ABSTRACT

Title of Thesis:	Developmental pathways from maternal emotion dysregulation to parenting behaviors and adolescent emotion lability: interactive effects of youth ADHD symptoms and sex
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A large literature base convincingly suggests that maternal and child characteristics interact to predict parenting practices and children's emotional development. However, the independent and interactive effects of parent- and youth-level risk factors on emotion parenting behaviors and adolescent emotion lability over time is largely unknown. Using secondary data analyses of a longitudinal community sample of adolescents and their caregivers ($N = 277$), the current study examined the extent to which supportive vs. harsh parenting reactions to adolescents' expressions of negative emotions underlie the longitudinal association between maternal emotion dysregulation and changes in adolescent emotion lability, and whether youth ADHD symptoms and sex impact these processes. Using structural equation modeling, results showed that mothers who reported being more emotionally dysregulated were more likely to endorse engaging in harsh parenting for boys with more ADHD symptoms, relative to mothers of adolescent girls or adolescents with fewer ADHD symptoms. Contrary to hypotheses, no other pathways were statistically significant. These results partially align with a transactional model of

parenting wherein parent- and adolescent-level risk factors interact to confer risk for maladaptive parenting. Future work should further attempt to characterize the independent and interactive effects of maternal emotion dysregulation and youth ADHD symptoms on parenting and adolescent outcomes over time.

Developmental pathways from maternal emotion dysregulation to parenting behaviors and adolescent emotion lability: interactive effects of youth ADHD symptoms and sex

by

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Chapter 1: Introduction

In Western industrialized societies, adolescence is considered a phase of life spanning the transition from childhood to independent adulthood (Riediger & Klipker, 2014; Sawyer, Azzopardi, Wickremarathne, & Patton, 2018). Adolescence is characterized by biological, psychological, and social challenges wherein substantial changes in the lability and intensity of emotions are unlike any other developmental period (Hollenstein & Lanteigne, 2018). Relative to children and adults, adolescents display more emotional responses to emotion-eliciting situations, oscillate from positive and negative emotional states more rapidly, and experience an uptick in negative affectivity in daily living (Riediger & Klipker, 2014). Navigating adolescent development is indeed challenging for youth and their families, yet this developmental period is critical to identity formation and autonomy, ultimately enabling adolescents to develop the necessary skills to assume adult roles and responsibilities.

One risk-factor for adolescent social-emotional maladjustment is adolescent emotion lability, typified by frequent and intense maladaptive responses to emotion-eliciting situations and difficulty recovering from negative emotions (Dunsmore, Booker, & Ollendick, 2013; Rogers, Halberstadt, Castro, MacCormack, & Garrett-Peters, 2016). Emotion lability has been linked to a variety of mental health concerns, including internalizing and externalizing symptoms, risky sexual behaviors, and the development of substance use problems (Carthy, Horesh, Apter, Edge, & Gross, 2010; Dunsmore et al., 2013; Garner & Hinton, 2010; Kim-Spoon, Cicchetti, & Rogosch, 2013; Oshri, Sutton, Clay-Warner, & Miller, 2015), representing a trans-diagnostic risk factor for the emergence of psychopathology (Berking & Wupperman, 2012; Gross, 2011; Hollenstein

& Lanteigne, 2018; McLaughlin, Hatzenbuehler, Mennin, & Nolen-Hoeksema, 2011). Therefore, understanding the development of adolescent emotion lability is of upmost clinical importance.

The current study examined the transmission of mothers' emotion dysregulation to that of their adolescent offspring, and whether distinct parenting pathways underlie this longitudinal association. We also evaluated the extent to which adolescent symptoms of attention-deficit/hyperactivity disorder (ADHD) modify these pathways over time, consistent with a developmental-transactional model of ADHD in families (Johnston & Chronis-Tuscano, 2015). Finally, we systematically explored the role of adolescent sex, recognizing the potential for sex-differentiated effects on parenting and youth emotion lability (Bornstein, 2005; Chaplin, 2015; Endendijk, Groeneveld, Bakermans-Kranenburg, & Mesman, 2016; van der Pol et al., 2015).

Direct and Indirect Transmission of Maternal Emotion Dysregulation

Unlike any other developmental period, parents of adolescents are routinely tasked with modeling appropriate emotion regulation and providing sufficient emotional support and structure, while balancing their adolescent's growing need for self-reliance (Riediger & Klipker, 2014; Thompson & Meyer, 2007). For some parents, striking this balance may be particularly difficult in the context of parent-level risk factors (Morris, Silk, Steinberg, Myers, & Robinson, 2007). One hypothesized trans-diagnostic parent-level risk factor for adolescent emotion lability is maternal emotion dysregulation. In part, maternal emotion dysregulation is theorized to directly impact adolescent emotional development, as youth learn about emotions and how to regulate them by observing and modeling their parents (Morris et al., 2007). Indeed, the direct effect of maternal emotion

dysregulation on adolescent emotion lability may be especially robust during the adolescent period (Sarıtaş, Grusec, & Gençöz, 2013), as adolescents' need for independence often makes them less receptive to direct parental guidance and input related to regulating their negative emotions (Brand & Klimes-Dougan, 2010; Katz & Hunter, 2007).

Recent evidence also suggests that maternal emotion dysregulation can impact youth emotional development indirectly, via the effect on parenting behaviors necessary to facilitate the development of adolescent emotional competence (Katz & Hunter, 2007; Morelen, Shaffer, & Suveg, 2016; Morris et al., 2007; Sarıtaş et al., 2013). Specifically, parents' responses to the negative emotional expressions (i.e., anger, sadness) of their adolescent children are among several mechanisms through which maternal emotion dysregulation can serve to worsen adolescent emotion lability over time. Maternal emotion dysregulation is thought to interfere with a mother's ability to modulate internal processes to promote appropriate responses to situational demands (Cole, Michel, & Teti, 1994; Crandall, Deater-Deckard, & Riley, 2015). Mothers who report being overwhelmed by their emotions and/or view their emotions as unmanageable are at-risk for employing maladaptive coping strategies in stressful parenting situations (Gratz & Roemer, 2004), such as when their child expresses negative emotions. Consequently, relative to mothers with fewer emotion regulation difficulties, mothers with poorer emotion regulation may be more likely to engage in harsh and less supportive responses to their adolescents' negative emotions (Jones, Brett, Ehrlich, Lejuez, & Cassidy, 2014).

Adolescents whose mothers respond in harsh or unsupportive ways may be especially likely to demonstrate worsening emotion lability over time. However, the

majority of this literature to date has focused on children, with fewer investigations related to the impact of parental responses to adolescents' negative emotions on adolescent emotion lability over time (Morris et al., 2007; Riediger & Klipker, 2014). Drawing from the child literature, harsh parental reactions characterized by minimizing (e.g., "tell him/her not to make such a big deal out of it") or punitive (e.g., "get angry at him/her for losing his/her temper") responses to children's negative emotions are associated with higher rates of child emotion dysregulation. For example, Blair et al., (2014) showed that children aged 5 years whose mothers reported harsher parenting reactions were more likely to experience poorer emotion regulation two years later, compared to children of mothers who engaged in fewer harsh responses. In a cross-sectional study of elementary school children, Jones, Eisenberg, Fabes, & MacKinnon (2002) found that parents' punitive responses were associated with children's utilization of inappropriate emotion coping strategies when experiencing negative emotions, such as engaging in escape or revenge-seeking behaviors. In additional cross-sectional studies, higher levels of minimization reactions (e.g., "tell [your child] that (s)he is overreacting") have been shown to be positively associated with emotion lability and negatively associated with emotion coping behaviors (Eisenberg & Fabes, 1994; Eisenberg, Fabes, & Murphy, 1996). In contrast, problem-solving and comforting responses are more likely to reduce maladaptive child coping responses (Morris et al., 2007; Thompson & Meyer, 2007). For instance, cross-sectional findings from (Shortt, Stoolmiller, Smith-Shine, Eddy, & Sheeber, 2010) indicated that young adolescents (ages 10-13) whose mothers reported eliciting supportive discussions about upsetting situations were less likely to experience difficulties coping with their anger.

Importantly, effective parenting behaviors are commensurate to the developmental characteristics of adolescence (e.g., need for autonomy, increased cognitive capacities). For example, adaptive responses to young children's negative emotions include soothing or direct instructions for coping, whereas for adolescents, problem solving and discussing coping strategies may promote increased autonomy and emotional competence (Riediger & Klipker, 2014). In this regard, supportive parental reactions typified by problem solving and encouragement are likely to be negatively associated with adolescent emotion lability over time. In contrast, adolescents whose mothers are more frequently punitive or minimizing in their responses may be at risk for worsening emotion lability, given the increased emotional lability/negativity of this age combined with the overall heightened risk for psychopathology in adolescence (Chang, Schwartz, Dodge, & McBride-Chang, 2003; Morris et al., 2007; Riediger & Klipker, 2014; Sarıtaş et al., 2013; Yap, Allen, & Ladouceur, 2008).

Taken together, theoretical models of adolescent emotional development include the critical roles of maternal emotion regulation abilities and the manner in which mothers respond to the negative emotional displays of their adolescent offspring. However, no known studies have examined the extent to which supportive vs. harsh parenting reactions to adolescents' expressions of negative emotions underlie the longitudinal transmission of maternal emotion dysregulation. Moreover, the extent to which adolescent characteristics impact these longitudinal pathways is largely unknown, despite a foundational component of many theoretical models including the interaction of parent and adolescent characteristics (Johnston & Chronis-Tuscano, 2015; Morris et al., 2007). In order to weather the challenges of adolescence, some youth likely need

considerable parental support and scaffolding, particularly related to emotion lability/negativity.

Moderating Role of Adolescent ADHD Symptoms

For all adolescents, and perhaps especially for those with symptoms of ADHD, maternal emotion dysregulation and parenting behaviors related to emotions are potentially salient predictors of adolescent outcomes (Fabes, Leonard, Kupanoff, & Martin, 2001; Johnston & Chronis-Tuscano, 2015; Sanders, Zeman, Poon, & Miller, 2015). The symptom constellation of ADHD is especially costly to adolescent functioning, as symptoms of inattention interfere with sustained, goal-directed acts, and hyperactive/impulsive symptoms beget rash verbal and emotional behavior. Consequently, youth with ADHD and those with subthreshold, but elevated, symptoms are at risk for academic failure, grade retention, interpersonal problems with parents and peers, reduced quality of life, sleep disturbances, depression/suicide, and substance use problems (Barbaresi et al., 2013; Bunford, Evans, Becker, & Langberg, 2015; Bussing, Mason, Bell, Porter, & Garvan, 2010; Chronis-Tuscano et al., 2010; Eadeh et al., 2017; Gau & Chiang, 2009; Langberg et al., 2017; Mesman, 2015). A sizeable minority of youth with ADHD also present with full-threshold co-occurring internalizing and/or externalizing disorders (Anastopoulos et al., 2011; Bussing et al., 2010; Cho et al., 2009; Deault, 2010; Larson, Russ, Kahn, & Halfon, 2011; Roy, Oldehinkel, Verhulst, Ormel, & Hartman, 2014).

Compounding these concerns in adolescence, or perhaps underlying them, are the affective difficulties associated with ADHD symptomatology. Youth with ADHD display more negative emotions, greater emotional reactivity, and lower levels of frustration

tolerance than youth without ADHD (Seymour & Miller, 2017). Compared to their typically developing peers, children with ADHD engage in poorer problem solving when upset, are less likely to seek help from parents when frustrated, and focus on more negative components of tasks (Martel, 2009). Emotion dysregulation (including lability/negativity) is also a mechanism contributing to the development of co-occurring internalizing problems (e.g., depression) in both clinical and community samples (Anastopoulos et al., 2011; Bunford et al., 2015; Seymour et al., 2012; Seymour, Chronis-Tuscano, Iwamoto, Kurdziel, & MacPherson, 2014).

For many youth with ADHD symptoms and their families, adolescence is replete with frustration and failure experiences. Accordingly, adolescents with elevated symptoms of ADHD may be especially reliant on their parents to support and scaffold their regulation of emotions given their negative affectivity and self-regulation deficits combined with accruing impairments associated with ADHD symptomatology in adolescence. Even though adolescents with ADHD require substantial caregiver support related to emotions, their symptoms and associated impairments make these youth especially difficult to parent. In the context of adolescent ADHD symptoms, mothers with more difficulties regulating their own emotions may be especially unlikely to engage in supportive parenting behaviors. Instead, maternal emotion dysregulation may interact with adolescent ADHD symptoms to confer risk for more frequent harsh reactions to adolescents' expressions of negative emotions, in turn leading to worsening adolescent emotion lability over time. This possibility is consistent with a core component of the developmental-transactional model of ADHD in families (Johnston & Chronis-Tuscano, 2015), wherein the interaction of parental characteristics and youth ADHD symptoms

predicts parenting, with parenting behaviors in turn contributing to both positive and negative youth developmental outcomes.

Conditional Effects of Adolescent Sex

Sex is another adolescent-level characteristic that may impact the transmission of mothers' emotion dysregulation to that of their adolescent offspring both directly and indirectly, via emotion-related parenting behaviors. For example, sex differences in emotionality have been widely documented, with adolescent females significantly more likely than their male peers to express positive emotions and to internalize negative emotions (Chaplin & Aldao, 2013). Notably, sex differences in emotional displays may be most evident in peer contexts or when adolescents are alone as opposed to when they are with parents (Chaplin & Aldao, 2013). Nevertheless, some research supports sex-differentiated pathways to social-emotional competency arising from parents' sex-differentiated emotion socialization behaviors (i.e., how they respond to their sons' vs. daughters' negative emotional displays). For instance, mothers have been shown to more frequently discuss internalizing negative emotions (i.e., sadness) with their daughters than with their sons (Cassano, Perry-Parrish, & Zeman, 2007). Harsh maternal responses to children's negative emotions have also been implicated in poorer emotional understanding for boys but not for girls (Denham, Mitchell-Copeland, Strandberg, Auerbach, & Blair, 1997). Overall, this research supports the importance of exploring sex differences in emotion-related parenting behaviors and youth emotional development over time.

The Current Study

In line with a transactional model, adolescent ADHD symptoms may amplify (i.e., moderate) the association between maternal emotion dysregulation and maternal harsh responses to adolescents' negative emotions, with this association in turn contributing to the development of adolescent emotion lability over time. Relatedly, adolescent ADHD symptoms and maternal emotion dysregulation may interact to predict fewer supportive parenting reactions, contributing to poorer adolescent emotion lability. Paramount to elucidating these risk processes is utilizing longitudinal analyses while examining the effects of adolescent sex and controlling for prior levels of emotion lability, parenting behaviors, and important psychological covariates. Notably, symptoms of oppositional defiant disorder (ODD) frequently co-occur with symptoms of ADHD, and emotion dysregulation is a core feature of ODD (Cavanagh, Quinn, Duncan, Graham, & Balbuena, 2017). However, the extent to which symptoms of ADHD uniquely amplify the proposed pathways is unknown, but of practical significance.

Recognizing that mediation analyses assume a temporal relation between variables over time and that community-based samples capture a range of symptom severities, the present study uses participants ($N = 277$) from a larger, 10-year longitudinal project on risk behaviors across development (see MacPherson, Magidson, Reynolds, Kahler, & Lejuez, 2010 for additional study details). In order to identify mechanisms of the development of adolescent emotion lability, the present study used a subset of the longitudinal project wherein youth were on average 13.06 years old ($SD_{age} = 0.90$) at time 1 ("T1"), 14.00 years old ($SD_{age} = 0.89$) at time 2 ("T2"), and 15.02 years old ($SD_{age} = 0.95$) at time 3 ("T3"). Using a model building approach, we examined the following aims.

Aim 1: To evaluate the direct effect of T1 maternal emotion dysregulation ($M_{\text{adolescent age}}$ = 13.06) on T3 adolescent emotion lability ($M_{\text{adolescent age}}$ = 15.02), controlling for T1 adolescent emotion lability.

Hypothesis 1: T1 maternal emotion dysregulation will be significantly positively associated with T3 adolescent emotion lability, controlling for prior levels.

Aim 2: To evaluate T2 harsh and supportive parenting responses ($M_{\text{adolescent age}}$ = 14.00) as simultaneous mediators of the effect of T1 maternal emotion dysregulation ($M_{\text{adolescent age}}$ = 13.06) on T3 adolescent emotion lability ($M_{\text{adolescent age}}$ = 15.02), controlling for T1 parenting and adolescent emotion lability.

Hypothesis 2: Harsh and supportive parenting will mediate the association between maternal emotion dysregulation and adolescent emotion lability, such that more maternal emotion dysregulation will predict higher levels of harsh parenting, lower levels of supportive parenting, and higher levels of adolescent emotion lability.

Aim 3: To examine whether T1 adolescent ADHD symptoms ($M_{\text{adolescent age}}$ = 13.06) moderated the effects of T1 maternal emotion dysregulation ($M_{\text{adolescent age}}$ = 13.06) on either T2 parenting ($M_{\text{adolescent age}}$ = 14.00) or T3 adolescent emotion lability ($M_{\text{adolescent age}}$ = 15.02).

Hypothesis 3: The strength of the maternal emotion dysregulation effects on both parenting and adolescent emotion lability will be strongest at higher levels of adolescent ADHD symptoms.

Across each of these three aims, we explored the effect of adolescent sex with multigroup modeling, given prior research indicating sex-differentiated parenting and emotional functioning among youth.

Chapter 2: Method

Participants and Procedures

The current study included the first cohort of participants ($N = 277$) from a larger, 10-year longitudinal project on adolescent risk behaviors across development (see MacPherson, Magidson, Reynolds, Kahler, & Lejuez, 2010 for additional study details). This study represents secondary analyses on this sample. Youth and their parent(s) were recruited from the Washington D.C. metropolitan area via fliers and media outreach initiatives in schools and community organizations. Eligible families: 1) had a child between the ages of 9-13; 2) were proficient in English; and 3) indicated that they could participate in annual study assessments. The assessments were administered in a university-based laboratory setting, with the children and their parent(s) receiving up to $40 for each assessment wave.

Adolescents and their mothers were assessed annually over 8 years. The current study includes ADHD symptoms and maternal emotion dysregulation measured at T1 ($M_{age} = 13.06$, $SD_{age} = 0.90$), harsh and supportive parenting measured at T2 ($M_{age} = 14.00$, $SD_{age} = 0.89$), and adolescent emotion lability measured at T3 ($M_{age} = 15.02$, $SD_{age} = 0.95$). Mothers were between the ages of 28-57 years at T1 ($M_{age} = 44.09$ $SD_{age} = 6.07$) and reported annual family incomes ranging from $0 to $325,000 at that time ($M_{income} =$ $102,498, $SD_{income} =$ $56,350). Adolescent race/ethnicity was 52.5% White/Caucasian, 37.7% Black/African-American, 1.6% Asian, and 8.2% "other race/ethnicity."

Measures

Demographics. Mothers reported their own educational attainment and child age, sex, and race/ethnicity at each time point. Race/ethnicity was dichotomized to represent

(1) White/Caucasian and (0) non-White youth, given the low percentage of Asian, Latino, and "other" race/ethnicities in the sample. Maternal educational attainment was dichotomized to represent (1) received post-high school education and (0) received a high school education only.

Maternal Emotion Dysregulation. Maternal emotion dysregulation was measured using the Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004). The DERS is a 36-item self-report measure. Mothers rated how often each item applied to them using a 5-point Likert-scale from 1 (almost never, 0-10%) to 5 (almost always, 91-100%). The DERS assesses six domains of difficulties in emotion regulation: non-acceptance of negative emotions, difficulties engaging in goal-directed behaviors when distressed, inability to regulate impulsive behaviors when distressed, difficulties employing effective emotion regulation strategies, having problems identifying expressed emotions, and having a lack of overall emotional awareness. We calculated a DERS total score by summing all items across subscales, with a higher total score showing greater self-reported maternal ED. The DERS total score shows high internal consistency and test-retest reliability (0.88) in addition to adequate construct and predictive validity (Gratz & Roemer, 2004). The current sample demonstrates good internal consistency, Cronbach alpha (α) =.80.

Maternal Parenting Responses to Adolescents' Expressions of Negative Emotions. Parenting was examined at all time points using the Coping with Children's Negative Emotions Scale – Adolescent Version (CCNES; Fabes, Eisenberg, & Bernzweig, 1990). The CCNES is a parent self-report measure with six subscales designed to reflect typical parenting responses to adolescents' negative emotions. In the

current study, mothers were presented with 12 hypothetical scenarios in which their child might express negative emotions (e.g., gets upset or angry) and rated how likely they were to respond to the scenarios in each of six ways. The problem-focused responses and the emotion-focused responses subscales capture the extent to which mothers engage in problem-coping responses aimed at addressing the source of the adolescent's distress and emotion-focused coping responses designed to address the emotional distress itself. The expressive encouragement subscale reflects the degree to which mothers facilitate and/or encourage youth's displays of negative emotions. The minimization reactions subscale captures the degree to which mothers discount or limit adolescents' emotional reactions or their antecedents, and the punitive reactions subscale represents the extent to which mothers use verbal/physical punishment to control youth's negative emotional displays. The distress reactions subscale indexes the perceived distress a mother experiences herself in the context of her child's negative emotional expressions. The CCNES is considered a reliable and valid instrument (Fabes, Poulin, Eisenberg, & Madden-Derdich, 2002).

The current study categorized harsh and supportive parenting responses to adolescents' negative emotional expressions using two composite variables (Fabes et al., 2002). Consistent with prior research on the CCNES (Ehrlich, Cassidy, Gorka, Lejuez, & Daughters, 2013; Fabes et al., 2001; Mazursky-Horowitz et al., 2015), we computed a composite variable for harsh parenting responses to adolescents' expressions of negative emotions by averaging the z-scores of the punitive and minimizing responses subscales. We also calculated a composite variable for supportive responses by averaging the z-scores of three subscales: problem-focused, expressive encouragement, and emotion-

focused responses. Prior research using this adolescent version of the measure shows adequate reliability of the harsh parenting summary score (0.73) and the supportive parental responses variable (0.87) (Ehrlich et al., 2013; Ehrlich, Cassidy, Lejuez, & Daughters, 2014). The CCNES also demonstrates adequate test-retest reliability in addition to convergent and divergent validity with the Interpersonal Reactivity Index and the Parent Affect Test, respectively (Fabes et al., 2002). The internal consistencies of the harsh parenting ($\alpha = 0.88$) and the supportive parenting ($\alpha = 0.90$) summary scores used in the current study were good.

Adolescent Emotion Lability. Youth emotion lability was evaluated via maternal-reports on the Emotion Regulation Checklist (ERC; Shields & Cicchetti, 1997). Mothers reported the frequency with which youth display both positive and negative emotion regulation-related behaviors using a 4-point Likert scale (1 = rarely/never; 4 = almost always). The current study used the lability/negativity subscale because emotion lability is considered a trans-diagnostic risk factor for negative developmental outcomes and is most consistent with the affective difficulties observed among youth with ADHD (Martel, 2009). The lability/negativity subscale of the ERC consists of 15 items assessing dysregulation of both positive and negative emotions, emotional intensity, mood lability, and rigidity of emotional response. Items include: "is easy frustrated" and "can bounce back and recover quickly when upset or frustrated (e.g., doesn't pout or stay sullen, anxious or sad after emotionally distressing events)." A total score was calculated from these 15 items using raw scores (4 items reverse coded), with high scores indicating more emotion lability/negativity. Prior research using the ERC shows good construct and

discriminate validity (Shields & Cicchetti, 2001). For the current study, internal consistency was good (α = 0.85).

Youth ADHD and ODD Symptoms. Mothers completed the Disruptive Behavior Disorders checklist (DBD; Pelham, Gnagy, Greenslade, & Milich, 1992). From the DBD, two subscales were derived: ADHD and ODD symptoms. Mothers rated their children's behaviors on a 4-point scale (0 = not at all to 3 = very much), for example, "often interrupts or intrudes on others (e.g. butts into conversations or games)" and "often does not seem to listen when spoken to directly." A total score was created for the ADHD and the ODD subscales by summing all respective items, with higher scores indicating more symptomatology. The DBD shows excellent psychometric properties (Pelham et al., 1992) and the current study showed good internal consistency (ADHD α = .94; ODD α = .80).

Data Analytic Plan

Prior to conducting analyses, patterns of missingness were examined. First, correlations between demographic variables and missingness on both study variables at T1 and subsequent retention were examined. Second, for any missing variables, Little's (1988) missing completely at random (MCAR) test was performed using SPSS, with non-significant results supporting the presence of MCAR data. Supportive parenting at T1 significantly predicted missingness on adolescent emotion lability at T3 (R = .17, p = .012). No other variables at T1 were significantly associated with study retention (i.e., valid data for both the mediator and outcome variables) and results from Little's (1988) MCAR test supported the presence of MCAR data ($\chi^2(68) = 58.74$, p = .78).

Structural equation modeling (SEM) with *lavaan* in RStudio (version 1.0.136) was used to test the main study hypotheses. All default settings were used, with the exception of the fixed.x function, which was set to false in order to model covariances between the exogenous variables. Figure 1 illustrates the model building analytic approach. First, the direct effect of maternal emotion dysregulation on adolescent emotion lability was examined (Figure 1a). Second, a mediation model with both T2 harsh and supportive parenting variables mediating the association between T1 maternal emotion dysregulation and T3 adolescent emotion lability was evaluated (Figure 1b). Next, T1 adolescent ADHD symptoms were tested as a moderator of T1 maternal emotion dysregulation on T2 supportive and harsh parenting and T3 adolescent emotion lability (Figure 1c). Predictors were mean centered, with the interaction term derived from the product of the mean centered predictors. Only statistically significant moderated pathways were included in the main moderated mediation model (Figure 1d) to ensure the most parsimonious final model.

Chapter 3: Results

To examine the hypothesized mediation pathways, the delta method was first used to test the significance of the product of standard errors for the *a* and *b* paths (Sobel, 1982). In addition to the delta method, which is a conservative estimate of mediation, Monte Carlo confidence intervals (Tofighi & MacKinnon, 2016) were used to test the indirect effect using an interactive online tool with 20,000 repetitions (Preacher, Rucker, & Hayes, 2007; Preacher & Selig, 2012; Selig & Preacher, 2008). Finally, the indirect effects were also evaluated at one standard deviation above and below the mean of adolescent ADHD symptoms using the delta method and Monte Carlo confidence intervals.[1,2]

Full Information Maximum Likelihood procedures were used to simulate the missing parameters (Enders, 2001). Full Information Maximum Likelihood is optimal for inferring probable values of the missing parameters because it utilizes all the observed data in the simulations, thereby reducing biased parameter estimates for data that meets the assumption of MCAR . Robust standard errors were also used to account for any non-normality bias in the standard errors, thereby producing model fit indices that more accurately reflect the appropriate amount of misfit in the model compared to standard indices (Satorra & Bentler, 2010).

To assess model fit, the comparative fix index (CFI) and the root mean square error of approximation (RMSEA) were used. The fit between the hypothesized model and

[1] To further test the statistical significance of the mediated effect in simple structural equation models, all analytic models were replicated in Mplus, using bias-corrected bootstrap methods.
[2] The strength of the pathways were also examined with negative-binomial transformed exogenous variables.

the observed data is evident in the CFI values, of which a .90 or higher is considered acceptable (Bentler, 1990). In terms of RMSEA values, results under .05 support a good model fit, values between .05 and .08 indicate an adequate fit, and values greater than .10 indicate a poor fit (Browne & Cudeck, 1993). The chi-square statistic was also reported, although this index is sensitive to sample size and large chi-square values are often observed in large sample sizes (Bentler, 1990).

Demographic variables that were significantly correlated with the mediator or outcome variables were included as covariate predictors. For example, given that emotion lability is a core feature of ODD (Cavanagh et al., 2017), we controlled for ODD in our moderated mediation model. Other covariate pathways among predictor and demographic variables were modeled when they were significantly correlated. Demographic covariates were free to covary with each other.

Given prior research documenting sex-differentiated parenting and sex differences in affect and emotionality, the moderating role of adolescent sex was explored by modeling sex as an a-priori grouping variable for each analytic model. Sex differences were assessed by comparing the chi-square value from analyses where key variable regression coefficients were constrained to be equal for both sex groups to a chi-square value from analyses allowing separate regression estimates. A significant difference between chi-square values supports a moderation by sex.

Descriptive Statistics

Descriptive statistics and bivariate associations for the key variables are shown in Table 1. T1 maternal emotion dysregulation was positively associated with T2 harsh parenting and negatively associated with T2 supportive parenting, such that mothers who

reported more emotion regulation difficulties engaged in harsher and less supportive parenting responses to their child's negative emotional expressions than did mothers with fewer emotion regulation difficulties. T1 maternal emotion dysregulation was also positively associated with T1 adolescent ADHD symptoms and T3 adolescent emotion lability. T2 harsh parenting was significantly positively associated with T3 adolescent emotion lability and T2 supportive parenting was significantly negatively related to T3 adolescent emotion lability. Mothers who reported engaging in more frequent harsh parenting responses to their adolescent's negative emotional displays were more likely to have adolescents with more emotion lability at T3, relative to adolescents whose mothers reportedly engaged in fewer harsh and more supportive responses. Finally, T1 adolescent ADHD symptoms were positively associated with T1 maternal emotion dysregulation and T2 harsh parenting.

Simple Mediation Model

To address aims 1 and 2 of the study – harsh and supportive parenting would mediate the effect of maternal emotion dysregulation on adolescent emotion lability – these analyses tested the direct effect of maternal emotion dysregulation on adolescent emotion lability (Figure 1a) and the indirect effect of maternal emotion dysregulation on adolescent emotion lability via harsh and supportive parenting (Figure 1b). Chi-square difference testing suggested that adolescent sex did not moderate the coefficient strength ($\chi^2(8) = 13.29$, $p = .10$) in the simple mediation model. Although the chi-square difference test was only marginally significant, sex was modeled as a grouping variable, rather than a covariate, given our a-priori analytic plan to examine sex-differentiated pathways.

Results from the simple mediation model are presented in Table 2. Controlling for prior levels of adolescent emotion lability, there was no significant direct effect of maternal emotion dysregulation on later adolescent emotion lability (i.e., *c* path) for boys or girls, although this pathway was weakly moderate for boys (*B*=.14, *p*=.10) but null for girls (*B*=-.02, *p*=.73). Maternal emotion dysregulation significantly predicted maternal harsh parenting (i.e., *a1* path) for boys and girls, but not supportive parenting (i.e., *a2* path). Harsh parenting did not significantly predict changes in adolescent emotion lability (i.e., *b1* path) for boys or girls, and neither did supportive parenting (i.e., *b2* path). Contrary to prediction, the indirect effects of maternal emotion dysregulation on changes in adolescent emotion lability via harsh parenting was not significant for boys (*b*=.008, *SE*=.006, *p*=.13, 95% CI [-.002, .02]) or girls (*b*=.005, *SE*=.006, *p*=.41, 95% CI [-.005, .016]). Likewise, supportive parenting did not mediate the longitudinal association between maternal emotion dysregulation and adolescent emotion lability for boys (*b* =-.001, *SE*=.001, *p*=.75, 95% CI [-.005, .007]) or girls (*b*=-.001, *SE*=.005, *p*=.78, 95% CI [-.012, .010]).[3]

Moderated Mediation Model

To address aim 3 of the study – whether higher youth ADHD symptoms amplify the effects of maternal emotion dysregulation on parenting and adolescent emotion lability – these analyses examined the moderating effect of youth ADHD symptoms on direct effects, as well as on indirect effects of maternal emotion dysregulation on adolescent emotion lability simultaneously via parenting. To understand the specific

[3] These results held with bootstrap confidence intervals in Mplus. Additionally, effect estimates of each pathway were similar with negative binomial transformations of the zero-inflated study variables.

effects of adolescent ADHD symptoms on these pathways over time, all analyses controlled for youth ODD symptoms and prior levels of parenting and adolescent emotion lability in this model. Furthermore, significant demographic predictors at the bivariate level were modeled as covariates in all analyses.

Preliminary analyses in separate moderation models revealed that youth ADHD symptoms moderated the longitudinal effect of maternal emotion dysregulation on harsh parenting (B =.49, SE = .18, p < .01), but not supportive parenting (B =-.19, SE = .27, p = .48) or adolescent emotion lability (B =-.03, SE = .23, p = .89) (Figure 1c). We subsequently modeled the moderating effect of adolescent ADHD symptoms on the relation between maternal emotion dysregulation and harsh parenting (i.e., the *a* path) within the moderated mediation model (Figure 1d; Table 2) for boys and girls. Consistent with our a-priori analytic plan to elucidate the ways by which sex impacts these developmental pathways over time and the low statistical power of the chi-square test, we modeled sex as a grouping variable instead of covariate.

In this model, the interaction between maternal emotion dysregulation and adolescent ADHD symptoms significantly predicted harsh parenting for boys but not girls, controlling for prior levels of parenting, adolescent emotion lability, and youth ODD symptoms. Simple slope analyses of this pathway revealed that, for adolescent males, maternal emotion dysregulation was related to harsh parenting at higher levels of youth ADHD symptoms (i.e., +1*SD*; B =.24, SE = .04, p < .001), but not at lower (i.e., -1*SD*; B = -.003, SE = .09, p =.97) or average (i.e., B = .12, SE = .07, p = .09) levels of youth ADHD symptoms. We next evaluated the conditional indirect effect of maternal emotion dysregulation * youth ADHD symptoms on adolescent emotion lability through

harsh parenting for boys and girls. Results failed to support the interaction of maternal emotion dysregulation and youth ADHD symptoms on changes in adolescent emotion lability via harsh parenting for boys (b = .001, SE = .001, p = .38, 95% CI [-.001, .004]) or girls (b = .0001, SE = .001, p = .56, 95% CI [-.005, .016]). Given this non-significant conditional indirect effect, no follow-up analyses were conducted to examine the indirect effect of maternal emotion dysregulation across levels of adolescent ADHD symptoms.

Chapter 4: Discussion

A large literature base convincingly suggests that maternal emotional functioning and parenting practices can facilitate or hinder children's emotional development, and youth with ADHD are at risk for emotion regulation difficulties. However, no research has longitudinally examined the independent and interactive effects of maternal emotion dysregulation, adolescent ADHD symptoms, and sex on emotion parenting behaviors and adolescent emotion lability, a trans-diagnostic risk factor for the emergence of psychopathology. Addressing these gaps, the current study examined the parenting pathways through which mothers' emotion dysregulation affects adolescent emotion lability and the extent to which adolescent ADHD symptoms and sex modify these pathways over time. We employed secondary data analyses of a well-characterized longitudinal community sample of adolescents and their caregivers. This study is strengthened by a rigorous model building approach while controlling for important covariates (i.e., ODD) and prior levels of parenting behavior and youth emotion lability.

Direct and Indirect Effects of Maternal Emotion Dysregulation on Youth Emotion Lability

Results from the simple mediation model showed a significant effect of maternal emotion dysregulation on harsh parenting for both boys and girls. Consistent with prior research and the current study hypotheses, mothers with more emotion regulation difficulties were more likely to report engaging in minimizing and punitive responses to their children's expressions of negative emotions, relative to mothers with fewer self-reported emotion regulation difficulties. These longitudinal findings extend a small research base on the ways by which emotion dysregulation among mothers impacts emotion-related parenting behaviors. Results also extend cross-sectional research of

Sarıtaş et. al., (2013) and Morelean et. al., (2016), who found that maternal emotion dysregulation was associated with harsh parenting among high school youth and school-aged children, respectively.

Contrary to our predictions in the simple mediation model, the effect of maternal emotion dysregulation appeared to be unique to harsh parenting, as the longitudinal association between maternal emotion dysregulation and changes in supportive parenting was non-significant. This finding supports the idea that harsh and supportive parenting are not merely opposite ends of the same underlying dimension. They also indicate that different domains of emotion parenting behaviors may be impacted by distinct parent-level characteristics. Consistent with this possibility is emerging research showing that maternal emotional awareness and cognitive regulation are more strongly associated with supportive parenting than negative parenting (Crandall et al., 2015; Giuliani, Beauchamp, Noll, & Fisher, 2019). Finally, maternal emotion dysregulation was not significantly associated with changes in adolescent emotion lability in the simple mediation model. In light of the present findings, there is a need for additional investigations into sex-differentiated transmission of emotion regulation difficulties.

There was not a significant mediation of maternal emotion dysregulation on adolescent emotion lability via harsh or supportive parenting. In effect, the first part of the model findings was somewhat consistent with our hypotheses (i.e., maternal emotion dysregulation to harsh parenting), but the second half of our model (i.e., harsh parenting to adolescent emotion lability) was non-significant and contrary to our hypotheses. Furthermore, no pathways were significant via supportive parenting. It may be that mothers' self-reported parenting responses to adolescents' expressed negative emotions

predict other components of adolescent emotional functioning (i.e., depressive symptoms). Indeed, some research suggests that supportive parenting is more strongly associated with the development of interpersonal skills (Valiente et al., 2004), whereas harsh parenting predicts children's self-regulation of negative affect (Davidov & Grusec, 2006). Another mechanism may be mothers' responses to adolescents' positive emotions, which have been shown to cross-sectionally predict youth emotion dysregulation and depression specifically among girls (ages 11-13 years) (Yap et al., 2008). Future research should examine these possibilities among adolescents over time, as the majority of the literature to date examines these questions exclusively in children.

Conditional Effects of Youth ADHD Symptoms and Sex

Within the main analytic model (i.e., the moderated mediation model), maternal emotion dysregulation was significantly longitudinally associated with increases in harsh parenting over time. This pathway was moderated by adolescent ADHD symptoms and conditional upon adolescent sex. Specifically, mothers who reported being more emotionally dysregulated were more likely to endorse engaging in harsh parenting for boys with elevated ADHD symptoms relative to girls (regardless of ADHD symptomatology) and boys with lower levels of ADHD symptoms. These findings extend prior research suggesting that child and parent-level vulnerabilities (i.e., depression) interact to predict parenting practices, and these associations are reciprocal over time (Deault, 2010; Neece, Green, & Baker, 2012; Scaramella & Leve, 2004). Perhaps mothers with more difficulties regulating their own emotions have fewer coping resources (Gratz & Roemer, 2004); consistent with a transactional model of ADHD in families, these mothers may be especially taxed in the context of their adolescent sons

with elevated ADHD symptoms, who may require high levels of parental support and scaffolding to manage their negative emotions.

There are several possible explanations for these findings, each warranting substantial empirical attention. It may be that boys' expressions of negative emotions elicit harsher responses from their mothers than do girls' expressions of negative emotions. Indeed, boys display higher levels of arousal, poorer inhibitory control, and less developed language abilities than do girls as early as infancy, which may make them susceptible to difficulties adaptively regulating negative emotions to meet environmental demands (Chaplin & Aldao, 2013). Sex differences in processing speed, inhibitory control, and working memory have also been observed in ADHD, with females typically outperforming males across these cognitive domains (Arnett, Pennington, Willcutt, DeFries, & Olson, 2014). It may be that such cognitive deficits, which are associated with increased functional impairment (Fried et al., 2016), elicit maternal frustration and negative affect. Mothers with more emotion regulation difficulties may be ill-equipped to cope with these negative emotions, in turn harshly responding to their sons.

On average, boys with ADHD symptoms are also more likely to manifest disruptive behaviors and anger than are girls with ADHD (Rucklidge, 2010). Externalizing expressions of negative emotions may translate to an environment wherein negative emotions are generally perceived as upsetting or troublesome. As a consequence, mothers with more emotion dysregulation may be especially likely to punish or minimize adolescent boys' negative emotional expressions in an effort to prevent disruption, escalation, or negative fall-out (Morelen et al., 2016). Moreover, children learn gender-role consistent behaviors over time through socialization, which

may contribute to differentiated emotional expressions (i.e., anger vs. sadness) and subsequent parental responses. Such socialization processes may be magnified in adolescence, as youth increasingly interface with media and peers (Crone & Konijn, 2018; Twenge, Martin, & Spitzberg, 2018), yet findings are mixed (Oosten, Vandenbosch, & Peter, 2017). Given these socialization processes, mothers may react more negatively to their son's expressions of emotions while being more accepting of their daughters' emotional displays. Finally, dysregulated mothers whose adolescent boys manifest elevated ADHD symptoms may also experience high perceived parenting stress, in turn contributing to harsher parenting responses. In their meta-analysis of ADHD and parenting stress, Theule, Wiener, Tannock, & Jenkins (2013) found that child sex was a significant moderator, such that parents reported lower levels of stress in samples with more female children than male. Of note, this meta-analysis included children 12 years of age or younger, despite the fact that manifestations of ADHD in the family differ for younger children vs. adolescents with ADHD (i.e., risky sex, driving, and substance use). Additional research into mechanisms underlying the present findings is warranted, specifically among adolescents.

Contrary to our predictions, no other pathways were statistically significant for boys or girls in the moderated mediation model; neither was the conditional indirect effect. Specifically, harsh parenting did not mediate the longitudinal association between the interaction of maternal emotion dysregulation * adolescent ADHD symptoms and adolescent emotion lability. While the first part of this model partially aligned with our hypotheses (i.e., maternal emotion dysregulation * adolescent ADHD predicted harsh parenting), harsh parenting did not, in turn, significantly predict adolescent emotion

lability. It may be that other mechanisms beyond harsh parenting responses explain the transmission of maternal emotion dysregulation to adolescent emotion lability for youth with elevated ADHD symptoms. For example, research suggests that adolescents with ADHD and their caregivers experience more conflicts than do typically-developing youth, perhaps as a result of normative increases in demands for independence coinciding with an uptick in impairment across school, peer, and home functioning frequently observed among adolescents with ADHD symptomatology, requiring parents to remain more involved (Deault, 2010; Eadeh et al., 2017; Wehmeier, Schacht, & Barkley, 2010). Perhaps maternal emotion dysregulation is associated with frequent parent-child conflict among adolescents with elevated ADHD symptoms, in turn contributing to worsening adolescent emotion lability/negativity. Future studies should index maternal emotion dysregulation within the context of parent-child conflicts or emotion-eliciting discussions in an attempt to investigate this possibility.

We also failed to find any significant effects with supportive parenting in any of the models. Specifically, we expected that maternal emotion dysregulation would be significantly longitudinally associated with supportive parenting, which in turn would mediate the association between maternal emotion dysregulation and adolescent emotion lability, but this was not the case. Perhaps being less emotionally dysregulated is necessary, but not sufficient, for mothers to engage in supportive emotion parenting behaviors (Morelen et al., 2016). Instead, other maternal characteristics may impact supportive parenting and adolescent emotion lability, such as emotion and cognitive control, flexibility, emotional awareness, and meta-emotion philosophy (Crandall,

Ghazarian, Day, & Riley, 2016; Katz, Maliken, & Stettler, 2012; Kienhuis, Rogers, Giallo, Matthews, & Treyvaud, 2010).

Limitations

Although this study was strengthened by a well-characterized community sample and a prospective longitudinal design, these findings should be interpreted in the context of some limitations. A main limitation of the study is the use of maternal report only and we thus cannot preclude the possibility that shared method variance impacted the present findings. Importantly, distinct information can be derived from parental vs. adolescent reports of parenting. In fact, recent research shows that adolescent-perceived parenting is a stronger correlate of emotion regulation than parent reports (Van Lissa, Keizer, Van Lier, Meeus, & Branje, 2019). We did not include any observational or adolescent reported measures of maternal parenting responses to adolescents' emotional displays. Therefore, we cannot preclude the possibility that social desirability impacted maternal reports of parenting (Lui, Johnston, Lee, & Lee-Flynn, 2013). Moreover, we did not include a measure of fathers' emotion dysregulation and parenting behaviors, and more work is needed to evaluate the relative contribution of paternal vs. maternal emotion dysregulation on parenting responses and adolescent emotion lability over time (Brand & Klimes-Dougan, 2010). Additionally, while youth ADHD symptoms were assessed using maternal reports, a multi-informant, comprehensive assessment approach (i.e., including teacher reports and diagnostic interviews assessing impairment) is the gold standard for ADHD assessment (Pelham, Jr., Fabiano, & Massetti, 2005). Moreover, while these findings suggest that even among youth with sub-clinical ADHD symptomatology, maternal emotion dysregulation confers risk for harsh parenting, they cannot necessarily

be generalized to clinical populations of youth with ADHD. Finally, it is critical to examine other variables potentially related to emotion parenting behaviors, as it is unlikely that mothers' functioning exclusively shapes adolescent emotional outcomes. Indeed, other factors such as fathers' and other partners' involvement and the potential impact of single vs. dual-parent households may shape adolescent emotion lability over time. It is critical that additional research explore these possibilities.

Conclusion and Clinical Implications

Theoretical models of adolescent emotional development include the critical roles of maternal emotion regulation abilities and the manner in which mothers respond to adolescent children's expressions of negative emotions. However, no known studies have examined the extent to which supportive vs. harsh parenting reactions to adolescents' expressions of negative emotions underlie the longitudinal association between maternal emotion dysregulation and changes in adolescent emotion lability. Moreover, the extent to which adolescent symptoms of ADHD and sex impact these processes is largely unknown, despite a foundational component of many theoretical models of development including the interaction of parent and adolescent characteristics. The current study showed that mothers who reported being more emotionally dysregulated were more likely to endorse engaging in harsh parenting for boys with more ADHD symptoms, relative to mothers of adolescent girls or adolescents with fewer ADHD symptomatology. No other pathways were statistically significant. These results partially align with a transactional model of ADHD in the family wherein parent- and adolescent-level risk factors interact to confer risk for maladaptive parenting (Johnston & Chronis-Tuscano, 2015). Future work should further attempt to characterize the independent and interactive

effects of maternal emotion dysregulation and adolescent ADHD symptoms on parenting and adolescent emotion lability and symptoms of psychopathology over time, with the goal to develop targeted interventions for both parent- and adolescent-level risk factors.

Figures and Tables

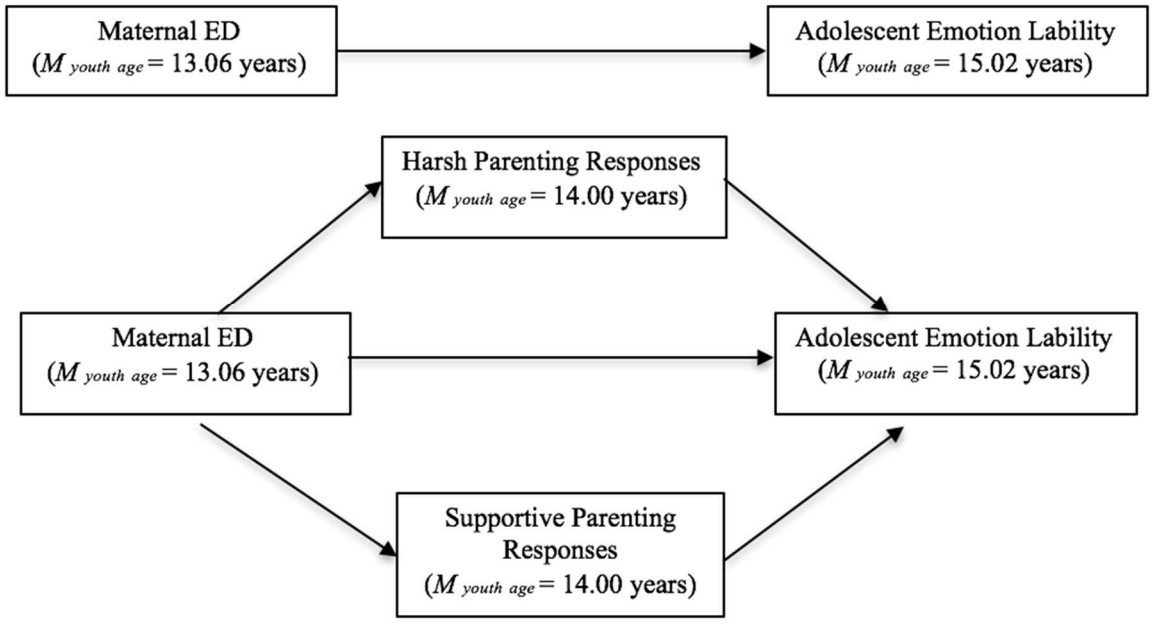

Figure 1a. Conceptual summary of the main effects model of maternal ED on adolescent emotion lability.

Figure 1b. Conceptual summary of simple mediation model wherein harsh and supportive parenting responses to adolescent negative emotions simultaneously mediate the association between maternal emotion dysregulation and adolescent emotion lability.

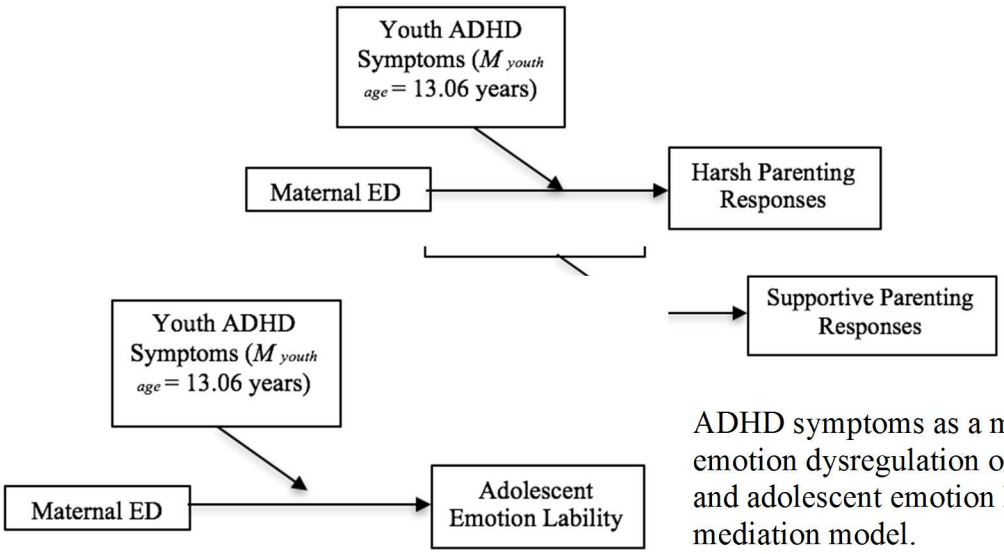

Figure 1c. Conceptual summary of adolescent ADHD symptoms as a moderating variable of maternal emotion dysregulation on supportive and harsh parenting and adolescent emotion lability, independent from the mediation model.

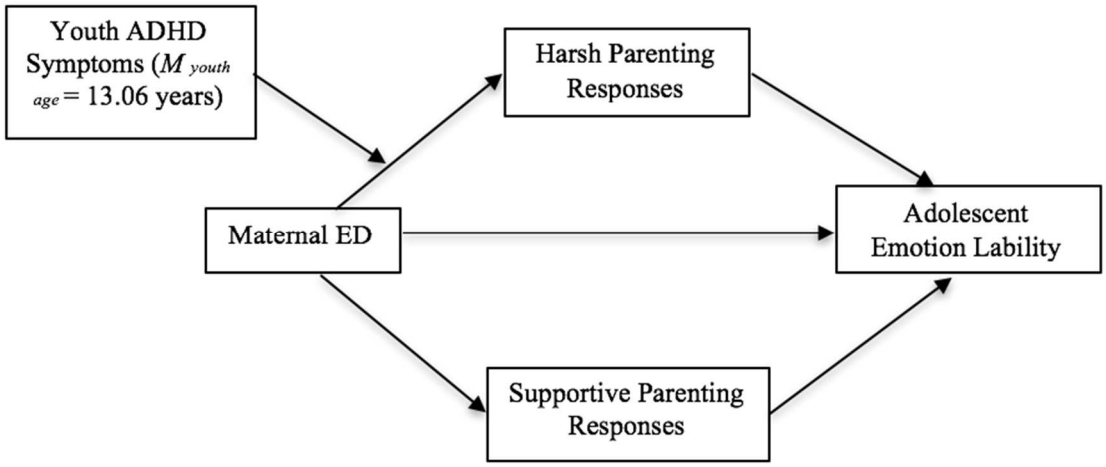

Figure 1d. Conceptual summary of the final moderated mediation model wherein the interaction of maternal emotion dysregulation and youth ADHD symptoms predicts harsh parenting, in turn leading to adolescent emotion lability.

Table 1. *Descriptive statistics and bivariate associations for key and demographic variables*

	1. Maternal ED (T1)	2. Youth ADHD Symptoms (T1)	3. Harsh Parenting (T2)	4. Supportive Parenting (T2)	5. Youth Emotion Lability (T3)
1. Maternal ED (T1)					
2. Youth ADHD Symptoms (T1)	.21**				
3. Harsh Parenting (T2)	.42**	.17*			
4. Supportive Parenting (T2)	-.22**	-.12+	-.20**		
5. Youth Emotion Lability (T3)	.26**	.52**	.31**	-.15*	
Youth Sex (Female)	-.03	.11	.03	.08	-.04
Youth ODD Symptoms (T1)	.15*	.59**	.19**	-.07	.33**
Youth Race (Caucasian)	.11	.11	.18**	-.17*	.11
Mother Age (T1)	.15*	.15*	-.18**	-.06	-.14+
Mother Education (T1)	.04	-.06	.07	.17*	.10
N	230	212	220	220	197
M (*SD*)	64.28 (16.48)	2.17 (3.53)	-.001 (.60)	.003 (.57)	23.61 (6.30)
Min	36.00	.00	-.91	-2.13	15.00
Max	112.00	17.00	2.03	.84	44.00
Skew	.73	2.08	.80	-.78	.94
Kurtosis	.03	4.17	.19	.44	.69

Notes. ED = emotion dysregulation; ADHD = attention-deficit/hyperactivity disorder; HS = high school; T1 = time point 1 (M_{age} adolescent = 13.06 years); T2 = time point 2 (M_{age} adolescent = 14.00 years); T3 = time point 3 (M_{age} adolescent = 15.02 years). $+p \leq .10$, $*p < .05$, $** p < .01$.

Table 2. *Results*

	Aim 1: Direct effect		Aim 2: Simple mediation		Aim 3: Moderated mediation	
	B	*SE*	*B*	*SE*	*B*	*SE*
Effects on Adol. Emotion Lability						
Maternal ED	.14+(M) -.02 (F)	.08 (M) .07 (F)	.09 (M) -.04 (F)	.09 (M) .06 (F)	.09 (M) -.04 (F)	.08 (M) .07 (F)
Harsh Parenting			.11 (M)+ .06 (F)	.07 (M) .07 (F)	.06 (M) .06 (F)	.06 (M) .07 (F)
Supportive Parenting			.04 (M) -.02 (F)	.07 (M) .08 (F)	.001 (M) -.02 (F)	.07 (M) .08 (F)
Youth Emotion Lability (T1)	.67**(M) .79**(F)	.06 (M) .04 (F)	.64**(M) .77**(F)	.06 (M) .04 (F)	.82 (M)** .78 (F)**	.09 (M) .08 (F)
Youth ODD Sx (T1)					-.27 (M)** -.02 (F)	-2.48 (M) .14 (F)
Effects on Harsh Parenting						
Maternal ED			.19**(M) .22**(F)	.06 (M) .07 (F)	.12+(M) .22 (F)**	.07 (M) .07 (F)
Youth ADHD Sx					-.62**(M) -.32 (F)	.24 (M) .37 (F)
Maternal ED*Youth ADHD Sx					.63**(M) .23 (F)	.24 (M) .32 (F)
Youth Caucasian			.01 (M) -.13*(F)	.06 (M) .06 (F)	.01 (M) -.11 (F)	.06 (M) .07 (F)
Youth Emotion Lability (T1)			.03 (M) .08 (F)	.06 (M) .05 (F)	.17 (M)+ .09 (F)	.09 (M) .07 (F)
Youth ODD Sx (T1)					-.18 (M)* .09 (F)	.10 (M) .07 (F)
Harsh Parenting (T1)			.71**(M) .66**(F)	.05 (M) .06 (F)	.73 (M)** .66 (F)**	.05 (M) .06 (F)
Effects on Supportive Parenting						
Maternal ED			.03 (M) .11 (F)	.07 (M) .08 (F)	.05 (M) .15 (F)+	.07 (M) .08 (F)
Youth Caucasian			-.13*(M) -.02 (F)	.06 (M) .07 (F)	-.15 (M)* -.05 (F)	.06 (M) .07 (F)
Youth Emotion Lability (T1)			-.07 (M) .02 (F)	.06 (M) .07 (F)	-.16 (M)* .10 (F)	.08 (M) .07 (F)
Youth ODD Sx					.15 (M)* -.15 (F)*	.06 (M) .07 (F)
Supportive Parenting (T1)					.71 (M)** .79 (F)**	.07 (M) .05 (F)
Maternal HS Education			.09 (M) .21**(F)	.06 (M) .06 (F)	.09 (M) .20 (F)**	.06 (M) .05 (F)
Model fit						
χ^2	$\chi^2(4) = 5.56$, $p = .23$		$\chi^2(18) = 10.99$, $p = .90$		$\chi^2(38) = 47.10$, $p = .15$	

CFI	.99	1.00	.99
RMSEA	.05, $p = .15$	.00, $p = .99$	.04, $p = .60$
R^2 Adol. Emotion Lability	.50 (M) .61 (F)	.51(M) .62(F)	.54 (M) .61 (F)
R^2 Harsh Parenting		.62(M) .66(F)	.65 (M) .66 (F)
R^2 Supportive Parenting		.57(M) .31(F)	.59 (M) .62 (F)

Notes. Adol. = Adolescent; ED = emotion dysregulation; ADHD = attention-deficit/hyperactivity disorder; HS = high school; Sx = Symptoms; T1 = time point 1 (M_{age} adolescent = 13.06 years); T2 = time point 2 (M_{age} adolescent = 14.00 years); T3 = time point 3 (M_{age} adolescent = 15.02 years). *df* = degrees of freedom; $+p \leq .10$, $*p < .05$, $** p < .01$. CFI = Comparative Fit Index; RMSEA = Root Mean Square of Approximation. T1 parenting covaried with T1 youth ODD symptoms and emotion lability, and T1 maternal education and ethnicity. T1 and T2 parenting variables covaried with each other. Demographic covariates were free to covary.

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