Copyright

by

Justin Kyle Scott

2017

The Thesis Committee for Justin Kyle Scott
Certifies that this is the approved version of the following thesis:

The emotional basis of aversive parenting: Mothers' affective sensitivity to children's aversiveness and reactivity

APPROVED BY

SUPERVISING COMMITTEE:

Supervisor:

Theodore Dix

Nancy Hazen-Swann

Edward Anderson

The emotional basis of aversive parenting: Mothers' affective sensitivity to children's aversiveness and reactivity

by

Justin Kyle Scott, B.S., M.S.

Thesis

Presented to the Faculty of the Graduate School of

The University of Texas at Austin

in Partial Fulfillment

of the Requirements

for the Degree of

Master of Arts

The University of Texas at Austin

May 2017

Dedication

This work is dedicated to William Lucas "Luke" Douphrate III, my most trusted friend, who will never read this thesis. You were the most intelligent, kind, and loving person I will ever know.

"In other words, the so-called involuntary circulation of your blood is one continuous process with the stars shining. If you find out it's you who circulates your blood, you will at the same moment find out that you are shining the sun. Because your physical organism is one continuous process with everything else that's going on. Just as the waves are continuous with the ocean, your body is continuous with the total energy system of the cosmos, and it's all you."

— Alan Wilson Watts

I hope your next journey is better than the last.

Acknowledgements

First and foremost, I am grateful for the continuous support and guidance from my advisors Drs. Theodore Dix and Nancy Hazen-Swann. Your contributions to my educational training have been invaluable. Second, I thank my wife, Stevie Raeann Scott, for all her love, support, and encouragement throughout the development of this project. Without you, I may have easily given up. Third, I thank Anat Moed and Ofer Eldad for their support with these data and analyses, and Dr. Edward Anderson for his expertise and for sharing his data with me. Finally, I thank all of my friends and colleagues, but especially Courtney Walsh and Kierra Sattler, whose support in the form of office disruption and French fry consumption have made the past few years the best.

Abstract

The emotional basis of aversive parenting: Mothers' affective sensitivity to children's aversiveness and reactivity

Justin Kyle Scott, M.A.

The University of Texas at Austin, 2017

Supervisor: Theodore Dix

This study examined whether the affective processes of aversion-sensitivity, a pronounced tendency to be negatively aroused by the ongoing aversive properties of children's behavior, regulate mothers' aversive parenting behavior with children. On days when mothers are aversion-sensitive, they may experience negative emotional arousal when faced with difficult child behavior, leading them to be motivated to reduce their distress by removing the child behaviors that cause it. Using observed, sequential data from 319 divorcing mothers and their 4- to 11-year-old children across six assessments (over two years), multilevel models were estimated to predict a set of emotion-related parenting behaviors. Results demonstrated that within-mother increases in aversion-sensitivity predicted mothers' displays of parenting behavior that tend to elicit negativity in children (i.e., mothers' aversive parenting behavior), volatile fluctuations in aversive parenting behavior, tendencies to display extreme behavior that is beyond one standard deviation both above (spikes) and below (drops) mothers' mean aversiveness, inclinations to remain high in aversiveness following spikes, and reductions in the ability

to maintain low aversiveness following drops. Aversion-sensitive mothers' tendencies to emit aversive and volatile parenting behavior were pronounced on days that children were aversive and negatively reactive. The results demonstrate the importance of emotional reactivity to aversive child inputs as a potential regulator of aversive parenting behavior. Applied to coercive family processes, the results suggest that the volatile and reciprocally negative family patterns that predict externalizing behaviors in children may rest in part on emotional processes reflected in aversion sensitivity. Knowledge of these processes may help explain why in some families stress, socio-economic disadvantage, difficult child temperament, and other factors predict aversive family patterns linked to child adjustment problems.

Table of Contents

List of Tables

List of Figures

Chapter 1: Introduction

For many, parenting is burdensome. Children can be difficult, noncompliant, and combative. All parents at some point experience negative emotions when interacting with their children (Dix, 1991). A common proposal in literatures on at-risk parents—parents who are stressed, depressed, or abusive—is that their inconsistent, aversive parenting reflects aversion-sensitivity: a pronounced tendency to be aroused by the aversive properties of children's behavior (Dix, Moed, & Anderson, 2014; Patterson & Forgatch, 1990). Yet, despite considerable speculation over several decades, this proposal is largely untested. Typically, affective sensitivity to aversive inputs is simply assumed to be present when parents are negative and coercive, rather than its being measured and examined empirically. This study tested directly whether changes in mothers' aversion-sensitivity regulate changes in their aversive behavior.

Although parental stress and depression predict dysfunctional parenting, they do not explain it. Reflecting both stable negative emotionality traits (Howland, Armeli, Feinn, & Tennen, 2017) and changing reactions to daily stress (McLoyd, 1990), aversion-sensitivity is thought to regulate aversive parenting by promoting distress when threats from children occur, including both children's own aversive behavior and their negative reactivity with parents. The emotional arousal that parents experience with children regulates their behavior and their expectations of future arousal (Baumeister, Vohs, DeWall, & Zhang, 2007). Aversion-sensitivity appears to reflect, not simply parents' stable tendencies to display negative, coercive behavior, but their tendency specifically to be affectively reactive to changing levels of aversive input. Frequent activation of distress then leads to motivation to reduce that distress and suppress the child behaviors that cause it. Furthermore, because their aversive control practices result from transient

fluctuations in children's aversive behavior, aversion-sensitive mothers should display parenting that is variable or inconsistent, connected to unstable changes in their affect more than consistently-applied rules about how to use negative control practices to appropriately control child conduct. Although many have proposed the idea of aversion-sensitivity (Beach, et al., 2012; Cyranowski, Swartz, Hofkens, & Frank, 2009; Leerkes, Su, Calkins, Supple, & O'Brien, 2016; Lorber & O'Leary, 2005), few have operationalized it and examined its role in aversive parenting. To date, only two studies have operationalized aversion-sensitivity directly. They have shown that aversion-sensitivity is present in depressed mothers (Dix et al., 2014) and predicts poor child outcomes over time (Moed, Dix, Anderson, & Greene, 2017). However, no study has yet examined how the behavior of aversion-sensitive mothers is regulated by their reaction to the aversive characteristics of their children's behavior.

To reduce their ongoing distress, parents may react to aversive child behaviors in two ways: acting to avoid them or acting to suppress them (Dix et al., 2014). At times, parents may avoid conflict with their children, particularly when parents expect aversive parenting to fail to prevent children from being difficult (Bell & Chapman, 1986; Dix et al., 2014). Parents are likely not only to be aware of their children's reactive tendencies, but also to use conflict-avoiding behavior to avoid eliciting a reactive episode from their child. Because avoiding conflict decreases the likelihood that children will reciprocate negativity (Dowdney & Pickles, 1991), parents may expect avoidant behavior to reduce the stress that they may otherwise endure (Kochanska et al., 1987). At other times, parents may display aversive parenting to control children and suppress future aversive child behavior (Dix et al., 2014). As children's behavior becomes increasingly aversive and surpasses parents' tolerance threshold (Lahey, Conger, Atkeson, & Treiber, 1984), aversion-sensitive parents are likely to react with negativity to suppress children's

2

aversive behaviors (Dix et al., 2014). This reactive expression, or aversion-sensitivity, is activated specifically by the aversive properties of children's behavior, and is not simply a mothers' general tendency to react negatively (Moed et al., 2017). Because displaying aversive parenting may momentarily suppress aversive child behaviors, parents may expect aversive parenting behavior to remove the stress they are experiencing and prevent further conflict. Indeed, previous research has shown that depressed mothers, who are known to be aversion-sensitive, tend both to disengage from their children's aversive behavior (Kochanska, Kuczynski, Radke-Yarrow, & Welsh, 1987) and display more harsh and negative parenting (Dix et al., 2014).

PARENTAL BEHAVIOR REGULATION

Aversion-sensitive mothers are thought to regulate their behavior depending on their arousal, their anticipation of children's reactions to aversive parenting behavior, and their expectations of whether aversive parenting behavior will eliminate their distress. If aversion-sensitive mothers expect their negative reaction to increase their child's aversive behavior, they should suppress the expression of negative emotions and minimize their displays of aversive behavior. In contrast, if aversion-sensitive mothers expect their negative reaction to decrease their child's aversive behavior, they should express negative emotions by increasing their aversive behavior.

This behavioral regulation should depend on two factors (Dix et al., 2014). First, mothers' responses should depend on the aversiveness of children's behavior. Aversive child behaviors arouse negative emotion in aversion-sensitive mothers that influence mothers' responses (Leerkes, Su, Calkins, Supple, & O'Brien, 2016; Lorber, 2012). When children's behavior is low in aversiveness, aversion-sensitive mothers are likely to avoid conflict by minimizing their own aversive parenting behavior. By minimizing

children's reciprocating negativity, this prevents exacerbating the mother's arousal. In contrast, when children's behavior is high in aversiveness, aversion-sensitive mothers are likely to react with increased aversive parenting behavior to remove the aversive stimulus.

Second, mothers' responses should depend on the negative reactivity of the child. Children tend to reciprocate parents' negativity (Dowdney & Pickles, 1991); therefore, all mothers are likely to develop expectations about the likelihood that their child will react to aversive parenting behavior with negativity. Because negative reciprocation from the child will be particularly distressing for aversion-sensitive mothers, their tendency to emit aversive parenting behavior should depend on this expectation. All mothers who expect their children to be highly reactive may avoid using aversive parenting behaviors to prevent aggravating the child and minimize their own distress. On days when mothers are aversion-sensitive, however, suppressing aversive parenting behavior may be less likely to occur as their emotional arousal primes them to anticipate that more pressure will be needed to control their child (see Dix et al., 2014). Aversion-sensitive mothers' aversive parenting behavior should be regulated by their children's negative reactivity and become increasingly aversive as children's negative reactivity increases.

SPIKES AND DROPS IN AVERSIVE PARENTING

Rather than displaying a gradual change in behavior, aversion-sensitive mothers should at times display significant spikes, or increases, and significant drops, or decreases, in their aversive parenting. This should occur because aversion-sensitive mothers are regulating their parenting behavior to remove aversive input from children and thus minimize their physiological distress. Often, their behavior should reflect immediate emotional reactions to the aversive stimuli they receive from their children.

4

The fight or flight tendencies of the sympathetic nervous system mobilize individuals to react to potential threat (Lang, Bradley, & Cuthbert, 1997). Research in this area has suggested that individuals may be quicker to react to aversive input when a negative emotional response to the particular stimulus has been conditioned (Davis, 1998). Therefore, the emotional arousal that aversion-sensitive mothers experience should mobilize them to react quickly to the aversive child behaviors that cause them distress. Reflecting the fight or flight system's influence on behavior, at times aversion-sensitive mothers should show spikes in aversive parenting (fight) to clamp down on their children's aversive behavior, and at other times, they should show drops in aversive parenting (flight) to avoid further conflict, presumably with the hope that children's aversive behavior will subside on its own.

Additionally, because emotional arousal activates response patterns that require time to subside (Porges, 2007), aversion-sensitive mothers are likely to remain aroused longer than non-aversion-sensitive mothers. Although a significant spike in aversive parenting can be an attempt to control children and thereby minimize mothers' arousal, it is unlikely to remove the mothers' physiological arousal immediately, especially if their children reciprocate negativity (Dowdney & Pickles, 1991). In contrast, when aversion-sensitive mothers show a drop in their aversive parenting to avoid exacerbating their children, they may stay low for longer periods of time than non-aversion-sensitive mothers. Aversion-sensitive mothers likely are still experiencing their emotional distress after a significant drop; therefore, their lingering negative affect should be reflected in their avoidant behavior.

CURRENT STUDY

       The current study addresses how aversion-sensitivity in mothers regulates aversive parenting behavior. Hypothesis 1 is that, as children's behavior becomes more aversive, mothers in general will display a set of emotion-related behaviors, including greater aversive parenting behavior, greater variability in aversive parenting behavior, greater numbers of spikes and drops, and longer lags to return to baseline levels of aversive parenting behavior after a spike or drop occurs. Hypothesis 2 is that, as mothers become more aversion-sensitive, they will display a set of emotion-related behaviors, including greater aversive parenting behavior, greater variability in aversive parenting behavior, greater numbers of spikes and drops, and longer lags to return to baseline levels of aversive parenting behavior after a spike or drop occurs. Hypothesis 3 is that mothers' aversion-sensitivity, children's aversive behavior, and children's negative reactivity will interact to predict mothers' emotion-related behaviors, including greater aversive parenting behavior, greater variability in aversive parenting behavior, greater numbers of spikes and drops, and longer lags to return to baseline levels of aversive parenting behavior after a spike or drop occurs. Specifically, as mothers become more aversion-sensitive, they should be increasingly likely to emotion-related behaviors as children's behavior becomes more aversive. This relationship should be pronounced on days when children are also negatively reactive.

Chapter 2: Method

PARTICIPANTS

Drawn from a study of divorcing families, participants were 319 mothers and their 5- to 11-year old children (mean age = 7.8 years, SD = 2.0). Mothers were identified via court records and assessed within four months after filing for divorce. Children were evenly split by gender (48% male). 64% were Caucasian, 27% were Hispanic, and 9% were African American. Mothers ranged from 21- to 53-years old (median = 36.8). Most mothers had attended some college but had not finished (38%). Mothers' education ranged from less than a high school degree (9.4%) to a graduate degree (1.3%).

PROCEDURE

Data were collected in the home over a two-year period. Baseline information was collected within 120 days of filing divorce, and follow up assessments were completed at 12 and 24 months. Additional assessments were completed at 6 and 18 months or when a change in partnering occurred (e.g., cohabitation, remarriage). 19% of participants completed four to six assessments, 58% completed three assessments, 12% completed two assessments, and 11% completed only the baseline assessment. Multilevel modeling will be used to account for the variations in number and spacing of completed assessments across participants (Singer & Willett, 2003).

At each assessment mothers and their children completed a 12-minute conflict discussion task in which they were asked to discuss an area of disagreement. Interactions were recorded and, using the Family and Peer Process Code, coded for observed content and affect of each behavior (Stubbs, Crosby, Forgatch, & Capaldi, 1998).

Mother-child interactions

The coding scheme consisted of 24 behavioral content codes (e.g., positive talk, command, touch, advise) and 6 affect codes (e.g., happy, caring, neutral, distress, aversive, sad). To create talk turns, the most negative content and affect codes in an individual's talking sequence were selected, leaving each talk turn with a single content code and a single affect code. Inter-rater reliability was determined from 20% of all observations; Kappas averaged .80 with 92% agreement between raters.

Mothers' general negativity

To measure mothers' tendency to display negative affect, two affect codes reflecting mothers' negative emotions (aversive and distress codes) were used to create a negative affect code. The affect code for sadness was excluded, as it is typically unassociated with immediate reactions to partners' behavior (Horstmann, 2003). Mothers' general negativity was the proportion of turns that mothers expressed negative affect.

Children's negative reactivity

To measure children's negative reactivity, children's aversive and distress affect codes were used to create a negative affect code. Similar to mothers' negative affect code, the code for sadness was excluded from the children's negative affect code. Children's negative reactivity was the proportion of turns in which mothers expressed negative affect that children reacted to with negative affect in the subsequent turn.

Children's and mothers' aversive behavior

Each of the 6 affect codes and 24 content codes were paired to generate 144 possible behaviors. To ensure adequate data for each child and mother behavior,

8

behaviors with base rates below the median of 28 were dropped. Only 1.6% of turns were eliminated leaving a total of 47 child behaviors and 50 mother behaviors (170,357 talk turns). The average dyad had 187 talk turns per interaction. Across the entire sample, child behaviors were rank-ordered from least to most aversive based on the probability that mothers in the entire sample expressed negative affect in the next turn. For example, "sad-talk" was ranked as 1, "neutral-agree" was ranked as 20, and "aversive-tease" was ranked as 47. Mother behaviors were rank-ordered from least to most aversive based on the probability that children in the entire sample expressed negative affect in the next turn. For example, "happy-neutral nonverbal" was ranked as 1, "neutral-talk" was ranked as 20, and "aversive-talk" was ranked as 50. A third measure, variability in aversive behavior, was the standard deviation for the mothers' aversive behaviors throughout each assessment. This variability reflects the extent to which mothers' parenting behavior fluctuates in aversiveness rather than staying constant at their mean level.

Mothers' aversion-sensitivity

At each assessment a mothers' aversion-sensitivity was the rate at which the probability of her expressing negative affect increased with increases in the aversiveness of children's immediately preceding behavior (i.e., the slope across the 47 child behaviors as they increase from low- to high-aversive; see Figure 1). Slopes for each assessment were estimated and saved using multilevel modeling and controlled for child age, child gender, and mothers' initial negativity (i.e., the intercept when children's behavior is low aversive).

Change in mothers' aversiveness

Increases, or spikes, and decreases, or drops, in mothers' aversiveness were calculated as a proportion of the number of significant turn-to-turn increases and

decreases in aversiveness to the total number of maternal turns. Increases and decreases were considered significant if the change was one standard deviation or greater above or below each individual mothers' mean level of change in aversiveness across each interaction. The frequency of significant increases and decreases were each divided by the total number of maternal turns, resulting in proportion of turns that reflected both spikes and drops.

Lags in aversiveness

Lags in mothers' aversiveness were calculated as the average number of turns after a spike or drop in aversiveness that it took mothers to return to baseline aversiveness. Due to high variability in mothers' turn-to-turn aversiveness, data stability was increased by averaging aversiveness rankings across coding windows of four talk turns (see Figure 2). Two lag measures were created, one for spikes and one for drops. First, each mother's baseline aversiveness was calculated as her mean level of aversiveness across each interaction. Second, moments when mothers showed significant spikes (+1 *SD*) or drops (-1 *SD*) were identified. Each time this occurred, the number of lags that it took for the mother to return to her baseline aversiveness was summed. Finally, the means of the lags for all spikes and drops in aversiveness were calculated separately.

Chapter 3: Results

PRELIMINARY FINDINGS AND ANALYSIS PLAN

Descriptive statistics and correlations among study variables are shown in Table 1. The estimates here are based on all dyads across all assessments. Because assessments were based on the timing of participants' divorce and because some participants completed additional assessments when a change in partnering occurred, the data is unbalanced with participants varying on the timing and number of assessments. This intentionally unbalanced design is not problematic for the multilevel models in our primary analyses, but the standard deviations and significance levels cannot be meaningfully computed for the bivariate correlations (Singer & Willett, 2003).

The study's primary analyses consisted of a series of six multilevel models evaluated in Mplus v7.11 (Muthén & Muthén, 1998-2012) to predict mothers' aversive behavior, variability in aversive behavior, spikes, drops, lags after spikes, and lags after drops in mothers' aversive parenting behavior. Full information maximum likelihood was used to handle missing data, allowing the model to be estimated with all available data. All analyses used within-person aversion-sensitivity, child aversive behavior, negative reactivity, and all two- and three-way interactions between them as predictors. Additionally, all analyses controlled for within-person covariates of maternal depressive symptoms and maternal general negativity and between-person covariates of mothers' age and education and children's age and gender. Analyses predicting lags also controlled for the number of spikes or drops that occurred in that assessment.

PREDICTING MOTHERS' AVERSIVE PARENTING BEHAVIOR

Table 2 shows unstandardized estimates and standard errors of the models predicting mothers' aversive behavior and aversive variability, and Table 3 shows

unstandardized estimates and standard errors of the models predicting mothers' spikes, drops, lags after spikes, and lags after drops in mothers' aversive parenting behavior. The first hypothesis—that children's aversive behavior predicts a set of emotion-related parenting behaviors—was partially supported. On days when children displayed aversive behavior, mothers displayed more aversive parenting behavior ($b = .78$, $p < .001$), greater variability in aversive parenting behavior ($b = .20$, $p < .05$), longer lags to return to baseline levels of aversive parenting behavior after spikes ($b = .21$, $p < .001$) and, unexpectedly, shorter lags to return to baseline levels of aversive parenting behavior after drops ($b = -.36$, $p < .001$). Children's aversive behavior did not predict spikes ($b = .003$, $p = .202$) or drops ($b = .003$, $p = .100$).

The second hypothesis—that aversion-sensitivity predicts a set of emotion-related parenting behaviors—was partially supported. Independent of mothers' general negativity, on days when mothers were aversion-sensitive, they displayed more aversive parenting behavior ($b = .52$, $p < .001$), greater variability in aversive parenting behavior ($b = .94$, $p < .001$), more spikes ($b = .01$, $p < .01$), more drops ($b = .01$, $p < .01$), longer lags to return to baseline levels of aversive behavior after spikes ($b = .18$, $p < .01$) and, in contrast to proposals stressing avoidance, shorter lags to return to baseline levels of aversive behavior after drops ($b = -.34$, $p < .05$).

The third hypothesis—that the relation between mothers' aversion-sensitivity and a set of emotion-related parenting behaviors would be pronounced on days when children were aversive and negatively reactive—was partially supported. Three-way interactions predicting both mothers' aversive parenting behavior ($b = -.15$, $p < .05$) and aversive variability ($b = -.08$, $p < .05$) were significant; simple slopes were probed following procedures by Aiken and West (1991) and are shown in Figures 3 and 4. On days when mothers' were aversion-sensitive, they displayed more aversive parenting behavior when

12

children were highly aversive, regardless of whether children were highly negatively reactive ($b = .61$, $p < .001$) or not ($b = .55$, $p < .001$). However, when children were low in aversive behavior, aversion-sensitive mothers displayed more aversive parenting behavior when children were highly negatively reactive ($b = .39$, $p < .01$). Additionally, on days when mothers were aversion-sensitive, they displayed greater variability in their aversive behavior in general, but not when children were both low in aversive behavior and low in negative reactivity ($b = .88$, $p < .001$). Additionally, a three-way interaction predicting lags after drops in mothers' aversive parenting behavior was marginally significant ($b = .12$, $p = .057$). Simple slopes were probed and are shown in Figure 5. On days when mothers were aversion-sensitive, they displayed shorter lags to return to baseline levels of aversive parenting behavior when children were negatively reactive, regardless of whether children were aversive ($b = -.38$, $p = .013$) or not ($b = -.41$, $p = .014$). Mothers' aversion-sensitivity did not predict shorter lags, however, when children were high in aversive behavior and low in negative reactivity ($b = -.28$, $p = .059$), or when children were low in both aversive behavior and negative reactivity ($b = -.29$, $p = .094$).

Chapter 4: Discussion

Many have proposed that parents' affective sensitivity to aversive input from children regulates aversive parenting behavior, but few have tested it empirically. The current study tested this proposal directly by examining whether mothers' tendency to be aroused by the aversive properties of children's behavior predicts patterns of aversive parenting behavior that reflect a motivation to reduce negative arousal. The results demonstrate that, independent of mothers' depression and general negativity, within-mother increases in aversion-sensitivity predict mothers' displays of parenting behavior that tend to elicit negativity in children (i.e., mothers' aversive parenting behavior), volatile fluctuations in aversive parenting behavior, tendencies to display extreme behavior that is beyond one standard deviation both above (spikes) and below (drops) mothers' mean aversiveness, inclinations to remain high in aversiveness following spikes, and reductions in the ability to maintain low aversiveness following drops. These results suggest the importance of emotional reactivity to aversive child inputs as a potential regulator of aversive parenting behavior and are consistent with proposals that aversion-sensitivity leads to emotions that motivate mothers to reduce their distress by removing or avoiding the child behaviors that cause it.

Consistent with analyses of affective sensitivity (Dix et al., 2014; Leerkes et al., 2016; Patterson & Forgatch, 1990), on days when mothers were aversion-sensitive, they were likely to display patterns of aversive parenting that are conceptually linked to emotion—independent of both children's aversive behavior and mothers' tendencies to display negative behavior. These results are consistent with two ways that aversion-sensitivity is thought to regulate mothers' aversive parenting behavior. First, aversion-sensitivity may prime mothers' to display higher aversive parenting behavior, regardless

14

of whether children are being difficult on that day (Patterson & Forgatch, 1990). Second, on days that mothers are more easily aroused by aversive child behavior, they may have a lower threshold for the aversive child behaviors they can withstand (Lahey et al., 1984), leading to more frequent activation of both negative emotion and aversive parenting (Dix et al., 2014).

The behavioral regulation patterns following activations of negative emotion may reflect fight or flight responses, with mothers, on days when they are aversion-sensitive, displaying more spikes (fight) and drops (flight) in aversive parenting within the same 12-minute interaction. One explanation for spikes could be that mothers' tendency to be aroused by children's aversive behavior leads them to experience intense negative emotion, motivating them to reduce their distress by controlling their children's behavior (Baumeister et al., 2007; Dix, 1991; Dix et al., 2014). Once mothers are aroused and displaying highly aversive parenting behavior, it is possible that their emotional arousal could make it difficult to return to a lower level of aversive behavior. One explanation for drops could be that mothers' tendency to be aroused by children's aversive behavior also leads them to attempt to prevent conflict by suppressing the use of aversive parenting. If we assume that drops reflect a motivation to reduce significant negative emotion, this low (suppressed) aversive parenting behavior is not likely to remain for long, as mothers are likely still enduring the physiological arousal that prompted the drop in the first place (Porges, 2007). Even if low aversive behavior (a drop) is attempted, if the child's behavior remains above the mother's tolerance threshold, another negatively reactive response could be elicited in the mother because her negative emotion pushes her to react negatively.

Aversive parenting not only depends on whether mothers are aversion-sensitive, but also whether children are displaying difficult behavior (Leerkes et al., 2016; Lorber,

2012). On days when mothers were easily aroused by aversive child behaviors, they displayed the greatest tendencies to emit aversive parenting behavior and were the most variable in aversive parenting behavior when children's behavior was aversive, regardless of children's negative reactivity. Whether children are negatively reactive or not, it is possible that when mothers' tolerance threshold for child behavior has been surpassed, they are likely to react with aversive parenting behavior (Lahey et al., 1984). When aversion-sensitivity was low, mothers appeared to react only to the aversive properties of children's behavior, ignoring whether children are negatively reactive. As aversion-sensitivity increased, however, mothers became more reactive to children who were negatively reactive, even on days when children's behavior was low aversive. Repeated negative interactions with their children over time may prime mothers who are aversion-sensitive to expect children to reciprocate negativity. This anticipated negative reactivity may motivate aversion-sensitive mothers to display greater aversive parenting behavior to try to control the child's behavior and prevent the aversive child behavior they expect from occurring (Dix et al., 2014). Parents may expect this high control to suppress children effectively (Pinderhughes, Dodge, Bates, Pettit, & Zelli, 2000), but in some instances it may instead elicit negativity from children and create conflict (Dowdney & Pickles, 1991). Aversion-sensitivity's relation with children's behavior is especially evident when considering mothers' reactions to children who are neither aversive nor negatively reactive. On these days, aversion-sensitive mothers displayed similar levels of aversive parenting as on days when they are not aversion-sensitive. Even though mothers are more easily aroused by children's behavior on days when they are aversion-sensitive, if children's behavior remains below mothers' tolerance threshold, they may never need to display aversive parenting (Dix et al., 2014).

Our findings could be easily misinterpreted as greater negativity in mothers predicting more aversive parenting, but several patterns within the results suggest that this is not the case. First, in all analyses we control for mothers' general tendency to display negative affect; therefore, any variation predicted by aversion-sensitivity is independent of general negativity. Second, if aversion-sensitivity were simply mothers' tendency to be negative, then it would consistently predict greater aversive parenting behavior, regardless of the child's behavior. Consistent with other research demonstrating that parents' negative emotional arousal predicts both harsh and withdrawn parenting (Lorber, 2012; Lorber & O'Leary, 2005), our results demonstrate that aversion-sensitivity predicts not only heightened aversive parenting, but also greater fluctuations and drops in aversive parenting behavior. In fact, mothers' general tendency to express negative affect predicted neither spikes nor drops in aversive parenting behavior. Compared to general negativity, which may be expected by children (Grusec & Goodnow, 1994), the inconsistent parenting predicted by aversion-sensitivity may be particularly disrupting to family processes, because impulsive, emotionally-driven parenting reactions may elicit conflict (Hollenstein & Lewis, 2006) and undermine children's socio-emotional development (Eisenberg et al., 2001).

Applied to coercive family processes, the results suggest that the volatile and reciprocally negative family patterns that predict externalizing behaviors in children may rest in part on emotional processes reflected in aversion sensitivity. Independent of general negativity, aversion-sensitivity indeed predicts externalizing problems and poor socio-emotional competence in children (Moed et al., 2017). Our design augments coercion theory by using a within-person design to uncover the potential emotional basis of aversive parenting. From coercion theory came proposals that stress, depression, and divorce lead to aversive parenting, but poor parenting skills, rather than emotion, have

been considered the most salient mediator between these relations (Patterson & Forgatch, 1990). Despite its success, coercion theory has yet to define the affective processes that predict dysfunctional patterns of family interaction (Granic & Patterson, 2006). Our design has demonstrated that aversive parenting may not be simply an individual differences measure of parenting skill, but rather a more complex process that is regulated by the emotional arousal primed by the difficult child behavior parents face. Although coercive family exchanges were not examined here directly, our findings that aversion-sensitivity predicts both spikes and drops in aversive parenting behavior has interesting implications for understanding the emotional processes involved in inconsistent and coercive family interactions. Future research is needed to examine directly whether aversion-sensitivity predicts patterns of coercive family interactions.

To reduce aversive parenting and coercive family interaction, interventions may need to address, not simply parents' contextual stress and poor parenting skills, but also their inability to regulate negative emotional reactions to difficult child behavior. Additionally, on days that parents are aversion-sensitive, they may anticipate child negativity and worry about future arousal, leading them to react with greater aversive parenting—even when their children have not shown any aversive behavior on that day. Therefore, interventions may also need to address parents' appraisals of children's behavior. If at-risk parents can be taught to regulate their emotions while simultaneously reappraising their child's behavior as something they can handle effectively, then coercive family interactions and poor child adjustment might decline.

LIMITATIONS AND FUTURE DIRECTIONS

The study has some notable limitations. First, the study draws from a sample of divorcing mothers and their children. Research suggests, however, that families

undergoing high-stress, including divorcing families, may be at risk for aversion-sensitivity (Patterson & Forgatch, 1990). These results need to be replicated using a sample drawn from a more general population to determine whether the relations observed here are also present in families not undergoing stress. Second, the study focuses only on mothers and their children, excluding fathers and other caregivers. These results need to be replicated in a sample including other parents and family structures to clarify whether aversion-sensitivity exists in other parents. Third, aversion-sensitivity was measured as the rate at which the probability of mother's expressing negative affect increases as the aversiveness of children's behavior increases. Future research is needed using physiological measures to examine whether aversion-sensitivity reflects poor physiological regulation of negative emotion in the face of difficult child behaviors. Fourth, Future research should examine what predicts aversion-sensitivity (Patterson & Forgatch, 1990), and determine whether aversion-sensitivity predicts poor parenting practices above and beyond more distal indicators of family stress.

CONCLUSION

The current study provides empirical support for the often-proposed idea that inconsistent, aversive parenting behavior reflects a parents' tendency to be negatively aroused by the aversive properties of children's behavior. Analyses using observed measures of aversion-sensitivity demonstrated the importance of emotional reactivity to aversive child inputs as a potential regulator of aversive parenting behavior. The results point, first, to the importance of considering parent emotion when modeling the complexities of family interactions (Dix, 1991). Emotion is a strong motivating force behind human behavior (Baumeister et al., 2007) and should not be overlooked when examining family process. Second, aversion-sensitivity's independent predictions of

aversive parenting behavior demonstrate its separation from mothers' general negativity. The finding that aversion-sensitivity predicts drops in mothers' aversive behavior suggests that aversion-sensitivity is not just mothers' general tendency to emit negative affect, but rather a unique reaction to the aversive qualities of child behavior that motivates mothers to reduce distress by both increasing and decreasing aversive parenting. Third, the results suggest that the volatile and reciprocally negative parent child interactions that characterize dysfunction in families may rest in part on emotional processes reflected in aversion sensitivity. When applied to coercion theory, our findings suggest the importance of clinicians targeting both parent emotion regulation and cognition about parenting and child behavior to effectively reduce coercive family interactions. Furthermore, aversion-sensitivity may help explain variability in the extent to which parent depression, stress, socioeconomic disadvantage, difficult child temperament, and other factors predict the aversive family patterns linked to poor child adjustment (Patterson & Forgatch, 1990).

Tables

Table 1. Descriptive Data and Correlations Among Study Variables

	Mean	Range	Correlations									
			2	3	4	5	6	7	8	9	10	11
1. Mothers' Aversion-Sensitivity Slope	.69	-.42 – 10.41	.23	.06	.29	.36	.09	.08	.08	-.10	.15	.23
2. Children's Aversive Behavior	11.81	8.40 – 26.55	–	.79	.58	.38	.19	.16	.13	-.23	.06	.82
3. Children's Negative Reactivity	.03	.00 – .28		–	.36	.15	.15	.16	.10	-.15	.01	.75
4. Mothers' Aversive Behavior	20.34	14.90 – 35.80			–	.41	.05	.02	.19	-.24	.09	.50
5. Mothers' Aversive Variability	5.77	.76 – 14.41				–	.35	.35	.10	-.41	.07	.40
6. Proportion of Spikes	.15	.04 – .30					–	.90	-.10	-.20	.05	.09
7. Proportion of Drops	.15	.00 – .27						–	-.12	-.21	.05	.08
8. Lags after Spike	3.42	.00 – 27							–	-.05	.01	.03
9. Lags after Drops	2.58	.00 – 12.67								–	.01	-.21
10. Mothers' Depressive Symptoms	14.00	.00 – 53.68									–	.04
11. Mothers' General Negativity	.08	.00 – 1.00										–

$^*p < .05$, $^{**}p < .01$, $^{***}p < .001$. *Note.* Although these means and correlations are unbiased estimates, the intentionally

unbalanced design means that standard deviations and significance tests cannot be meaningfully computed.

Table 2. Multilevel models predicting mothers' general aversive behavior

|	Mothers' Aversiveness		Aversiveness Variability	
Within-Level Predictors	*b*	*SE*	*b*	*SE*
Mothers' Aversion-Sensitivity	.52***	.11	.94***	.10
Children's Aversive Behavior	.78***	.12	.20*	.09
Children's Negative Reactivity	.11	.08	-.02	.07
MASxCAB	.14***	.03	.06*	.02
MASxCNR	.21	.13	.10	.10
CABxCNR	-.10**	.03	-.07**	.02
MASxCABxCNR	-.15*	.06	-.08*	.04
Mothers' Depressive Symptoms	.01	.01	-.003	.004
Mother's General Negativity	-.21	1.35	3.04*	1.00
Between-Level Predictors	*b*	*SE*	*b*	*SE*
Mothers' Age (Baseline)	-.002	.01	.01	.01
Mothers' Education (Baseline)	-.03	.02	.005	.02
Children's Age (Baseline)	-.14***	.03	-.09***	.03
Children's Gender	-.10	.10	.15	.10

$^{*}p < .05, ^{**}p < .01, ^{***}p < .001.$

Table 3. Multilevel models predicting extreme fluctuations in mothers' aversive behavior

|	Spikes		Drops		Lags after Spikes		Lags after Drops	
Within-Level Predictors	*b*	*SE*	*b*	*SE*	*b*	*SE*	*b*	*SE*
Mothers' Aversion-Sensitivity	.01**	.002	.01**	.002	.18**	.06	-.34*	.16
Children's Aversive Behavior	.003	.002	.003	.002	.21***	.05	-.36***	.07
Children's Negative Reactivity	.002	.002	.002	.002	.12	.10	-.15	.10
MASxCAB	.001	.002	.00	.001	-.04	.05	.03	.02
MASxCNR	-.003	.002	-.003	.002	.07	.11	-.32*	.15
CABxCNR	.00	.001	.00	.00	-.03	.05	.13***	.04
MASxCABxCNR	.00	.00	.00	.00	.03	.04	.12†	.06
Mothers' Depressive Symptoms	.00	.00	.00	.00	.003	.01	.01	.01
Mother's General Negativity	-.01	.02	-.01	.02	2.16**	.67	-.47	.56
Between-Level Predictors	*b*	SE	*b*	SE	*b*	SE	*b*	SE
Mothers' Age (Baseline)	.00	.00	.001*	.00	.02	.01	.004	.01
Mothers' Education (Baseline)	.001	.001	.00	.001	-.03	.03	-.03	.03
Children's Age (Baseline)	-.003**	.002	-.003**	.001	-.05	.04	.06	.04
Children's Gender	.001	.003	.002	.003	-.32	.17	-.22	.13

†*p* < .06, *p* < .05, **p* < .01, ***p* < .001.

23

Figure 1. Determining mothers' aversion-sensitivity
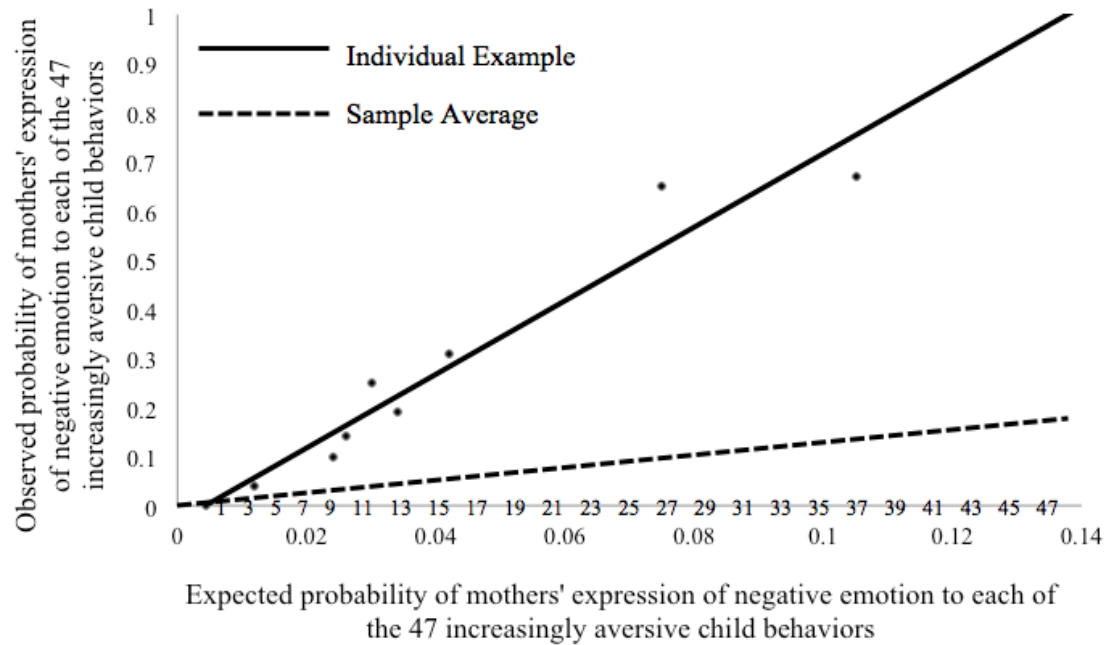
Note: Figure 1 shows an illustrative example of the calculation of aversion-sensitivity for an individual mother. Slopes

represent mother's expression of negative emotion across increases in the aversiveness of children's behaviors. The dashed

line shows the average across the entire sample based on a 3-level multilevel model and the solid line shows the data points

and a best-fitting slope for an individual mother.

Figure 2. Increasing stability in mothers' aversive behavior rankings over time
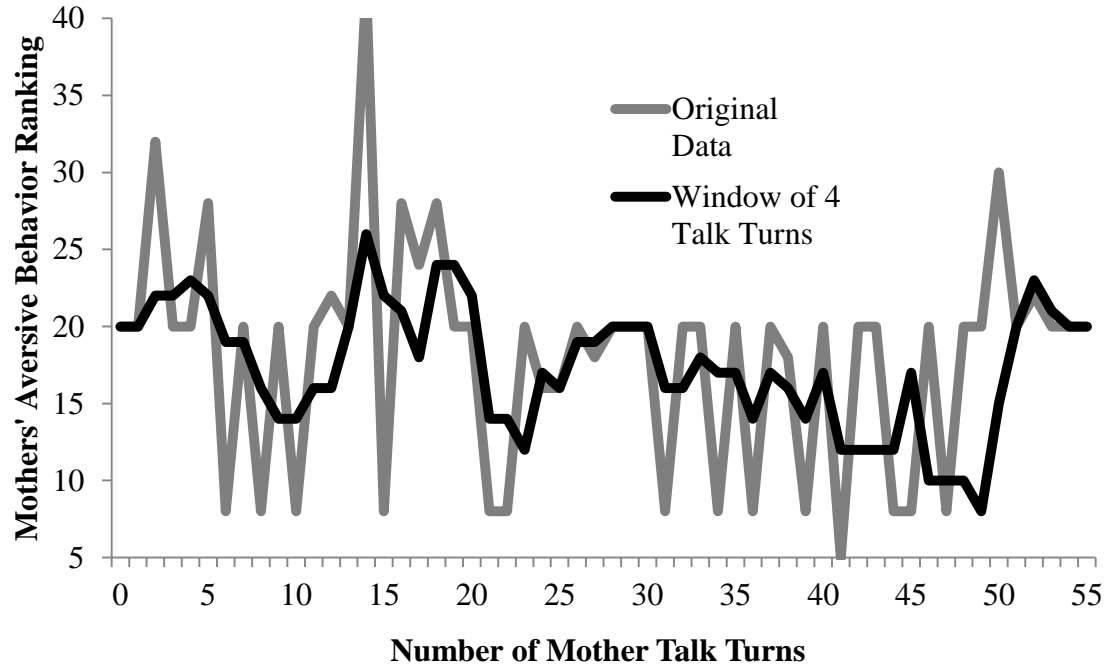
Note: Figure 2 shows an illustrative example of original and smoothed data for a single mothers' aversive behavior rankings over 55 talk turns. Data were smoothed by calculating the average aversiveness ranking across coding windows of four talk turns.

Figure 3. Three-way interaction predicting mothers' aversive behavior rankings
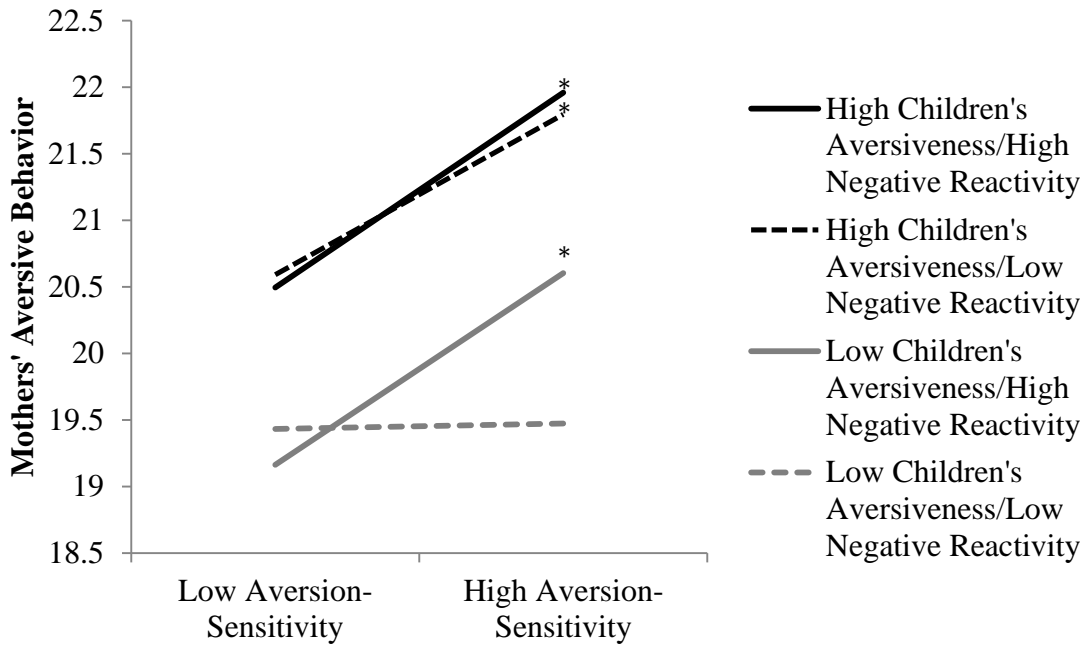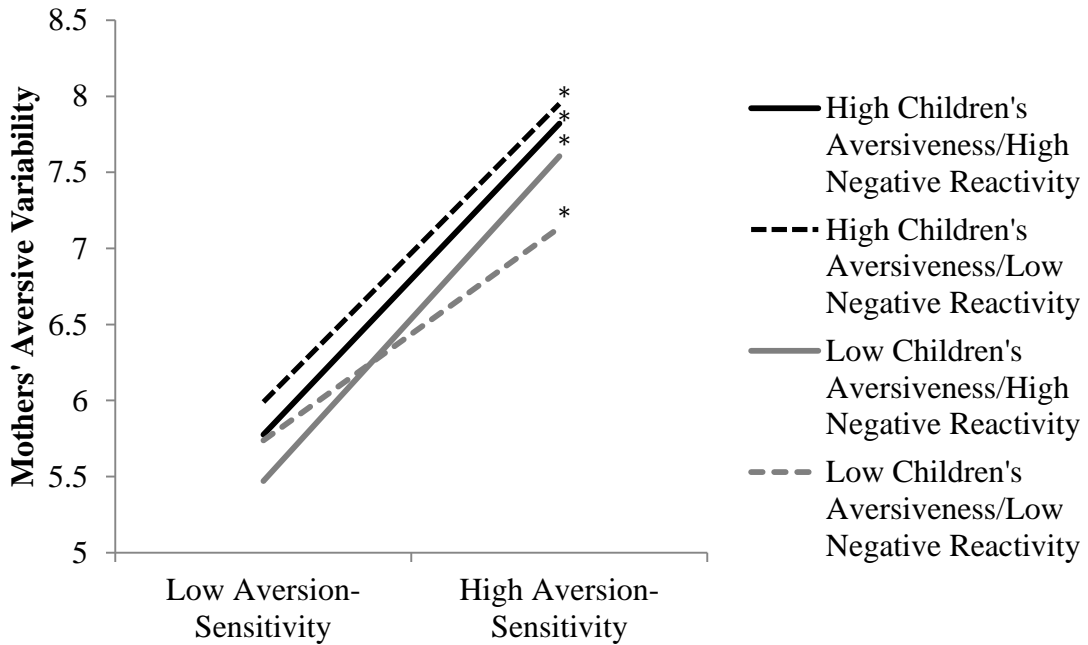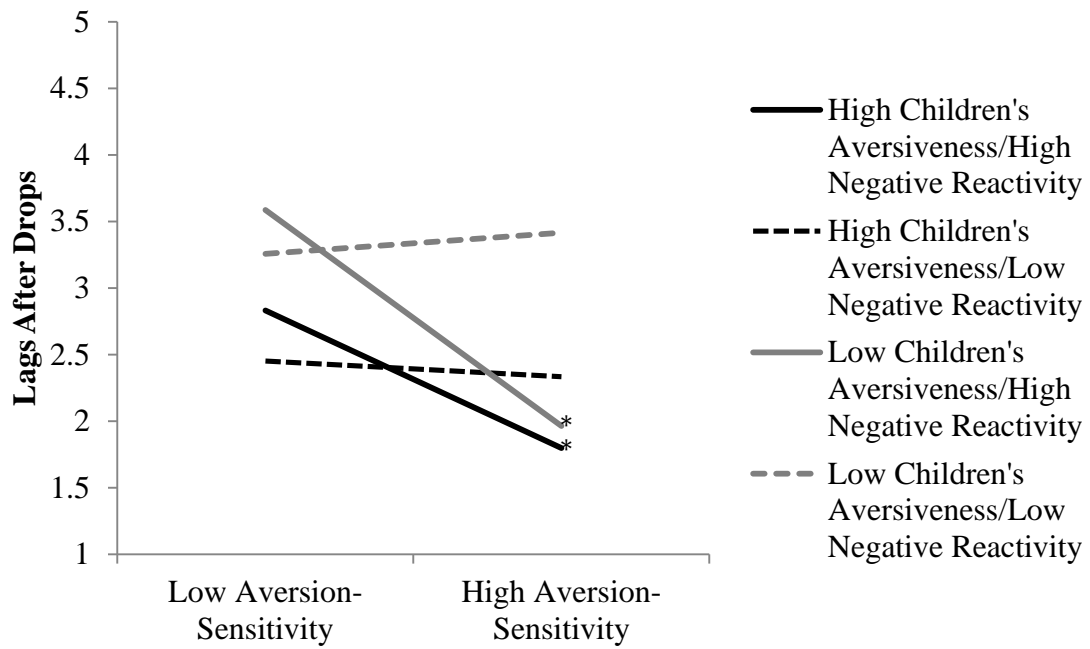

Figure 4. Three-way interaction predicting mothers' aversive behavior variability

Figure 5. Three-way interaction predicting lags after drops in mothers' aversive behavior

Appendix

Affect codes measure the emotional displays of the participant in each talk turn. Six affect codes are used to distinguish between types of emotional displays: 1=Happy, 2=Caring, 3= Neutral, 4=Distress, 5=Aversive, 6=Sad. The following is taken directly from Stubbs et al., 1998.

Happy (1). The code for happy (1) is given when the participant displays happiness, either through facial expression (e.g., smiling), tone of voice (e.g., higher pitch, faster pace), or body language (e.g., exaggerated gestures).

Caring (2). The code for caring (2) is given when the participant displays warmth, affection, supportiveness, concern and interest for their partner. Additionally, teasing that is affectionate in nature is coded as caring.

Neutral (3). The code for neutral (3) is given when the participant displays neutral affect. Because neutral behaviors typically provide little information about the interaction, if any talk turn contains a mixture of neutral and any other affect code, the other affect category is given as the final code.

Distress (4). The code for distress (4) is given when the participant displays affect that indicates distress, including anxiety, embarrassment, worry, or fear. Distress is also coded when participants express physical pain.

Aversive (5). The code for aversive (5) is given when the participant displays anger, displeasure, hostility, or harsh/cold detachment. Aversive is also coded when the participant ridicules, mocks, or is sarcastic to their partner. Light-hearted irony that is clearly delivered with happy or caring affect was not coded as aversive.

Sad (6). The code for sad (6) is given when the participant displays affect that reflects sadness, dysphoria, despondence, or depression. Participants may simply appear

28

detached from the ongoing activity or they may show more overt signs of sadness or distress such as speaking in a low, slow tone, sighing, becoming tearful, and verbally expressing their sadness.

CONTENT CODES

Content codes measure the interactive behaviors of participants in each talk turn. The content codes are divided among five relatively independent categories: Verbal, Vocal, Nonverbal, Physical and Compliance Behavior. The following is taken directly from Stubbs et al., 1998.

Comply (01). The participant clearly obeys their partners' request.

Noncomply (03). The participant clearly disobeys their partners' request or command.

Positive talk (11). Speech that expresses approval, support, or empathy related to person(s) outside the interaction.

Talk (12). General conversational speech, including gossip, chit-chat, conversation about past or present, verbal acknowledgment of partners' statement, and discussion over partner's statement.

Negative Talk (13). Negative speech referring to person(s) not present in the session as well as all general complaints about situations, occurrences, preferences, or objects.

Positive interpersonal (21). Positive speech and empathy referring to person(s) present in the session.

Tease (22). Speech that includes banter, playful pestering, and gentle wit directed at person(s) present in the session.

Negative interpersonal (23). Negative speech directed to person(s) present in the session.

Endearment (31). Personalized approval, positive emotion, affection, or terms of endearment (pet names) directed to a person(s) present in the session.

Self-Disclose (32). Statements that reveal important information about the speaker that directly affect the participant.

Verbal Attack (33). Personalized disapproval, negative emotion, name-calling, or threats directed to a person(s) present in the session.

Advise (41). Comments that teach a behavior or specific skill.

Command (42). Firm directives for behavior change in person(s) present in the session as well as requests for behavior change.

Coerce (43). Threatening directives for behavior changes, including threats of physical, emotional, or psychological harm.

Agree (51). Speech cooperating with a directive, or giving permission to a request.

Refuse (53). Speech indicating that the participant will not comply or give permission to a request.

Vocal (62). Vocal expressions that are not speech, including laughter, sobbing, or neutral vocal expressions of acknowledgement.

Positive nonverbal (71). Any nonverbal behavior indicating acceptance, approval, agreement, or affirmation of another person or behavior.

Neutral nonverbal (72). Nonverbal acknowledgement of another's behavior, including head movement, hand gestures or facial expressions.

Negative nonverbal (73). Nonverbal gestures that are threatening, belittling, or derogatory.

Physical aggression (83). Any aversive physical contact, including light hitting, pinching, slapping, ear flicking, grabbing another's hand, destructiveness to objects, etc.

Physical interact (92). Any direct physical contact which is inherently neutral or nonaversive such as in holding a child back as in restraint, guiding an individual to a location, or taking a child's hand to help in feeding.

Physical Attack (93). Any moderate to severe aversive physical contact including moderate to hard kicking, punching, slapping or hitting with an object, and destruction of objects.

Stubbs, J., Crosby, L., Forgatch, M. S. & Capaldi, D. M., (1998). *Family and Peer Process Code: A synthesis of three Oregon Social Learning Center behavior codes (Training Manual).* Eugene: Oregon Social Learning Center.

Figure 6. Two-way interaction predicting mothers' aversive behavior
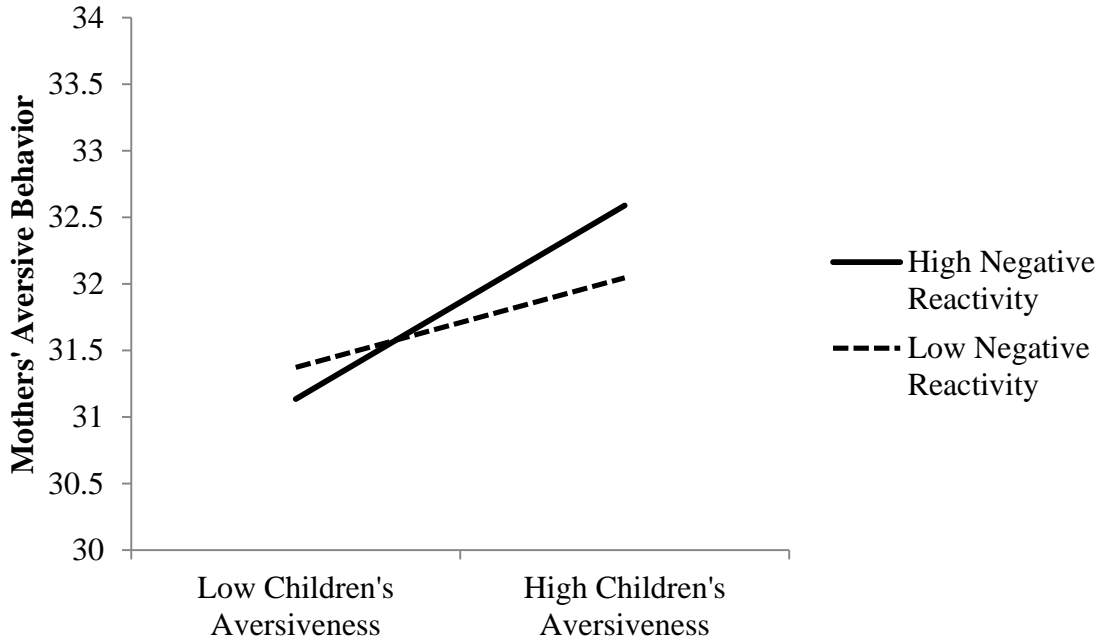

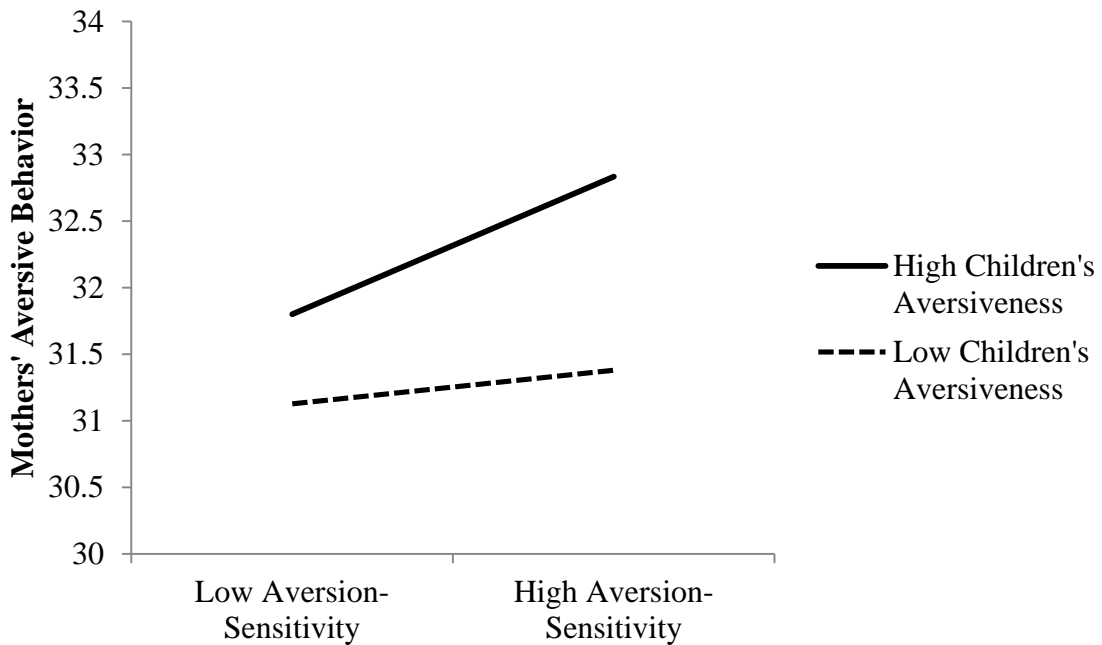Figure 7. Two-way interaction predicting mothers' aversive behavior

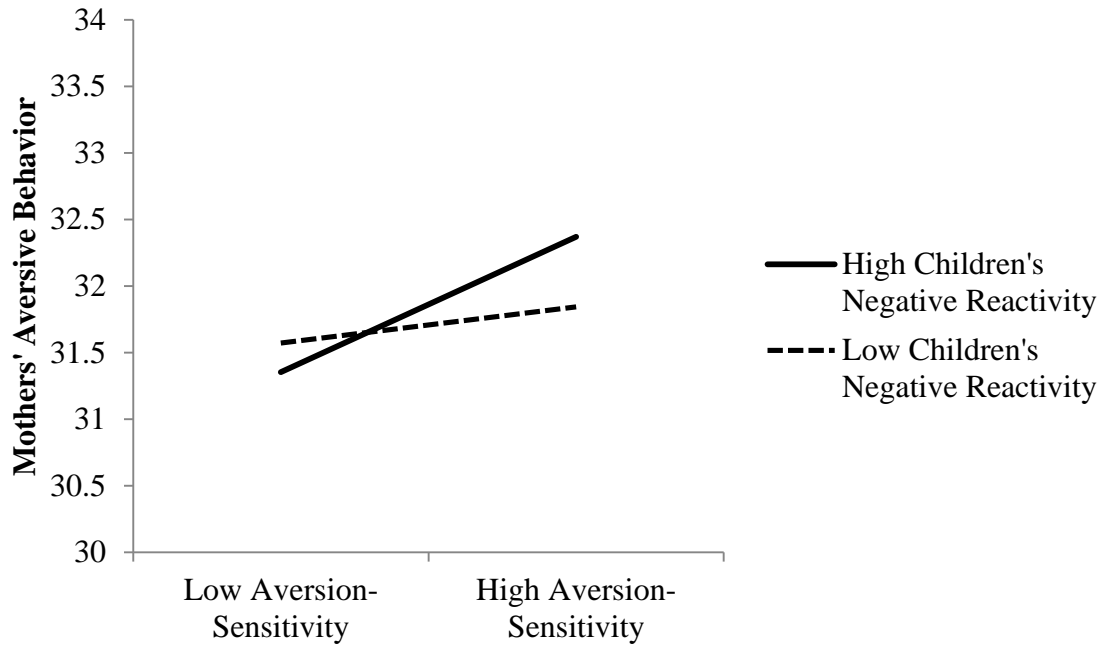Figure 8. Two-way interaction predicting mothers' aversive behavior

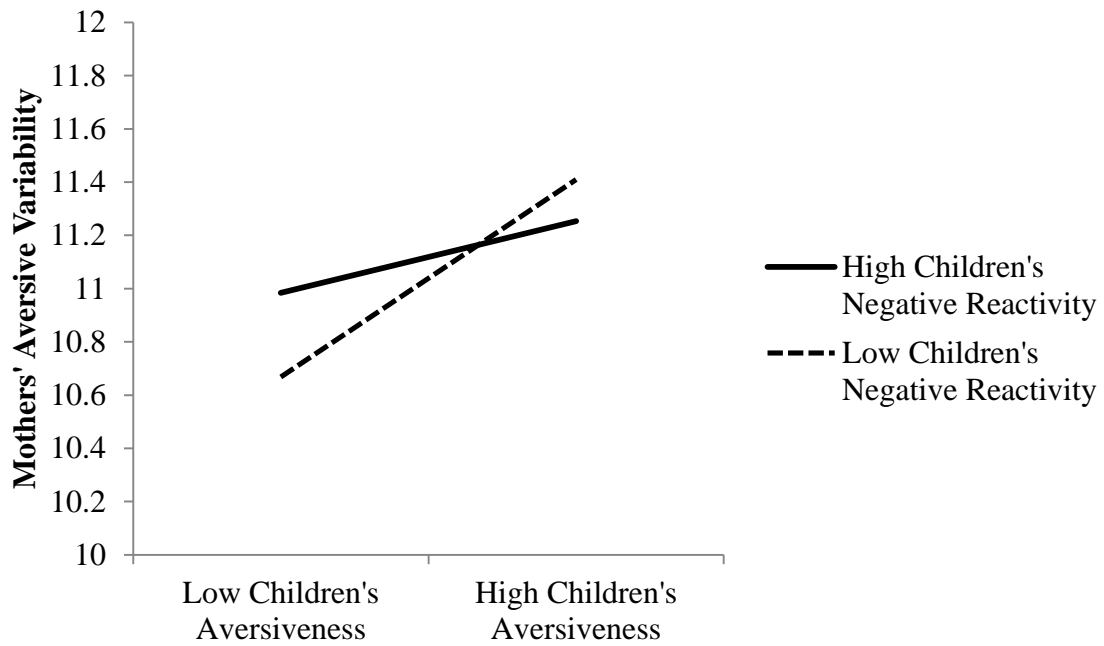Figure 9. Two-way interaction predicting variability in mothers' aversive behavior

Figure 10. Two-way interaction predicting variability in mothers' aversive behavior
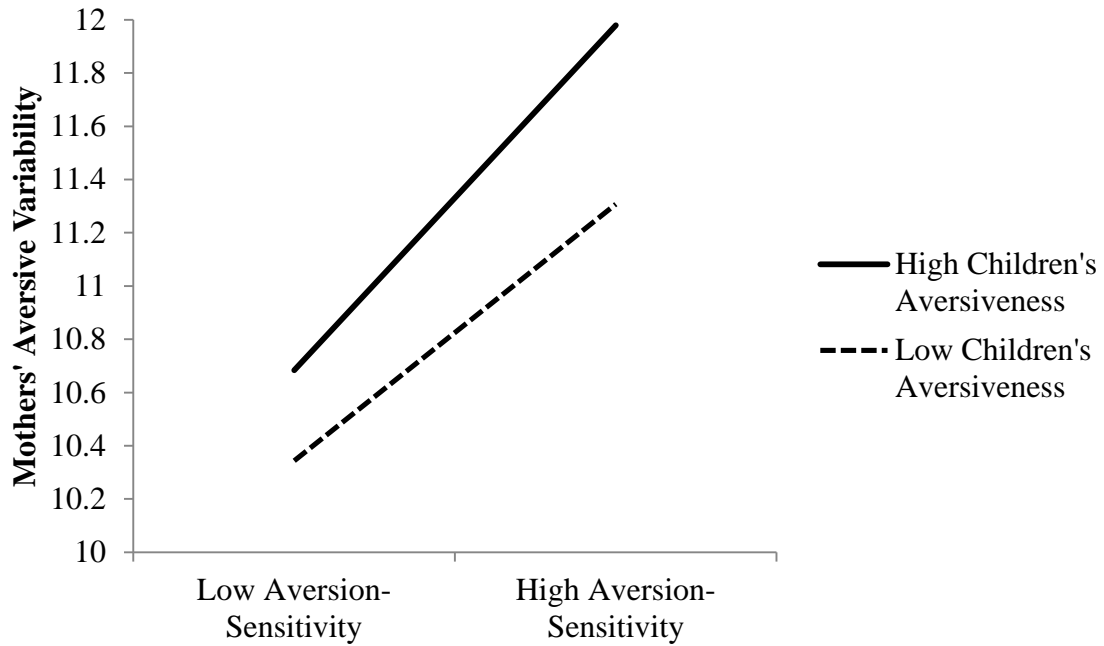

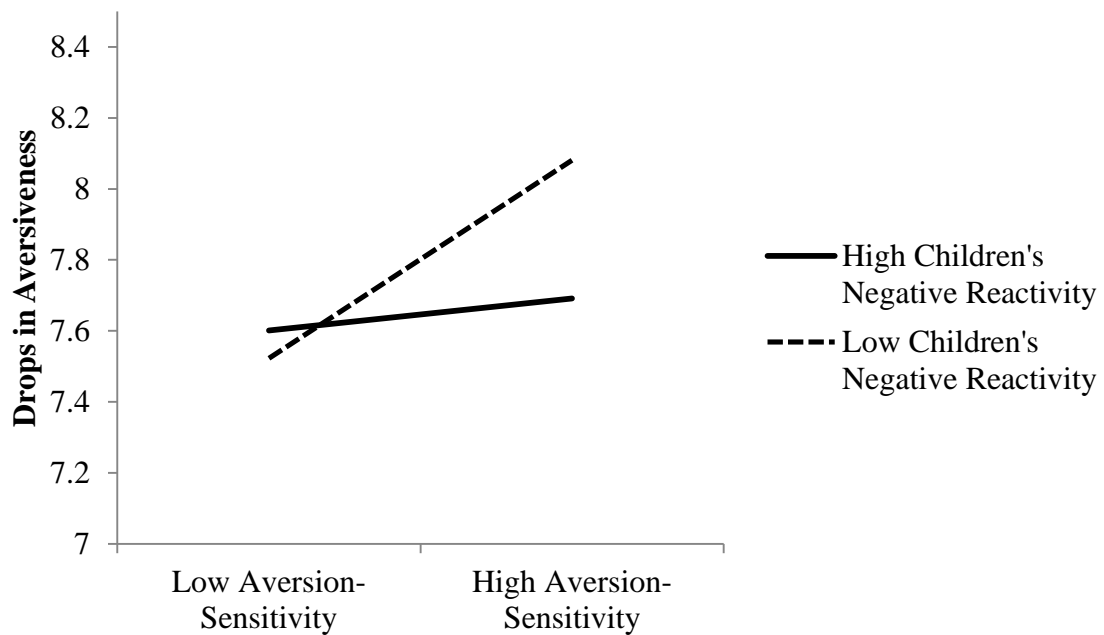Figure 11. Two-way interaction predicting drops in mothers' aversive behavior

Figure 12. Two-way interaction predicting lags after drops in mothers' aversive behavior
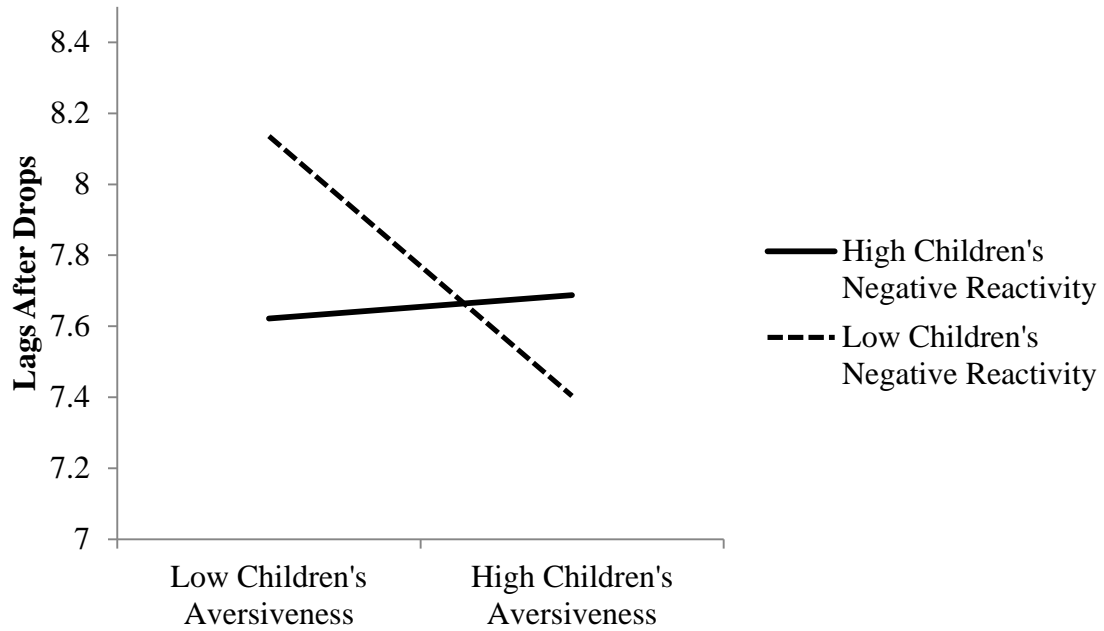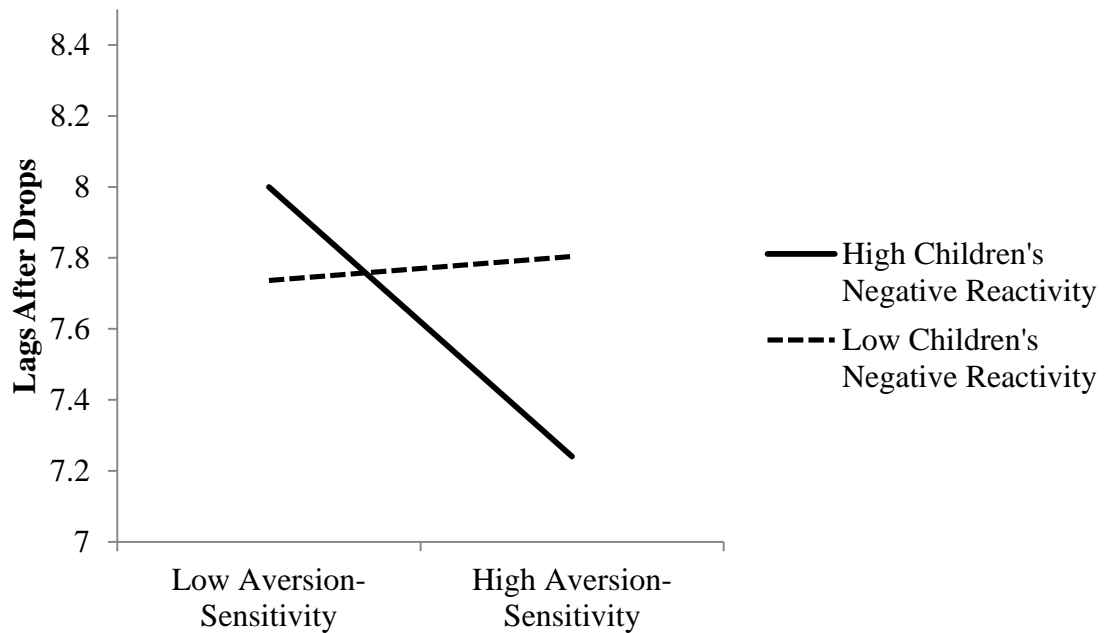

Figure 13. Two-way interaction predicting lags after drops in mothers' aversive behavior

References

Baumeister, R. F., Vohs, K. D., DeWall, C. N., & Zhang, L. (2007). How emotion shapes behavior: Feedback, anticipation, and reflection, rather than direct causation. *Personality And Social Psychology Review, 11*(2), 167-203. doi:10.1177/1088868307301033

Beach, S. R. H., Lei, M. K., Brody, G. H., Simons, R. L., Cutrona, C., & Philibert, R. A. (2012). Genetic moderation of contextual effects on negative arousal and parenting in African-American parents. *Journal of Family Psychology, 26*, 46-55. doi:10.1037/a0026236

Bell, R. Q., & Chapman, M. (1986). Child effects in studies using experimental or brief longitudinal approaches to socialization. *Developmental Psychology, 22*(5), 595–603. doi:10.1037/0012-1649.22.5.595

Belsky, J., & Pluess, M. (2009). Beyond diathesis stress: Differential susceptibility to environmental influences. *Psychological Bulletin, 135*(6), 885-908. doi:10.1037/a0017376

Burke, L. (2003). The impact of maternal depression on familial relationships. *International Review of Psychiatry, 15*, 243–255. doi:10.1080/0954026031000136866

Cox, M. J., Paley, B., & Harter, K. (2001). Interparental conflict and parent–child relationships. In J. H. Grych, & F. D. Fincham, (Eds.), *Interparental conflict and child development: Theory, research, and applications* (pp. 249-272). New York, NY, US: Cambridge University Press. doi:10.1017/CBO9780511527838.011

Cyranowski, J. M., Swartz, H. A., Hofkens, T. L., & Frank, E. (2009). Emotional and

    cardiovascular reactivity to a child-focused interpersonal stressor among

    depressed mothers of psychiatrically ill children. *Depression and Anxiety, 26*,

    110-116. doi:10.1002/da.20515

Davis, M. (1998). Anatomic and physiologic substrates of emotion in an animal model.

    Journal of Clinical Neurophysiology, 15, 378–387.

Dix, T. (1991). The affective organization of parenting: Adaptive and maladaptive

    processes. *Psychological Bulletin, 110*(1), 3-25. doi:10.1037/0033-2909.110.1.3

Dix, T., Moed, A., & Anderson, E. R. (2014). Mothers' depressive symptoms predict both

    increased and reduced negative reactivity: Aversion sensitivity and the regulation

    of emotion. *Psychological Science, 25*(7), 1353-1361.

    doi:10.1177/0956797614531025

Dowdney, L., & Pickles, A. R. (1991). Expression of negative affect within disciplinary

    encounters: Is there dyadic reciprocity? *Developmental Psychology, 27*, 606–617.

    doi:10.1037/0012-1649.27.4.606

Eisenberg, E., Gershoff, E. T., Fabes, R. A., Shepard, S. A., Cumberland, A. J., Losoya,

    S. H., Guthrie, I. K., & Murphy, B. C. (2001). Mothers' emotional expressivity

    and children's behavior problems and social competence: Mediation through

    children's regulation. *Developmental Psychology, 37*, 475-490. doi:10.1037/0012-

    1649.37.4.475

Granic, I., & Patterson, G. R. (2006). Toward a comprehensive model of antisocial

    development: A dynamic systems approach. *Psychological Review, 113*, 101-131.

Grusec, J. E., & Goodnow, J. J. (1994). Impact of parental discipline methods on the

    child's internalization of values: A reconceptualization of current points of view.

    Developmental Psychology, 30, 4 –19. doi:10.1037/0012-1649.30.1.4

Hollenstein, T., & Lewis, M. D. (2006). A state space analysis of emotion and flexibility

    in parent-child interaction. *Emotion, 6*, 656-662.

Horstmann, G. (2003). What do facial expressions convey: Feeling states, behavioral

    intentions, or actions requests? *Emotion, 3*, 150–166. doi:10.1037/1528-

    3542.3.2.150

Howland, M., Armeli, S., Feinn, R., & Tennen, H. (2017). Daily emotional stress

    reactivity in emerging adulthood: Temporal stability and its predictors. *Anxiety,*

    Stress & Coping: An International Journal, 30(2), 121-132.

    doi:10.1080/10615806.2016.1228904

Kochanska, G., Kuczynski, L., Radke-Yarrow, M., & Welsh, J. D. (1987). Resolution of

    control episodes between well and affectively ill mothers and their young child.

    Journal of Abnormal Child Psychology, 15(3), 441–456.

    doi:10.1007/BF00916460

Lahey, B. B., Conger, R. D., Atkeson, B. M., & Treiber, F. A. (1984). Parenting behavior

    and emotional status of physically abusive mothers. *Journal Of Consulting And*

    Clinical Psychology, 52(6), 1062-1071. doi:10.1037/0022-006X.52.6.1062

Lang, P. J., Bradley, M. M., & Cuthbert, B. N. (1997). Motivated attention: Affect,

    activation and action. In P.J. Lang, R.F. Simons, & M.T. Balaban (Eds.),

Attention and orienting: Sensory and motivational processes (pp. 97–135).

Hillsdale, NJ: Erlbaum.

Leerkes, E. M., Su, J., Calkins, S. D., Supple, A. J., & O'Brien, M. (2016). Pathways by

which mothers' physiological arousal and regulation while caregiving predict

sensitivity to infant distress. *Journal Of Family Psychology, 30*(7), 769–779.

doi:10.1037/fam0000185

Lorber, M. F. (2012). The role of maternal emotion regulation in overreactive and lax

discipline. *Journal Of Family Psychology, 26*(4), 642-647. doi:10.1037/a0029109

Lorber, M. F., & O'Leary, S. G. (2005). Mediated paths to overreactive discipline:

Mothers' experienced emotion, appraisals, and physiological response. *Journal of*

Consulting and Clinical Psychology, 73, 972-981. doi:10.1037/0022-

006X.73.5.972

McLoyd, V. C. (1990). The impact of economic hardship on Black families and children:

Psychological distress, parenting, and socioemotional development. *Child*

Development, 61(2), 311-346. doi:10.2307/1131096

Moed, A., Dix, T., Anderson, E. R., & Greene, S. M. (2017). Expressing negative

emotions to children: Distinguishing mothers' aversion-focused from general

negativity in the prediction of children's adjustment. *Journal of Family*

Psychology, 31, 224-133.

Patterson, G. R., (1982). *A social learning approach: 3. Coercive family process*. Eugene,

OR: Castalia Publishing Co.

Patterson, G. R., & Forgatch, M. S. (1990). Initiation and maintenance of process

    disrupting single-mother families. In G. R. Patterson (Ed.), *Depression and*

    aggression in family interaction. (pp. 209-245). Hillsdale, NJ, England: Lawrence

    Erlbaum Associates, Inc.

Pinderhughes, E. E., Dodge, K. A., Bates, J. E., Pettit, G. S., & Zelli, A. (2000).

    Discipline responses: Influences of parents' socioeconomic status, ethnicity,

    beliefs about parenting, stress, and cognitive-emotional processes. *Journal of*

    Family Psychology, 14(3), 380-400. doi:10.1037/0893-3200.14.3.380

Porges, S. W. (2007). The polyvagal perspective. *Biological Psychology, 74*(2), 116-143.

    doi:10.1016/j.biopsycho.2006.06.009

Singer, J. D., & Willett, J. B. (2003). *Applied longitudinal data analysis*. New York, NY:

    Oxford University Press.

Stubbs, J., Crosby, L., Forgatch, M. S. & Capaldi, D. M., (1998). *Family and Peer*

    Process Code: A synthesis of three Oregon Social Learning Center behavior

    codes (Training Manual). Eugene: Oregon Social Learning Center.