as if the child is crying or about to cry. Body gestures observed in conjunction with other expressions of sadness (in order not to confuse them with other codes, such as Withdrawal), may include slumped shoulders, downcast head or eyes, wringing hands, wiping tears, or putting one's head in one's hands.

In order to distinguish Sadness from Withdrawal, children need to be observed to be visibly, recognizably unhappy or anguished, rather than shut down or avoiding of the topic. Withdrawal in many ways signals an absence of emotional responsiveness, whereas Sadness is the presence of distress. Conflictual emotions, such as anger, tension, frustration, and irritation should be coded under Negativity and Conflict; similarly, insults, put-downs, blaming statements, critical comments (directed at the partner or at the partner's relatives and

friends), disgust, condescension, mockery, spiteful or hurtful comments, name-calling, and swearing should be coded under Verbal Aggression.

1 - Very Low. The child does not exhibit any indications of sadness, sorrow, anguish, grief, pain, regret, and remorse.

2 - Low. The child appears to be minimally sad; that is, the child is observed once to appear sad, sorrowful, anguished, grieved, pained, and/or regretful or remorseful, and this isolated moment of sadness is mild in intensity (e.g., the child states something like, "I feel kind of sad," or appears momentarily pained or remorseful, but this feeling appears to be fleeting).

3 - Moderate. There are a few instances in which the child appears to be mildly sad, sorrowful, anguished, grieved, pained, and/or regretful or remorseful. Again, these instances are relatively fleeting.

4 - Moderately High. There are several occasions, though for less than half of the interaction overall, when a child appears to be somewhat sad, sorrowful, anguished, grieved, pained, and/or regretful or remorseful. Then feelings of mild sadness may be somewhat difficult for the child to "shake off."

5 - High. For half to more than half of the interaction, the child is observed to be sad, sorrowful, anguished, grieved, pained, and/or regretful or remorseful. Most of these behaviors and/or statements are obvious and of moderate to high intensity. The child may be observed on one or more occasions to cry openly.

#### CHILD CODE: WITHDRAWAL

This code assesses the degree to which a child removes him/herself from the interaction or avoids the interaction or discussion. The child may evade the issue or may seem to pull him/herself out of the discussion. The child may seem to retreat into a shell, become detached, back off, or shut down, physically or emotionally (in other words, through body language, tone of voice, and/or attitude). In this code, tone of voice refers to when a child sounds flat, bored, disinterested, tired, or distracted when speaking. A withdrawn attitude is more displayed, in addition to body language, in what the child says. A child may display a withdrawn attitude by saying things like, "This isn't my problem," "You two figure it out," "I don't care," "Do whatever you want," or "I have nothing else to say." A child also may withdraw by avoiding eye contact, turning body away, changing body position to create more distance, crossing arms, getting up from or slumping in the chair, fidgeting excessively with hair, glasses, nails, etc., or becoming indifferent, nonchalant, disinterested, or unresponsive. A child's withdrawal may take the form of superficial listening (e.g., by saying, "Yeah, yeah" when the child clearly has not been paying attention).

1 - Very Low. The child is not withdrawn from the interaction/discussion. The child remains actively engaged, interested, and involved throughout the course of the discussion (e.g., by speaking, listening, or leaning body forward). The child

does not disengage, retreat, shut down, or distance him/herself from the others or from the discussion.

2 - Low. The child is minimally withdrawn from the interaction. The child for the most part is involved, but there may be moments when he/she briefly disengages or shuts down during the discussion (e.g., loses eye contact for a little while, looks away for a bit, or gets out of the chair briefly). When a child disengages, however, after a short time he/she resumes active involvement.

3 - Moderate. There are one or two blocks of time when the child seems somewhat withdrawn, but this is clearly less than half the time. The child for the most part is involved, but there are definite parts of the discussion that the child does not take part in. That is, the child is for the most part an active listener and/or active speaker, but when withdrawn, appears as if he/she may be listening but is not otherwise involved. When attempts are made to re-engage the child, the child generally responds appropriately (e.g., answers a question, laughs at a joke, or responds to a touch).

4- Moderately High. For about half the time, the child is actively withdrawn in at least one of the three ways mentioned above (either in body language, tone, or attitude). There are clear ways in which the child is uninvolved (e.g. the child may not be listening or may pout or look sullen). When attempts are made to re-engage the child, the child generally responds appropriately, but there are likely to be one or two times in which the child is unresponsive or responds inappropriately (e.g. does not answer or answers a question sullenly or indifferently, does not laugh at a joke or ignores it, or ignores a touch).

5- High. For at least half the time, the child is actively withdrawn in at least two of the three ways mentioned above (body language, tone, or attitude), and at times sulks, pouts, or is sullen. When attempts are made to re-engage the child, the child often may not respond or respond inappropriately (e.g. not answer questions or delay an answer to a question and answer sullenly or indifferently, ignore a joke, or ignore or brush off a touch).

#### CHILD CODE: OPPOSITION/DEFIANCE

This code assesses the degree to which the child displays oppositional, defiant, or belligerent behavior. Included in this code are insulting, distracting, disrespectful, noncompliant, disobedient, argumentative, annoying, blaming, angry, or vindictive behaviors. If the child blames others for his/her mistakes, deliberately does things to annoy others, seems touchy or easily annoyed, or swears or deliberately says things to hurt others, the child will be coded as high on the opposition/defiance code.

1 - Very Low. The child does not engage in any oppositional or defiant behavior.

2 - Low. The child engages in a few relatively mild oppositional/defiant behaviors (e.g., on one or two occasions blames others, does not immediately comply with parental requests, briefly attempts to distract the discussion, or becomes slightly touchy or annoyed).

3 - Moderate. The child engages in several relatively mild oppositional/defiant behaviors (e.g., several times blames others, does not immediately comply with parental requests, briefly attempts to distract the discussion, or becomes slightly touchy or annoyed).

4 - Moderately High. The child engages in one or two moderately intense oppositional/defiant behaviors such as deliberately annoying others or saying things to hurt others, gets out of chair or otherwise behaves in a highly distracting manner, insults or argues actively with his/her parent(s), is actively disrespectful or willfully disobedient, or swears.

5 - High. The child may engage in several mild oppositional/defiant behaviors and more than twice engages in moderately to highly intense oppositional/defiant behaviors, such as deliberately annoying others or saying things to hurt others, gets out of chair or otherwise behaves in a highly distracting manner, insults or argues actively with his/her parent(s), is actively disrespectful or willfully disobedient, or swears.

#### CHILD CODE: POSITIVE AFFECT

This code assesses the positiveness of the child's tone of voice, facial expressions, and body language on a scale from little to no positive affect expressed to much positive affect expressed. Positive affect may be expressed through behaviors such as affection, laughter, and smiling. The lower end of this scale is characterized by an absence of negative affect behaviors. However, this does not mean that the child is necessarily expressing positive affect. In fact, a child who expresses little affect at all (i.e., unemotional, flat affect) will score low on both negative and positive affect. At the higher end, the child shows an easy, relaxed manner, and may laugh, smile, or be affectionate.

1 - Very Low. The child expresses very little to no positive affect, maintaining a flat, neutral, or negative demeanor throughout the interaction. The child very rarely (if ever) seems to really be enjoying the interaction. Few (if any) smiles are displayed, and the child in general does not seem relaxed. The child often seems disinterested, bored, disengaged, or withdrawn from the interaction.

2 - Low. The child expresses some positive affect, showing brief periods of enjoyment, but this is not the child's general state. It may seem to take a fair amount of effort on the part of the parent(s) to make the child smile or display positivity. The child may at times seem neutral, disinterested, bored, disengaged, or withdrawn from the interaction.

3 - Moderate. The child expresses a moderate amount of positive affect and is able to display some enjoyment of the interaction and his/her parent(s). The child may be neutral for some portions of the interaction (such as seeming disinterested, bored, disengaged, and/or withdrawn) but will smile, laugh, or be affectionate on occasion with his/her parent(s).

4 - Moderately High. The child expresses frequent positive affect (e.g., smiles, is affectionate and warm, and seems comfortable, relaxed, and at ease in the discussion). There may be occasional moments of mild frustration, disinterest, boredom, disengagement, or withdrawal from the interaction. There is an underlying sense of warmth, connection, and comfort between the child and at least one of the parents (or with the one parent, for single-parent families).

5 - High. The child expresses a great deal of positive affect (e.g., smiles, is affectionate and warm, and seems comfortable, relaxed, and at ease in the discussion). The child seems to enjoy being with both of his parents (or the one parent, for single-parent families). The child seems to generally be in a good mood, though may become a bit bored or disinterested on occasion. The child seems relaxed most of the time. There is an underlying sense of warmth, connection, and comfort between the child and both of his/her parents.

## Appendix B: Parent Codes of Autonomy Granting and Demandingness

### Autonomy Granting

This code assesses the process of decision-making between the parent and child and the extent to which each member has a role in or contributes to the family discussion. Specifically, this code identifies the degree of autonomy that the parent grants the child during the discussion task. Autonomy in this case is the degree to which the parent recognizes the child's competence in contributing to the decision-making process. Parents who are high in autonomy granting want their children to be assertive as well as socially responsible, and self regulated as well as cooperative.

A parent who is high on autonomy recognizes a child's competence and elicits his/her opinions on topics impacting the child. He or she listens carefully to the child's opinions and encourages verbal give-and-take, even though the parent still maintains ultimate control. He or she maintains authority, but discusses rules, punishments, etc with the child, arriving at decisions by consensus. A parent also helps the child understand the impact of his or her behavior by talking through the consequences of their actions, helping the child to see both sides of the issue.

1- Very Low. The parent expresses little to no desire to listen to or understand the child's perspective on a given topic. He or she holds unmistakable authority, valuing obedience as a virtue and favoring punitive, forceful measures when necessary to encourage good behavior. He or she does not encourage verbal give and take and instead believes that the child should accept his or her word for that is right and acceptable. Rules, in this case, are nonnegotiable. A child may voice his/ her opinion, however, the parent does not seem to actively respond to a child's input nor appear to take a child's feedback into account in the decision-making process.

2- Low. There may be one or two times in which the parent appears to actively elicit the child's opinions on a given topic. However, these attempts may appear less than genuine, as the parent may not appear to actively consider the child's input, or alter his or her opinion or approach based upon the child's feedback. Any attunement to a child's input is minimal in terms of *quantity and quality*. The parent still makes decisions based upon his/her desires, with little consideration to objections or reasoning from the child.

3- Moderate. The parent allows for a moderate amount of verbal give and take with the child. He or she may seem somewhat inconsistent in encouraging and valuing child input and expressivity, shifting from occasions of openness and

mutual respect to longer periods of control. He or she, on occasion, may use reason to affirm her values and policies and help the child see things from his or her perspective. Yet these attempts often seem lacking and ineffective. Any efforts to elicit and consider the child's input occur less than half the time.

4- Moderately High. The parent generally recognizes the value of the child's perspective, though he or she may not agree with it. He or she is usually active in engaging the child, requesting the child's opinions on topics that impact the child directly. For the most part, the parent uses logic and reasoning when arguing his point to encourage the child to see the broader picture and/or consequences of certain behaviors. On rare occasions, however, the parent may exert his or her power without explanation or reason or may miss the opportunity to consider the child's perspective.

5- High. The parent encourages the child to freely express him or herself throughout the interaction, even when the parent is in disagreement with the child's perspective. The parent negotiates with the child on his/ her age-appropriate level. He or she is adept in engaging the child, always taking the child's desires into account on topics that impact the child directly. The parent maintains his authority on a topic not by asserting his power, but by using reason to demonstrate the pros and cons of different sides of the argument, believing the child competent to weigh these consequences.

#### Demandingness

This code assesses the degree to which a parent sets up and enforces set boundaries for the child. A parent who is high on demandingness has high expectations for a child's behavior and encourages the child to meet those expectations by implementing rules and punishment, as needed. This parent is also high on monitoring—maintaining awareness of a child's behavior throughout the session and responding with praise or punishment, when required.

1- Very Low. The parent is not demanding of the child. The parent is lenient and does not require mature behavior or compliance. Instead, he or she may appear to be disengaged or instead may allow the child to self-regulate in order to avoid confrontation with the child. The parent who is very low in demandingness may seem to have a child that is out of his or her control throughout the session.

2- Low. Parents who are low in demandingness may, on rare occasions, attempt to control the child's behavior, either by providing instructions to the child on appropriate behavior or by attempting to punish the child when he or she has crossed a line. These attempts to set up boundaries, however, may not only rare, but ineffective. In this case, the parent does not have good control of the child

and may alternate between a few periods of overt control and more extended periods of total leniency.

3- Moderate. The parent engages in a moderate amount of control. About half the time, he or she monitors child behavior and reinforces rules and boundaries. This parent may inconsistently address child behavior problems when they do occur. As such, the child may regulate his or her own behaviors for about half of the interaction. This inconsistency may be a result of inattention or in avoidance of confrontation with the child. Though the parent may not be pleased with child behavior, he or she seems less than capable of controlling the child.

4- Moderately High. The parent generally is competent in setting and enforcing rules and restrictions. This parent is usually able to establish clear boundaries and punish bad behavior when it occurs. Despite the occasional missed opportunity, this parent is adept at monitoring child verbal and nonverbal behaviors and reacting so as to encourage child compliance. However, the parent may demonstrate some inconsistency in enforcing good behavior, though it is less than half the time.

5- High. The parent establishes clear limitations with the child and is able to enforce rules and regulations that encourage behavior within these limits. This code does not necessarily indicate that a parent is overly strict or restrictive, but instead demonstrates a parent who is consistent and clear in their expectations for their child, and encourages the child—through punishment and praise—to meet these expectations. This parent highly monitors child behavior and does not allow the child to act in ways that are immature or problematic. The parent seems to be in good control of the child throughout.

## LAUREN R. GILBERT

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### EDUCATION

- Ph.D. Experimental Developmental Psychology, Expected  
University of Kentucky  
Dissertation: *Parenting Behaviors of Sleepy Parents: Associations with Emotion Regulation and Sleep*  
Advisor: Peggy Keller, Ph.D.
- Certificate College Teaching and Learning, May 2015  
University of Kentucky  
Practicum Advisor: Matthew Winslow, Ph.D., Eastern Kentucky University
- M.S. Experimental Psychology, December 2012  
University of Kentucky  
Thesis Title: *Synchrony in parent-child interactions during middle childhood and early adolescence: Examination into physiological correlates and behavioral processes*  
Advisor: Peggy Keller, Ph.D.
- B.A. Sociology, May 2008  
University of Kentucky  
Summa Cum Laude

### HONORS AND AWARDS

#### Graduate

- 2013-2014 Departmental Outstanding TA Award, University of Kentucky
- Fall 2013 Douglas Marshal Wilson Make a Difference Award, University of Kentucky: *an award given to faculty and students who contribute to a positive, more enjoyable working environment day in and day out.*

## Undergraduate

2003 Phi Beta Kappa, University of Kentucky: *Considered to be the nation's oldest, most prestigious honor society award, given to the most outstanding students in liberal arts and sciences.*

## **PUBLICATIONS**

**Gilbert, L. R.** Pond, R. S., Haak, E. A., DeWall, C. N., & Keller, P. S. (In press). Sleep problems exacerbate the emotional consequences of interpersonal rejection. *Journal of Social and Clinical Psychology*.

Keller, P. S., Smith, O. A., **Gilbert, L. R.**, Bi, S., Haak, E. A., & Buckhalt, J. A. (In press). Earlier school start times as a risk factor for school performance: An examination of public schools in the Commonwealth of Kentucky. *Journal of Educational Psychology*. IF = 3.16

Keller, P. S., Blincoe, S., **Gilbert, L. R.**, DeWall, C. N., Haak, E. A., & Widiger, T. (2014). Narcissism in romantic relationships: A dyadic perspective. *Journal of Social and Clinical Psychology*, 33(1), 25-50. IF = 1.41

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Keller, P.S., **Gilbert, L. R.**, Koss, K., Cummings, E. M., & Davies, P. T. (2011). Parental problem drinking, marital aggression, and child emotional insecurity: A longitudinal investigation. *Journal of Studies on Alcohol and Drugs*. IF = 1.68

## **MANUSCRIPTS UNDER REVIEW**

**Gilbert L. R.** Brown, C. S., & Mistry, R. M. (Under Review). Latino immigrant parents' academic involvement: The role of financial stress and parental depression.

Keller, P.S., Granger, D.A., Tyler, J. **Gilbert, L.R.**, Haak, E.A., & Bi, S. (Under Review). Parent problem drinking is associated with children's adrenocortical reactivity to stress.

Keller, P. S., **Gilbert, L. R.**, Bi, S., Haak, E. A., & Smith, O. A. (Under Review). Earlier school start times in the Commonwealth of Kentucky: Links to higher rates of behavioral problems in public elementary schools.

## MANUSCRIPTS IN PREPARATION

**Gilbert, L. R.** Haak, E. A., Bi, S., & Keller, P. S. (In preparation). Parental depression and anxiety: Links to adolescent emotion regulation, parenting of underage drinking, and adolescent drinking behaviors.

**Gilbert, L. R.** Haak, E. A., Bi, S., & Keller, P. S. (In preparation). The impact of sleep deprivation on mother-child dyadic synchrony in middle childhood.

Haak, E. A., **Gilbert, L. R.**, Bi, S., & Keller, P. S. (In preparation). HPA axis reactivity in the promotion of child prosocial behavior.

Bi, S., **Gilbert, L. R.**, Haak, E. A., & Keller, P. S. (In preparation). Marital conflict, child emotional insecurity, and child eating and weight problems.

## CONFERENCE PRESENTATIONS

**Gilbert, L.R.**, Haak, E. A., Suchecki, J., Nichols, T., Keller, P.S. (submitted). Parent mental health and adolescent underage drinking: The role of adolescent emotion regulation and parents' fatalism. Poster submission for the biannual meeting of the Society for Research in Child Development in Philadelphia, PA.

**Gilbert, L.R.**, Brown, C.S., Mistry, R. (submitted). Latino immigrant parents' academic involvement: How financial stress and parental depression indirectly impact children's academic outcomes. Poster submission for the biannual meeting of the Society for Research in Child Development in Philadelphia, PA.

**Gilbert, L.R.**, Nichols, T., Vanmeter, R.F., Sheldon, C., & Keller, P.S. (2014, April). Sleep deprivation exacerbates the negative emotional consequences of interpersonal rejection. Poster presentation at the annual meeting of the Midwestern Psychological Association in Chicago, IL.

**Gilbert, L.R.**, Brown, C.S., Mistry, R. (2014, April). Latino immigrant parents' academic involvement: How financial stress and parental depression indirectly impact children's academic outcomes. Poster presentation at the annual meeting of the Children At Risk Conference in Lexington, KY.

**Gilbert, L.R.**, Bi, S. Perkins, A., & Keller, P.S. (2014, March). Mother-child synchrony: The impact of sleep deprivation. Poster presentation at the biannual meeting of Society for Research of Human Development in Austin, TX.

**Gilbert, L.R.**, Keller, P.S., Motley, S., & Coe, J. (2012, June). Child sleep, parent sleep, and family context. Poster presentation at the annual meeting of

Sleep in Boston, MA.

**Gilbert, L.R.**, Keller, P.S., & Haak, E. (2012, March). Generational transmission of attachment disorder and the moderating effects of social support. Poster presentation at the annual meeting of Children At Risk in Lexington, KY.

**Gilbert, L. R.**, Blincoe, S., Keller, P. S., Brandenburg, M., Weeks, D., & El-Sheikh, M. (2011, October). Child sleep, parent sleep, and family context. Poster presentation at the annual meeting of the Pediatric Sleep Medicine Conference, Amelia Island, GA.

Keller, P. S., **Gilbert, L. R.**, Blincoe, S., & Haak, E. (2011, October). Parental alcohol use and children's sleep. Poster presentation at the biennial meeting of Pediatric Sleep Medicine in Amelia Island, Florida.

Keller, P. S., **Rogers, L. N.**, Cummings, E. M., & Davies, P. T. (2011, April). Effects of Interparental attachment on the relation between marital aggression and children's emotional security. In M. R. W. George & K. J. Koss (Chairs), *Security processes in the family: Examining predictors and outcomes of children's exposure to marital conflict*. Symposium conducted at the biennial meeting of the Society for Research in Child Development, Montreal, Canada.

**Rogers, L. N.**, Keller, P. S., Koss, K. J., Cummings, E. M., & Davies, P. T. (2011, April). Children's involvement in marital conflict: Interactions between marital conflict and parental problem drinking. Poster presentation at the biennial meeting of the Society for Research in Child Development, Montreal, Canada.

**Rogers, L. N.**, Keller, P. S., George, M. R. W., Cummings, E. M., & Davies, P. T. (2011, April). Parents' security in the interparental relationship and marital aggression: Relations with parenting over time. Poster presentation at the biennial meeting of the Society for Research in Child Development, Montreal, Canada.

## RESEARCH EXPERIENCE

Fall 2010-                      Family and Child Development Lab, University of Kentucky  
Spring 2011                      Graduate Project Director of the All Kinds of Families Project

*This project was designed to examine the role of parental problem drinking in child psychophysiological stress response. My roles included participant recruitment, coordinating the assay of salivary cortisol, maintaining IRB approval for the research, training and*

*managing undergraduate research assistants, and data cleaning, preparation, and analysis.*

Advisor: Peggy Keller, Ph.D.

Summer 2011- Spring 2012 Family and Child Development Lab, University of Kentucky Graduate Project Director of R21 Child Sleep Project.

*This project was designed to examine the effects of parental problem drinking and associated family risk factors on child sleep. My roles included participant recruitment, scoring of sleep data derived from actigraphy, maintaining IRB approval for the research, training and managing undergraduate and graduate research assistants, and data cleaning, preparation, and analysis.*

Advisor: Peggy Keller, Ph.D.

Summer 2012- Present Family and Child Development Lab, University of Kentucky Graduate Project Director of the Sleep Apnea Project.

*This project is designed to examine the impact of sleep apnea on emotion regulation and subsequent romantic relationship functioning. My roles include participant recruitment, attainment of participant medical records, maintaining IRB approval for the research study, training and managing undergraduate and graduate research assistants, and data cleaning, preparation, and analysis.*

Advisor: Peggy Keller, Ph.D.

## **GRANT APPLICATION EXPERIENCE**

**Gilbert, L.R.** (2011, November). Physiological and Parent-Child Interactional Synchrony in Middle Childhood. NSF Graduate Research Fellowship Program. Grant was not funded.

## **COLLEGE TEACHING EXPERIENCE**

### **Primary Instructor Position**

2014 Fall Introduction to Psychology (Psy 200), Eastern Kentucky University

2013 Fall Information Literacy in Psychology (Psy 250), Eastern Kentucky University  
Average evaluation rating for quality of instructor: 4.9/5.0

2013 Summer Developmental Psychology (Psy 223 online), University of Kentucky  
Average evaluation rating for quality of instructor: N/A

### **Teaching Assistant**

2014 Fall Processes of Psychological Development (Psy 460), University of Kentucky

2014 Spring Experimental Psychology (Methods) (Psy 215), University of Kentucky

Average evaluation rating for quality of instructor: 3.9/4.0

2013 Fall Processes of Psychology Development (Psy 460), University of Kentucky

Average evaluation rating for quality of instructor: 3.6/4.0

2013 Spring Cognitive Processes (Psy 427), University of Kentucky

Average evaluation rating for quality of instructor: 3.8/4.0

2012 Fall Processes of Psychological Development (Psy 460), University of Kentucky

Average evaluation rating for quality of instructor: 3.9/4.0

2011 Summer Applications of Statistics in Psychology (Psy 216), University of Kentucky, Average evaluation rating for quality of instructor: N/A

### **TEACHING ENHANCEMENT ACTIVITIES**

Fall 2014 College Teaching & Learning (EPE 672): Course regarding methods, principles, and materials used in teaching in higher education.

Spring 2014 Kentucky Pedagogicon Conference: Attended conference dedicated to encouraging creative and pedagogically supported teaching practices.

Spring 2014 College Teaching Seminar (GS 610): Course in pedagogical issues facing faculty in institutions of higher education.

Spring 2014 Instructional Technology (GS 630): Course designed to teach students to use a range of technologies to solve problems and enhance teaching in the classroom.

Spring 2013 SETOP Annual Teaching Conference: Attended conference that enables instructors to learn, discuss, and present on topics related to the teaching of psychology.

Fall 2012 Preparing Future Faculty (GS 650): Course designed to

introduce students to the roles and responsibilities of faculty members at different types of institutions of higher education.

- Fall 2012 Using Social Media to Develop a Sense of Community in the Classroom: Attended workshop designed to demonstrate the value of using social media in the classroom to promote a sense of belonging and connection.
- Fall 2011 Generation X Teaches the Millennials: Advice from a Boomer: Attended workshop on promoting engagement in the classroom by focusing on the needs and traits of new college students and subsequent implications for teaching.
- Summer 2010 University-wide TA Orientation with Microteaching: Attended orientation to prepare new graduate students to instruct effectively and confidently in the classroom by discussing student needs, campus regulations, and campus and departmental support strategies.

#### **INVITED GUEST LECTURER**

- Spring 2014 Graduate Student Primary Instructor Positions: What to Expect, University of Kentucky. GS 650: Preparing Future Faculty.
- Fall 2013 Regional Comprehensive Universities: Similarities & Differences, University of Kentucky. GS 650: Preparing Future Faculty.
- Fall 2012 Family Influence on Physical and Psychological Health and Wellness, University of Kentucky. COM 313: Interpersonal Communication in Close Relationships.

#### **MENTORING EXPERIENCE**

- 2014 Graduate mentor, Capstone Project, Joey Frederick
- 2014 Graduate mentor, Summer Training in Alcohol Research (STAR) Student Mentor, Christian Garcia: *Parenting behaviors designed to reduce teen prescription stimulate abuse: A parent-report measure.*
- 2013 Graduate Mentor, Summer Research Fellow, Joshua Shouse: *Marital conflict as a determinant of attachment insecurity: Hypothalamic-pituitary-adrenal axis activity as a moderator of risk*

2011 Graduate Mentor, Summer Research Fellow, Morgan Brooke  
Razor: *The transmission of antisocial behavior across  
generations: The role of psychophysiology*

## TEACHING INTERESTS

Introduction to Psychology  
Psychology Research Methods  
Developmental Psychology  
Family Psychology  
The Psychology of Close Relationships  
Psychology of Emotion

## PROFESSIONAL ACTIVITIES AND SERVICE

Fall 2014 Developmental student representative to the Graduate Student  
Executive Committee

Fall 2014 Coordinator for new graduate student budgeting and financial  
planning panel

Fall 2014 New Graduate Student Orientation Panel Member

Fall 2014 Service Coordinator for the new Graduate Student Life Handbook

2014-2015 Developmental Psychology Brown Bag Coordinator

Spring 2014 Redevelopment of Lab for Psychology 460: Developmental  
Methods

Spring 2014 Session Moderator at the National Conference for Undergraduate  
Research

Fall 2013 New Graduate Student Orientation Panel Member

Spring 2013 Graduate Student Interview Coordinator

Spring 2012 New Graduate Student Orientation Panel Member

2014-2015 Developmental representative on Graduate Student Executive  
Committee