

**The Effects of Dispositional Anger, Effortful Control and Maternal Responsiveness
on Turkish Preschoolers' Emotion Regulation**

by

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STATEMENT OF AUTHORSHIP

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ABSTRACT

The aim of this study was to investigate the effects of child temperamental characteristics and parenting on Turkish preschoolers' emotion regulation functioning. Specifically, the joint and multiplicative effects of dispositional anger, effortful control and maternal responsiveness were examined in relation to children's emotion regulation outcomes. The sample consisted of 118 children between the ages of three to six, their mothers and preschool teachers. Children's dispositional characteristics and maternal responsiveness were assessed in a laboratory session. Dispositional anger and effortful control were measured through behavioral batteries and maternal responsiveness was observed through mother-child interactions. Children's emotion regulation functioning was measured through teacher-rated Emotion Regulation Checklist. The hierarchical regression analyses revealed that among three predictors, only maternal responsiveness contributed to the prediction of emotion lability, the scale of the ERC that taps emotion dysregulation. Contrary to expectations, none of the two-way interactions between dispositional anger, effortful control and maternal responsiveness significantly predicted the outcomes. Different from US findings, emotion regulatory effect of effortful control for dispositional anger was not supported. The results of mediational analyses did not reveal a mediating role for effortful control but rather a common-cause model where maternal responsiveness promoted effortful control and buffered against emotion dysregulation. Overall, the present study sheds light on the importance of not only promoting supportive parenting practices such as sensitivity, acceptance and cooperation but also designing interventions that teach parents strategies to reduce or

prevent emotion regulatory problems and promote children's attentional and behavioral control.

Keywords: Emotion regulation, emotion dysregulation, dispositional anger, effortful control, maternal responsiveness

ÖZET

Bu çalışmanın amacı, okul öncesi dönemde mizaç özelliklerinin ve ebeveyn davranışlarının, Türk çocuklarının duygu düzenleme becerilerine etkisini incelemektir. Bu çalışmada özellikle hedeflenen, çocukların öfke/kızgınlık eğilimlerinin, kendini denetleme becerilerinin, anne duyarlılığının ve bu değişkenlerin birbirleriyle etkileşimlerinin, çocukların duygu düzenleme becerileri ve duygu düzenleme güçlüklerine etkisini araştırmaktır. Araştırmaya 3-6 yaşlarında 118 çocuk ile anneleri ve anaokulu öğretmenleri katılmıştır. Çocukların öfke/kızgınlık eğilimleri ve kendini denetleme becerileri davranış bataryalarıyla ölçülmüş, anne duyarlılığı ise anne-çocuk etkileşimleriyle laboratuvar ortamında gözlenmiştir. Çocukların duygu düzenleme becerileri ve duygu düzenleme güçlükleri ise anaokulu öğretmenleri tarafından Duygu Düzenleme Ölçeği ile değerlendirilmiştir. Hiyerarşik regresyon bulguları, bağımsız değişkenler arasından sadece anne duyarlılığının, çocuğun duygu düzenleme güçlüğünü yordadığını ortaya koymuştur. Beklenenin aksine, bağımsız değişkenler arası ikili etkileşimler, duygu düzenleme becerisi ve duygu düzenleme güçlüğünü yordamamıştır. Batı'daki bulgulardan farklı olarak, kendini denetleme becerisinin öfke/kızgınlık duygusunu düzenlemedeki olumlu etkisi ortaya konulamamıştır. Bunun yanısıra bulgular, kendini denetleme becerisinin anne duyarlılığı ile duygu düzenleme becerisi arasındaki ilişkide aracı rolünü desteklememiş, anne duyarlılığının kendini denetleme becerisi ve duygu düzenleme güçlüğünü yordadığı ortak-etken modelini desteklemiştir. Çalışmanın literature en önemli katkılarından biri, duyarlılık, kabullenme ve işbirliği gibi olumlu ebeveyn davranışlarının önemine dikkat çekmesidir. Ayrıca bu çalışma, ebeveynlere yönelik müdahale programları hazırlanırken, çocukların duygu düzenleme güçlüklerini

önlemede ya da azaltmada yardımcı olacak ve kendini denetleme becerilerini geliştirecek stratejilere önem verilmesi gerektiğine işaret etmektedir.

Anahtar Sözcükler: Duygu düzenleme becerisi, duygu düzenleme güçlüğü, öfke/kızgınlık eğilimi, kendini denetleme becerisi, anne duyarlılığı

DEDICATION

“To my dear family”

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CHAPTER 1

MOTIVATION FOR THE STUDY

Emotion regulation refers to “the intrinsic and extrinsic processes involved in initiating, maintaining or modulating emotions in relation to personal goals” (Thompson, 1994, pp. 27-28). In the last few decades, children’s abilities to regulate their emotions have been the focus of researchers. Studies provide clear evidence for the associations between children’s emotion regulation abilities and a range of important developmental outcomes. Indeed, it has been shown that difficulty in regulating emotions is associated with children’s behavioral problems and social incompetence (Belsky, Friedman, & Hsieh, 2001; Eisenberg et al., 2001; Eisenberg, et al., 2007; Eisenberg, Liew, & Pidada, 2004; Eisenberg, Spinrad, et al, 2004; Liew, Eisenberg, & Reiser, 2004; Rydell, Berlin, & Bohlin, 2003; Zhou, Eisenberg, Wang, & Reiser, 2004). These negative consequences of emotion dysregulation have fueled research into factors and mechanisms that influence children’s abilities to regulate emotions. The emerging consensus from that literature is that reactivity in negative emotionality and effortful control appear to be important internal factors while parenting appears to be an important external factor.

1.1 The Scope and Purpose of the Study

Reactivity in negative emotionality refers to “the tendency to experience negative emotions such as anger, fear and sadness” (Yap, Allen, & Sheeber, 2007, p. 185) and effortful control is defined as “the ability to inhibit dominant response to activate a subdominant response” (Rothbart, Ellis, Rueda, & Posner, 2003, p. 1114). Previous studies suggest that negative emotionality (Calkins, Smith, Gill, & Johnson, 1998) and effortful control (Carlson, & Wang, 2007; Liew, Eisenberg & Reiser, 2004) are primary precursors of individual differences in children’s emotion

regulation functioning. In addition, the role of parent-child interaction in particular parenting behavior style, which is defined as “parental attitudes and behaviors that create emotional relationship between parent and child” (Darling & Steinberg, 1993, p. 488) affects children’s emotion regulation functioning (Morris, Silk, Steinberg, Myers, & Robinson, 2007). Most importantly, the interplay between these two temperamental characteristics and parenting behavioral style affects regulation of emotions.

The major purpose of this study is to examine individual differences in emotion regulation in relation to temperamental characteristics of negative emotionality, effortful control and parenting in an effort to specify the origins of emotion dysregulation. A better understanding of the factors and mechanisms that influence emotion regulation will help elucidate emotion regulation’s broader relations with children’s well-being, adjustment, and social competence.

In this thesis, the first chapter gives a general introduction about the motivation and the purpose of this study. The second chapter provides relevant literature on emotion regulation with respect to its conceptualization, developmental changes, social, cultural and gender differences. This chapter also focuses on internal and external factors, specifically two temperamental characteristics and parenting, and reviews research on their associations with children’s emotion regulation. Furthermore, the aims and hypotheses of the current study are presented. The third chapter gives detailed information about participants, procedure and measures of the study. Chapter 4 reports the results and final chapter discusses the findings with respect to the original hypotheses and the extant literature in the context of limitations and directions for future research.

CHAPTER 2

LITERATURE REVIEW

2.1 Emotion Regulation

In the last few decades, researchers have shown great interest in the field of emotion regulation. Their studies on emotion regulation have contributed to our understanding of children's social and behavioral development. Indeed, deficiency in regulation of emotions has been found to predict children's maladjustment such as externalizing and internalizing symptoms (Eisenberg et al., 2001; Eisenberg et al., 2007; Eisenberg, Spinrad, et al., 2004; Rydell et al., 2003) and social incompetence such as problems in empathy-related responding (Eisenberg, Liew, et al., 2004) and fewer prosocial behaviors (Rydell et al., 2003). In the next part, how emotion regulation is conceptualized by various researchers and the reasons for the diversity in emotion regulation definition are presented.

2.1.1 Definition of Emotion Regulation

It has been difficult for researchers to achieve a consensus on a single definition of emotion regulation. This stems from several reasons. First of all, researchers couldn't differentiate the construct of emotion from the construct of emotion regulation. Emotions are "biologically-based enduring capabilities that allow quick appraisals and action tendencies to deal with unfavorable conditions" (Cole, Martin, & Dennis, 2004, p. 319). However, emotion regulation is very much related with modulation of emotions, specifically, modulation of emotional tone which is composed of emotional experiences (anger, joy) and emotional dynamics (intensity, duration, lability) (Thompson, 1994). According to Cicchetti, Ganiban and Barnett (1991, p. 15) emotion regulation (ER) refers to "intra and extraorganismic

factors involved in modulating emotional arousal to function adaptively in emotionally arousing situations”.

Much of the diversity in the ER definitions stems from the ambiguity of whether emotion regulation refers to the management of overt behaviors or regulation of internal feeling states and processes. Indeed, the two processes are indivisible since modulation of overt manifestations of emotions such as facial and gestural reactions also involve internal psychological or physiological states (Spinrad, Eisenberg, & Gaertner, 2007). Therefore, Eisenberg and Spinrad (2004, p. 338) give a comprehensive description to emotion related self regulation as “modulation of internal feeling states, attentional and physiological processes, motivational states and behavioral concomitant of emotion”, indicating that regulation of internal processes and overt behaviors need not to be distinguished. This view has also been adopted in the present study.

One approach to the study of emotion regulation has been to examine emotion regulation strategies in order to understand which strategies are effective in better regulating emotions within particular contexts. This approach may also be used in predicting long-term emotional and behavioral outcomes from specific regulatory strategies (Bridges, Denham, & Ganiban, 2004). According to Gross and Thompson (2006), there are five families of emotion regulation strategies, four of which are antecedent-focused ER that occur before emotional responses and the last one is response-focused ER that occurs after emotional responses.

Antecedent-focused ER strategies are situation selection, situation modification, attentional deployment and cognitive change (Gross & Thompson, 2006). Situation selection requires predicting situations which are likely to create

desirable emotional responses. Situation modification consists of direct efforts to change the situation, which in turn alters possible emotional responses. Attentional deployment is related with internal processes, different than previous strategies that shape environment. It involves moving attention away from the situation (distraction) and focusing attention on emotional aspects of the situation (concentration). Finally cognitive change requires changing appraisals of the situation or of one's capacity to manage it. On the other hand, response-focused ER strategies involve primarily strategies that alter how a felt emotional state is displayed. These strategies diminish the intensity of physiological, experiential or behavioral responses (Gross & Thompson, 2006).

Second, it has been difficult for researchers to specify whether emotion regulation refers to regulation of emotions or regulation by emotions (Cole et al., 2004). Emotions are regulatory since appraisals and action tendencies alter one's own behaviors as well as others' behaviors (Campos et al., 1994; Izard & Ackerman, 2000 as cited in Cole et al., 2004). For instance, when an infant experiences fear, it changes facial and bodily expressions, prepares body for flight and alters caregiver's response toward infant (Cole et al., 2004). Thus, changes due to activated emotions indicate the regulatory role of emotions.

However, emotions not only have the capacity to regulate but are also being regulated. According to Eisenberg and Spinrad (2004), considering emotions as regulators makes it difficult to disengage emotion regulation from social interactions, since emotions alter one's own and others' behaviors. Therefore, some researchers emphasize emotions as regulated rather than regulating in their definitions of emotion regulation (Cole et al., 2004; Eisenberg, & Spinrad, 2004; Thompson,

1994). For instance, Cole et al. (2004, p. 320) define emotion regulation as “changes in the activated emotions”. Similarly, in this study, ER involves regulated emotions.

Third, the question of whether emotion regulation involves only inhibition of emotional reaction or maintenance and enhancement of it, has contributed to the diversity in emotion regulation definition. In his definition, Thompson emphasizes all processes as emotion regulation, which is “inhibiting, maintaining and enhancing the occurrence, intensity and expression of emotions” (1994, p. 28). It indicates that depending on the goal and the situation, for instance, a child may intensify his anger against a perpetrator rather than inhibiting it (Thompson, 1994). Therefore, in this study ER does not only involve the process of inhibition but also maintenance and enhancement of emotional reactions.

Fourth, disagreement between researchers on the valence of emotions that are regulated, whether only negative emotions are regulated or both negative and positive emotions are regulated, has contributed to lack of a clear definition of the construct. According to Saarni (1984), children display conventionally expected emotion-related expressions rather than their genuine feelings. For instance, they show positive feelings in situations that create negative feelings. Therefore, smiling after having received an undesirable gift provides evidence for inhibition of negative emotions (Saarni, 1984). Yet, emotion regulation has also been achieved through modulation of positive emotions. For instance, a child may inhibit displaying positive emotions in another’s misfortune (Cole, Michel, & Teti, 1994). Therefore, most theories of emotion regulation emphasize modulation (minimize, maximize, mask) of both negative and positive emotions for accomplishing specific goals that are required for particular situations (Bridges et al., 2004; Yap et al., 2007). The present

study also adopts the view that not only negative emotions but also positive emotions are altered.

In summary, there has been an ongoing debate among researchers about what is meant by emotion regulation. Lack of conceptual clarity leads to variation in measurement of emotion regulation and limits our ability to generalize from set of studies to another. In the next section, studies will be examined in terms of various measurement approaches to emotion regulation.

2.1.2 Different Approaches to Measure Emotion Regulation

The conceptual difficulty in separating emotion from its regulation has led researchers to find appropriate measures that disengage the two constructs. As previously explained, one of the ways to assess emotion regulation is ER strategies. For regulation to be inferred, there must be a decrease in emotional expression following a strategy (Cole et al., 2004). However, the hypothesized regulatory strategies do not necessarily decrease emotional reactivity. For instance, when withdrawal from fear eliciting stimuli is examined as a strategy, findings have shown that it is associated with an increase in fear intensity, suggesting that it is either an ineffective strategy or an aspect of fear expression (Buss & Goldsmith, 1998). Similarly, visual distraction has been studied as a strategy but only to discover that while distress decreases during the presence of distractor, distress reemerges when the distractor is removed (Harman, Rothbart & Posner, 1997). In contrast, in Buss and Goldsmith's study (1998), some strategies have been found to regulate anger but not fear. This variability in the effectiveness of either endogenous or exogenously generated strategies suggest that consistently effective or ineffective emotion regulation strategies may be difficult to find and that a strategy may be more or less

adaptive in regulating emotions at particular contexts (Gross & Thompson, 2006). This variability in ER strategies may be an ineffective measurement framework to assess emotion regulation functioning.

Another approach for measuring emotion regulation is through manifestations of well-regulated and poorly-regulated emotions. In the present study, emotion regulation and its dysregulation was assessed through the Emotion Regulation Checklist (Shields & Cicchetti, 1997). The questionnaire based index of emotion regulation has two subscales which are emotion regulation and emotion lability. The emotion regulation subscale assesses adaptive regulation with items that describe how well-regulated emotions for a given context may manifest and hence, overlaps with the conceptualization of emotion regulation as modulation of emotional arousal appropriate for the situation (Cicchetti et al, 1991; Thompson, 1994). The emotion lability subscale assesses lack of flexibility, mood swings, emotional intensity and dysregulated negative affect with items that describe how poorly regulated emotions may manifest such as activation of contextually inappropriate emotion expressions or inappropriately intense emotional displays. Such item content overlaps with the conceptualization of emotion dysregulation as “the impairment of appropriate functioning by a pattern of emotional regulation” (Cole, Michel, et al., 1994, p. 84). Therefore the ERC measure used in this study adequately measures the constructs of emotion regulation and emotion dysregulation through their manifestations.

2.1.3 Developmental Changes in Emotion Regulation

The developmental literature shows that emotion regulation is present even during the first few months of life through reflexive behavioral patterns such as head turning and sucking (Kopp, 1989). These behaviors can be considered as early

endogenous strategies to manage distress (Gilliom, Shaw, Beck, Schonberg, & Lukon, 2002). Given the limitations of those strategies, parents' active role in managing infant distress is quite dominant in particular during the first year (Kopp, 1989). During toddler years, dependence on parents for managing with distress lessens due to dramatic growth in cognitive, sociocognitive, motor and language capacities necessary for regulation (Kopp, 1989). For instance, self-distraction, redirection of attention, averting of gaze to alternative stimuli, and focusing attention on source of frustration are among mostly adopted strategies in toddlerhood (Gilliom et al., 2002). Cognitive development also triggers more planful ER mechanisms that require representation of causes of distress and organization of actions to modify distress (Kopp, 1989).

In school age years, managing emotions consistent with prevailing display rules begins to emerge and becomes an important component of children's emotion regulation functioning (Saarni, 1984). For instance, in classical disappointment paradigm (Saarni, 1984) where an undesirable gift was given (an infant toy), children between the ages of 6 to 11 showed marked differences in their expressions. Younger children didn't hide their genuine feelings and showed negative emotions. However, older children showed negative expressions less overtly with some transitional behaviors such as lip biting and smiling instead of expressing their genuine feelings of disappointment. In addition, peer context influences and challenges children's emotion regulation more than parents, since peer context necessitates socially appropriate emotion regulation strategies (Kopp, 1989).

2.1.4 Gender Differences in Emotion Regulation

Children's emotion regulation abilities also show variability across gender. Studies mostly support the view that girls are better at regulating emotions (Cole, Zahn-Waxler, & Smith, 1994; Saarni, 1984). For example, when modulation of expression of negative emotions were examined among 4 and 5 year-old children, girls showed three times more positive emotions than negative emotions after having received an undesirable gift (Cole, Zahn-Waxler, et al, 1994). This finding supports the view that boys have difficulty in inhibiting negative emotions, which may foster disruptive behaviors. In addition, greater suppression of negative emotions among girls may indicate differential socialization of emotions between genders. Gender-role socialization practices which encourage agentic qualities like self-expression among boys and communal qualities like concern for others among girls may be responsible for differences in emotion regulation functioning across gender (Cole, Zahn-Waxler, et al., 1994; Dion & Yee, 1986; Saarni, 1984).

2.1.5 Social and Cultural Differences in Emotion Regulation

Differences in emotion regulation functioning have also been examined in relation to socioeconomic backgrounds and culture. Raver (2004) has claimed that poverty related environmental and biological risk factors may have negative effects on children's emotion regulatory skills. However, parental practices may also buffer against the adverse impact of such risk factors. For instance, Garner and Spears (2000) found that despite being reared in a low income minority context, children showed constructive emotion regulation if their parents' skill in appropriate emotional expressions were high.

There is also cultural variability in children's emotion regulation functioning, which may reflect differential values and norms for appropriate social behaviors among self-ingroups and out-groups in collectivistic and individualistic societies (Matsumoto, Hee Yoo & Chung, 2007). In collectivistic cultures, children are expected to control expression of negative emotions toward in-group members to promote harmony and avoid interpersonal conflict. In contrast, in individualistic cultures, open expressions of negative emotions are valued and may even indicate intimacy (Matsumoto et al., 2007). Thus, children of individualistic culture adopt emotion regulation strategies that contribute to their well-being and personal goals in favor of strategies that promote harmony. Further in individualistic cultures expression of anger is tolerated to the extent that it contributes to self-assertion (Cole, Bruschi & Tamang, 2002).

In a study, Zahn-Waxler, Friedman, Cole, Mizute and Hiruma (1996) revealed that American preschool children showed more anger and less regulation than their Japanese counterparts to hypothetical conflict and distress situations. In addition, Cole and Tamang (1998) revealed that in Nepal, where ingroup values are emphasized, the first graders inhibited negative emotions. In a cross-cultural study, expression of negative emotions, specifically anger and disgust, was considered less appropriate among Japanese sample than U.S. and Canadian samples (Safdar et al., 2009). These studies indicate that societal values and norms are influential in expressing and regulating emotions.

2.2 Temperament and Emotion Regulation

For many years, psychologists have shown great interest in temperament and defined the construct in different ways (Goldsmith et al., 1987). The most typical

definition of the construct has been proposed by Thomas and Chess as constitutionally based individual differences in behavioral style and they identified nine categories and three temperamental clusters. Buss and Plomin define temperament as inherited personality traits and view emotionality (intensity of emotion), activity (level of motor activity), and sociability (tendency to approach) as temperamental dimensions that appear early in life. Goldsmith describe temperament in terms of experiencing and expressing emotions and arousal (Goldsmith et al., 1987).

Finally, Rothbart and her colleagues define temperament as “constitutional differences in reactivity and self-regulation” (Rothbart & Derryberry, 1981, p. 37). Reactivity refers to “individual’s reaction to changes in the environment, as reflected in behavioral and physiological systems” while regulation refers to “modulation of reactivity” (Rothbart & Derryberry, 1981, p. 37). In parallel with this definition, three broad factors of temperament, which are surgency (positive emotionality and approach), negative emotionality (anger/frustration, fear and sadness) and effortful control (inhibitory control, attentional focusing, perceptual sensitivity and low intensity pleasure) are proposed (Ahadi, Rothbart & Ye, 1993). The present study adopts Rothbart’s conceptualization of temperament and examines negative emotionality and effortful control as temperamental dimensions in relation to children’s emotion regulation functioning.

2.2.1 Negative Emotionality

Reactivity in negative emotionality is defined as “susceptibility to negative emotions such as anger, sadness and fear” (Yap et al., 2007, p. 185). This temperamental characteristic is present early in life and remains relatively stable in

time and across different contexts (Cole et al., 2004). Regulation of negative emotionality is of a crucial aspect of emotional, social and behavioral functioning. For instance dysregulation of sadness and fear is most likely to result in internalizing problems like anxiety and depression whereas dysregulation of anger is most likely to result in externalizing problems like aggression (Eisenberg et al., 2001). In addition to behavioral problems, negative emotionality is associated with low levels of prosocial behavior (Rydell et al., 2003), less sympathy (Eisenberg et al., 1996), poor social skills and peer problems (Eisenberg et al., 1993). These adverse outcomes are believed to reflect disruptive effects of negative emotionality on emotion regulation processes.

2.2.2 Negative Emotionality and Emotion Regulation

It has been claimed that emotionality and emotion regulation are two related constructs which should be treated separately at empirical level (Rydell et al., 2003) as low levels of negative emotionality do not always reflect better regulation of negative emotions. For example, toddlers who actively used distraction strategies may show less negative emotions only because they are less distressed (Cole et al., 2004). This confounding of low levels of negative emotionality of well-regulated negative emotionality may reflect the bidirectional relation between negative emotionality and its regulation (Izard, Stark, Trentacosta, & Schultz, 2008). That is, we would expect effective emotion regulation to inhibit display and experience of negative emotions but we would also expect high levels of negative emotionality to make regulation of such emotions difficult (Izard et al., 2008). Indeed, intense emotionality can disrupt internal processes and lead to difficulties in emotion

regulation (Fox & Calkins, 1993 cited in Calkins, 1994; Yap et al., 2007) as well as poorer social and behavioral adjustment (Thompson, 1994).

It has been well documented that negative emotionality predisposes children to difficulties in regulating emotions (Braungart-Rieker & Stifter, 1996; Calkins et al., 1998; Rydell et al., 2003). For instance, in one study, infants' greater levels of reactivity, specifically negative vocalizations and cry in a frustrating situation at 5 months, predicted less regulation at 10 months (Braungart-Rieker & Stifter, 1996). In addition, 5 and 6.5 years old children with high negative emotionality (anger, fear) showed less regulation of anger and fear (Rydell et al., 2003). In related studies, negative emotionality was linked to the use of maladaptive ER strategies (Calkins et al., 1998; Calkins & Johnson, 1998; Calkins, Dedmon, Gill, Lomax, & Johnson, 2002). For example, negative emotionality was positively associated with aggression/venting and negatively associated with distraction. Similarly, preschoolers with high negative emotionality (fear, sadness and autonomic reactivity) adopted less positive modes of regulation such as cognitive restructuring, but more negative modes of regulation such as physical and verbal aggression (Eisenberg et al., 1993).

2.2.3 Effortful Control

Effortful control is defined as “the ability to inhibit a dominant response to activate a subdominant response” and constitutes a broad temperamental dimension which includes attentional focusing, inhibitory control, perceptual sensitivity and low intensity pleasure (Rothbart et al., 2003, p. 1114). This ability emerges at the end of the first year of life with the development of anterior attention system, shows marked

improvement in preschool years and continues to develop throughout childhood (Eisenberg, Smith, Sadovsky, & Spinrad, 2004; Rothbart et al., 2003).

The nature of the broad effortful control temperamental factor is complex and involves several components such as voluntarily focusing and shifting attention, inhibiting and activating behavior (Eisenberg, Smith, et al., 2004). For example, attention focusing is “the ability to maintain attentional focus on task” and attention shifting is “the ability to shift attention between tasks” (Eisenberg, Sadovsky, et al., 2005, pp. 194-195). Inhibitory control is “the ability to inhibit or suppress salient thought processes or actions that are not related with the task” (Carlson & Wang, 2007, p. 490). Yet, it is important to note that this ability does not only involve the suppression of a dominant response but also the activation of a subdominant response (Carlson & Wang, 2007). Therefore, it refers not only to inhibition but also initiating and sustaining less dominant behaviors (Kochanska, Murray & Harran, 2000).

Effortful control has been shown to predict a variety of socioemotional outcomes such as empathy related responding (Eisenberg et al., 1996), committed compliance (Kochanska, Tjebkes, & Forman, 1998), conscience development (Kochanska & Knaack, 2003), and low levels of behavioral problems (Eisenberg et al., 2001; Eisenberg et al., 2007; Eisenberg, Spinrad, et al., 2004). Those findings support the view that effortful control is a regulation promoting component of temperament.

2.2.4 Effortful Control and Emotion Regulation

Effortful control is also believed to play a major role in emotion regulation, especially in modulation of anger and approach systems (Deryberry & Rothbart,

1997). The argument in support of this view is relatively straightforward in that voluntarily focusing and shifting attention, inhibiting or activating behaviors in situationally appropriate ways should also assist in modulating emotional experiences and responses (Valiente et al., 2006). For instance, when people experience negative emotions, they may use attentional strategies such as distraction to reduce negative affect. Indeed, effortful control allows individuals to voluntarily decrease attention to threatening cues and increase attention to positive cues, thus decreasing emotional reactivity (Deryberry & Rothbart, 1997). In addition, masking or inhibition of negative affective displays should be aided by greater levels of inhibitory control (Eisenberg, Smith et al., 2004) and hence the latter should promote emotion regulation.

Others have proposed that attention may be a common mechanism that underlies early emerging emotional system and later emerging effortful control (Kochanska & Knaack, 2003). Biological evidence supports such propositions. Anterior cingulate cortex, one of the main nodes of executive attention network, has two intertwined subdivisions, one of which is connected to prefrontal cortex and responsible for attentional processes, while the other is connected to the limbic system and responsible for emotional processes (Calkins & Hill, 2006). Thus, prefrontal-limbic connections provide support for the neurobiological link between effortful control and emotion regulation processes.

Empirical studies also provide evidence for the relation between effortful control and emotion regulation. These studies are divided into groups based on attentional control and inhibitory control components of effortful control. With respect to inhibitory control, Carlson and Wang (2007) measured emotion regulation

through Saarni's (1984) disappointment paradigm, a new Secret Keeping task and a questionnaire while inhibitory control was assessed from several observational measures (Forbidden Toy, Gift Delay, Simon Says). The results showed that children who were observed to have higher inhibitory control skills were also able to mask their negative emotional expressions during the disappointing gift paradigm. However, this association was only found for 4 but not 5 year-olds and was found to be stronger for girls. In addition, a quadratic effect of inhibitory control on emotion regulation was discovered. Both low and high levels of inhibitory control were related to difficulty in emotion regulation, and moderate levels of inhibitory control were associated with better emotion regulation scores. Carlson and Wang (2007) proposed three possible mechanisms in this relation. First, inhibitory control may be necessary for suppression of negative emotional expressions (emotions as regulated). Second, emotions may underlie successful inhibitory control processes (emotions as regulators). Third, there may be a bidirectional relation where two constructs need each other for their successful functioning.

In a related study, inhibitory control was measured through compliance to instructions such as 'do not play with toys' and it predicted emotion regulation (Kalpidou, Power, Cherry, & Gottfried, 2004). Children appeared to cope better with emotionally arousing situations if they showed greater compliance with forbidden toys. Similarly, attentional control was found to be related to 8 to 10 month old infants' modulation of negative emotions (Kochanska, Coy, Tjebkes, & Husarek, 1998). Finally, research that assesses the broad construct of effortful control revealed that preschoolers with high effortful control expressed fewer negative verbal and gestural expressions when they were disappointed (Liew et al., 2004). Those findings

indicate that both attentional and inhibitory control components of effortful control predicts better modulated emotionality.

2.2.5 Effortful Control and Negative Emotionality

A great number of studies reveal a consistent negative relation between negative emotionality and effortful control (Kochanska, Coy, et al, 1998; Kochanska et al., 2000; Kochanska & Knaack, 2003). For instance, 8 to 10 month old infants' focused attention (a component of effortful control) was related to lower levels of negative emotionality (Kochanska, Coy, et al, 1998). In addition, 14-22 month old infants who are prone to intense anger showed lower levels of effortful control at 22, 33 and 45 months (Kochanska & Knaack, 2003) and finally infants with high levels of effortful control at 22 month showed lower levels of anger at 22 and 33 months (Kochanska et al., 2000).

Some researchers expect effortful control to moderate the adverse influence of negative emotionality on socio-emotional functioning (Fox & Calkins, 2003; Rothbart & Bates, 1998). In fact, the interaction of negative emotionality with effortful control on a whole host of outcomes is often interpreted as positive evidence for emotion-related regulatory function of effortful control (Rothbart & Bates, 1998). However, studies that examined multiplicative effects of effortful control and negative emotionality have often assessed internalizing and externalizing symptoms and social competence as outcomes rather than a circumscribed measurement of emotion regulation functioning (Belsky et al., 2001; Eisenberg et al., 2001; Eisenberg et al., 2007; Eisenberg, Liew, et al. 2004; Eisenberg, Spinrad, et al., 2004; Zhou et al., 2004). For instance Eisenberg et al., (2001) investigated negative emotionality (anger, sadness) and effortful control among children with externalizing and

internalizing problems. As a result of videotaped laboratory observations and parental reports, high anger and low effortful control uniquely predicted externalizing problems among preschool and school aged children. In addition, high sadness and low effortful control uniquely predicted internalizing problems. It indicates that negative emotionality and regulation have additive effects on problem behaviors.

Similarly, Eisenberg, Spinrad, et al., (2004) examined anger as a moderator in the relation between effortful control and behavioral problems among children from 4 to 8.5 in a two year longitudinal study. As expected, high dispositional anger rated by teachers moderated the relation between effortful control and externalizing behaviors. In other words only for those children with high dispositional anger, effortful control predicted less externalizing behaviors. Therefore effortful control buffered against the adverse effects of high dispositional anger. However, for children with low dispositional anger, effortful control did not predict behavioral problems. Those findings were replicated in a Chinese sample by Eisenberg and her colleagues (2007). The Chinese first and second graders' effortful control was found to be a strong predictor of their adjustment for those who were prone to high anger. It is important to note those moderation effects in both Chinese and US samples were not found for parent reported anger, indicating differential expression of anger at school and home contexts and/or possible maternal bias.

With regard to social functioning as the outcome of focus, findings have shown that effortful control enters into multiplicative relations with negative emotionality as well (Belsky et al., 2001; Eisenberg, Fabes, Guthrie, & Reiser, 2000; Zhou et al., 2004). For example, Zhou et al. (2004) showed that the relation between

anger and social functioning was moderated by effortful control among Chinese children that is, high dispositional anger was associated with social problems only for those children with low effortful control. Although similar interactions were not replicated in an Indonesian sample (Eisenberg, Liew, et al., 2004) and only found with teacher ratings of anger proneness in US samples, boys' low negative emotionality and high effortful control at third grade uniquely predicted social competence at sixth grade, supporting cross-cultural similarity in functions of negative emotionality and effortful control in relation to social functioning.

It is important to note that the multiplicative effects of effortful control with negative emotionality on behavior problems, in particular, are interpreted to support emotion-related regulatory function of effortful control (Eisenberg et al., 2007; Eisenberg, Spinrad, et al., 2004; Rothbart & Bates, 1998). However, the outcomes of behavior problems and social functioning are broader indices of self-regulation rather than circumscribed and specific indicators of emotion regulation. One of the goals of this thesis was to examine the replicability of those multiplicative and additive effects on more circumscribed measures of emotion regulation functioning.

2.3 Parenting Behavior Style and Emotion Regulation

A fuller understanding of the relations among children's negative emotionality, effortful control and emotion regulation, can only emerge in a framework that includes non-endogeneous environmental sources of influences on emotion regulation. After all, emotion regulation develops in the context of parent-child interactions (Calkins, 1994; Field, 1994; Fox & Calkins, 2003; Kopp, 1989). Thus studying the relations of internal and external factors in a common framework should provide a better understanding of children's emotion regulation. One of the

goals of this thesis was to consider the joint influence of parental responsiveness in addition to child's negative emotionality and effortful control.

2.3.1 Parental Influence on Emotion Regulation

It has been proposed that parents affect children's emotion regulation functioning at both biological and behavioral levels of analysis of ER (Calkins & Hills, 2006). Evidence from animal studies suggests that maternal licking/grooming, arched back nursing and touching have crucial impacts on infants' physiological stress response specifically HPA activity, which plays role in regulation of emotions (Champagne & Meaney, 2001 as cited in Calkins & Hills, 2006). Accordingly, research with human infants has shown that maternal holding/rocking and vocalization reduced distress in 2 and 6 months old infants (Jahromi, Putnam & Stifter, 2004). In addition, parental behaviors can influence parasympathetic nervous system that plays a role in the down-regulation of emotions (Calkins & Hills, 2006; Porges, 1996).

Parents also influence their children's regulation of emotions at the behavioral level (Calkins & Hills, 2006). According to Morris et al. (2007), children develop ER through observing and modeling their parents' ER and through social referencing. In addition, emotion-related parenting practices serve to directly intervene in the regulation of emotions. For example, emotion-coaching behaviors, parental encouragement of and reactions to child's emotions, parental control over child's emotions and opportunities for emotional arousal (niche-picking) are some of the direct interventions of parents. Similarly, Eisenberg, Cumberland and Spinrad (1998) classify parental direct interventions as parental reactions to child's emotions, discussion of emotions and expression of emotions. Finally emotional climate of the

family, which is reflected in attachment relationship, parenting style, parental expression of emotions and marital relations has been suggested to affect development of children's ER (Morris et al., 2007). Among various parental influences on children's ER, parenting style has received considerable research attention.

2.3.2 Parenting Behavior Style

Parenting Style is a broad concept referring to "parental attitudes and behaviors toward children that creates emotional relationship between parent and child" (Darling & Steinberg, 1993, p. 488). Demandingness and responsiveness have been proposed as two underlying dimensions that create variability in parenting style. Demandingness refers to "parents' maturity demands on children through disciplinary techniques and supervision". On the other hand, responsiveness refers to "actions that support child's needs, demands and foster individuality, self-regulation" (Baumrind, 1991a as cited in Darling & Steinberg, 1993, p. 492).

2.3.2.1 Maternal Responsiveness in Attachment Relationship

Maternal responsiveness has widely been investigated under infant-mother attachment quality. Because mothers of securely attached infants are also responsive to their infants' signals (Morris et al., 2007). Accordingly, securely attached children display well-regulated emotions that is, children who are securely attached feel more competent in experiencing distress and managing it since they have built cognitive representation of caregivers as available whenever needed through development of positive internal working model (Calkins, 2004). Because of the acceptance of negative emotions, they do not hesitate to express negative emotions (Berlin & Cassidy, 2003) and expect caregivers' assistance in emotionally challenging

situations. Indeed, their responsive and available mothers help them manage distress by teaching them new methods to regulate their emotions (Kerns, Abraham, Schlegelmilch, & Morgan, 2007; Kopp, 1989). Thus, securely attached children use effective ER strategies (Gilliom et al., 2002; Kliewer, Fearnow, & Miller, 1996). However insecurely attached children develop mistrust in their own abilities and others' abilities to regulate emotions, which in turn leads to use of ineffective ER strategies (Gilliom et al., 2002). Moreover they hesitate to display emotions, and minimize (insecure-avoidant) or maximize (insecure-resistant) their negative emotions in order not to alienate the attachment figure (Cassidy, 1994).

2.3.2.2 Maternal Responsiveness and Emotion Regulation

Maternal responsiveness has been proposed as a key process for children's efficient regulation of emotions because responsive mothers teach their children appropriate ways for regulating emotions in specific situations (Sroufe, 1995). Mothers who appropriately respond to children's signals in ways that reduce their distress, also teach them *implicitly* the use of appropriate strategies for managing such situations in the future. For instance, directing child's attention away from the forbidden toy rather than removing the object and leaving the child crying, teaches child what strategy to apply in similar future situations. Moreover, biological studies provide support for the role of maternal responsiveness on children's emotion regulation skills. For instance, responsiveness is found to be positively related with good cardiac vagal tone regulation, a marker for regulation of emotions (Haley & Stansbury, 2003).

Numerous studies have examined how variations in maternal responsiveness (sensitivity, acceptance, support) are related to children's abilities to regulate their

behaviors and emotions. For instance, maternal sensitivity which refers to “being aware of child’s cues and responding to them promptly and appropriately” (Spinrad, Eisenberg, Gaertner, et al., 2007, p.1172) is linked to emotion regulation. Even during first few months, mothers’ prompt and accurate responses to infants’ crying such as feeding, approaching, interacting and touching the infant promoted proximity and contact seeking, and decreased or terminated crying (Bell & Ainsworth, 1972; Fish, Stifter, & Belsky, 1991). Similarly, infants of sensitive mothers showed less negative affect in still-face paradigms, suggesting lesser emotional perturbation in challenging contexts (Braungart-Rieker, Garwood, Powers, & Notaro, 1998). High maternal sensitivity among six month olds was also associated with lower baseline levels of cortisol, better HPA reactivity and better behavioral regulation following an emotionally arousing task (Blair, Granger, Willoughby, & Kivlighan, 2006).

In another study perceived maternal acceptance was found to be positively associated with active and support-seeking emotion-regulation strategies among school-aged children (Kliewer et al., 1996). Similarly, children whose mothers showed high responsive support, in other words high comfort, approval and acceptance, used a more varied repertoire of coping strategies for emotional distress (Hardy, Power, & Jaedicke, 1993) and only relied on avoidance strategies in situations which are perceived as uncontrollable. In another study, 6 to 8-year old children whose mothers were responsive to distress displayed better regulation of negative emotions, and boys whose mothers showed greater warmth displayed better regulation of positive emotions as measured by the ERC (Davidov & Grusec, 2006). Similarly, Altan (2006) revealed that maternal responsiveness (warmth, inductive

reasoning and supportive parenting) predicted Turkish preschoolers' overall emotion regulation score, assessed by the ERC.

2.3.2.3 Maternal Emotional Tone and Emotion Regulation

Maternal emotional tone is also believed to play an important role on children's ER. When mothers are not responsive to their children's signals, the resulting emotional unavailability deprives the infant of efficient exogenous emotion regulation opportunities (Field, 1994). For example, when mothers are emotionally unavailable as in the still-face paradigm, the resulting behavioral and physiological disorganization in the infant is common (Field, 1994). Hence, behavioral and physiological disorganization is reflected in changes in biological activity levels and emotional disturbances on the behalf of the infant. Furthermore, when emotional unavailability manifests in a disruptive and noncontingent manner, studies show that more distress, gaze aversion and crying are observed in still face tasks (Field, 1994).

In an experimental study (Cohn & Tronick, 1983), when mothers were asked to interact with their three-month old infants in a depressive manner, with less facial expressions, bodily movements, touch, and monotone voice in three minute epochs, their infants had difficulty in regulating their emotions during depressed condition. They spent more time in protest, wary and looking away from mother with negative expressions. The effect of the depressive condition lasted into the first 60 seconds of the non-depressive condition. The results indicate that even at earlier ages, infants modify their emotional states in response to emotional expressions of mothers.

Most studies on maternal emotional tone are conducted with depressed mothers, because a characteristics feature of maternal depression is emotional unavailability. Studies provide clear evidence for emotion regulation problems

among depressed mothers' children. In a longitudinal study, maternal depression at 21 months predicted emotional dysregulation at preschool years (Maughan, Cicchetti, Toth, & Rogosch, 2007). Similarly behaviorally inhibited preschool children whose mothers were depressed were more likely to use passive and less effective ER strategies (Feng et al., 2008). Since depressed mothers are usually less responsive, supportive and consistent in their behaviors and show less positive affect (Feng et al., 2008), it negatively impacts their children's emotion regulation functioning.

2.4 Parenting Behavior Style, Negative Emotionality and Effortful Control

Even though temperamental characteristics make independent contributions to social development, they also interact with environmental influences in predicting developmental outcomes (Sanson, Hemphill, & Smart, 2004). Since temperamental systems are open to change by experience, it becomes important to investigate the relations between parenting and child temperamental characteristics on social development. Hence, the development of emotion regulation skills is a function of the joint and interactive effects of both child temperament and parenting (Calkins, 1994; Field, 1994; Kopp, 1989). One of the goals of this thesis was to inform the relations of parenting, child's negative emotionality and effortful control on emotion regulation functioning.

2.4.1 Parenting Behavior Style and Negative Emotionality

According to differential susceptibility hypothesis (Belsky, 1997), children high in negative emotionality are more susceptible than others to positive and negative rearing conditions that influence developmental outcomes. In other words, children who are high in negative emotionality show more positive outcomes in

supportive rearing environments and show more negative outcomes in unsupportive rearing environments (Belsky, Bakermans-Kranenburg & Van Ijzendoorn, 2007).

It has been well documented that highly reactive children benefit more from supportive parenting (Blair, 2002; Velderman, Bakermans-Kranenburg, Juffer, & Van Ijzendoorn, 2006). In one study, mothers of children with high and low emotional reactivity received an intervention that enhances parental sensitivity (Velderman et al., 2006). It was revealed that interventions were more effective for the mothers with highly reactive children. The most reactive infants were more susceptible to their mothers' change in sensitivity. The results support highly reactive infants' evolutionary based differential susceptibility to rearing influences especially in the domain of sensitivity. Similarly, Blair (2002) revealed that highly negatively emotional infants scored lower on internalizing and externalizing symptoms after an intervention that enhances developmentally appropriate and educationally stimulating parent-child interactions. Those findings show beneficial effect of supportive environments for vulnerable infants.

We would expect parenting to interact with emotional reactivity in predicting children's emotion regulation functioning. Calkins (1994) proposed that parenting style should determine the influence of emotional reactivity on emotion regulatory skills. For instance, she proposed that an infant who is reactive to frustration would have adaptive coping response when the caregiver is supportive, enabling the infant to tolerate aversive emotions and to adopt effective regulatory strategies. However, the same infant would have maladaptive regulatory strategies when the caregiver has controlling and coercive discipline.

Even though parenting style appears to be relatively important, there are only a few empirical studies that provide support for the role of parenting style on children's emotionality and regulation. In one study conducted by Gilliom et al. (2002), negative emotionality was assessed through intensity and frequency of fussy and irritable behaviors from 18 month-old infants. Emotion regulation strategies were classified as active distraction, passive waiting, information gathering, physical comfort seeking and focus on delay object in a mother-child interactive task. Maternal behaviors were coded on dimensions of warmth, hostility, punitiveness through a puzzle task while supportiveness to their children's regulation was assessed through a waiting task in a videotaped laboratory setting. As a result, maternal control moderated the link between negative emotionality and strategy use for anger regulation. In other words, high emotional negativity predicted less passive waiting (sitting quietly without looking at the frustrating object) but more focus on the frustration task strategies (looking at the frustrating object and speaking about it while trying to end the waiting period) among infants whose mothers used negative control. Similarly, maternal interference predicted 18-month old toddlers' proneness to distress and interacted with it in predicting maladaptive coping behaviors such as aggression and acting out behaviors (Calkins & Johnson, 1998). In other words, negative emotionality resulted in use of less effective strategies for anger regulation in the presence of maternal negative control.

2.4.2 Parenting Behavior Style and Effortful Control

From the perspective of differential susceptibility hypothesis (Belsky, 1997), we can expect children with low effortful control to regulate emotions well if they have responsive parents. However, it can also be argued that parenting behavior style

contributes variability to children's effortful control. For instance, parental responsiveness can promote while parental negative control can cause overarousal which hinders the development of attentional and cognitive processes during discipline encounters (Grusec & Goodnow, 1994; Hoffman, 2000). Evidence supports those links. For example, maternal positive expressivity has been found to predict mid-elementary school children's effortful control two years later (Eisenberg, Zhou, et al., 2005) and maternal responsiveness at 22 months (reflecting emotional availability, acceptance, supportiveness and sensitivity) predicted greater effortful control at 22 and 33 months (Kochanska et al., 2000).

Although the specific nature of the relation between maternal responsiveness and emotion regulation functioning has not been sufficiently explored in literature, the foregoing review would suggest that maternal responsiveness may foster effortful control which in turn is associated with various adaptive functioning indices. Evidence in fact supports such links. For example in Zhou et al.'s (2004) study, effortful control mediated the negative relation between authoritarian parenting to Chinese children's social functioning, in the Eisenberg, Zhou, et al.'s (2005) study, observed maternal warmth/positive expressivity in mid-elementary school years predicted effortful control two years later, which in turn predicted low externalizing problems in adolescence. Spinrad, Eisenberg, Gaertner et al. (2007) replicated the links from supportive parenting to better effortful control and lower externalizing and higher social competence at 18 and 30 months of age. In this study, the mediating role of effortful control in the relation between maternal responsiveness and ER functioning was examined.

2.5 The Present Study

The main purpose of this study was to uncover the roles of child temperamental characteristics and maternal responsiveness on children's emotion regulation functioning. Among temperamental characteristics, children's negative emotionality, specifically their tendency for experiencing anger (dispositional anger) and effortful control were examined. Under the broad construct of negative emotionality, it is important to separate anger from other negative emotions (Derryberry & Rothbart, 1997). Furthermore, anger and fear are differentially associated with outcomes such that, dysregulated anger leads to externalizing problems and disruption of social relations, while dysregulated fear can lead to internalizing symptoms (Rydell et al., 2003). In addition, some studies show that unlike anger, emotions of fear and sadness can sometimes be associated with more positive consequences such as empathic responses (Roberts & Strayer, 1996). Hence, in this thesis only dispositional anger was examined in relation to emotion regulation functioning along with effortful control.

Although the review of the literature clearly indicates a role for maternal responsiveness in emotion regulation functioning (e.g. Sroufe, 1995), no study to date has examined the joint and multiplicative effects of maternal responsiveness with both children's reactivity and effortful control on circumscribed measures of emotion regulation. As noted earlier, one of the contributions of this thesis to the literature was to achieve a more circumscribed measurement of emotion regulation distinct from social competency or behavior problems.

On the basis of previous research, following hypotheses were advanced:

1. High dispositional anger should predict poor functioning in emotion regulation. Specifically, children with high dispositional anger should score low in emotion regulation subscale and high in emotion dysregulation subscale of the ERC.

2. High effortful control should predict positive functioning in emotion regulation. In other words, children with high effortful control should score high in emotion regulation subscale and low in emotion dysregulation subscale of the ERC.

3. In addition, effortful control should serve to change the negative impact of dispositional anger on children's emotion regulation functioning. In other words, effortful control should promote emotion regulation and/or buffer against emotion dysregulation for children with high dispositional anger.

4. High maternal responsiveness should predict positive functioning in emotion regulation. Children whose mothers show high responsiveness should score high in emotion regulation subscale and low in emotion dysregulation subscale of the ERC.

5. Moreover, maternal responsiveness should moderate the relation between dispositional anger and emotion regulation functioning. In other words, maternal responsiveness should promote emotion regulation and/or buffer against emotion dysregulation for children with high dispositional anger.

6. Maternal responsiveness may also moderate the relations of effortful control with children's ER functioning. That is to say, maternal responsiveness should promote emotion regulation and/or buffer against emotion dysregulation for children with low effortful control.

7. Finally, effortful control was examined as a mediator of the link between maternal responsiveness and emotion regulation functioning. Thus, maternal

responsiveness would moderate the relation between dispositional anger and emotion regulation both directly and indirectly through promoting effortful control.

CHAPTER 3

METHOD

3.1 Participants

118 preschoolers (50 girls), their mothers and preschool teachers participated in the study. Children were mostly recruited from three private preschools chosen by convenience sampling, located in middle to high SES suburbs of Istanbul and also from a notice made to Koc University staff with preschool aged children from lower middle class backgrounds. Children's age range was between 2.6 to 6.1 with a mean of 4.5 years ($SD = .92$). Mothers' age ranged from 26.7 to 43.9 with a mean of 36.1 years ($SD = 3.5$) and fathers' age ranged from 30.8 to 71 with a mean of 40.2 years ($SD = 5.7$). Children were mostly from high socio-economic status families. The socio-economic status of the families in the sample was computed from sum of mothers' and fathers' education years and average monthly family income. The scores were z-transformed and the average of these standardized scores was computed to form a total SES score. With regard to education levels, the mean years of education for both mothers and fathers was 15.4. Among mothers, 10.2 % of them had a high school degree or less, 11.9 % had some college education, 46.6 % had a college degree and 28.8 % had a graduate degree. Average monthly family income of participants was 6900 TL (4656 USD). Among those, 10.2 % of the participants had monthly family income lower than 1000 TL (666 USD), 7.6 % had 1000 to 3000 TL (666 - 2000 USD), 15.3 % had 3000 to 5000 TL (2000 - 3333 USD), 26.3 % had 5000 to 7000 TL (3333 - 4666 USD) and 39.8 % had more than 10000 TL (6666 USD). Descriptive statistics further displayed that most of the children were from

intact families (88.1%), and 66.9% of the mothers were half-time or full-time employed whereas 99 % of the fathers were full-time employed.

3.2 Overview of Procedure

The families were seen in the context of a cross-sectional assessment study on children's social and emotional development. Mothers who volunteered to participate in the study were given the DVD copy of the entire visit and a short form evaluating their children's social and emotional development based on the observations made during the visit. The session took place in a laboratory furnished to resemble a living room with a couch and a play room with toys. The session lasted 2^{1/2} to 3 hours, encompassed multiple observational contexts. About one hour of the session was devoted to observing mother-child relationship in contexts designed to simulate every-day situations such as snack, play, clean-up, mother busy, teaching, warm-up and the remaining portion was devoted to behavioral batteries pertaining to children's socio-emotional functioning. The sessions were conducted by a female research assistant. All behavioral data were videotaped from behind a one-way screen for later coding.

Children's effortful control and dispositional anger were observed during standard behavioral batteries. The behavioral batteries for effortful control were introduced as challenging tests of skill or games ("Let's see if you can...") and children did not receive feedback on actual trials. Mothers were asked to refrain from either assisting or intervening during these tasks and were instead asked to be busy with questionnaires. Child's anger was observed in a single paradigm and the mother was not in the room during this episode. Maternal responsiveness was observed

during the six dyadic contexts. Finally, children's emotion regulation functioning was rated by their preschool teachers.

3.3 Measures

3.3.1 Emotion Regulation

The Emotion Regulation Checklist (ERC) developed by Shields and Cicchetti (1997) was used in order to measure children's abilities to regulate their emotions. In parallel with the definition of emotion regulation (Cicchetti et al, 1991; Thompson, 1994), the ERC has 24 items which target processes such as affective lability, flexibility, intensity, valence, and situational appropriateness. Items are rated on a 4 point Likert scale (1 = never, 4 = always). The factor structure analysis yielded two factors for the measure, which are Lability/Negativity and Emotion Regulation. The Lability/Negativity subscale consists of items that tap emotional dysregulation, specifically lack of flexibility, mood lability and dysregulated negative affect such as 'Is prone to anger outbursts'. On the other side, the Emotion regulation subscale is comprised of items tapping adaptive regulation, specifically appropriate emotional expressions, empathy and emotional awareness such as 'Can say when he/she is feeling sad, angry or mad, fearful or afraid'. The ERC composite score was generated through reversing negatively weighted items and taking the average of the scores of all 24 items. Thus, higher composite score represents higher levels of emotion regulation (See Appendix A).

Previous research has shown this instrument to be highly reliable, with a Cronbach alpha of .96 for the Lability/Negativity subscale, .83 for the Emotion Regulation subscale and .89 for the total scale (Shields & Cicchetti, 1997). The instrument has also shown adequate validity since it could differentiate well-

regulated and dysregulated children, similar to observational measures of ER and emotion regulation Q-sort (Shields & Cicchetti, 1997). Consistent with the previous studies, the instrument has shown adequate reliability with a Cronbach's alpha of .79 for the Lability subscale, .59 for the Regulation subscale and the two subscales were moderately correlated in the present study ($r = -.31$). In addition, teacher form of ERC, which is formed with minor changes in wording, was used in this study. It is preferred since teacher reports have high internal consistency with alpha coefficients of .93 for the original ERC (Ramsden & Hubbard, 2002), .84 and .75 for the Turkish version of the ERC (Altan, 2006; Batum, 2005).

3.3.2 Effortful control

Procedure. Observed behavioral tasks were used to measure effortful control. Six game-like tasks developed by Kochanska, Murray, Jacques, Koenig, & Vandegeest (1996) were used to assess three components of effortful control (Kochanska et al., 2000). The first component, slowing down motor activity, reflects children's abilities to slow down their fine and gross motor activities such as drawing and walking. The task namely Walk-a-Line assesses children's abilities to walk down a line affixed to the floor as slowly as possible. Similarly, Turtle and Rabbit assesses their abilities to draw a straight line either slowly as a turtle or fast as a rabbit. The second component is delaying which reflects children's abilities to wait for pleasant events such as receiving candy and gift. Snack Delay measures children's abilities to wait for the experimenter to ring the bell in order to get an M & M candy under a glass cup, in six trials with delays of 10 - 40 seconds. Gift measures children's abilities to sit with his/her back, not to peek while the gift is being wrapped for 60 seconds. In addition, the task measures their abilities not to touch the

wrapped gift within arm reach and not to leave his/her seat until experimenter comes back with a bow for three minutes. The third component which is measured through Go-No Go tasks reflects children's abilities to flexibly suppress a dominant response in favor of a subdominant response. Among these tasks, Day and Night requires children to designate the card with a picture of moon when said 'day' and designate the card with a picture of sun when said 'night'. Similarly, Bear and Dragon requires children to do what the nice bear hand puppet says (e.g. 'touch your nose') but to suppress what the dragon hand puppet says (six trials for each puppet).

Coding and Reliability. Each task was coded on Likert type of scales and behavioral timing subscales by independent coders. In Walk-a-Line and Turtle and Rabbit tasks, coding involves the duration of each trial. In Snack Delay task, trials were coded on a 4 point Likert scale (0 = eats candy before the bell is lifted, 2 = touches cup/paper before the bell is lifted but doesn't eat, 3 = touches before the bell is lifted, 4 = keeps his/her hands appropriate and waits for the bell). In addition, for each trial, latencies for fidgeting (41s, if never) were noted. In the wrapping phase of the Gift task, child's peeking was coded with a scale from 0 to 4, (0 = fully peeks and doesn't turn around, 1 = turns around but turns back forward, 2 = peeks over the shoulder, 3 = turns head less than 90 degrees but not enough to see wrapping, 4 = doesn't try to peek). For scoring the bow phase of the Gift task, touching was coded from 1 to 4 (1 = opens gift, 2 = lifts/picks up gift, 3 = touches gift, 4 = doesn't touch), sitting was coded on a 2 points scale as either 'sits until wrapping finishes' or 'stands before wrapping finishes'. Latencies for fidgeting in gift wrapping and waiting-for-bow (60s and 180s, if never), for turning around to peek (60s, if never), for touching (180s, if never) and for sitting (180s, if never) were also noted. The Day

and Night task was coded with a scale from 0 to 3, (0 = fails to point, 1 = incorrect response, 2 = self-correction and, 3 = correct response). Finally different scales were coded in Bear and Dragon trials. The Bear trials were coded with a scale from 0 to 3 (0 = doesn't move, 1 = performs a partial movement, 2 = performs the wrong movement, 3 = performs full movement) while the Dragon trials were coded with a scale from 0 to 3 (0 = performs full movement/doesn't inhibit behavior, 3 = doesn't move/fully inhibits behavior) (See Appendix B). The Kappa for categorical scales ranged from .89 to .91 and intraclass correlations (ICC) for latency and duration scores ranged from .84 to .99.

Data Reduction. In Walk-a-Line task, average of the two slow trials were computed. For scoring Turtle and Rabbit task, means for rabbit trial was subtracted from means for turtle trial. Then, scores of two tasks were averaged to achieve a composite score representing slowing down component. In Snack Delay, the average of standardized codes and latencies generated a composite score. In Gift, the average of standardized codes and latencies formed a composite score. Moreover, the average of Snack Delay and Gift composite scores generated a composite score representing delaying component. In Day and Night task, the sum of the frequency of inhibition responses in 10 trials was used to achieve composite score. In Bear and Dragon task, only the scores from Dragon trials were summed. The average of standardized composite scores of two tasks generates the composite score for the third component (See Appendix B). Finally, effortful control composite score was generated from the average of standardized scores of six tasks.

Previous research has shown adequate reliability, with a Cronbach alpha of .79 (Kochanska, Coy & Murray, 2001) and validity for this instrument since it

correlates with parents' ratings of children's effortful control (Kochanska et al., 1996; Kochanska et al., 2000; Kochanska, Murray & Coy, 1997). The measure was also found to be longitudinally stable (Kochanska & Knaack, 2003). In the present study, the Cronbach's alpha for the composite was .71, revealing adequate reliability.

3.3.3 Dispositional Anger

Procedure. Children's dispositional anger was assessed by a game-like task namely 'Transparent Box', drawn from the Laboratory Temperament Assessment Battery (PS-LaB-TAB; Goldsmith, Reilly, Lemery, Longley, & Prescott, 1995). In this task, first the child is asked to choose one of three toys to play with. Then, the preferred toy is locked in a transparent box by the experimenter. Given wrong keys, child is asked to try to open the box. At the end of two minutes, experimenter pretends as if he/she remembers the place of the right key and opens the box with that key. At last, child is let to play with the toy.

Coding and Reliability. In the two minutes of period, child's anger reflected upon facial, bodily and verbal expressions was coded on a presence/absence basis in every 5-second segment, intensity of anger was coded in every 60-second intervals with a 3 point Likert scale (0 = absent, 3 = high intensity) and latency to first expression of anger was noted in seconds (See Appendix C). The Kappa for categorical scales ranged from .67 to .89 and intraclass correlations (ICC) for latency measures ranged from .85 to 1.

Data Reduction. In order to form a composite score for anger, first all presence-absence scores were converted into frequency scores, later latency scores were reversed. Finally, frequency, intensity and reversed latency scores were z-transformed and the average of the standardized scores formed a composite score for

anger. The internal consistency of the composite score was adequate with a Cronbach's alpha of .75.

3.3.4 Maternal Responsiveness

Procedure. Mother-child contexts that contain typical naturalistic interactions such as free time, snack time, play time, problem-solving, mother busy and discipline contexts such as toy clean-up were used to observe maternal responsiveness during the laboratory session (Aksan, Kochanska, & Ortmann, 2006; Kochanska & Aksan, 1995).

Coding and Reliability. The macroscopic coding system which is adopted from Ainsworth, Bell and Stayton's coding of maternal responsiveness (1971, as cited in Kochanska & Aksan, 2004) was used in this study. Independent coders rated maternal behaviors based on descriptions of responsive and unresponsive maternal behaviors in each interaction context. Three 7 point (1 = highly unresponsive, 2 = unresponsive, 3 = somewhat unresponsive, 5 = somewhat responsive, 6 = responsive, 7 = highly responsive) criteria captures sensitivity and attunement of the mother to the child's need and signals taking into consideration, promptness, sincerity and appropriateness of the mother's response in each context (See Appendix D). The intraclass correlations ranged from .65 to .85.

Data Reduction. Previously utilized data reduction method was used to derive a composite score representing maternal responsiveness. First, sensitivity scores in all contexts were averaged, and then the same computation was done for cooperation and acceptance scores in order to arrive at overall sensitivity, cooperation and acceptance scores. At last, the three scores were z-transformed and

their average was computed to form an overall responsiveness score. The Cronbach's alpha for the composite was .81, revealing high reliability.

CHAPTER 4

RESULTS

4.1 Overview

The results of the study are presented in three parts. In the first part, descriptive statistics of the study variables are documented. In the second part, correlations among demographic variables and the study variables are reported. In the third part, the hypotheses of the study are tested using multiple regression analyses with emotion regulation and emotion lability as the outcome measures and dispositional anger, effortful control, maternal responsiveness as predictors.

4.2 Descriptive Statistics

Prior to the substantive analyses, the data were examined for normality and outliers. Descriptive statistics of the study variables are presented in the Table 1. As can be seen in Table 1, none of the skewness and kurtosis values exceeded the absolute value of 2 indicating that distributions were generally normal and no outliers were identified. As can be seen in Table 1, mothers of the children in the sample scored moderately high in responsiveness scale, indicating that they accept, cooperate and are sensitive to their children. In addition, preschool teachers reported moderate to high levels of emotion regulation and low to moderate levels of emotion lability.

Table 1

Descriptive Statistics of Study Variables

Variable	N	Mean	SD	Minimum	Maximum	Skewness	Kurtosis
Dispositional Anger	118	.000	.81	-1.92	2.1	.12	.02
Effortful Control	118	-.021	.55	-1.74	1.23	-.58	.21
Maternal Responsiveness	118	5.5	.71	2.87	6.6	-1.3	1.9
Emotion Lability	103	1.62	.38	1	2.6	.45	-.43
Emotion Regulation	103	3.4	.43	2.33	4	-.52	-.51

4.3 Correlational Analyses

Bivariate correlations among demographic and study variables are presented in Table 2. Out of a total of 36 correlations four correlations would be expected to be significant by chance at an alpha of .10 and two correlations at an alpha of .05 but there were eight significant correlations at the conventional level indicating that the correlation matrix was significant. As can be seen from Table 2, as mother's age increased, family's socioeconomic status (composite of family income and sum of mother's and father's education years) significantly increased. Family's SES was also correlated positively with maternal responsiveness, indicating that mothers from more advantaged socioeconomic backgrounds were more responsive to their children. As expected, bivariate correlations showed that effortful control was highly positively associated with child's age and moderately positively associated with mother's age. In addition, there was a moderate positive correlation between effortful control and maternal responsiveness, indicating that responsive mothers tended to have children who score high in the effortful control battery.

Maternal responsiveness was also moderately negatively associated with teacher rated emotion lability, indicating that as maternal responsiveness increased, child's emotion regulatory problems decreased. As expected, emotion regulation and emotion lability were moderately negatively correlated. Contrary to predictions, effortful control was negatively correlated with emotion dysregulation, tapped by emotion lability subscale, but it was not associated with emotion regulation subscale. Finally, dispositional anger was not significantly correlated with any of the variables.

Table 2

Intercorrelations among All Variables in the Study

Variable	1	2	3	4	5	6	7	8	9
1 Sex	1								
2 Child's age	-.16+	1							
3 Mother's age ^b	.09	.18+	1						
4 SES	.12	.01	.33**	1					
5 Anger	.02	-.06	-.03	-.08	1				
6 Effortful Control	.11	.62**	.26**	.13	-.10	1			
7 Emotion Regulation ^a	-.04	-.13	.08	.17+	.09	.00	1		
8 Emotion Lability ^a	-.11	-.01	-.06	-.12	.04	-.17+	-.31**	1	
9 Maternal Responsiveness	.25**	.10	.16+	.32**	-.03	.29**	.03	-.32**	1

Note : + $p < .10$, * $p < .05$, ** $p < .01$, ^aN = 103, ^bN = 115

4.4 Regression Analyses: Focusing on Moderational Relations

Hierarchical regression analyses were performed to examine whether the individual differences variables and their interactions predicted emotion regulation outcomes. Separate hierarchical regression analyses were run for two dependent variables, emotion regulation and emotion lability, the scale of the ERC that taps emotion dysregulation. The aim was to test whether dispositional anger interacted with effortful control and/or maternal responsiveness in predicting children's emotion regulation and emotion lability. A significant moderation of effortful control with dispositional anger would be evidence for the emotion regulatory effect of effortful control for dispositional anger (Eisenberg et al., 2007; Rothbart & Bates, 1998). Furthermore, the study aimed to test the interaction between effortful control and maternal responsiveness in predicting children's emotion regulation and emotion lability.

Before running a series of regression analyses, child's age and sex were controlled for their potential effects on the dependent variables. In both regressions, if the effects of child sex or age were significant those variables were added in the first step as predictors. In the second step, the main effects of dispositional anger, effortful control and maternal responsiveness on each dependent variable were examined. In the third step, the two-way interaction of dispositional anger with effortful control, the two-way interaction of dispositional anger with maternal responsiveness and the two-way interaction of effortful control with maternal responsiveness were examined. As supplementary analyses, a possible three-way interaction was also examined among anger, effortful control and maternal responsiveness. Because in none of the regressions the three-way interaction was significant, regressions are presented without the three-way interaction.

4.4.1 Prediction of Emotion Dysregulation

Hierarchical regression analysis with emotion lability scale of the ERC, tapping emotion dysregulation, as the dependent variable are presented in Table 3. The regression analysis revealed that the effects of child's sex and age were not significant ($R^2 = .012$, $F(2, 102) = .590$, *ns*). The main effects of the three predictors were examined in a single step and this step was significant. As can be seen from Table 3, 12% of the variability in emotion lability was predicted by this model. However, only maternal responsiveness contributed significantly to the prediction of emotion lability, indicating that children with responsive mothers displayed lower levels of emotion dysregulation. Contrary to the expectations, dispositional anger and effortful control did not add uniquely to the prediction.

The multiplicative effects were examined in the third step and it was revealed that R square was not significantly different from zero. As shown in Table 3, none of the two-way interactions significantly predicted emotion lability. Contrary to the expectations, dispositional anger did not interact with effortful control. Therefore emotion regulatory effect of effortful control for dispositional anger was not supported. Similarly, maternal responsiveness did not interact with dispositional anger and did not interact with effortful control in predicting emotion lability. It only predicted the outcome.¹

¹ The three-way interaction among dispositional anger, effortful control and maternal responsiveness was added in the fourth step to hierarchical regression analysis in Table 3. The results showed that three-way interaction did not significantly contribute to the prediction of emotion lability $t = .308$, *ns*.

Table 3

Summary of Hierarchical Regression Analyses for Emotion Lability

Predictor	R	R ²	Beta (β)	B	F	Sig.
Step 2	.35	.123			2.7	.024 *
Sex			.004	.003		.965
Age			.126	.053		.301
D.Anger			.004	.001		.970
Eff. Control (EC)			-.176	-.071		.161
M.Responsiveness(MR)			-.287	-.111		.005 *
Step 3	.36	.130			1.7	.094
Sex			-.005	-.004		.959
Age			.137	.057		.274
D.Anger			.008	.003		.942
Eff. Control (EC)			-.193	-.078		.140
M.Responsiveness (MR)			-.275	-.106		.012*
Anger x EC			.015	.006		.890
Anger x MR			-.090	-.042		.377
Eff. Control x MR			.004	.001		.971

Note : * p < .05

4.4.2 Prediction of Emotion Regulation

Parallel hierarchical regression analyses with emotion regulation as the dependent variable are presented in Table 4. The regression analysis revealed that R squares were not significantly different from zero at the end of each step. In the first step, the effects of child's sex and age were not significant ($R^2 = .021$, $F(2,102) = 1.05$, *ns*). As can be seen in Table 4, in the next step, emotion regulation was not predicted by any of the independent variables. The results were contrary to the expectations since none of the variables contributed to the prediction of emotion

regulation. Interestingly, maternal responsiveness did not contribute to the variability in emotion regulation although it predicted emotion dysregulation, tapped by emotion lability subscale. Similarly, in the third step, emotion regulation was not predicted by any of the two-way interactions. Contrary to the expectations, dispositional anger did not interact with effortful control and did not interact with maternal responsiveness in predicting emotion regulation. Similarly, maternal responsiveness did not interact with effortful control in predicting emotion regulation².

² The three-way interaction among dispositional anger, effortful control and maternal responsiveness was added in the fourth step to hierarchical regression analysis in Table 4. The results showed that three-way interaction did not significantly contribute to the prediction of emotion regulation $t = .354, ns$.

Table 4

Summary of Hierarchical Regression Analyses for Emotion Regulation

Predictor	R	R ²	Beta (β)	B	F	Sig.
Step 2	.21	.046			.92	.467
Sex			-.106	-.094		.324
Age			-.230	-.110		.071
Anger			.102	.043		.313
Eff. Control (EC)			.159	.073		.222
M.Responsiveness(MR)			.033	.015		.750
Step 3	.22	.050			.62	.755
Sex			-.115	-.102		.295
Age			-.229	-.109		.081
Anger			.106	.045		.334
Eff. Control (EC)			.156	.071		.253
M.Responsiveness(MR)			.054	.024		.630
Anger x EC			.018	.008		.872
Anger x MR			-.053	-.028		.619
Eff. Control x MR			.042	.016		.705

4.4.3 Summary

In the first set of hierarchical regression analyses, the additive and multiplicative effects of dispositional anger, effortful control and maternal responsiveness on emotion lability were examined. The results revealed that among three independent variables, only maternal responsiveness significantly contributed to the prediction of emotion lability, tapping emotion dysregulation. Contrary to the expectations, dispositional anger did not interact with effortful control and/or maternal responsiveness in promoting emotion regulation. Similarly, maternal

responsiveness did not interact with effortful control in predicting emotion dysregulation. The second set of hierarchical regression analyses was conducted to explore the additive and multiplicative effects of dispositional anger, effortful control and maternal responsiveness on emotion regulation. Unexpectedly, none of the independent variables and their interactions significantly promoted emotion regulation. Hence, emotion regulatory effect of effortful control for dispositional anger was not supported. Only the hypothesized effect of maternal responsiveness on emotion dysregulation was supported.

4.5 Regression Analyses: Focusing on Mediation relations

Another aim of the study was to investigate whether the effects of maternal responsiveness on emotion regulation outcomes would be mediated by effortful control. Therefore, a set of regression analyses was conducted to test whether effortful control acted as a possible mediator in the relations between maternal responsiveness and emotion regulation outcomes. Separate hierarchical regression analyses were run for two dependent variables, emotion regulation and emotion lability, the scale of the ERC that taps emotion dysregulation.

4.5.1 Prediction of Emotion Dysregulation

In the proposed model, it was hypothesized that the effect of maternal responsiveness on emotion lability would be mediated by effortful control. A series of regression analyses using Baron and Kenny's (1986) four step approach was conducted. First, independent variable was regressed on dependent variable. Maternal responsiveness significantly predicted emotion lability ($\beta = -.321, t = -3.4, p < .05$). Second, independent variable was regressed on mediator. Maternal responsiveness significantly predicted effortful control ($\beta = .293, t = 3.3, p < .05$). Third, mediator was regressed on dependent variable. This relation was marginally

significant ($\beta = -.169, t = -1.72, p < .10$). Finally, regression analysis was conducted to explore the effect of maternal responsiveness on emotion lability after controlling effortful control. This regression was significant ($\beta = -.298, t = -3, p < .05$). Those results do not show clear support for mediation given the marginally significant relationship between effortful control and emotion dysregulation.

The marginal correlation between effortful control and emotion dysregulation could arise from a common-cause model where maternal responsiveness predicts both emotion dysregulation and effortful control (see Figure 1 panel b) rather than a mediated model where the relationship between maternal responsiveness and emotion dysregulation is mediated by effortful control as hypothesized initially (see Figure 1 panel a). In order to test the consistency of the data with either of those models, variance - covariances were submitted to LISREL 8 with maximum likelihood estimation and the competing models depicted in Figure 1 were examined for goodness of fit.

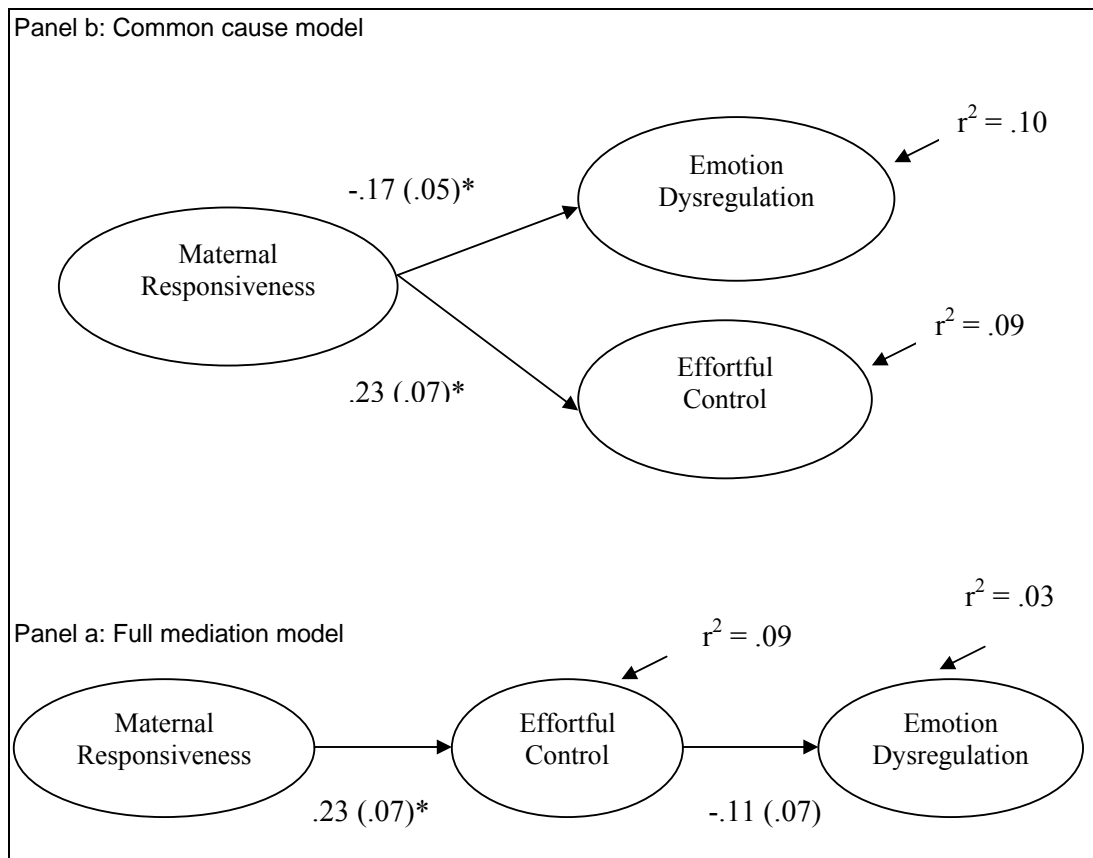
The model fitting analyses indicated that the full mediation model (panel a of Figure 1) from maternal responsiveness to effortful control and from effortful control to emotion dysregulation did not fit the data, $\chi^2(1) = 8.81, p = .003$, 90% confidence interval for RMSEA ranged from .13 to .45, and CFI = .58, all indicating poor fit to the data. In contrast, the model fit for the common-cause model (panel b of Figure 1) in which maternal responsiveness predicted both effortful control and emotion dysregulation, showed excellent fit to the data, $\chi^2(1) = .55, p = .46$, 90% confidence interval for RMSEA ranged from .00 to .24, and CFI = 1.

Those two models are non-nested competing models, however, model fit statistics using maximum likelihood were clearly consistent with the common-cause

model rather than the mediated model. Further, although the partial mediation model is a saturated model and hence untestable for overall model fit, the indirect effect estimates from either the full mediation model (effect = $-.03$, SE (effect) = $.02$, *ns*) or the partial mediation model (effect = $-.01$, SE (effect) = $.02$, *ns*) were non-significant. Together with the results of the Baron and Kenny approach to mediation analyses, the findings appear more consistent with the common cause than partial mediation model.

Figure 1

The Relations between Maternal Responsiveness, Effortful Control and Emotion Dysregulation



4.5.2 Prediction of Emotion Regulation

Another series of regression analyses using Baron and Kenny's (1986) four step approach was conducted to explore whether effortful control would mediate the relation between maternal responsiveness and emotion regulation.

The same steps were taken in the analyses. In the first step, independent variable was regressed on dependent variable. Maternal responsiveness did not significantly predict emotion regulation ($\beta = .026, t = .26, p > .05$). The second step in which maternal responsiveness was regressed on effortful control was found to be significant ($\beta = .293, t = 3.3, p < .05$). In the third step, the mediator was regressed on dependent variable. This relation was not significant ($\beta = .004, t = .036, p > .05$) that is, effortful control did not significantly predict emotion regulation. Those findings indicate that not only maternal responsiveness but also effortful control did not promote emotion regulation. Since only the second requirement was satisfied, mediation was not possible.

4.5.3 Summary

The results did not support a mediating role for effortful control but rather a common-cause model where maternal responsiveness predicted both low emotion dysregulation and high effortful control.

CHAPTER 5

DISCUSSION

5.1 Overview

Previous research has shown that investigation of individual differences in emotion regulation has important implications for social functioning (Belsky et al., 2001; Eisenberg et al., 2001; Eisenberg et al., 2007; Eisenberg, Liew, et al., 2004; Eisenberg, Spinrad, et al., 2004; Liew et al., 2004; Rydell et al., 2003; Zhou et al., 2004). Therefore identification of the factors that influence children's emotion regulation functioning is an important goal for both socio-emotional development and developmental psychopathologists. With this purpose, the present study investigated individual differences in Turkish preschoolers' emotion regulation functioning in relation to temperamental characteristics and parental responsiveness. Specifically, the study aimed to explore the additive and multiplicative effects of dispositional anger, effortful control and maternal responsiveness on children's emotion regulation. The findings related to the original hypotheses and supplementary analyses are discussed with respect to the extant literature situating them in the context of strengths and limitations of the study.

5.2 Findings Relevant to the Original Hypotheses

5.2.1 Dispositional Anger and Effortful Control in relation to Emotion Regulation Outcomes

Overall the findings did not support the hypotheses. For example, one of the central predictions in the present study was that dispositional anger would predict emotion dysregulation. However, dispositional anger did not predict teacher ratings of either emotion regulation or emotion lability, the subscale of ERC that taps

emotion dysregulation. This finding contradicts previous research which link observed anger in frustrating situations with use of maladaptive emotion regulation strategies, indicating poor regulation (Buss & Goldsmith, 1998; Calkins et al., 1998; Calkins et al., 2002; Calkins & Johnson, 1998).

Concerning the other temperamental characteristic, it was expected that effortful control would predict emotion regulation functioning. It was found that effortful control was not associated with emotion regulation subscale but it was marginally associated with lability subscale that taps emotion dysregulation. This indicates that effortful control does not promote emotion regulation but buffers against emotion dysregulation. As a result, the findings did not provide support for the prediction that effortful control plays a role in modulations of emotions (Deryberry & Rothbart, 1997), a central tenet of Rothbart's model and is inconsistent with other studies that demonstrated a relation between emotion regulation and effortful control (e.g. Carlson & Wang, 2007).

One possible reason for inconsistency among the relations of anger and effortful control with emotion regulation could stem from reliance on either different measures of emotion regulation (ER) or differences in how ER is conceptualized across studies. In the present study, emotion regulation was measured with Emotion Regulation Checklist (ERC; Shields & Cicchetti, 1997). ERC taps manifestations of well-regulated and dysregulated emotions. The items in the Emotion Lability subscale taps emotion dysregulation typically associated with both internalizing and externalizing disorders but do not contain other maladaptive behavioral patterns such as social withdrawal. The items in the Emotion Regulation subscale tap adaptive regulation, specifically appropriate emotional expressions, empathy and emotional

awareness. This conceptualization of ER stands in contrast to previous research. It is possible to detect three different patterns toward the conceptualization and measurement of ER in previous studies that may inform lack of convergence between the findings from this study and those of previous studies.

In the first pattern, ER has been measured as regulation strategies in observational paradigms (Buss & Goldsmith, 1998; Calkins et al., 1998; Calkins et al., 2002; Calkins & Johnson, 1998). In these studies, researchers have demonstrated that purported regulatory strategies such as distraction tend to correlate with lower negative emotionality when both are measured within the same context. Given that both intensity of negative emotionality and frequency of purported regulatory strategies are measured in the same context, it is not surprising to uncover associations between the two. However, when effects of purported regulatory strategies on *subsequent* intensity of target emotion are examined, evidence suggests that regulatory strategies do not always have regulatory effects. For instance, ‘distraction’ have been found to reduce intensity of subsequent anger in some studies (Buss & Goldsmith, 1998) but not others (Harmon, Rothbart, & Posner, 1997), and strategies such as ‘withdrawal’ have been found not to reduce intensity of subsequent fear. Those findings indicate either inefficiency in regulation or that what appears to be a regulation behavior is actually a component of emotion expression itself (Buss & Goldsmith, 1998; Goldsmith & Davidson 2004). In a special section discussion regarding the links between emotional reactivity and its regulation, the consensus viewpoint was that regulation and emotion should be measured independently (Cole et al., 2004). In this sense the methodology adopted in this study conformed to independent measurement of emotional reactivity from regulation.

In the second pattern, we find that Eisenberg and her colleagues have conceptualized emotion regulation more broadly. For example, they have demonstrated that anger and effortful control predict elevations in internalizing or externalizing symptoms both additively and interactively (Eisenberg et al., 2001; Eisenberg et al., 2007; Eisenberg, Spinrad, et al., 2004) and they consider such evidence as effortful control's role in emotion related regulation (Eisenberg et al., 2007). However, symptom elevations contain both emotion related dysregulation and other maladaptive patterns related to self-regulation (Mullin & Hinshaw, 2007). Therefore equating symptom elevations with emotion dysregulation may give inaccurate information about the predictors of emotion regulation.

In a third more recent pattern, we find that ER is measured as the ability to mask negative emotionality with smiling in Saarni's classic disappointment paradigm, in which children are given an undesirable gift (babyish toy) and observed for their facial reactions to disappointment while alone and in the presence of the experimenter (Carlson & Wang, 2007; Liew et al., 2004). Results from such studies indicate that effortful control whether observed or maternally reported predicts children's ability to mask. However, the conceptualization of emotion regulation includes more than 'masking negative emotions'. As previously explained, ER refers to "internal and external processes that inhibit, maintain and enhance the occurrence, intensity and expression of emotions" (Thompson, 1994, p. 28). It also includes modulation of positive emotions. Therefore, assessment of emotion regulation through display rules alone might provide limited information about ER and its predictors.

Importantly, in the current study ER was conceptualized differently than the previous studies just described. First, the ERC does not measure strategies that children may use to regulate their emotional expressions but rather taps manifestations of well or poorly regulated emotionality. Second, neither the conceptualization nor the measurement of ER in this study equates it with symptoms elevations or display rules. Third, ERC was only rated by teachers who evaluated ER manifestations in the preschool context while predictors, dispositional anger, effortful control and responsiveness were assessed in a laboratory with observational paradigms and rated by independent teams of coders. Hence, none of the correlations in this study was inflated by shared method or rater variance unlike most previous research. Since emotion regulation was not assessed through regulatory strategies or symptoms or display rules, the results might not converge with previous research.

The discrepancy in findings could also stem from how dispositional anger was measured in the current study. Anger was assessed with a single paradigm, Transparent Box, drawn from Lab-TAB (Goldsmith et al., 1995) where child's anger/frustration was observed during a two-minute frustration context. A single context gives limited information about child's propensity for anger proneness in contrast to questionnaire reports of parents and teachers who aggregate their perceptions of the child's dispositional reactivity in anger over several contexts and days. The fact that dispositional anger was not correlated with any of the measures in this study would support this possibility. Future studies need to rely on multiple contexts to observe children's dispositional reactivity in anger.

Nevertheless, reliance on observational methods with independent teams of coders for each construct minimized shared method and rater variance among the

constructs. Hence, it is possible that majority of earlier studies which have relied on shared method and rater variance (Buss & Goldsmith, 1998; Calkins et al., 1998; Calkins & Johnson, 1998; Eisenberg et al., 2007; Eisenberg, Spinrad, et al., 2004) were dealing with inflated correlations among predictors and outcomes, giving the impression that the reported associations between anger and ER or effortful control and ER were more substantial than they actually are. Because our operationalization of ER was most similar to how Eisenberg and colleagues have measured this construct (i.e. symptom ratings), the null findings from this study may be particularly informative. In that when maladaptive patterns associated with internalizing and externalizing symptoms are circumscribed to include only emotion related dysregulation such as in the ERC, effortful control may fail to show a specific emotion related regulatory function as hypothesized in Rothbart's model.

Cultural differences in display rules could also be a reason for lack of associations among dispositional anger and other study variables. Display rules are “culturally determined rules that guide the display of emotion depending on social circumstances” (Matsumoto, 1990, p. 196). Children become more familiar with display rules around the ages of 4 or 5 (Fox & Calkins, 2003). Differences in display rules across cultures are mostly explained with Hofstede's (1980 as cited in Hofstede, 2001) dimensions. According to Hofstede (1980 as cited in Hofstede, 2001), one stable dimension of cultural variability is ‘Individualism-Collectivism’ (I-C). Individualistic cultures encourage uniqueness in individuals and deemphasize hierarchical power and status differences. In contrast, collectivistic cultures encourage identification of individuals as members of groups and emphasize hierarchical power and status differences (Matsumoto, 1990). ‘Individualism-

Collectivism' dimension is particularly important in relation to display rules because it creates in-group and outgroup distinctions (Matsumoto, 1990). Collectivistic cultures give more importance to in-group harmony and therefore it is assumed that members of collectivistic cultures should display more positive emotions to in-group members (Matsumoto, 1990). Accordingly, studies show that in Japan, open expression of negative emotions, specifically anger, disgust and fear, are considered inappropriate and they are reported to be displayed less often toward in-group members since it threatens in-group harmony (Matsumoto, 1990; Safdar et al., 2009). However, such findings need to be confirmed with observations of actual emotional expressions toward in-group versus out-group members as display rules may represent ideals and shared values which may diverge from actual emotional behavior.

Another dimension of cultural variability is 'power distance' (PD) (Hofstede, 1980 as cited in Hofstede, 2001). Cultures differ in terms of the emphasis they give to power and status differences (Matsumoto, 1990). High-PD cultures give more importance to maintenance of status differences than low-PD cultures. Therefore it is assumed that members of high-PD cultures should display more positive emotions to higher-status others than lower-status others in order not to threaten status differences (Matsumoto, 1990). Accordingly, in Japan, where power distance is emphasized, people rated display of anger towards higher-status individuals as more inappropriate (Matsumoto, 1990). As a result, cultural differences in display rules occur as a function of in-group and out-group distinctions and power distance.

Turkish culture ranks 28th in the individualism index and 18th in the power distance index among 53 regions (Hofstede, 1980 as cited in Hofstede, 2001). Thus,

we may expect that the sample in the current study embraces values associated with collectivism and high-PD to a greater extent than studies conducted in the US which constitutes the basis for hypotheses tested in this study. Accordingly it is possible that in the present study during Transparent box paradigm, Turkish children tried to minimize or mask their anger expressions in the presence of an experimenter who is an out-group member with a power distance differential, because display of negative emotions toward high status individuals is discouraged in collectivistic cultures in order to maintain status differences. And the masking or minimization led to diminished variability in anger measures leading to lack of prediction with ERC outcomes. However, this explanation is not very likely for the present study since the range of scores for the raw anger variable were not skewed and indicated adequate variability across the full range of possible scores. Another possibility is that because children were alone in the room during the paradigm, we may expect them not to be too concerned about masking or minimizing anger expressions, consistent with the range of observed scores in the sample. In the absence of a need to mask or minimize anger expressions, we may expect reactivity measures to fail to predict ERC and this may explain lack of associations. Finally, it is possible that children may have failed to mask or minimize anger expressions in this context because majority may not have internalized the relevant display rule, and hence reactivity in this context may fail to give relevant information about emotion regulatory abilities in preschool contexts. Finally, reactivity in anger observed in the transparent box paradigm may not be sensitive to emotion regulation abilities in preschool contexts. Future studies should observe reactivity in anger in several contexts and determine those most sensitive to

emotion regulatory abilities in preschool school contexts both as a function of prevailing display rules and their relevance to emotion regulation across cultures.

In summary, differences in conceptualization and measurement of ER, the limited sampling of reactivity in anger, and cultural differences in display rules could be possible reasons for null findings in terms of relations of dispositional anger and effortful control with other variables.

5.2.2 Maternal Responsiveness in relation to emotion regulation outcomes

Concerning parental influences on emotion regulation, it was expected maternal responsiveness would predict children's emotion regulation functioning. Consistent with our predictions, maternal responsiveness significantly contributed to the prediction of emotion lability. In other words, children whose mothers show high responsiveness displayed lower levels of emotion dysregulation in the preschool context. This finding is consistent with the previous research done by Bell and Ainsworth (1972) and Fish et al., (1991) who showed that mothers' prompt and accurate responses in an observational setting regulate infants distress. Unexpectedly, maternal responsiveness was not correlated with emotion regulation. This was contrary to the findings of Altan (2006), which revealed that reported maternal responsiveness (warmth, inductive reasoning and supportive responses) significantly predicted overall emotion regulation scores by ERC among Turkish preschoolers. It also contradicts with findings of Davidov and Grusec (2006), in which observed and reported maternal responsiveness to distress significantly predicted regulation of negative emotions assessed through the ERC and maternal warmth (an expression of acceptance) significantly promoted regulation of positive

emotions among 6 to 8 year old boys. It is noteworthy that correlates of emotion regulation and emotion dysregulation differed despite the fact that they were moderately negatively correlated. The findings clearly show that maternal responsiveness does not promote emotion regulation but buffers against emotion dysregulation. Hence, this finding provides at least partial support for the earlier studies regarding the important role that maternal sensitivity, acceptance and cooperation play in children's affective adjustment (Altan, 2006; Bell & Ainsworth, 1972; Davidov & Grusec, 2006; Fish et al., 1991).

5.2.3 Focusing on Moderational Relations

As mentioned earlier, one of the aims of this study was to explore multiplicative effects of dispositional anger with effortful control and maternal responsiveness on children's emotion regulation. First, it was expected that dispositional anger and effortful control would interact in predicting children's emotion regulation functioning. However, hierarchical regression analysis revealed nonsignificant result. That is, effortful control did not promote emotion regulation and did not buffer against emotion dysregulation for children high in dispositional anger. This finding did not provide support for the often assumed emotion-related regulatory effect of effortful control as a moderator of emotional reactivity (Fox & Calkins, 2003; Rothbart & Bates, 1998). The findings also contradict with previous research in US (Eisenberg, Spinrad, et al., 2004) and Chinese samples (Eisenberg et al., 2007; Zhou et al., 2004). In those studies, effortful control was found to moderate teacher reports of anger proneness (but not maternal reports of anger proneness) in predicting adjustment, in particular externalizing symptoms. Once again, it is possible the discrepancies in findings reflect differences in measurement instruments.

For example, when ER is measured in a more circumscribed manner as in the current study, rather than equating it with symptoms, effortful control may play a limited role in buffering against emotion dysregulation or promoting emotion regulation.

Differences in findings across these studies in terms of interaction effects could also stem from cultural and other contextual differences. For instance, in both US sample (Eisenberg, Spinrad, et al., 2004) and Chinese samples (Eisenberg et al., 2007), dispositional anger and effortful control were measured through questionnaires filled out by mothers and teachers. However, moderation was only found for teacher reported anger and not for parent reported anger, suggesting either a differential expression of anger at school and home contexts or possible maternal bias or both. For instance in the Zhou et al' s study (2004), parental and teacher ratings of dispositional anger were not correlated, indicating differences in how mothers and teachers view child emotionality which could reflect differences in how anger manifests in school versus home contexts in the Chinese culture. Because in the collectivistic Chinese culture, display of anger may be less acceptable in the school than the home context, relative importance of effortful control in controlling anger displays in the school context may be more important to functioning. However, in US samples teacher and parent reports of anger are correlated and even in those samples it tends to be only teacher ratings of anger that interact with effortful control to predict symptom elevations (Eisenberg, Spinrad, et al., 2004). In other words, home versus school contextual differences seem to be relevant to regulatory functions of effortful control in US samples as well. Therefore it is possible that the discrepancies in findings of the present study and past research reflect both cultural and contextual differences. For example, when anger is measured in a laboratory

setting as in the current study, it may not reflect children's anger displays in home or school contexts where emotion-related regulatory function of effortful control may hold greater importance.

In addition, display rules that dictate appropriate expression of emotions could influence the way effortful control may be brought to bear on anger regulation. As mentioned previously, in collectivistic cultures anger displays are minimized toward in-group members and toward higher-status individuals in order not to threaten in-group harmony and status differences (Matsumoto, 1990). However, anger displays are more acceptable toward out-group members and those with lower-status as it reinforces in-group identity through distancing between in-groups and out-groups and maintains status differences (Matsumoto, 1990; Matsumoto et al., 2007). Those conventions may be helpful in explaining lack of moderation in the current study. In the presence of an in-group member such as mother or in the presence of an out-group member with a power distance differential such as experimenter during Transparent box paradigm, children might minimize or mask their anger expressions in order not to threaten in-group harmony and power distance. However, children were alone during the paradigm even though the frustration was brought on by the experimenter. Thus the source of anger display might not be attributed to the mother or the experimenter hence they did not need to bring effortful control capacities to control emotion expressiveness. Alternatively, children at this age may still rely on their mothers for regulation of anger (Berlin & Cassidy, 2003; Kopp, 1989), diminishing the need to rely on their internal resources for regulation, such as effortful control. These are only assumptions based on previous research. The present study is not cross-cultural and does not inform when

and in what specific contexts display rules are brought to bear on anger expressions across different cultures or in this culture. The findings therefore raise the possibility that emotion regulatory function of effortful control with respect to its moderations with reactivity in anger differs across developmental and cultural contexts.

The analyses also explored whether maternal responsiveness would interact with dispositional anger in predicting children's ER functioning. Contrary to expectations, maternal responsiveness did not promote emotion regulation and did not buffer against emotion dysregulation for children with high dispositional anger. It is noteworthy that maternal responsiveness significantly buffered against emotion dysregulation, however, this buffering effect was not larger for children with high dispositional anger. In other words, there was no evidence in favor of Calkins' model (1994) and differential susceptibility hypothesis (Belsky, 1997) suggesting that supportive parenting promoted emotion regulation or buffered against emotion dysregulation for children with high dispositional anger.

Although the interactive effect of maternal responsiveness and negative emotionality on ER functioning has not been systematically explored in literature, some researchers have found support for the moderating role of negative parenting in the relation between anger proneness and children's ER functioning (Gilliom et al., 2002; Calkins & Johnson, 1998). For instance, observed anger predicted ineffective strategies for anger regulation only in the presence of maternal negative control (Gilliom et al., 2002) and in the presence of maternal interference (Calkins & Johnson, 1998). It is possible the discrepancies in findings reflect differences in measured constructs (negative versus positive parenting behaviors) and differences in measurement instruments (ER strategies versus the ERC).

Finally, the present study explored whether maternal responsiveness would interact with effortful control in predicting children's ER functioning. The results revealed that maternal responsiveness did not moderate the relation between effortful control and emotion regulation outcomes. In other words, there was no evidence in favor of differential susceptibility hypothesis (Belsky, 1997) that maternal responsiveness promoted emotion regulation or buffered against emotion dysregulation for children with low levels of effortful control.

5.2.4 Focusing on Mediational Relations

Another prediction of this study was to understand the pattern of associations between maternal responsiveness and ER functioning. Based on the literature, it was expected that maternal responsiveness would predict ER outcomes and this relation would be mediated by children's effortful control abilities. Concerning emotion dysregulation, Baron and Kenny's (1986) four step approach revealed that maternal responsiveness significantly contributed to emotion lability and contributed to effortful control separately. However, the relation between effortful control and emotion lability was marginally significant. Finally, maternal responsiveness significantly predicted emotion lability after controlling effortful control. Those results did not show clear support for mediation given the marginally significant relationship between effortful control and emotion lability.

It is possible the pattern of associations found in this study is more consistent with a common-cause model rather than a mediational model. Specifically, it is possible maternal responsiveness leads to both better standing on effortful control and lower levels of emotion dysregulation, rather than a mediational model in which maternal responsiveness leads to increases in effortful control which in turn buffers

against emotion dysregulation. The LISREL models were fit to examine whether the data from this study were more consistent with a common-cause or a mediational model. Those analyses indicated that the common-cause model showed excellent fit to the data, indicating that maternal responsiveness predicted both effortful control and emotion dysregulation compared with the mediational model where the effects of maternal responsiveness on emotion dysregulation were constrained to be indirect. The common-cause findings are consistent with previous studies demonstrating associations of maternal responsiveness with effortful control (Kochanska et al., 2000) and with emotion dysregulation (Bell & Ainsworth, 1972; Fish et al., 1991). Concerning emotion regulation, the mediating role of effortful control was found to be nonsignificant. This is not unexpected since maternal responsiveness and effortful control did not predict emotion regulation and correlates of emotion regulation and emotion dysregulation differed in previous analyses.

Although the relation between maternal responsiveness and ER functioning has not been systematically explored in literature, some researchers found support for mediating role of effortful control in the relation between parenting behaviors and children's social functioning (Eisenberg, Zhou, et al., 2005; Spinrad, Eisenberg, Gaertner et al., 2007; Zhou et al., 2004). For example, in their longitudinal study, Eisenberg, Zhou, et al., (2005) found support for the mediating role of effortful control in the relation between parental warmth/positive expressivity and children's externalizing behaviors. In addition, Spinrad, Eisenberg, Gaertner et al. (2007) and Zhou et al. (2004) found support for the mediating role of effortful control in the relation between supportive parenting and social adjustment and functioning in different age groups. The findings here are consistent with earlier research in

demonstrating the importance of maternal responsiveness for prevention and intervention settings to promote children's functioning, however, the data also suggest that the process through which maternal responsiveness promotes adjustment may differ from one cultural context to another.

5.3 Supplementary Analyses

The evidence from this study did not reveal broad or convincing support for the emotion-related regulatory effects of effortful control. Because effortful control is a multidimensional construct composed of three components (slowing down, delaying, suppressing dominant response), additional analyses were conducted to examine whether the expected effects were present for some components of effortful control but not others. For example, it is possible that hot effortful control as in the delay tasks moderates anger proneness in predicting emotion regulation outcomes but cool effortful control involving suppression of dominant responses with subdominant responses as in the day-night and bear-dragon tasks does not moderate anger proneness in predicting emotion regulation outcomes (Zelazo & Cunningham, 2007). Those analyses did not support the idea that components of effortful control may be differentially involved in emotion regulation outcomes. Finally, I explored the three-way interaction effect of dispositional anger, effortful control and maternal responsiveness on children's ER functioning. The analysis revealed nonsignificant results.

5.4 Summary

Overall, the findings of the present study are too weak to permit conclusions as to which factors promote emotion regulation or buffer against emotion dysregulation. In addition, majority of the findings were inconsistent with previous

findings. Dispositional anger did not predict emotion dysregulation either by itself or in interaction with either effortful control or maternal responsiveness. The same was true for effortful control. Hence, contrary to previous findings, effortful control did not appear to play the often assumed emotion-related regulatory function.

On the other hand, maternal responsiveness did not promote emotion regulation but buffered against emotion dysregulation. However, maternal responsiveness did not appear to play a moderational role in linking anger or effortful control with emotion regulation related outcomes. I had also hypothesized mediational relations that link maternal responsiveness to better effortful control which in turn promotes emotion regulation. The findings did not support mediation, however, the pattern of associations was more consistent with a common-cause model in which maternal responsiveness promoted both effortful control and buffered against emotion dysregulation.

5.5 Strengths and Limitations

One strength of this study was the use of multiple methods and independent raters. Children's temperamental characteristics (dispositional anger and effortful control) were assessed through behavioral batteries and maternal responsiveness was observed in various mother-child interactional contexts. Observational data were later coded by independent raters. Reliance on independent raters and observational measures of predictors and questionnaire measures of outcomes minimize shared method and rater variance and hence the correlations are not artificially inflated by reliance on the same rater for both predictors and outcomes. Another strength of this study is sample size than can be considered as quiet large for observational measures.

Study also had limitations. First, the design of the study was cross-sectional and correlation, thus the associations even when consistent with earlier findings, do not support causal inferences. Second, children in this study were recruited from preschools serving middle to high socioeconomic backgrounds and therefore represent a restricted sampling of the population of Istanbul or Turkey, limiting generalizability of the associations. Third, although laboratory was designed as a naturalistically furnished living room and observations lasted between 2-3 hours, data were generated in a single laboratory visit and all observational assessments nevertheless took place against a background of novelty which may have constrained variability in both effortful control and maternal responsiveness. Finally, dispositional reactivity in anger was observed only in a single brief context rather than multiple contexts and multiple sources of information (e.g. parent report of anger), which may have constrained variability in anger.

5.6 Broader Implications and Future Directions

The present study is one of the few studies to examine the unique relations of children's temperamental characteristics and parenting behavior style on children's emotion regulation functioning. To my knowledge, there is virtually no existing research on the relations of observed effortful control, dispositional anger and maternal responsiveness as well as their additive and multiplicative influences on emotion regulation in Turkey. Although the findings of this study are limited, they provide important insights and contribute to a better understanding of children's emotion regulation. First of all, the results indicate that maternal responsiveness is related to Turkish children's effortful control and emotion dysregulation in ways that are, for the most part, similar to in the U.S. However, the pattern of associations

differed from previous data based almost exclusively on US samples. Those differences may reflect yet unknown cross-cultural differences in the processes that link maternal responsiveness with emotion regulation. Although this research has not focused on culture and was not a cross-cultural study, the sample included children from an urban Middle Eastern context which is relatively collectivistic and an understudied region. Therefore, it is possible that expression of negative emotions and emotion-related regulatory function of effortful control may differ in this cultural context. Future studies need to inform cross-cultural differences in both display rules as well as measurement of differences in observed emotional reactivity in ways that may inform some of the difficult to explain null findings characteristic of this study.

The findings of this study have also important implications for interventions that target reducing or preventing emotion regulatory problems. They suggest that maternal responsiveness promotes effective regulation of emotions by buffering against emotion dysregulation. It is important for intervention work because dysregulated emotions most likely lead to social and behavior problems (Cole, Michel, et al., 1994). In addition, the findings suggest that maternal responsiveness at preschool ages plays an important role in children's abilities to regulate their attention and behaviors. Thus, interventions should be designed to promote supportive parenting practices such as sensitivity, acceptance and cooperation and to teach parents strategies that will reduce or prevent children's emotion regulatory problems and promote their attentional and behavioral control. Investment in such intervention programs especially during preschool years are likely to pay off in increasing school preparedness.

On the basis of the results, it can be concluded this study provides previously unavailable information in an attempt to link child temperamental characteristics and parenting behavior style in combination to emotion regulation for the purpose of improving children's socio-emotional development. In future studies, it would be useful to assess anger in more than one context and to collect longitudinal data in diverse cultures.

APPENDICES

Appendix A

Duygu D zenleme  leđi

Ařađıdaki listede bir ocuđun duygusal durumu ile ilgili ifadeler yer almaktadır. Verilen numaralandırma sistemini g z  n nde bulundurarak ařađıdaki davranıřları ocukta ne kadar sıklıkla g zlemediđinizi iřaretleyiniz:

Bu davranıřı:

(1) HİBİR ZAMAN/NADİREN

(2) BAZEN

(3) SIK SIK

(4) NERDEYSE HER ZAMAN g zlemliyorum.

	Hibir Zaman/ Nadiren	Bazen	Sık sık	Neredeyse Her zaman
1. Neřeli bir ocuktur.	1	2	3	4
2. Duygu hali ok deđiřkendir (ocuđun duygu durumunu tahmin etmek zordur �nk� neřeli ve mutluyken kolayca �zg�nleřebilir).	1	2	3	4
3. Yetiřkinlerin arkadařa ya da sıradan (n�tr) yaklařımlarına olumlu karřılık verir.	1	2	3	4
4. Bir faaliyetten diđerine kolayca geer; kızıp sinirlenmez, endiřelenmez (kaygılanmaz), sıkıntı duymaz veya ařırı derecede heyecanlanmaz.	1	2	3	4
5. �z�nt�s�n� veya sıkıntısını kolayca atlatabilir (�rneđin, canını sıkan bir olay sonrasında uzun s�re surat asmaz, endiřeli veya �zg�n durmaz).	1	2	3	4
6. Kolaylıkla hayal kırıklıđına uđrayıp sinirlenir (huysuzlařır, �fkelenir).	1	2	3	4
7. Yařıtlarının arkadařa ya da sıradan (n�tr) yaklařımlarına olumlu karřılık verir.	1	2	3	4

	Hiçbir Zaman/ Nadiren	Bazen	Sık sık	Neredeyse Her zaman
8. Öfke patlamalarına, huysuzluk nöbetlerine eğilimlidir.	1	2	3	4
9. Hoşuna giden bir şeye ulaşmak için bekleyebilir (örneğin, şeker almak için sırasını beklemesi gerektiğinde keyfi kaçmaz veya heyecanını kontrol edebilir).	1	2	3	4
10. Başkalarının sıkıntı hissetmesinden keyif duyar (örneğin, biri incindiğinde veya ceza aldığında güler; başkalarıyla alay etmekten zevk alır).	1	2	3	4
11. Heyecanını kontrol edebilir (örneğin, çok hareketli oyunlarda kontrolünü kaybetmez veya uygun olmayan ortamlarda aşırı derecede heyecanlanmaz).	1	2	3	4
12. Mızırır ve yetişkinlerin eteğinin dibinden ayrılmaz.	1	2	3	4
13. Ortalığı karıştırarak çevresine zarar verebilecek enerji patlamaları ve taşkınlıklara eğilimlidir.	1	2	3	4
14. Yetişkinlerin sınır koymalarına sinirlenir.	1	2	3	4
15. Üzüldüğünü, kızıp öfkелendiğini, veya korktuğunu söyleyebilir.	1	2	3	4
16. Üzgün veya halsiz görünür.	1	2	3	4
17. Oyuna başkalarını katmaya çalışırken aşırı enerjik ve hareketlidir.	1	2	3	4
18. Yüzü ifadesizdir; yüz ifadesinden duyguları anlaşılmaz.	1	2	3	4
19. Yaşıtlarının arkadaşça ya da sıradan (nötr) yaklaşımlarına olumsuz karşılık verir (örneğin kızgın bir ses tonuyla konuşabilir ya da ürkek davranabilir).	1	2	3	4
20. Düşünmeden, ani tepkiler verir.	1	2	3	4
21. Kendini başkalarının yerine koyarak onların duygularını anlar; başkaları üzgün ya da sıkıntılı olduğunda onlara ilgi gösterir.	1	2	3	4
22. Başkalarını rahatsız edecek veya etrafa zarar verebilecek kadar aşırı enerjik, hareketli davranır.	1	2	3	4

	Hiçbir Zaman/ Nadiren	Bazen	Sık sık	Neredeyse Her zaman
23. Yaşlıları ona saldırgan davranır ya da zorla işine karışırsa olumsuz duygular gösterir (örneğin kızgınlık, korku, öfke, sıkıntı).	1	2	3	4
24. Oyuna başkalarını katmaya çalışırken olumsuz duygular gösterir (örneğin, aşırı heyecan, kızgınlık, üzüntü).	1	2	3	4

Appendix B

Kendini Denetleme Becerisi

Katılımcı no _____ Dosya (mpg) ismi _____ Kodlayan: _____

Köprü

Toplam süre _____
Referans _____
Hızlı _____
Yavaş _____

Çizgi Üzerinde Yavaşça Yürüme

Toplam süre _____ Hatalar (çizginin dışına çıkma) _____
Referans _____
Yavaş #1 _____
Yavaş #2 _____

Hediye Paketi

Paketleme Süreci:
Başlama zamanı _____

Sabırsızlık gösterisi:

Tanım: Bakmadan ya da yerinden kalkmadan sabırsızlık gösterme,
ör durum hakkında konuşmak hadi demek, vb.,
kıpır kıpır olmak (Ç sabırsızlık göstermediyse 60 sn)

Zaman Süre

Bakma/oturma:

Ç arkasına döner ve tekrar önüne dönmez.	1	_____	_____
Ç arkasına döner/ kalkar, ama sonra tekrar önüne döner/oturur.	2	_____	_____
Ç hediyeği görebileceği şekilde omzunun üzerinden bakar.	3	_____	_____
Ç kafasını 90 dereceden daha az yana çevirir.	4	_____	_____
Ç bakmaya çalışmaz.	5	_____	_____

(Ç hiç bakmadıysa/kalkmadıysa 60 sn)

Aldığı en düşük bakma/oturma kodu _____

Not: Aldığı en düşük bakma/oturma puanı için kod, zaman ve süre yazılır. Daha düşük puanlar için zaman boş bırakılır ve süreye 60 yazılır. Daha yüksek puanlı davranışlardan gösterdiklerine zaman ve süre yazılır, hiç göstermediklerinin ise zaman ve süreleri boş bırakılır.

Kurdele bekleme süreci:

Başlama zamanı _____

Sabırsızlık gösterisi:

Tanım: Dokunmadan ya da yerinden kalkmadan sabırsızlık gösterme,
ör durum hakkında konuşmak hadi demek, vb.,
kıpır kıpır olmak (Ç sabırsızlık göstermediyse 180 sn)

Zaman Süre

Oturma kodu:

Ç süre bitmeden kalktı.	0	_____	_____
Ç süre bitene kadar oturdu.	1	_____	_____

Dokunma kodu:

	<i>Zaman</i>	<i>Süre</i>
Ç hediye açar.	1	_____
Ç hediye kaldırı/ alır.	2	_____
Ç hediyeye dokunur fakat kaldırmaz.	3	_____
Ç hediyeye hiç dokunmaz.	4	_____

(Hiç dokunmadıysa 180 sn)

Aldığı en düşük dokunma kodu _____

Not: Aldığı en düşük bakma/oturma puanı için kod, zaman ve süre yazılır. Daha düşük puanlar için zaman boş bırakılır ve süreye 60 yazılır. Daha yüksek puanlı davranışlardan gösterdiklerine zaman ve süre yazılır, hiç göstermediklerinin ise zaman ve süreleri boş bırakılır.

Yemeği geciktirme

Kod tanımları:

		<i>Deneme kodu</i>	<i>Sabırsızlığa dek geçen süre</i>
Ç yemeği zil çalmadan yer.	0	Deneme 1 (5)	_____
Ç zili beklemeden alacakken süre biter.	1	Deneme 2 (10)	_____
Ç zil çalmadan bardağa/taşa vb. dokunur ama yemez	2	Deneme 3 (0)	_____
Ç zili bekler ama elini istenen şekilde tutmaz	3	Deneme 4 (20)	_____
(ör kağıt aracılığı ile taşa dokunur)		Deneme 5 (0)	_____
Ç elini kağıtta istenen şekilde tutar ve zili çalana kadar bekler	4	Deneme 6 (40)	_____

Sabırsızlık gösterisi: Zilin çalmasını beklerken kıpır kıpır olmak, kağıdı, taşa direk ya da dolaylı olarak itmek/dokunmak, durum hakkında konuşmak (hadi demek) vb. Hiç göstermediyse süreye 41 yazılır.

Gündüz/Gece

Her deneme için kodlar:

(0) Gösteremez; (1) Yanlış cevap verir ve kendini düzeltmez (ya da doğru cevap verir ama fikir değiştirir); (2) Kendini düzeltir; (3) Doğru cevap verir ve fikrini değiştirmez.

Deneme 1 (gece)	_____	Deneme 6 (gece)	_____
Deneme 2 (gece)	_____	Deneme 7 (gündüz)	_____
Deneme 3 (gündüz)	_____	Deneme 8 (gündüz)	_____
Deneme 4 (gece)	_____	Deneme 9 (gece)	_____
Deneme 5 (gündüz)	_____	Deneme 10 (gündüz)	_____

3'lerin sayısı: _____ ; 2'lerin sayısı _____ ; 1'lerin sayısı _____ ; 0'ların sayısı _____

Toplam deneme sayısı _____

Kukla oyunu (Ayı/Canavar)

Her ayı komutu için: (Hareket /aktivasyon (activation) kodunu temsil eder)

Ç hiç bir hareket yapmaz.	0 (no activation)
Ç düzeltme niyetli kısmi bir hareket yapar	1
Ç söylenenden farklı bir hareket yapar.	2
Ç söylenen hareketi doğru/tam yapar.	3

Her canavar komutu için: (Denetleme/ engelleme (inhibition) kodunu temsil eder)

Ç söylenen hareketi tam yapar.	0
Ç söylenenden farklı bir hareket yapar.	1
Ç kısmi bir hareket/düzeltilme yapar.	2 (başını sallayıp/ hayır demek de burada kodlanır)
Ç hiç bir hareket yapmaz.	3

	Ayı komutları				Canavar komutları				
	Tam	Farklı	Kısmi	Hiç	Tam	Farklı	Kısmi	Hiç	
1. Dil	3	2	1	0	1. Kulak	0	1	2	3
2. Diş	3	2	1	0	2. El çırp	0	1	2	3
3. El çırp	3	2	1	0	3. Göz	0	1	2	3
4. Burun	3	2	1	0	4. Ayak	0	1	2	3
5. Karın	3	2	1	0	5. Burun	0	1	2	3
6. Baş	3	2	1	0	6. El salla	0	1	2	3
Ayı hareket toplamı: _____					Canavar denetleme toplamı: _____				

Ayı için:

3'lerin sayısı: _____ ; 2'lerin sayısı: _____ ; 1'lerin sayısı: _____ ; 0'ların sayısı: _____

Toplam deneme sayısı: _____

Canavar için:

3'lerin sayısı: _____ ; 2'lerin sayısı: _____ ; 1'lerin sayısı: _____ ; 0'ların sayısı: _____

Toplam deneme sayısı: _____

Appendix C

Şeffaf Kutu (Engellenme hissiyle başa çıkma)

Katılımcı no _____ Kodlayan _____ Mpg dosya ismi _____

İlk üzüntüye kadar geçen süre _____ (hiç üzüntü gözlemlenmediyse 121)

İlk öfkeye kadar geçen süre _____ (hiç öfke gözlemlenmediyse 121)

Uğraşmayı bırakana kadar geçen süre _____ (hiç gözlemlenmediyse 121)

A'dan yardım isteyene kadar geçen süre _____ (hiç gözlemlenmediyse 121)

Dakika 1:	5	10	15	20	25	30	35	40	45	50	55	60
Üzüntü												
Öfke/ Kızgınlık/ Kösteklenme hissi												
İlgili												

Üzüntünün en yoğun/şiddet düzeyi (0-3): _____

Öfke/asabiyetin en yoğun/şiddet düzeyi (0-3): _____

Toplam # : Üzüntü _____ Öfke/kızgınlık/kösteklenme _____ İlgili _____

Dakika 2:	5	10	15	20	25	30	35	40	45	50	55	60
Üzüntü												
Öfke/ Kızgınlık/ Kösteklenme hissi												
İlgili												

Üzüntünün en yoğun/şiddet düzeyi (0-3): _____

Öfke/asabiyetin en yoğun/şiddet düzeyi (0-3): _____

Toplam # : Üzüntü _____ Öfke/kızgınlık/kösteklenme _____ İlgili _____

5sn-lik dilim adedi toplamı _____

Appendix D
Annenin ocuęa Duyarlılıęı

Katılımcı no _____ Kodlayan _____ Mpg dosya ismi _____

1. Etkinlik: Anneyle oda keşfi (6dk)

1 2 3 4 5 6 7

2. Etkinlik: Annenin işi var (15dk)

1 2 3 4 5 6 7

9. Etkinlik: Anneyle bisküvi-kurabiye molası (12dk)

1 2 3 4 5 6 7

11. Etkinlik: Anne- çocuk serbest oyun (6 dk)

1 2 3 4 5 6 7

12. Etkinlik: Oyuncak toplama (10 dk)

1 2 3 4 5 6 7

13. Etkinlik: Anneyle beraber problem çözme (10 dk)

1 2 3 4 5 6 7

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