THE RELATION OF PARENTAL EMOTION DYSREGULATION TO CHILDREN'S PSYCHOPATHOLOGY: THE MODERATING ROLE OF CHILD EMOTION DYSREGULATION

by

ZHUO HAN

(Under the Direction of Anne Shaffer)

ABSTRACT

The current study investigated the roles of parents' and children's emotion dysregulation in children's development of internalizing and externalizing problems by incorporating person- and variable-centered approaches. 64 children (38 girls and 26 boys) between the ages of 8 and 11 (*M* age = 9.45, *SD* = 1.04) participated in this study with their mothers (33 African Americans and 26 Caucasian Americans). The study variables were collected via multiple methods, including observational assessment of family interactions and questionnaire assessment from both parents' and children's perspectives. Using model-based cluster analysis, a profile of children's problems with regulating negative emotions was created for each child by incorporating multiple measurements on child emotion regulation. Two profiles were identified. Specifically, children in Cluster 1 (*N* = 14) demonstrated an externalizing regulatory style, whereas children in Cluster 2 (*N* =44) demonstrated an internalizing regulatory style. These latent profiles were applied in a moderation model testing whether the combination of parents' and children's regulatory style influence children's behavioral and psychological well being. Results showed that children's emotion dysregulation profiles moderate the relationship between

parental emotion dysregulation and child internalizing problems with children who adopted a more internalizing style with emotional problems more vulnerable to problematic internalizing symptoms in the context of high maladaptive parental emotion regulation. Such moderation model was not significant with child externalizing problems, but children who adopted a more externalizing style with emotional problem seem to have more problematic externalizing symptoms. This multifactorial approach in assessing child emotion regulation and examining the interaction of parents' and children's emotional competence on child psychopathology contribute to a better understanding of how family emotional processes impact children's psychological well being.

INDEX WORDS: Emotion Regulation, Emotion Dysregulation, Internalizing Problems, Externalizing Problems, Model-based cluster analysis, Child Psychopathology

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CHAPTER 1

INTRODUCTION

Emotion regulation is a multifaceted and dynamic process that has been posited to play a key role in many forms of psychopathology (Cicchetti, Ackerman, Izard, 1995; Cole, Mitchel, Teti, 1994). Scientific investigation examining familial influence on child psychopathology from the emotional perspective has seen a substantial increase in the past decades, with the majority of studies focusing on the deleterious effects of negative familial experience such as child maltreatment and parental psychopathology (e.g., Maughan & Cicchetti, 2002; Rogosch, Cicchetti, & Aber, 1995) or the influence of parental emotion socialization on child psychopathology (e.g., Chaplin, Cole, & Zahn-Waxler, 2005).

Although not directly assessed, the key role of parents' emotion regulation has been stressed in many of these studies in explaining the impact and mechanisms of emotion-related familial influences. For example, in explaining the positive correlation between parental and children's psychopathology, Suveg and colleagues (2011) argued that such association may be due to the fact that parents with mental health problems are more likely to experience significant emotion regulation problems, and these emotional deficits may affect the process and outcome of parental emotion socialization. Indeed, it has been argued for decades that in order to provide adequate emotion socialization, parents must have the ability to manage their emotions effectively and adaptively, and parental dysregulated emotions may contribute to poor developmental outcomes for children (Dix, 1991). Nevertheless, it is surprising that there is no

extant research examining the direct relationship between parental emotion dysregulation and children's development of psychopathology (Bariola, Gullone, & Hughes, 2011).

Moreover, it is important to note that not all children whose parents have problems with emotion regulation eventually develop child psychopathology (or of similar severity). There is likelihood that some children may be more resilient to the deleterious effect of parental emotion dysregulation than others. Similarly, not all children with parents who have less emotional problems are without of psychopathology. These possible discrepancies between parental emotion dysregulation and child psychopathology warrant a search for protective or vulnerability factors.

Children's own emotion dysregulation may be one of the moderating factors. On the one hand, children's own problems with emotion regulation exacerbate the likelihood that children develop psychopathology regardless of how their parents regulate emotions. On the other hand, it is possible that a certain combination of parental and children's emotion dysregulation patterns minimize or amplify the risk of children's psychopathological symptoms. However, similar to the examination of the relations between parental emotion dysregulation and child psychopathology, the exploration of the possible moderating role of child emotion dysregulation on this process has also been limited in the literature.

The current investigation seeks to understand the relationship among parental emotion dysregulation, child emotion dysregulation, and youth's psychopathology. Specifically, it is aimed at addressing the following questions: (1) What is the relation between parental emotion dysregulation and various forms of child psychopathology? (2) Does the relation between parental emotion dysregulation and psychopathology depend on differences in children's patterns of emotion dysregulation, specifically when measuring children's emotion dysregulation across

multiple measures and methods? In the current study, youth's emotion dysregulation is assessed through a person-centered approach by incorporating information from children's self-report, parental report as well as from behavioral observation.

In this introduction, I first discuss the definition, development, and measurement issues of youth's emotion regulation/dysregulation. I then discuss the association between emotion dysregulation and psychopathology. Next, I review the relevant literature concerning parental influence on child psychopathology from the emotional aspect, emphasizing the key role of parental emotion dysregulation. Major theoretical and methodological gaps in the current literature are discussed; a study aimed at bridging these gaps is proposed.

Child Emotion Regulation/Dysregulation

Definition and Conceptualization

Emotion regulation has been widely conceptualized as the internal and external processes involved in initiating, maintaining and modulating the occurrence, intensity, and expression of emotions to accomplish one's goals (e.g., Thompson, 1994; Eisenberg & Morris, 2002; Cole, Martin, & Dennis, 2004; Calkins & Hill, 2007; Morris, Silk, Steinberg, Myers, & Robinson, 2007).

This definition has been built upon the functionalist account of emotions (Frijda, 1986; Levenson, 2003), which suggested that adaptive emotion regulation should help individuals maintain or regain their psychological well being by accomplishing their goals (Bridges, Denham, & Ganiban, 2004). From the functionalist perspective, emotions are regarded as regulators of social interactions; thus emotions can establish, maintain or disrupt (i.e., regulate) the relationship between the individual and his/her environment (Campos, Campos, & Barrett, 1989). Emotion regulation becomes an integral part of the experience of emotion, and it serves

to coordinate one's goals and monitor the effects of one's behavior on the physical and social world (Campos, Mumme, Kermoian, & Campos, 1994). In other words, emotion regulation is the process a person experiences in order to modify the manifestation and the consequence of the original emotion. For example, the consequences of a child's anger outburst can be social (e.g., unwelcomed by other people), physical (e.g., breaking a toy) and/or psychosomatic (increasing heart rate). If these consequences are unwanted, the child may choose to regulate anger intrinsically by changing anger input or anger appraisal (e.g., treating an anger-evoking event as a challenge rather than an affront) or changing anger output (e.g., masking anger). These multifaceted modifications to the original emotion in order to meet or avoid certain consequences are broadly conceptualized as emotion regulation.

More importantly, the functionalist perspective on emotion regulation emphasizes the social context that elicited the need for regulation and specified the rules of conduct (Campos, Mumme, Kermoian, & Campos, 1994); thus regulation/dysregulation should be considered along with both the consequences and the social context for that emotion. For example, anger dysregulation does not simply imply a state in which a child is being very angry or habitually holding back anger. Instead, it connotes the formation of an enduring anger response system that leads the child to express or experience anger in inappropriate contexts (Cole & Hall, 2008). Thus, only when the deviations of an emotion response are not appropriate for a certain context and interfere with children's behavior and psychological functioning do we consider such behavior as a sign of dysregulation.

Development of Emotion Regulation

Emotion regulation is viewed as a developmentally acquired process that emerges primarily within the context of early parent-child interaction (Thompson, 1994). This ability

develops rapidly in infants and young children (Kopp, 1989) and continues to develop throughout adolescence (Zeman, Cassano, Perry-Parrish, & Stegall, 2006). It has been suggested that children's abilities and patterns in regulating emotions become increasingly independent from parental influence throughout development (Yap, Allen, & Sheeber, 2007). Such change might be due to the fact that parents spend less time together with their school-age children than with younger children (Larson, Richards, Moneta, & Holmbeck, 1996), providing parents less opportunity to support children's emotion regulation (Zalewski et al., 2011). Another explanation is that as children develop, they tend to rely less on parents to aid in emotion regulation but utilize other socialization agents such as peers (Eisenberg & Morris, 2002; Silk, Steinberg, & Morris, 2003). The other possibility is that older children might have developed a comparatively large repertoire of emotion regulation that is less likely to be readily influenced by other influences. All possibilities suggest that it is increasingly likely that as children get older, they regulate their emotions more independently.

In an effort to understand the mechanism through which parental factors contribute to children's development of psychopathology, research has examined children's emotion regulation as the mediating mechanism between parental influence and child psychopathology (e.g., Eisenberg, Gershoff et al., 2001), with the majority of the studies conducted with younger children (i.e., children in their infancy and preschool period). The role of parents in older children's emotion regulation has not been fully explored. For example, it is important to determine whether specific emotion regulation patterns of older children can buffer or exacerbate (i.e., moderate) the potential impact of parental emotion regulation on child psychopathology.

Measurement Issues in Children's Emotion Regulation

Given the varying conceptualizations of children's emotion regulation in the literature, measurement of emotion regulation remains largely inconsistent in the literature (Bridges, Denham, & Ganiban, 2004). This might be of particular concern when measuring youth's emotion regulation/dysregulation. In an editorial review, Suveg and Zeman (2011) identified various issues that are associated with the assessment of children's emotion regulation/dysregulation. The primary question centers on how do we interpret the reports from different informants. Although it has been shown that children as young as three years old can report on their emotional experience (Durbin, 2010; Fivush & Baker-Ward, 2005) and children's self-report might provide useful information that is otherwise unobtainable (Hourigan, Goodman, & Southam-Gerow, 2011), the validity of these reports remains a primary concern. This is because the ability to report on one's emotional experiences encompasses a wide range of emerging development (Bell & Wolfe, 2004; Brown & Dunn; 1991) including children's language abilities and emotion understanding. For example, it is not uncommon for a researcher to be asked by his/her child participant to clarify the meaning of a certain emotion word (e.g., enthusiastic). Thus, child report of their emotional experience can provide unique information, but to rely on it as a single measure of emotion regulation is problematic.

Another frequently employed reporter of youth's emotional experience is the parent. Although similar to children's self-report, parental report can also provide important information regarding youth's emotional functioning. Nevertheless, research on parent-child report concordance has suggested considerable discrepancies between the informants (e.g., Hawley & Weisz, 2003). The discrepancy is the greatest between school-age children and their parents (Hourigan, Goodman, & Southam-Gerow, 2011). One possible explanation is that emotions are

highly subjective; even parents might not have a full access to children's emotional world, especially when they begin to have less opportunity to interact with their children (e.g., with school-age children). The other possibility is that children's self-reports are not valid in many cases due to a certain developmental limitation (e.g., language ability) or due to children's concern that some of their emotions might be punished (e.g., anger).

Behavioral researchers, who have been trained to code youth's behavioral responses of emotional states, have been frequently utilized as the other reporters of youth's emotional experience. However, similar to the problems with parents' reports of youth's emotional experience, these researchers might not have access to youths' private internal experiences; thus their reports can only be based on observation in a very short period of time and usually in an obtrusive setting (e.g., children are aware their behaviors are observed and video-taped). Therefore, these observations may be biased in many ways. For example, children may tend to present themselves in a socially desirable way, especially older children. Alternatively, researchers' observation can be affected by fatigue, mood, or other factors unrelated to children's actual performance (Brentnall & Bundy, 2009).

Given the strengths and limitations inherent in each approach, it has been increasingly emphasized that we should incorporate multiple measures of youth's emotional experience (Thompson, 2011; Suveg & Zeman, 2011). However, it is surprising that less than five percent of published research on emotion regulation/dysregulation in the past 35 years has utilized three or more methods in assessing youth's emotion regulation (Adrian, Zeman, & Veits, 2011). This has limited our opportunities to scrutinize the discrepancies from multiple reports and make sense of the diverging results.

Fortunately, there has been an increasing attempt to make sense of data collected via multiple methods using more sophisticated statistical approaches, for instance, the person-centered approach (e.g., Latent Profile Analysis; Model-based Cluster Analysis). Researchers have begun to utilize these techniques to create an emotional profile for each individual based on measuring multiple emotion elements. For example, Smith and colleagues (2011) used Latent Profile Analysis (LPA) to identify anger control profiles of 8-year-old children via physiological (skin conductance), observational and self-report measures. Five distinct groups emerged in their sample based on the three measures. Children's profiles within each group were described. For example, the profile of children in the Physiology-and-Expression controller group was characterized by being high in self-report of anger experience but low in behavioral expression and physiological arousal. The profile of children in the Non-controller group was characterized by being comparatively high in all three measures. Similarly, Zalewski and colleagues (2011) adopted a similar approach to measure anxiety and frustration regulation of children in their middle-childhood via physiological (heart rate), observational and self-report measures. They identified five frustration and four anxiety regulation profiles in their sample, and showed frustration regulation profiles, but not anxiety regulation profiles, mediated relations between temperament and adjustment.

Despite this new trend in examining emotion regulation/dysregulation, few studies have adopted such person-centered approaches to study child emotion regulation/dysregulation by incorporating reports from multiple informants (e.g., children's self report, observational report, and parental report). Nevertheless, introducing the person-centered statistical technique to collectively examine reports from multiple informants may not only prevent us from drawing

conclusions based on a single reporter but also provide us with opportunities to make sense of potentially diverging results.

Emotion Dysregulation and Psychopathology

The studies on emotion regulation/dysregulation have seen a substantial increase in the past two decades, and it has been widely recognized that patterns of emotion regulation that have demonstrated a maladaptive quality can signal risk of psychopathology (e.g., Calkins & Keane, 2009; Cole & Hall, 2008). For example, children who showed deficits in emotion regulation seemed to be more vulnerable to a series of internalizing and externalizing psychological disorders (Southam-Gerow & Kendall, 2002; Yap et al., 2007).

The association between emotion dysregulation and psychopathology has been evidenced in many diagnostic criteria of disorders (e.g., DSM-IV-TR, APA, 2000) as well as in many empirical research findings (e.g., Beauchaine, Gatzke-Kopp, & Mead, 2007; Gotlib, Joormann, Minor, & Cooney, 2006). Even though DSM-IV-TR does not explicitly theorize about the role of emotion in psychopathology, emotion dysregulation is a defining characteristic of many forms of disorders, for example, diminished interest and pleasure in mood disorders, flat affect in schizophrenia, and unreasonable fear in anxiety-related disorders (DSM-IV-TR, APA, 2000). Additionally, many researchers have shown empirical evidence linking youths' emotional functioning, especially competence in regulating negative emotions, with symptoms of psychopathology. For example, difficulty regulating negative emotions and poor emotional understanding have been associated with high levels of aggressive behavior in children (e.g., Dearling et al., 2002; Calkins, Dedmon, Gill, Lomax, & Johnson, 2002) as well more anxious symptoms (e.g., Suveg & Zeman, 2004; Southam-Gerow & Kendall, 2000).

The adaptive regulation of both positive and negative emotions is crucial for children's psychological well being. However, based on the aforementioned evidence as well as other research findings, youth's inability to regulate negative emotions seems to lead to more detrimental outcomes than their failure to regulate positive emotions in terms of psychopathology. For example, girls' inhibition of negative emotions was associated with more depressive symptoms (Garber, Braafladt, & Weiss, 1995). Similarly, having fewer strategies to manage negative emotions was linked with adolescent depression (Silk, Steinberg, & Morris, 2003). Therefore, it seems important to examine youth's dysregulation of positive and negative emotions separately because they may lead to different child outcomes, and special attention should be paid to children's inabilities in regulating negative emotions when considering psychopathology as the outcome of investigation.

Emotion-Related Parental Influence on Child Psychopathology

A considerable amount of research has focused on identifying parental influence on children's development of psychopathology from the emotional perspective. This trend may be due to the salience of emotions in psychopathology as well as the crucial role of parents in children's organization and functioning of children's emotion system. These efforts can be generally grouped into two broad areas: (1) research examining the deleterious effects of negative familial experiences on child psychopathology, including the negative impact of maltreatment (e.g., Kim & Cicchetti, 2010), inter-parent discord and violence (e.g., Ghasemi, 2009), and parental psychopathology (e.g., Suveg, Shaffer, Morelen, & Thomassin, 2011); (2) research examining the impact of parental emotion socialization on children's psychosocial functioning, including the impact of parental reactions to children's negative emotions (e.g., Tao, Zhou, & Wang, 2010), parents' modeling of emotional expression (e.g., Greenberg et al., 1999),

parental discussion of emotions (e.g., Eisenberg et al., 2001), and parenting styles that are controlling or hostile versus warm and caring (e.g., Morris et al., 2002).

Both lines of research not only suggested that parental factors might play a key role in children's development of psychopathology, but they also posited that much of the negative parental impact may be accounted for or associated with parents' own problems with emotion regulation. For example, in explaining the influence of parental psychopathology, researchers suggested that parents with psychopathology are more likely to experience significant emotion regulation problems that may interfere with their abilities to communicate effectively with their children (Cummings & Davies, 1994). Similarly, in examining the cases of maltreatment or inter-adult discord, many argued that these problems might be associated with parents' failure to manage excessive overt negative emotions, most likely anger (Grotberg, Feindler, White, & Stutman, 1993). Moreover, parents who are experiencing emotion regulation deficits themselves might not have the resources or abilities to effectively socialize children's emotions, which may, in turn, contribute to poor developmental outcomes for children (Dix, 1991). For instance, compared to the parents who can manage their own emotions well, parents who have difficulty regulating their own emotions might not have the insight to discuss emotions with their children, and these parents might be more likely to react to children's negative emotions in an unsupportive manner or less likely to show warmth to their children due to their display of intense or labile emotional states.

Collectively, the above evidence has suggested that parents' abilities in regulating their own emotions can be associated with their influence on children's development of psychopathology in many ways. However, it is noteworthy that there is very limited extant research examining the direct relationship between parental emotion regulation and child

psychopathology. Additionally, as previously mentioned, there has been limited investigation with older children and there might be a change of pathway in terms of the role of older children's emotion regulation due to the fact that parents exert less influence on children's emotion regulation during middle childhood (Yap, Allen, & Sheeber, 2007; Angold & Rutter, 1992). Therefore, rather than being the outcome of parental influence, another possibility is that these children's emotion regulation patterns might serve as a risk or protective factor that may exacerbate or buffer parental impact on child psychopathology. In other words, children's emotion regulation might moderate the relation between parental emotion regulation and child psychopathology because of its increasing independence of parental influence and increasing sophistication of patterns. However, this model has yet to be empirically tested.

The Present Study

The proposed study seeks to bridge the aforementioned gaps in the literature and investigate the relations among parental emotion dysregulation, child emotion dysregulation, and child psychopathology during middle childhood. It proposes a moderation model that aims to examine whether there is a specific combination of parental and children's emotion dysregulation patterns that increases the risk for child psychosocial problems. Specifically, this study aims to test whether children's emotion dysregulation profiles moderate the relations between parental emotion dysregulation and child psychopathology.

The proposed study will advance previous research and contribute to the relevant literature in several ways. First, because emotion regulation is a complex construct, researchers have begun to suggest that we address the cross-informant discrepancies in multiple measures of children's emotion regulation (e.g., Hourigan, Goodman, & Southam-Gerow, 2011; Suveg & Zeman, 2011). However, such investigation is still limited in scope. This study advances the

methodological aspects of this literature by utilizing model-based cluster analysis to examine children's maladaptive emotion regulation (i.e., emotion dysregulation) from multiple methods, including parental report, child self-report and researchers' behavioral observation. Additionally, built upon the implication from the relevant literature that aggregating both positive and negative emotions in one examination might lead to biased results, and that the inappropriate regulation of negative emotions seems more crucial in terms of the development of psychopathology for older children (Cole & Hall, 2008), the current study specifically investigates children's dysregulation of negative emotions.

Second, very few studies have empirically examined the relations between parental emotion dysregulation and children's symptoms of psychopathology. Given the fact that parents must have sufficient abilities to manage their own emotional functioning in order to become an effective socialization agent for the child (Dix, 1991), and the implicitly stated association between parental emotion dysregulation and other parental factors (e.g., maltreatment, parental psychopathology) that may contribute to child psychopathology, it seems crucial to test the impact of parental emotion dysregulation on child psychopathology.

Third, the majority of previous studies have tested the mediation model by examining parental influence on child psychopathology through children's adaptive or maladaptive emotion regulation (e.g., Maughan & Cicchetti; Eisenberg, Gershoff et al., 2001). However, it may be the case that, for older children who might have developed a relatively large and stable emotion regulatory repertoire, there might be an interactional effect between parental and children's emotional patterns. For example, children's better emotion regulation skills may buffer them from the negative parental influence (e.g., parental emotion dysregulation) on children's psychological well-being. However, this alternative model has not been extensively examined.

Moreover, the impact of parental emotion dysregulation and the potential moderating role of children's own emotion dysregulation patterns might differ depending on the types of psychopathology. There is evidence suggesting that different emotion dysregulation patterns are associated with different types of psychopathology. For example, internalizing problems have often been related to maladaptive emotion regulation patterns of inexpressive or overcontrolled styles (e.g., Eisenberg, Losoya et al., 2001), whereas externalizing problems have mostly been related to maladaptive emotion regulation patterns of expressive and undercontrolled styles (e.g., Cole et al., 1996). This evidence has suggested a need to investigate separately the role of parental and youth's emotion dysregulation on internalizing and externalizing problems.

Therefore, the present study specifically examine the following questions: (1) What is the relation between parental emotion dysregulation and child internalizing and externalizing problems? It was predicted that higher levels of parental emotion dysregulation would relate to higher levels of child psychopathology. (2) Does child emotion dysregulation moderate the relations between parental emotion dysregulation and child internalizing and externalizing problems? It was predicted that the relation between parental emotion dysregulation and child internalizing and externalizing problems would be attenuated for children whose emotion regulation pattern fit that of their parents, whereas such association would be exacerbated for children whose emotion regulation pattern does not fit that of their parents.

Lastly, although not among the main analyses of the present study, exploratory analyses will investigate whether children's negative emotion dysregulation profiles significantly correlate with child psychopathology independent from parental emotion dysregulation. There has been plenty of research demonstrating the association between child emotion regulation/dysregulation and child psychopathology (e.g., Eisenberg, Cumberland et al., 2001;

Frick & Morris, 2004), whereas few studies utilized a person-centered approach and measured children's dysregulation of negative emotions from multiple informants. The present study seeks to explore the possible link between the problems children experience in regulating their negative emotions and their development of internalizing and externalizing problems.

CHAPTER 2

METHOD

Participants

64 mother-child dyads were recruited through flyers displayed in a small college town. Participants included 38 girls and 26 boys between the ages of 8 and 11 (*M* age = 9.45, *SD* = 1.04) and their mothers (M age = 37.27, *SD* = 8.32). With respect to the diversity of the child sample, 26 (40.6%) children were Caucasian, 33 (51.6%) were African American, 1 (1.6%) was Asian, 2 (3.1%) were Hispanic, and 2 (3.1%) were of other ethnicities. With respect to annual household income, 30 (46.9%) of the sample earned less than $20,000, 10 (15.6%) between $20,000 and $29,999, 16 (25%) between $30,000 and $80,000, and 8 (12.5%) over $ 80,000. All mothers reported acting as the primary caregiver, and most were biologically related to the participating children (92.2%). With respect to maternal marital status, 28 (43.8%) mothers were currently married, the rest (56.2%) were never married, separated or divorced. With respect to maternal education level, 38 (59.4%) had completed at least some college education.

Assessment Procedures

All procedures were approved by the University Institutional Review Board. Mothers and children signed consent/assent forms upon arriving at the research laboratory. They then participated in four four-minute interaction tasks intended to mimic common daily activities. All interaction tasks were administered and videotaped by a trained researcher.

The first task was an “imaginary happening,” where the child was given four minutes to answer questions about the future with their mother. For example, “What would your house look

like and what kind of food would you eat sixty years from now?" The mother was asked to write down the child's answers on a blank sheet. The second task was "conflict discussion", where the mother and the child discussed how they felt about a chosen topic of conflict for four minutes. The topics included doing homework, getting along with siblings, doing chores, etc. The third task was "etch-a-sketch", where the mother and the child were asked to draw a picture of a house and a tree on the etch-a-sketch. One dyad was asked to only use one knob, which controlled the horizontal movement of the line; whereas the other was asked to use the other knob, which controlled the vertical movement of the line. The last task was a "logic puzzle," where the mother and the child were asked to complete a logic puzzle together that was too difficult for the child to complete alone, thus requiring some parental assistance.

Upon completing these interaction tasks, mother and child were invited to different rooms and filled out several questionnaires individually. Parents were compensated $40 for their participation, and children were given a small token of appreciation. All study procedures were conducted in accordance with the sponsoring university's Institutional Review Board and the relevant state law.

Measures

Child Emotion Dysregulation

Child emotion dysregulation was assessed through multiple methods, including maternal report, child self-report, and behavioral observation. A latent variable, children's negative emotion dysregulation, was created by conducting a model-based cluster analysis based on the three measures of child emotion regulation.

Maternal Reported Child Emotion Dysregulation. Mothers completed the *Emotion Regulation Checklist* (*ERC*; Shields & Cicchetti, 1997). The *ERC* is comprised of 24 items that

targeted processes central to children's emotionality and regulation, and it was reflective of parents' perceptions of their child's typical experience with managing emotions. Because this study focused on children's regulation of negative emotions, the Emotion Negativity/Lability subscale, which measured dysregulated negative affect, was used (e.g., "My child is prone to angry outbursts."). Items were scored on a 1-4 point Likert scale, with responses ranging from "never" to "always". The internal consistency of the Emotion Negativity/Lability subscale for the current sample was good (α = .77).

Child Self-Reported Emotion Dysregulation. Children completed the *Children's Emotion Management Scales* (*CEMS*; Zeman, Shipman, & Penza-Clyve, 2001; Zeman, Cassano, Suveg, & Shipman, 2009). The *CEMS* is composed of 36 items that measure children's regulation of anger, sadness, and worry. For the purpose of the current study, the Dysregulated Expression subscale, which measured children's culturally inappropriate emotional expression (e.g., I do things like slamming doors when I'm mad"), was used. Items were rated on a 1-3 point Likert scale, with responses ranging from "hardly ever" to "often". The reliability for the overall scale in the current sample was good (α = .76).

Behavioral Observations. Children's dysregulated expression of negative emotions was also assessed through behavioral observation through the four interaction tasks. A group of trained researchers independently coded children's display of negative emotions during interactions, and conferenced a group score for each participant on a 1-7 point Likert scale. This coding scale was adapted from other family coding systems and developed specifically for the current study. It assessed children's expression of negative affect during low-stress mother-child interaction in the laboratory. At the higher end, a child can score a 7 if the child exhibits a pervasively negative mood or numerous extreme episodes. The child may be extremely angry,

sullen, irritable and petulant, visibly tense and frightened, or strikingly and unremittingly unhappy and pouty. In contrast, a child can score a 1 at the lower end if there were no signs of negative affectivity during the interaction. The child did not need to be expressing pleasure in the task. Simple interest and engagement will do. The inter-rater reliability of the coding scale was good as indexed by Intra-Class Correlations among coders (*ICC* = .72).

Parental Emotion Dysregulation

Parental emotion dysregulation was comprised of both parent report and behavioral observation. Parent report emotion dysregulation was measured via the *Difficulties in Emotion Regulation Scale* (*DERS*; Gratz & Roemer, 2004), which is a 36-item, self-report measure that provided a comprehensive assessment of parents' overall emotion regulation difficulties as well as six specific dimensions (e.g., difficulties controlling impulsive behaviors when experiencing negative emotions). The current study only examined parents' overall emotion regulation difficulties. Parents rated the extent to which each item (e.g., "When I am upset, it takes me a long time to feel better") applied to them using a 1-5 point Likert scale (1 = almost never, 5 = almost always). The internal consistency for the overall difficulties scale in the current study sample was good (α = .88).

The observed parental emotion regulation was coded via the interaction tasks and then transformed to parental emotion dysregulation. The positively stated scale assesses a mother's ability to control her emotions during the task and while engaging with her child. Emotion regulation was coded on a seven point likert scale (from 1 – extremely dysregulated, to 7 – extremely regulated) such that mothers scoring high on this scale demonstrate consistent and high levels of regulation and mothers scoring low on this scale demonstrate inconsistent or low levels of regulation or indicators of dysregulation. Indicators of regulation include recovering

quickly from an emotional experience, demonstrating patience toward her child. Indicators of dysregulation include becoming easily frustrated and inappropriate (in valence or intensity) emotional reactions. Reliability for this scale was .79. Because the observed and parent report emotion regulation were rated on different metrics, the *z* scores of the overall parent emotion regulation difficulties (i.e., via DERS) and the reversely coded parental emotion regulation (i.e., via observation) were combined and averaged.

Child Psychopathology

The *Child Behavior Checklist* (*CBCL*, Achenbach, 1991), were used as an index of child psychopathology. The *CBCL* is a 118-item parent-report measure of children's psychosocial functioning over the past 6 months that yields two broadband scales. The Internalizing subscale assesses children's anxious, depressed, and withdrawn behaviors as well as somatic complaints, whereas the Externalizing subscale assesses children's aggressive and delinquent behaviors. All items were rated on a 1-3 point Likert scale, with responses ranging from "Not true" to "Very true or often true". The *CBCL* has major advantages as a measure of children's mental health status because it has extensive support for its psychometric properties and its norms have been based on thousands of referred and nonreferred children (Achenbach, 1991). The internal consistencies of the present study for the Internalizing and Externalizing subscales were α = .82 and .90 respectively.

CHAPTER 3

RESULTS

Analytic Plan

First, the preliminary analyses evaluating the descriptive statistics, correlations among study variables, and possible group differences in study variables based on demographic characteristics were performed. Next, model-based cluster analysis was used to identify children's negative emotion dysregulation profiles based on multiple measures. The number and composition of clusters were determined by using Mclust program developed for *R* software (Fraley & Raftery, 2002). This analysis tests how many clusters, as well as which distribution, shape, volume, and orientation of clusters, fits the data best. Next, the resulting profiles were used in moderation analyses, to identify whether children's negative emotion dysregulation profiles moderate the relations between parental emotion dysregulation and child psychopathology. These moderation models were tested using SPSS MODPROBE macro, developed by Hayes and Matthes (2009) for estimating the single-degree-of-freedom interactions in Ordinary Least Square (OLS) and logistic regression. Finally, as post-hoc analyses, a series of independent samples *t*-tests were conducted to identify whether there were group differences in child psychopathology between children who had different negative emotion dysregulation profiles.

Preliminary Analyses

Rates of missing data ranged from 1.6% to 3.1%; the vast majority of missing data were due to participant non-response (i.e., deliberately not responding to a certain item) or missing

completely at random (i.e., one interaction video file was damaged for an unknown reason). The descriptive statistics and zero-order correlations of the study variables were presented in Table 1. Parental report of child emotion dysregulation was correlated with all study variables except for child self report of emotion dysregulation, suggesting a discrepancy between parental and child report but consistency between parental report and behavioral observation of child emotional experience. Contrary to expectations, parental emotion dysregulation was not associated with child internalizing or externalizing problems.

Child gender was not significantly associated with any study variables except for parental emotion dysregulation, with parents of boys reporting more difficulties with emotion regulation, t (58) = 2.43, $p < .05$. Family SES was also significantly associated with parental emotion dysregulation and parental report of child emotion dysregulation, with parents from a low-income background reporting greater difficulties with emotion regulation (t (58) = 3.14, $p < .05$) and more child emotion regulation problems (t (60) = 2.77, $p < .05$). Additionally, race was also significantly associated with parental emotion dysregulation and child self-report of emotion dysregulation, with the African American parents in our sample reporting more difficulties with emotion regulation (t (54) = -2.33, $p < .05$) and African American children self-reporting more dysregulated expression of negative emotions. Given these associations, child gender, SES, and race were controlled in the moderation model.

Model-Based Cluster Analysis: Cluster Results

A model-based cluster analysis was carried out on the three measures of child negative emotion dysregulation to identify patterns/profiles of children's regulatory difficulties with negative emotions. The selection of this method is primarily due to the fact that model-based cluster analysis avoids some common problems in traditional cluster analysis. Specifically, the

traditional clustering procedure may impose multi-cluster structure upon the data even if there are not actual clusters in the sample, and the cluster solution may be distorted when there are outliers in the data (Mun, Windle, & Schainker, 2008). The model-based cluster approach can reduce these biases and provide the Bayesian Information Criteria (BIC; Milligan & Cooper, 1985) as an index to assess the goodness-of-fit of classification solution. The analysis tests how many clusters as well as which cluster characteristics (i.e., distribution, shape, volume, and orientation) fit the data best (Fraley & Raftery, 2002). Higher BIC values indicate better fit of the model. When comparing models, a difference in BIC values of larger than 2 is considered positive to strong support of improvement in fit between the two models (Raftery, 1995).

In the present study, the best-fitting model (BIC value = -558.99) yielded a two-class solution with spherical clusters with equal volume and shape. The next best fitting model (BIC value = -563.63) yielded a two-class solution with diagonal clusters with varying volume, varying shape, and coordinate axes. According to the rule of thumb in interpreting the BIC value difference proposed by Raftery (1995), the best fitting model is positively supported (Δ BIC = 5.63). Thus, the two spherical clusters with equal volume and shape were chosen.

The results of two clusters were presented in Figure 1, which displays the deviation of the cluster mean from the overall sample for children's regulation profiles. The profile and grand means for maternal report, observation, and child report of children's negative emotion dysregulation were reported in Table 2. The profile of children in Cluster 1 (n = 14) was characterized by being higher than the sample mean on maternal report negativity with emotions and on observed display with negative emotions, but being lower than the sample mean on self-report of dysregulated expression of negative emotions. This profile characteristic reflected that children within Cluster 1 displayed more problems with negative emotions (i.e., more parental

report and observed problems with negative emotions) but self-reported fewer problems with emotion regulation. In contrast, the profile of children in Cluster 2 (n = 44) was characterized by being lower than the sample mean on maternal report negativity with emotions and on observed problems with negative emotions, and being higher than the sample mean on self-report of dysregulated expression of negative emotions. This profile characteristic suggested that children within Cluster 2 displayed fewer problems with negative emotions but self-reported experiencing more.

The two profiles were correlated with potential demographic covariates (i.e., child gender, race, age, and SES) to further determine whether it would be necessary to control these variables in the moderation models. The results showed that the group did not differ on child gender, c^2 (1, N = 58) = 0.19, p = .66; child race, c^2 (4, N = 58) = 4.48, p = .35; or SES t (56) = 1.31, p = .20. But older children seemed to be more likely to show less observable but more self-reported problems with negative emotions (i.e., they were more likely to be in Cluster 1). Thus, child age was controlled when testing the proposed moderation models.

Moderation Models

The moderation analyses examined whether child negative emotion dysregulation profiles moderated links between parental emotion dysregulation and child internalizing symptoms/externalizing symptoms. According to Hayes and Matthes (2009), moderation is demonstrated if the interaction term between the focal predictor (i.e., parental emotion dysregulation) and moderator variables (i.e., child negative emotion regulation profiles), as well as the coefficient of the overall model, are significant. Applying the Modprobe macros for moderation analysis (Hayes & Matthes, 2009), the conditional effect of parental emotion dysregulation was estimated at two values of the dichotomized child profiles. Demographic

variables (i.e., child gender, race, and SES) were also entered in the model as covariates as suggested by the preliminary analyses, but none of these variables were significant in the overall models.

The moderation analysis with the internalizing scale as an outcome variable showed that child negative emotion regulation profiles moderated the relations between parental emotion dysregulation and child internalizing problems (Table 2). As shown in Figure 2, the conditional effect estimates indicated that the interaction between parental emotion dysregulation and child profiles was such that parental emotion dysregulation was positively associated with child internalizing problems for children in Cluster 2 (i.e., less parental report and observed, but more self report problems with negative emotions), $b = 2.64$, $p < .01$; whereas the association between parental emotion dysregulation and child internalizing problems was negative but nonsignficant for children in Cluster 1 (i.e., more parental report and observed, but less self report problems with negative emotions), $b = -1.91$, $p = .32$. It appeared that parental emotion dysregulation was positively related to children's internalizing problems but only for children who self-reported more problems with negative emotions, though these problems were not reported or observed by parents or researchers.

The moderation analysis with the externalizing scale as an outcome variable indicated that child negative emotion dysregulation profile was not a significant moderator for parental emotion dysregulation (Table 2). As shown in Figure 3, although parental emotion dysregulation seemed to have an impact on child externalizing problems for children in Cluster 2, the conditional effect of the cluster affiliation was not significant. However, the post-hoc independent samples *t*-test demonstrated that child negative emotion regulations profiles were significantly associated with externalizing symptoms, controlling for the effect of parental

emotion dysregulation, t (55) = -2.89, $p < .01$. Thus, it appeared that children in Cluster 1 (i.e., more parental reported and observed problems with negative emotions, but less self-reported problems with negative emotions) had higher scores on parental reported externalizing problems compared to children in Cluster 2 (i.e., less parental reported and observed problems with negative emotions, but more self reported problems with negative emotions).

CHAPTER 4

DISCUSSION

The present study extends current knowledge about the role of emotion dysregulation in children's development of psychopathology by illustrating how children's maladaptive patterns of regulating negative emotions contribute to the link between parents' emotional functioning and children's development of psychopathology.

First, the study incorporated both variable- and person-centered analyses, allowing for examination of the moderating role of children's negative emotion dysregulation patterns on the relations between parental emotion dysregulation and child psychopathology. To identify children's different negative emotion regulatory patterns, data from children's self-reports, parents' reports, and behavioral observations were incorporated. These patterns not only illustrated the emotional profiles of children in different groups, but also reflected certain variations of emotion dysregulation within the same child from various perspectives, demonstrating the characteristics of the child in terms of his/her negative emotion regulatory styles.

Specifically, the two clusters that emerged distinguished the children into two groups based on three measures of emotion dysregulation. Although the trend was consistent between maternal report and behavioral observation for both groups, behavioral observation seemed to capture slightly more child problems with negative emotions than maternal report. Moreover, children in Cluster 1 demonstrated more but self-reported less dysregulated negative emotions than children in Cluster 2. This evidence suggested that children in Cluster 1 seemed to be less

aware of their difficulties with negative emotions than children in Cluster 2 as indexed by the discrepancies between children's self-reports and others' reports. In contrast, children in Cluster 2 seem to be either overly sensitive about their negative emotions or actively hid their emotional difficulties during the interactions with their mothers compared to children in Cluster 1. Taken together, children in Cluster 1 seemed to adopt more externalizing styles with the disruptive negative emotions, whereas children in Cluster 2 seemed to be more likely to internalize their difficulties with negative emotions.

Additionally, more children in our sample were categorized into Cluster 2 (i.e. they tended to display fewer problems with negative emotions but self-reported more) than into Cluster 1 (i.e., they tended to displayed more problems with negative emotions but self reported fewer). Additionally, there is the significant effect of child age on the cluster affiliation shown in our sample with older children being more likely to be categorized to Cluster 2. This trend may be accounted for by the longer history with emotion socialization and the more advanced neurobiological and social development older children have experienced compared to the younger ones. Thus, these results suggested that as children develop, they seem to be more likely and more able to mask their negative emotions, as these emotions are often considered less desirable in social settings.

Second, we hypothesized that parental emotion dysregulation would be positively related to child psychopathology. This link, although critical for understanding the development of child psychopathology from the family emotional perspective, has not been extensively tested in the literature. Restricted by the availability of reliable measures on adults' emotion regulation, some studies that aimed to explore the impact of parental emotion dysregulation just simply assumed that the depressed mothers utilized more maladaptive emotion regulation strategies

(e.g., Silk, Shaw, Skuban, Oland, & Kovacs, 2006; Garber, Braafladt, & Zeman, 1991). By compositing a comparatively new but reliable measure of adults' emotion regulation (DERS; Gratz & Roemer, 2004) and behavioral observation to assess parental emotion dysregulation, this study allowed direct exploration of the possible link.

Surprisingly, parental emotion dysregulation was not significantly correlated with child internalizing or externalizing problems as we had expected. One possible explanation was that not all children with parents who have difficulties in regulating their own emotions eventually develop psychopathology, yet children's own emotional profiles may mitigate the effect of parental emotion dysregulation. This might be especially true for older children whose emotional world seems to be more independent and private (Yap, Allen, & Sheeber, 2007); it may be that the fit between their parents and their own emotional styles might be more likely to exert influence on children's psychological well being rather than parental emotional style alone.

Moderation Models

The primary goal of this study was to examine whether the interaction between children's own and their parents' emotion dysregulation could influence children's development of internalizing and externalizing problems. Results showed that parental emotion dysregulation had a conditional effect on children's development of internalizing problems depending on children's negative emotion dysregulation patterns.

Specifically, parental emotion dysregulation was significantly and positively related to children's internalizing problems but only for children who adopted a more internalizing coping style with negative emotions (children in Cluster 2). Although not significant, parental emotion dysregulation seemed to be negatively related to children's internalizing problems for children who adopted more externalizing coping styles with negative emotions (children in Cluster 1).

These results demonstrated a significant moderating effect of children's regulatory patterns with negative emotions on the links between parental emotion regulation and child internalizing problems.

As for the significant conditional effect of parental emotion dysregulation for children in Cluster 2, it may be that for these children, who are aware of their own difficulties with emotions but do not express these difficulties in ways that are noticeable to parents or observers, there may be a particular risk to family contexts in which parents experience emotion dysregulation, as this may prevent them from being able to appropriately socialize their children's emotional experiences. Consequently, these children may begin to internalize their problems with negative emotions (e.g., rumination) as their parents are less able to detect their needs for emotional guidance. In contrast, parents who are competent with their own emotional experience may intentionally and/or unintentionally provide coping resources for their children through mechanisms such as modeling (Bridges, Denham, & Ganiban, 2004; Morris, Silk, Steinberg, Myers, & Robinson, 2007; Thompson, 1994). Such assistance may eventually benefit these children (who seem to be overly sensitive over these issues) from further internalizing their problems with negative emotions, which in turn may prevent them from developing internalizing types of psychopathology.

Moreover, although not a significant conditional effect, parental emotion dysregulation and child internalizing problems were negatively related for children who display more problems with negative emotions but are less aware of these difficulties (children in Cluster 1). One possible explanation for this trend may be that compared to parents who seem to be preoccupied by their own problem with emotions, parents who are more competent with emotions might be

more able to associate the emotional problems their children display with their internalizing symptoms during daily interaction.

Interestingly, when comparing both groups in the overall moderation model concerning the severity of internalizing symptoms, it seems that in the context of low parental emotion dysregulation, children whose problems are less observable have more internalizing symptoms than children whose problems are more noticeable. It has been suggested that emotionally competent parents are more able to provide effective emotion socialization such as modeling regulated emotional patterns and coaching children's expression of negative emotions in a supportive matter (Parke, 1994; Gottman, Katz, & Hooven, 1996). However, in the current study, such parental abilities seem to be advantageous only for children who are more aware of their own difficulties with negative emotions. It may be that children would be more likely to benefit from these parental resources (e.g., modifying their maladaptive emotion regulation strategies according to parental models; seeking parental emotional guidance when distressed) when they recognize their own lapses and difficulties with negative emotions. Otherwise, children might pay little attention to parental modeling of emotions and consider parental guidance unnecessary or even intrusive or interfering. This lack of acknowledgement of their own problems may prevent this group of children from benefiting from effective parental emotion socialization.

In contrast, in the context of high parental emotion dysregulation, children whose problems with negative emotions are less observable have more internalizing problems than children whose problems are more noticeable. It may be that children who adopt a more internalizing style with emotional disturbances are more sensitive or critical toward their difficulties with negative emotions than those who adopt a more externalizing style. However,

when parents are experiencing their own emotion regulation problems, their abilities to utilize strategies and communicate effectively with their children might be compromised (Cummings et al., 1994), which may render children who seem to be overly sensitive toward their own emotions more vulnerable to internalizing symptoms through internalization of emotional difficulties.

As for the moderation model with externalizing scale as an outcome variable, the moderation model was not significant. As expected, children who adopted a more externalizing style with emotional problems seemed to demonstrate more externalizing problems than children who adopted a more internalizing style, and this trend was consistent under the contexts of high and low parental emotional disturbances.

These differential findings concerning internalizing and externalizing problems are consistent with what has been suggested in the literature: that internalizing problems are more relevant to inexpressive or over-controlled emotional styles, whereas externalizing behavioral problems more relevant to reactive and under-controlled emotional patterns (e.g., Eisenberg, Losoya, Fabes, Guthrie, Reiser, Shepard, Poulin, & Padgett, 2001; Cole, Zahn-Waxler, Fox, Usher, & Welsh, 1996). However, as for the results with externalizing problems, it may also be that children whose emotional difficulties are more noticeable are more likely to be rated as having more externalizing problems by their parents, given the fact that our outcome variables are derived from parental report. Thus, future studies with measures on child psychopathology from a more objective perspective might help clarify this question.

Limitations and Future Directions

Although these results demonstrate the importance of examining the fit between child and parent emotion dysregulation patterns and add to our understanding of the differential role of

such fit in children's development of internalizing and externalizing symptoms, several limitations are acknowledged. First, although this study tried to incorporate multiple measures on study variables, child psychopathology was only obtained via parental report. Due to this limitation, we are unable to conclude whether our findings with the outcome variables are applied to children's actual internalizing and externalizing symptoms or their parents' perception of such symptoms. Future studies with more standardized clinical assessment or multiple informants on child psychopathology would contribute to a better understanding of this association.

Additionally, although I referred to the clusters that emerged from our sample as child negative emotion dysregulation patterns, they mainly captured one important aspect of emotion dysregulation (i.e., the dysregulation of the expressive component of emotions) according to its popular definition (e.g., Thompson, 1994; Eisenberg & Morris, 2002). Measures that are able to better incorporate other aspects (e.g., the occurrence and intensity) of emotion dysregulation are advised in future research.

Next, I didn't find a significant direct association between the composite scale of parental emotion regulation and child psychopathology as implied in other studies (e.g., Garber, Braafladt, & Zeman, 1991; Silk, Shaw, Skuban, Oland, & Kovacs, 2006). Nevertheless, it is possible that parents might be more likely to mask their problems with emotion regulation in the observed session due to the issue of social desirability, which may potentially bias the total score that I created. In fact, the self-report measure of emotion dysregulation alone is positively related with child internalizing problems. Thus, scales obtained from research with less obtrusive designs are encouraged.

Lastly, future studies with stronger statistical power should explore the impact of parental emotion regulation on child psychopathology and test the potential mediating variables (e.g., parental modeling of emotion regulation, parental coaching or discussion of child emotions).

Conclusion

With a comparatively diverse sample that incorporates almost equal numbers of African and Caucasian American families that come from various socioeconomic backgrounds, this study demonstrates that children in their middle childhood are more likely to deal with their emotional problems in a covert manner, which may render them more or less subject to internalizing problems depending on their parents' competence with their own emotions. In other words, children's sensitivity to emotional difficulties is actually a double-edged sword. It may prompt children to better access effective parental emotional assistance when such resources are available, but it may also lead children who internalize these difficulties to develop symptoms such as depression and anxiety when the badly needed effective emotion socialization is otherwise unavailable from the parents. Therefore, this study suggests the importance of the fit between parental and child emotion regulation styles when considering its impact on children's development of internalizing types of psychopathology.

Moreover, children with more overt styles expressing their difficulties with negative emotions seem to be more subject to externalizing problems such as aggression and delinquent behaviors than those who adopt more covert styles. However, this finding should be interpreted with caution, as parents might be less able to detect externalizing symptoms of children with more covert styles in expressing negative emotions.

Taken together, the findings of our study provide more evidence to support the person-centered approach to studying emotion regulation by demonstrating that this approach can be

useful in understanding the patterns or discrepancies among different measures of child emotion dysregulation (Hill, Degnan, Calkins, & Keane, 2006; Maughan, Cicchetti, Toth, & Rogosch, 2007; Zalewski, Wilson, Trancik, & Bazinet, 2011). The other major implication is that future research should examine how the fit between certain parental and child factors influences children's psychological and emotional well-being rather than a single parental or child factor alone. Lastly, this study provides support for the advocation that psychological programs targeting parents' emotion socialization skills should also take each individual child's characteristics and established styles of coping with emotional distress into consideration.

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Table 1

Means, standard deviations, and bivariate correlations of study variables

			Correlation						
Variable	M	SD	1	2	3	4	5	6	7
1. Child CEDR	1.81	.28							
2. Parent CEDR	28.08	5.71	.00						
3. Observed CEDR	2.18	.90	- .18	.36**					
4. Composite PEDR	0.00	.81	.20	.29*	.23				
5. Parent PEDR	69.52	23.00	.07	.31*	.13	.80**			
6. Observed PEDR	2.66	1.12	.22	.17	.24	.80**	.27*		
7. Internalizing	51.56	10.56	.03	.35**	.05	.24	.26*	.13	
8. Externalizing	50.57	10.76	- .02	.65**	.26*	.23	.21	.17	.55*

Note. CEDR = Child Emotion Dysregulation, PEDR = Parental Emotion Dysregulation, Internalizing = Child Behavior Checklist-Internalizing Subscale, Externalizing = Child Behavioral Checklist-Externalizing Subscale.

* $p < .05$, ** $p < .01$

Table 2

Results of ordinary least square regression analyses on child psychopathology

Outcome Variable	b (SE)	t	R^2	F
Internalizing Symptoms			.17	3.55 *
Parental EDR	5.27 (1.88)	2.81**		
Child Profiles	4.20 (3.25)	1.29		
Parental EDR * Child Profiles	-9.09 (4.23)	-2.15*		
Externalizing Symptoms			.22	4.69**
Parental EDR	4.07 (1.91)	2.13*		
Child Profiles	9.76 (3.30)	2.95**		
Parental EDR * Child Profiles	-1.72 (4.31)	-0.80		

Note: Parent EDR = Parental Emotion Dysregulation; Child Profiles = Child Negative Emotion Regulation Profiles.

* $p < .05$, ** $p < .01$

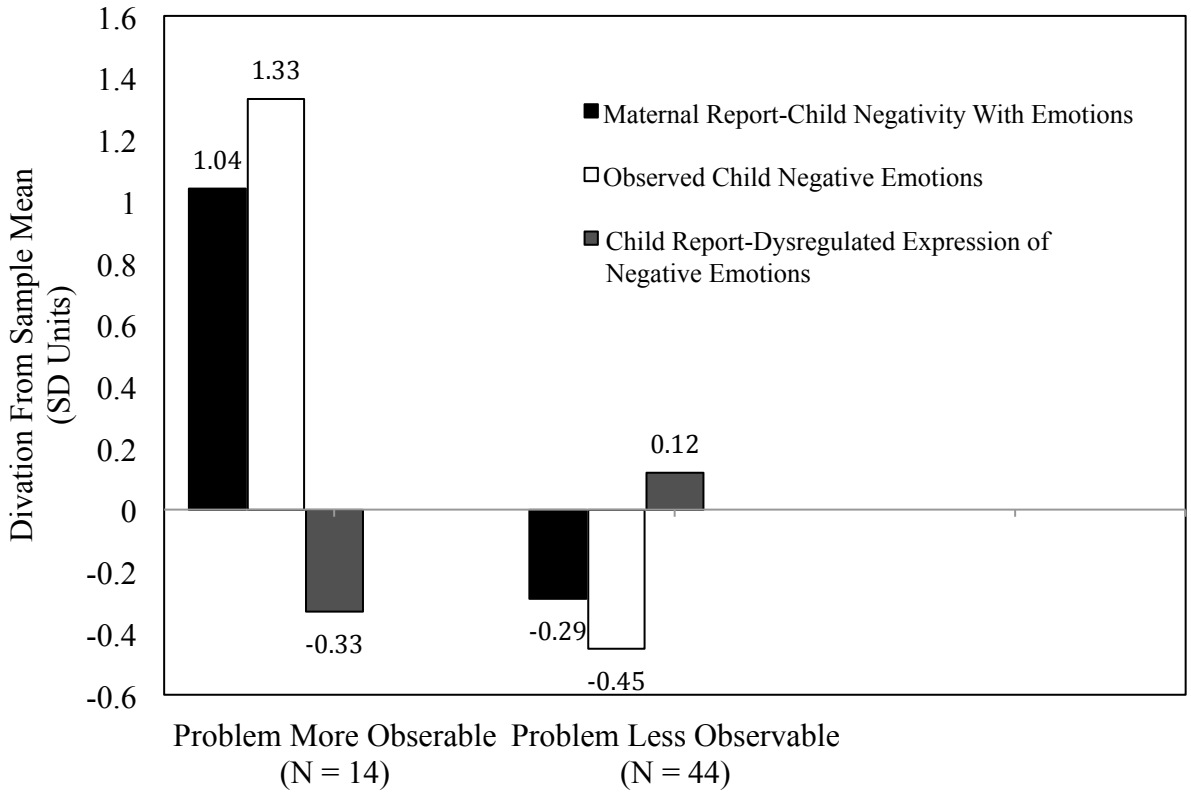

Figure 1. Standard deviations from the overall sample mean of each cluster for all measures on child emotion dysregulation from the best fitting model with two-cluster solution

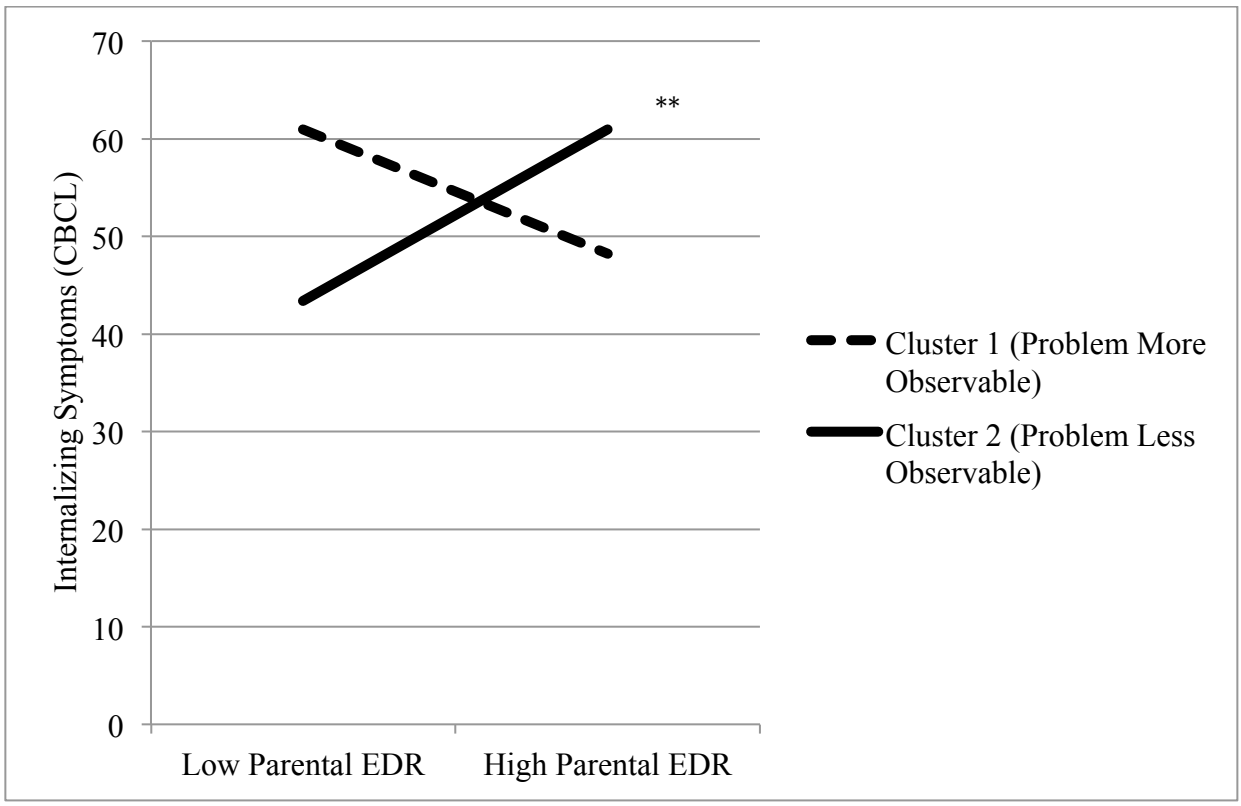

Figure 2. Interaction between child negative emotion regulation profiles and parental emotion dysregulation on child internalizing problems

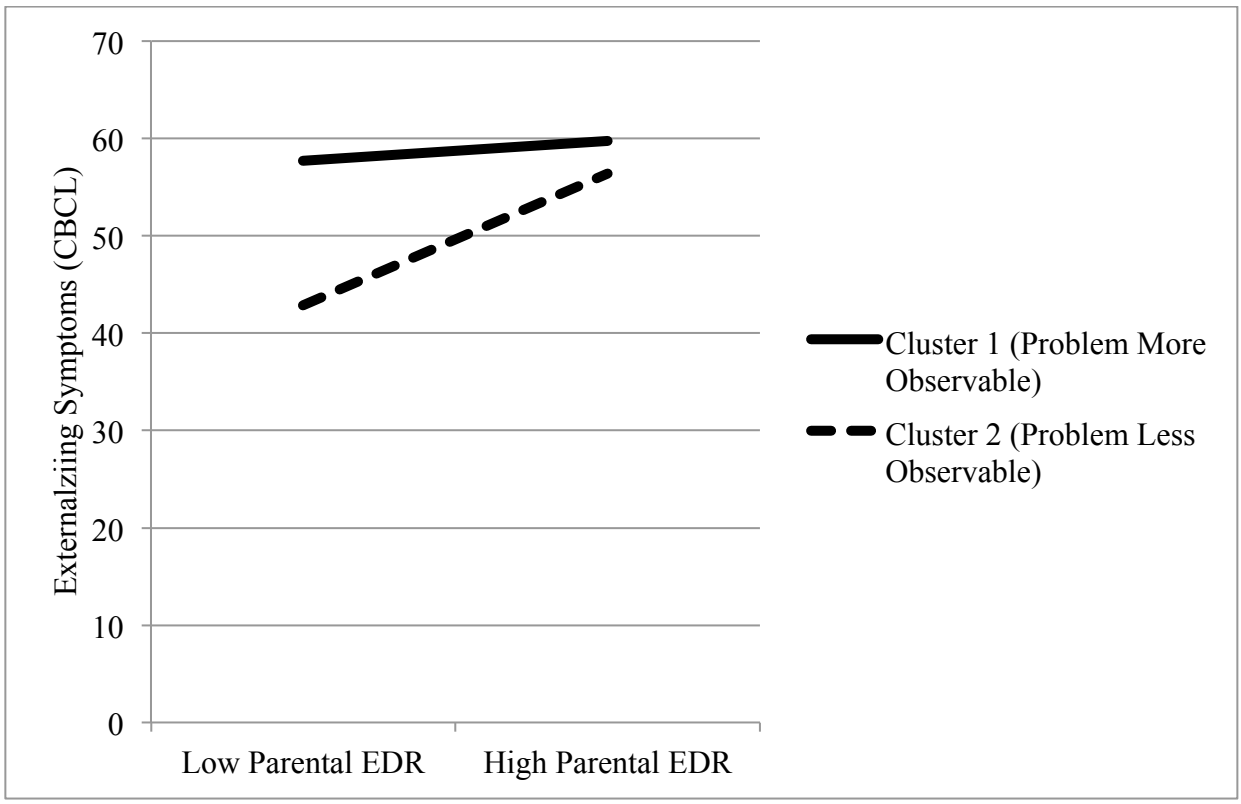

Figure 3. Interaction between child negative emotion regulation profiles and parental emotion dysregulation on child externalizing problems

APPENDIX A

CODING SCALE OF OBSEVED PARENT EMOTION REGULATION

1. **Extremely dysregulated.** Parent's emotions are predominantly dysregulated. There are almost no (or not any) instances of regulated emotion
2. **Highly dysregulated**
3. **Somewhat dysregulated:** Parent shows more dysregulated emotion than regulated but there is at least one indication that parent has some control over her emotions.
4. **Mixed dysregulation/regulation:** Parent shows a few instances of dysregulated emotion but also shows a few instances of regulated emotion. (Mix should be about 50/50)
5. **Somewhat well-regulated:** Parent shows one or two instances of dysregulated emotion but predominately remains in control of her emotions Parent's behavior indicates that she is able to regulate her emotions most of the time.
6. **Very well-regulated**
7. **Extremely regulated:** Parent's emotions and reactions appear to be well regulated under her control. There are almost no (or not any) instances of dysregulated emotion.

Dysregulation

- Mom's exhibits wide mood swings (for example, the mother's emotional state is difficult to anticipate because she moves quickly from a very positive or neutral to very negative emotional states).
- Becomes frustrated easily
- Has angry outbursts (e.g. yells at child)
- Has difficulty managing emotional intensity (e.g. gets angry easily and takes a while to return to baseline)
- Mom's emotions interfere with her ability to help her child with the specified task
- Has an emotional reaction inappropriate (in valence or intensity) given the situation

Regulation

- Is able to recover quickly from becoming upset (e.g., does not pout or remain angry after an emotionally-laden event)
- Is able to be patient towards her child
- Displays appropriate negative emotion (for example, anger, frustration, distress) in response to hostile, aggressive, or intrusive acts by the child
- Flexibly and appropriately matches her child's emotion and/or behavior (e.g. acts cheerfully towards her child when the child's behavior is positive).
- Shows understanding of her own emotions (e.g. telling her child how she feels)

APPENDIX B

CODING SCALE OF OBSERVED CHILD NEGATIVE AFFECT

Negative affect includes both expressions of anger, hostility, or irritability, but also sadness, anxiety, and distress. **It is not simply absence of positive affect** because a child may simply be hardworking and business-like. While such a child may receive a 1 on positive affect, the negative affect score requires visible signs of negative affectivity. Thus, we would not infer negative affectivity (e.g. anxiety, depression) from a child's hyperactivity or from lack of engagement. We look for signs of worry, sadness, belligerence, fear, or anger.

7. Very high negative affect.
This child exhibits a pervasively negative mood or numerous extreme episodes. Affect is not simply flat. The child may be extremely angry, sullen, irritable and petulant, visibly tense and frightened, or strikingly and unremittingly unhappy and pouty.

6. High negative affect. Marked signs of negative affectivity or tension are frequent, or there are several striking instances of negative affectivity against a backdrop of an angry, petulant, or sullen mood.

5. Moderately high negative affect. For a score this high, there must be either several marked episodes of negative affectivity, two striking episodes accompanied by other minor examples, or a pervasive undercurrent of negative affectivity or tension.

4. Moderate negative affect. There are clear signs of negative affectivity. Either there is one striking example (e.g. a brief angry outburst) or it is accompanied by a few minor examples, or there are minor examples intermittently across the session. Some of these, though minor, are not ambiguous.

3. Moderately low negative affect. The child may show one striking example of negative affectivity, without other signs, or there are several lesser signs of negative affectivity (e.g. the child may get mildly irritated with the parent on a few occasions, or the child is at one point clearly sad for a brief moment and later shows irritability once or twice).

2. Low negative affect. The child shows an occasional sign of negative affectivity that is not extreme (e.g. a slightly irritable reaction to something the parent says). This also is the score someone gets when they occasionally appear bored. If there are several signs, they are all subtle.

1. Very low (or no) negative affect. There are no signs of negative affectivity. Notice that the child does not need to be expressing pleasure in the task. Simple interest and engagement will do. She or he may be hardworking and simply oriented toward doing a good job.