

Gender Differences in Children's Emotion Regulation from Preschool to School Age

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Abstract

The main goal of this study was to examine gender differences in patterns of children's emotion regulation from preschool to school age. Participants were 199 three-year-old boys and girls who were reassessed at age 6. At both times, children participated in a disappointment task to assess emotion regulation, and mothers and fathers completed a temperament questionnaire. It was hypothesized that there would be main effects of gender and age on emotion regulation of children but no gender x age interaction. Multivariate analyses of variance (MANOVAs) with repeated measures were used to determine age and gender differences in children's emotion regulation skills, and subsequent analyses of variance (ANOVAs) were used to explore age and gender effects on each emotion. Six-year-old children displayed more task incongruent positive affect but less sadness and anger than 3-year-old children. Parents reported their children as less shy at age 6 than at age 3. Gender differences only appeared upon interaction with age. Certain gender differences (girls displaying more positive affect and boys displaying more anger) were apparent at age 3 but not at age 6, but only in laboratory settings. The main finding was the lack of gender differences in parent reports compared to apparent gender differences in observed behavior. Thus, gender differences in children's early emotion regulation were partly in the eye of the beholder and were most likely to be elicited by mildly stressful events in controlled situations. Future research on this topic must take into account not only the age of the child, but also the specific situational contexts in which emotional behavior is measured.

Keywords: emotion regulation; emotion; childhood; preschool; development; gender; age

Gender Differences in Children's Emotion Regulation from Preschool to School Age

Research has consistently shown gender differences in the development of children's emotion regulation (Chaplin & Aldao, 2013). Typically, girls have shown more internalizing behavior whereas boys are more likely to externalize their emotions (Saarni, 1984). When do these gender differences first appear in early development? Understanding the origins of gender differences in emotion regulation can provide insight into how well individuals adjust in the future (Bowie, 2010). However, relatively few investigators have examined the development of gender differences in emotion regulation across the period spanning early preschool through school entry.

In this thesis, I used a longitudinal mixed methods approach to examine emotion regulation in preschool and school age girls and boys to explore the gender differences across early childhood. First, I will review concepts of emotions, emotion regulation, and emotion dysregulation. Next, I will consider how emotion regulation changes as children mature. Finally, I will examine how parents may influence gender differences in childhood emotion regulation and expression, and whether these parental behaviors change with the age of the child.

Concepts of Emotion Regulation and Dysregulation

In order to study emotion regulation, it is important to understand theoretical concepts of emotion regulation and dysregulation. According to Cole, Michel, and Teti (1994), emotion regulation involves monitoring one's emotions to appropriately match a given circumstance. This includes both suppressing certain emotions and also allowing oneself to express certain other emotions in order to fit into a particular social situation. Emotion regulation strategies involve the psychological processes one goes through in order to maintain a level of social harmony and personal well-being. Some of these strategies include: delaying an emotional

reaction, reducing the intensity of an emotion, shortening the duration of an emotion, or shifting from one emotion to another. Conversely, emotion dysregulation occurs when the regulation of emotions interferes with the individual's emotional and/or social functioning. For example, Cole, Hall, and Hajal (2013) discussed how a person with a personality disorder might feel threatened in a certain situation. Instead of turning to effective regulation strategies, the individual became hostile towards others. Eventually, this kind of behavior could impair the quality of the individual's social relationships.

Zimmermann and Iwanski (2014) discussed emotions and argued that each emotion is different in how it affects and works within individuals. Thus, emotion regulation develops on an emotion-specific basis, rather than on a general developmental level. This is apparent when studying gender differences in emotion regulation. In a study of perceived gender stereotypes of emotion, Fabes and Martin (1991) found that males were perceived to express anger more frequently than females, whereas females were perceived to express sadness and fear more frequently than males.

Age Differences in Childhood Emotion Regulation

In early childhood, the development of emotion regulation is extremely rapid, reflecting maturation of executive brain functions controlling planning, inhibition, and social cognition. For example, Cole and colleagues (2013) found that emotional competence increased markedly across early childhood: by the school age period, typically developing children rarely showed emotion dysregulation. Specifically, in a study by Olson, Sameroff, Lunkenheimer, and Kerr (2009), toddlers between the ages of 2 and 3 were able to understand social demands and use their increasing memory capacity to monitor their own behavior. By the preschool age, children learned to adjust their emotional and behavioral responses to particular situations, distinguishing

between appropriate and inappropriate contexts for a particular behavior. In a study by Silk, Shaw, Skuban, Oland, and Kovacs (2006) regarding specific regulation strategies, older children were more likely to use active distraction and less likely to focus on delay objects than younger children, displaying a better understanding of effective strategies in certain situations. Thus, children's emotion regulation skills improve dramatically across the early childhood years. These findings highlight the importance of studying factors related to the development of emotion regulation across early childhood.

Gendered Emotions and Emotion Regulation

Gender stereotypes have important social implications. Girls are commonly stereotyped as displaying more expressions of prosocial emotions than boys, a folk belief that has implications for how interpersonal relations and gender roles are perceived (Fabes & Martin, 1991). For example, they are expected to get along better with people, and in turn, be nicer and friendlier. To what extents do research studies support these folk beliefs? It may not be surprising that in studies of emotion regulation during frustrating tasks, girls from ages 3 to 8 expressed more task incongruent positive emotions, whereas boys had more difficulty hiding their frustration (Cole, 1986; Davis, 1995). These findings suggest that even during the preschool years (and beyond), girls are more capable than boys of suppressing their emotions to conform to social standards (Saarni, 1984).

One potential explanation of girls' ability to suppress negative emotions is the idea of differential socialization. It has been theorized that girls are socialized to be more sensitive to others' feelings than boys, and therefore they excel at using effective strategies to cope with their emotions in a given social context (Chaplin, Cole, & Zahn-Waxler, 2005; Davis, 1995; Olson et al., 2009; Silk et al., 2006). To test this theory, Cole (1986) studied girls' emotion regulation in a

disappointment task under two conditions: social and nonsocial. Girls from ages 3 to 9 were presented with an undesired prize either in the presence of an experimenter (social condition) or alone (nonsocial condition). Girls engaged in more positive behavior when the experimenter was present, whereas girls in the nonsocial group displayed more negative emotions. These findings support the theory that girls use suppressive emotion regulation strategies in the presence of others, possibly because they are socialized to do so, highlighting a clear effect of gender on emotion regulation. However, few previous investigators have discussed how gender differences in emotion regulation may change with age.

Gender Differences in Parent-Child Emotion Communication

Parents are highly influential in socializing their children in accordance with gender norms (Chaplin et al., 2005; Eisenberg, Cumberland, & Spinrad, 1998). Studies have found that parents discussed emotions more frequently with daughters than with sons (Adams, Kuebli, Boyle, & Fivush, 1995; Eisenberg et al., 1998). Furthermore, these studies also revealed that parents used a larger variety of emotion words with daughters than with sons. Both findings may correlate with the belief that girls are generally more emotional than boys. In terms of specific emotions, parents typically reinforced sadness in girls and anger in boys by way of attending to those specific emotions more frequently in either their daughters or sons (Fivush, Brotman, Buckner, & Goodman, 2000; Silk et al., 2006). This could explain why girls typically display more sadness while boys display more anger than opposite gender peers. Finally, Chaplin and colleagues (2005) found that parental socialization of gender roles peaked around preschool age, suggesting that parental influences on child emotion expression should be apparent by this time.

The study by Chaplin and colleagues (2005) compared parental behaviors towards submissive expressions (sadness and anxiety) with behaviors towards disharmonious expressions

(joy at the expense of others and anger) in their children. They found that fathers paid more attention to submissive expressions in preschool and school age girls and to disharmonious expressions in school age boys. However, no gender differences were found for fathers' attention towards disharmonious expressions in their preschool age children. These findings have many implications, including the possibility that fathers do not distinguish between expressions of anger in their preschool age sons and daughters. In other words, perhaps fathers expect all children to express anger at the preschool level, but girls are expected to downplay their anger more than boys by school age. Mothers showed identical results to fathers with the exception that mothers paid more attention to girls' submissive emotional expressions than to those of boys. These findings suggest that whether a child expresses submissive or disharmonious emotions more strongly reflects the gender of the child than the gender of the parent.

Rationale for Current Study

In the current study, I examined associations between child age (specifically preschool and early school age), gender, and emotion regulation. While extensive research has been performed on age and emotion regulation, as well as on gender and emotion regulation, the relationship between the three has been relatively unexplored. Chaplin and Aldao (2013) reviewed gender differences in emotion regulation from childhood through adolescence. They found that gender differences in emotion regulation became apparent in the toddler or preschool periods. For example, early gender differences have been found in children's responses to frustrating tasks, and early suppression of negative emotions in girls could be a risk factor for internalizing problems (Chaplin & Aldao, 2013). An additional example involves externalization: externalizing behavior was more prevalent in boys in the preschool/toddler age

while the gender difference in externalization was weaker in adolescence. Thus, the preschool period is an opportune time to study gender differences in emotion regulation that may underlie children's current and later socioemotional adjustment. However, relatively few authors have used behavioral methods in comparing boys and girls, let alone a multi-measure approach that combines observational data and parents' reports. Behavioral methods allow the researcher to study a specific measure of interest by directly observing children's emotions in a controlled environment. Comparing observed behavior with parental reports allows for a more inclusive understanding of the child's emotion regulation skills that encompasses different situational contexts. In the present study, I proposed to use this strategy to develop and test hypotheses about the patterns of gender differences in emotion regulation across the period spanning preschool (age 3) to school (age 6).

Implications of Gender Differences in Emotion Regulation

Studying emotion regulation has important implications for understanding children's future adjustment. Particularly, children with relatively poor emotion regulation are at greater risk for future relational aggression patterns (Bowie, 2010); conduct problems (Cole, Teti, & Zahn-Waxler 2003); social conflict (Calkins, Gill, Johnson, & Smith, 1999); and depression (Cole, Zahn-Waxler, Fox, Usher, & Welsh, 1996). Chaplin and colleagues (2005) discovered that high levels of submissive emotions (sadness and anxiety) were more frequent in adolescent girls and can predict future internalizing problems. Conversely, they found that higher levels of disharmonious emotions (anger and joy at the expense of others) are more common in boys and can predict externalizing problems. These findings support the gender stereotypes of girls as more introversive and boys as extroversive. Moreover, they suggest that these gender norms can be linked back to early childhood displays of specific emotions. Understanding the development

of gender differences in emotion regulation can help parents and teachers recognize the early signs of potential internalizing or externalizing problems in girls and boys.

In addition to gender differences in patterns of emotion expression, the study of age differences in emotion regulation has implications for understanding children's subsequent adjustment. Cole and colleagues (1996) found that preschool children who were either inexpressive or highly expressive had more externalizing symptoms both at preschool age and in first grade. Similarly, they found that inexpressive children had more symptoms of depression and anxiety in first grade than others. Since emotions might present themselves differently in preschool versus school age children (Cole et al., 2013; Eisenberg & Morris, 2003; Röhl, Koglin, & Petermann, 2012; Saarni, 1984), it is important to examine a preschool child's emotion regulation strategies and predict how they will affect the child in the future.

In conclusion, considerable information has been discovered about gender and age differences in emotion regulation. Relative to the opposite gender, girls tend to display more internalized emotions (sadness, fear, sympathy), whereas boys tend to externalize negative emotions (anger, aggression) (Chaplin & Aldao, 2013). During a disappointment task, preschool age girls were more likely than boys to suppress their negative emotions and display task incongruent positive emotions (Cole, 1986). Regarding age differences, emotion regulation tends to improve dramatically across the early childhood period (Cole et al., 2013). Furthermore, the meta-analysis by Chaplin and Aldao (2013), which examined infants through adolescents, demonstrated that certain gender differences in emotional expression became more pronounced as the age of the child increased. However, few investigators have used behavioral methods to explore gender and age differences in emotion regulation across the early childhood period.

In the present study, I used longitudinal data from both observed child behavior and mothers' and fathers' perceptions of their preschool and school age children in order to analyze patterns of gender differences in emotion regulation. Longitudinal data permits examination of development across an important period. This approach allowed for an exploration of the same children across development as opposed to cross-sectional analyses of different children at different ages. At both time points (ages 3 and 6), I examined boys' and girls' observed behavior in disappointment tasks. Children were presented with an undesired prize and their reactions were observed. I analyzed children's displays of anger, sadness, and task incongruent positive affect, or joy, in response to the disappointing prize. In order to obtain the most inclusive estimates of children's emotionality, I explored parents' reports in addition to the observational laboratory experiment. I examined both mothers' and fathers' responses to a survey of children's temperament. Specifically, anger, fear, and shyness were the emotions of interest from the parent survey. Including parent reports along with observed behavior allowed me to compare subjects' emotionality from multiple perspectives. In addition, including both mothers' and fathers' survey responses provided the unique advantage of analyzing children's emotionality in relation to the gender of the parent.

In this thesis I addressed several research questions:

1. First, how does children's emotion regulation change as they mature across the preschool period? I predicted there would be a main effect of age on emotion regulation for the disappointment task, mother ratings, and father ratings of temperament. I predicted that during the disappointment task, displays of task incongruent positive emotion would increase with age, whereas the frequency of displaying sadness and anger would decrease. I also predicted that parents would rate their children as less angry, fearful, and shy with increasing age.

2. Second, how will girls and boys differ in emotion regulation at the preschool and school age levels? I predicted there would be a main effect of gender on emotion regulation for the disappointment task, mother ratings, and father ratings of temperament. I predicted that girls would show more sadness and contextually incongruent positive affect in the disappointment task than boys, and that boys would display more anger than girls. Similarly, I predicted that mothers and fathers would rate girls as more shy and fearful than boys, whereas boys would be perceived as angrier than girls.

3. Finally, how will gender differences in emotion regulation progress from preschool to school age? I predicted there would not be significant interactions between gender and age on emotion regulation for the disappointment task, or for mother or father ratings of temperament. Rather, I predicted that girls would display more task incongruent positive affect and sadness than boys at both the preschool and school age levels. I predicted that school age boys would show more anger than girls in a frustrating situation at both ages. Finally, I also predicted that mothers and fathers would rate girls as more fearful and shy than boys at both ages and boys as angrier than girls at both ages.

Method

Participants

Participants ($N = 199$) were drawn from a sample of 240 three-year-old children (118 girls; age range 32-45 months, $M = 41.40$ months, $SD = 2.09$ months) who were enrolled in an ongoing longitudinal study of young children at risk for school age conduct problems (Olson, Sameroff, Kerr, Lopez, & Wellman, 2005). Children represented the full range of externalizing symptom severity on the Child Behavior Checklist/2-3 (Achenbach, 1992), with an oversampling of toddlers in the medium high to high range of the Externalizing Problems Scale ($T > 60$; 44%).

The remaining sample was split relatively evenly between children whose externalizing problems *T* scores exceeded 50 but were below 60, and those whose *T* scores were below 50. Most families (95%) were recruited from newspaper announcements and fliers sent to day care centers and preschools; others were referred by preschool teachers and pediatricians. In order to recruit children with a range of behavioral adjustment levels, two different ads were periodically placed in local and regional newspapers and child care centers, one focusing on hard to manage toddlers, and the other on normally developing toddlers. The child's attendance in a formal preschool program was not an absolute requirement for family enrollment. Once a parent indicated interest, a screening questionnaire and brief follow-up telephone interview were used to determine the family's appropriateness for participation and willingness to engage in a longitudinal study. Children with serious chronic health problems, mental retardation, and/or pervasive developmental disorders were not included in the current study. Families were paid for their participation.

Most children (91%) were of European American heritage. Others were of African American (5.5%), Hispanic American (2.5%), and Asian American (1%) racial or ethnic backgrounds. The majority (87.9%) resided in two-parent families; of the remaining households, 5.3% of parents identified themselves as single (never married), and 6.8% as divorced. Fifty-five percent of mothers worked outside the home on a full-time basis. Nineteen percent of mothers and 24% of fathers had achieved high school educations only, 46% of mothers and 34% of fathers had completed 4 years of college, and 35% of mothers and 42% of fathers had completed additional graduate or professional training. The median annual family income was \$52,000 (range = \$20,000 to > \$100,000).

Of the 240 families assessed initially, Olson, Lopez-Duran, Lunkenheimer, Chang, and Sameroff (2011) retained 210 (88%) who participated in all aspects of data collection and 96% who have provided partial data. Twenty families moved out of state but continued to provide questionnaire data. Of the 10 families no longer in the study only two have refused participation (too busy). The other eight withdrew because of family or child illness. Attrition was not selective based on comparisons of major sociodemographic or study characteristics.

Overview of Procedures

Age 3. Children participated in a Saturday morning laboratory session scheduled at a local preschool. Following 20-30 min of rapport building, self-regulation and social-cognitive tasks were individually administered. Children received small gifts for their participation.

Mothers and fathers were interviewed in their homes by a female social worker (separate days). Family demographic information was obtained; in addition, mothers and fathers independently responded to questions concerning their child's behavioral adjustment. Subsequent to the home visit, mothers and fathers completed questionnaires concerning the child's behavioral adjustment and temperament.

The majority of the children in this study (86%) were enrolled in preschool or daycare programs outside the home. Preschool teachers were asked to contribute ratings of children's behavioral adjustment, and 95% agreed and were given gift certificates for their participation. As described below, children's peer interactions were videotaped in preschool settings.

Age 6. Children participated in a 3-4 hour laboratory assessment. Following 20-30 min of rapport building, measures of effortful control, social-cognitive maturity, cognitive competence, and responses to a disappointing task were individually administered. Children received small gifts for their participation.

Mother and fathers completed the abbreviated version of the child temperament measure described above.

Measures of Children's Emotional Reactivity

Individual differences in children's proneness to negative emotional reactivity were assessed using the same behavioral tasks and parental ratings at ages 3 and 6 years.

Disappointment task. Individual differences in children's negative emotional reactivity were assessed using an adapted version of the disappointment paradigm developed by Cole, Zahn-Waxler, and Smith (1994). Children were seated at a small table and shown an array of four small objects, some desirable (small toys or stickers) and some undesirable (broken pencils or bottle caps). The child was asked to rank order his/her most versus least preferred toys, and was told that another person would bring his/her most highly desired choice. A second assistant entered the room, presented the child's least desired choice, and sat at the table completing paperwork for 60 s. The assistant left the child alone for 60 s. Finally, the first assistant reentered and interviewed the child to determine self-reported emotional responses to disappointment. Next, the examiner told the child that there was a mistake and gave the child his/her first choice. The second assistant returned briefly and apologized for the mistake. The task was videotaped.

The presence of three affective states (happiness, sadness, anger) was coded every 10 s. Reliability was based on 30 paired observations independently analyzed by two coders ($kappa = .83$, range = .71-.94). The indexes of *reactive anger* (hostility, sarcasm, irritation, annoyance, harshness), *sadness* (glumness, dysphoria, tearfulness), and *joy* (display of happiness, pleasure, enthusiasm, cheerfulness, and excitement) were extracted for use in the current study. These measures were created by subtracting expressed negative affect in response to receiving a

disappointing toy from basal levels of negative affect (assessed before the toy was presented). Voice and facial cues for *anger/hostility* included harsh insistent tone, increase in pitch and volume, tightened or narrowed eyelids, tightened or pressed lips, clenched teeth, and mouth or jaw set. Voice and facial cues for *sadness* included soft voice tone decreases in volume and/or drops off, lip corners turned down, depressed lower lip, eyelids drooped, and tearfulness (Cole et al., 1994).

Parent ratings. An abbreviated version of Rothbart's Child Behavior Questionnaire (CBQ; Ahadi, Rothbart, & Ye, 1993) was used to assess individual differences in parents' perceptions of children's negative emotionality. Mothers and fathers independently rated their children on measures of anger, fear, and shyness. Measures of anger included questions such as, "My child gets angry when told s/he has to go to bed," or "My child has temper tantrums when s/he doesn't get what s/he wants." Measures of fear included questions such as, "My child is afraid of burglars or the 'boogie man,'" or "My child is very frightened by nightmares." Finally, measures of shyness included questions such as, "My child sometimes prefers to watch rather than join other children playing," or "My child gets embarrassed when strangers pay a lot of attention to her/him."

Results

Overview

Descriptive statistics and bivariate correlations were computed for all study variables. Next, Multivariate Analyses of Variance (MANOVA) with Repeated Measures were used to determine whether there were main effects of age or gender on children's emotion regulation, and whether there were age x gender interactions. Subsequently, one-way Analyses of Variance (ANOVA) with Repeated Measures and univariate analyses were conducted to explore each

emotion from all three reports. Finally, post-hoc pairwise (for within-subject differences) and independent samples (for between-subject differences) *t*-tests were used to test the direction (positive or negative) and strength (slight, moderate, or strong) of significant interactions.

Descriptive Statistics

Means [*M*] and standard deviations [*SD*] of the preschool age [Age 3] disappointment task and parent CBQ ratings are presented in Table 1. Means and standard deviations of the school age [Age 6] disappointment task and parent CBQ ratings are presented in Table 2.

Concurrent Intercorrelations between Study Variables

Intercorrelations between preschool age study variables are presented in Table 3. Significant correlations between sadness and anger in the disappointment task, anger in the disappointment task and fathers' ratings of anger, and mothers' ratings of shyness and fathers' ratings of fear were modest in magnitude and positive. Significant correlations between mothers' and fathers' ratings of anger and fear were moderate in magnitude and positive. Finally, mothers' and fathers' ratings of shyness were strongly positively intercorrelated.

Intercorrelations between school age study variables are presented in Table 4. Children's expressions of joy and sadness in the disappointment task were slightly negatively intercorrelated. Replicating the preschool level findings, mothers' and fathers' ratings of child anger and fear were moderately positively intercorrelated. In addition, the strong positive intercorrelation between mothers' and fathers' ratings of shyness persisted at age 6 years.

Gender and Age Differences in Emotion Regulation

Bivariate analyses indicated significant intercorrelations between dependent variables (the three emotions) within each block (disappointment task, mother's CBQ, and father's CBQ). Therefore, MANOVAs with repeated measures were conducted for each block of dependent

variables to compare age and gender for each measure. The overall multivariate test (Wilks's lambda) indicated a significant main effect of age for the disappointment task [$F(2, 191) = 37.35, p < .001$]; mother's CBQ ratings [$F(2, 203) = 5.62, p < .01$]; and father's CBQ ratings [$F(2, 114) = 10.34, p < .001$]. The overall multivariate test (Wilks's lambda) indicated no significant main effect of gender for the disappointment task [$F(2, 191) = 0.45, p = ns$]; mother's CBQ ratings [$F(2, 203) = 0.73, p = ns$]; or father's CBQ ratings [$F(2, 114) = 0.39, p = ns$]. Finally, the overall multivariate test (Wilks's lambda) indicated a significant gender x age interaction for the disappointment task [$F(1, 192) = 6.67, p < .05$] but did not indicate a significant gender x age interaction for mother's CBQ ratings [$F(1, 204) = 2.42, p = ns$] or father's CBQ ratings [$F(1, 115) = 0.02, p = ns$].

Main effect of age. I predicted that there would be a main effect of age on emotion regulation during the disappointment task. I hypothesized that in the presence of a frustrating stimulus, children would display more task incongruent positive affect, but less sadness and anger, with age. A one-way ANOVA with repeated measures was conducted to test the effect of age on each emotion (positive affect/joy, sadness, and anger) measured in the disappointment task. Age had a main effect on positive affect [$F(1, 196) = 68.66, p < .001$]; sadness [$F(1, 196) = 53.81, p < .001$]; and anger [$F(1, 196) = 21.71, p < .001$], supporting the hypothesis that age would have a main effect on children's emotion regulation during the disappointment task. A paired samples *t*-test was conducted to explore each individual emotion (see Table 5). Mean age differences in positive affect, sadness, and anger were significant. As expected, children at age 6 displayed more task incongruent positive affect, less sadness, and less anger than children at age 3.

I also hypothesized that there would be a main effect of age on mothers' and fathers' CBQ ratings. I predicted that mothers and fathers would rate their children as less angry, fearful, and shy with increasing age. A one-way ANOVA with repeated measures was conducted to test the effect of age on each emotion (anger, fear, and shyness) for mothers' and fathers' CBQ ratings. Based on mother's temperament ratings, age had a main effect on shyness [$F(1, 205) = 8.37, p < .01$] but not on anger [$F(1, 205) = 0.68, p = ns$] or fear [$F(1, 205) = 2.68, p = ns$]. Based on father's temperament ratings, age had a main effect on shyness [$F(1, 116) = 13.71, p < .001$] but not on anger [$F(1, 117) = 0.21, p = ns$] or fear [$F(1, 117) = 3.67, p = ns$]. A paired samples *t*-test was conducted to explore each specific emotion (see Table 6). Shyness differed significantly by age, with mothers and fathers rating children at age 3 as shyer than children at age 6. These results supported the hypothesis that there would be a main effect of age on parental perceptions of children's emotionality, although the hypotheses for anger and fear were not supported.

Main effect of gender. I predicted that there would be a main effect of gender in the disappointment task. I predicted that girls would show more sadness and task incongruent positive affect whereas boys would show more anger in the disappointment task. I also hypothesized that gender would have a main effect on parental ratings of children's temperament. Results failed to support the hypothesis that gender would have a main effect on emotion regulation in either measure. Girls and boys did not display significant differences in emotion regulation following a challenge without the interaction of age, nor did they differ significantly in mothers' or fathers' ratings of anger, fear, or shyness.

Gender and age interaction. I hypothesized that there would not be an interaction between child gender and age on emotion regulation during the disappointment task. I predicted

that girls would display more positive affect and sadness than boys at both ages, and boys would show more anger than girls at both ages. Contrary to expectation, there was a significant interaction between gender and age in the disappointment task. A univariate analysis was conducted to test the interaction for each emotion (positive affect/joy, sadness, and anger) at each age (3 and 6). There was a significant interaction between gender and age for positive affect at age 3 [$F(1) = 5.21, p < .05$] but not at age 6 [$F(1) = 0.81, p = ns$]. There was no significant interaction between gender and age for sadness at either age 3 [$F(1) = 0.13, p = ns$] or age 6 [$F(1) = 1.45, p = ns$]. There was a significant interaction between gender and age for anger at age 3 [$F(1) = 5.65, p < .05$] but not at age 6 [$F(1) = 3.08, p = ns$]. An independent samples *t*-test was executed to test age and gender differences in specific emotions within this category (see Table 7). At age 3, girls displayed more positive affect than boys. However, this gender difference became non-significant at age 6. Boys showed more anger than girls at age 3, but they did not show significantly more anger than girls at age 6. Expressions of sadness did not differ significantly according to the age and gender of the child. Thus, while gender differences did not appear upon analysis of gender alone, boys and girls did differ in emotion regulation during the disappointment task when accounting for age differences.

I also hypothesized that there would not be an interaction between gender and age in mothers' and fathers' CBQ ratings. I predicted that mothers and fathers would rate girls as more fearful and shy than boys and boys as angrier than girls at both ages. As expected, there were no significant interactions between gender and age for mothers' or fathers' CBQ ratings. Thus, parents' perceptions of negative emotionality in girls versus boys did not differ by the child's age.

Discussion

In this thesis, I examined the gender and age differences in children's emotion regulation using longitudinal measures of children's emotional responses to a disappointing task and parents' ratings of negative emotionality. Previous studies have shown that children's ability to regulate negative emotions varies significantly by child gender (Chaplin & Aldao, 2013; Chaplin et al., 2005) and age (Cole et al., 2013; Olson et al., 2009; Silk et al., 2006). I hypothesized that there would be main effects of age and gender on emotion regulation but no age and gender interaction. Contrary to expectation, there was no main effect of gender on emotion regulation for the disappointment task or for parental ratings of temperament. However, there was a significant interaction between gender and age in the disappointment task, but no significant interactions between gender and age in mothers' or fathers' ratings of negative emotionality. Finally, as predicted there was a main effect of child age on emotion regulation in the disappointment task and in both mothers' and fathers' ratings of temperament. Findings are discussed in greater detail below.

Disappointment Task

Age differences. Based on previous research I hypothesized that there would be a main effect of age on emotion regulation in the disappointment task. I expected that task incongruent positive affect would increase across age whereas the frequency of displaying sadness and anger would decrease with age. Results confirmed these hypotheses: children's displays of positive affect increased across time whereas the frequency of displays of sadness and anger decreased. These results are consistent with Olson and colleagues (2009) who found that as children aged, they became more capable of understanding the appropriate emotions to display in a given circumstance. In this case, the socially appropriate response to being given an undesired prize

would be happiness, so increasing positive affect and decreasing sadness and anger follow this logic. Consistent with a large body of prior research, these findings show that children are much better at regulating their negative emotions at the school age level than at the preschool level.

Gender differences. I also hypothesized that there would be a main effect of gender on emotion regulation of the disappointment task. In the presence of a frustrating stimulus, I predicted that girls would show more sadness and task incongruent positive affect than boys, whereas boys would display more anger than girls. None of these hypotheses were confirmed. However, gender differences did appear upon analysis of the interaction between gender and age.

Gender and age interaction. I hypothesized that there would not be a significant interaction between gender and age in the disappointment task. I predicted that girls would display more task incongruent positive affect and sadness than boys at both ages, while boys would show more anger than girls at both ages. Results showed an unexpected significant interaction between gender and age in the disappointment task. Specifically, gender differences in displays of positive affect and anger at the preschool age were significant, with young girls displaying more positive affect than young boys, and young boys displaying more anger than young girls. These findings were consistent with other studies that have shown preschool age girls to display higher rates of positive affect in the presence of a negative stimulus than boys (Cole, 1986) and preschool age boys to display higher rates of anger than girls (Fabes & Martin, 1991). However, these findings also showed that by the time children reached age 6, any gender differences in emotion regulation they might have shown previously were not as apparent. It is plausible that gender differences in expressions of negative emotionality will continue to be negligible across middle childhood. However, previous research has shown dramatic gender

differences in negative emotionality across adolescence, with girls showing higher levels of anxiety and depression than boys (Chaplin & Aldao, 2013).

Parental Ratings of Negative Emotionality

Age differences. I hypothesized that there would be a main effect of age on mothers' and fathers' ratings of negative emotionality. I predicted that parents would rate their children as less angry, fearful, and shy with increasing age. These predictions were partially confirmed. My findings showed that shyness was the only emotional characteristic out of the three to show significant differences across ages, decreasing from the preschool age to the school age based on both mothers' and fathers' reports. Why did parents' ratings of child shyness decrease across the transition from preschool to school age, whereas their reports of child anger and fear did not? Shyness largely reflects the child's reluctance to engage with novel children or adults. For example, an item on the CBQ survey defines shyness as, "My child sometimes seems nervous when talking to adults s/he has just met." If this quality involves an uncertainty about how to appropriately act in public, then these results remain consistent with the above findings from Olson and colleagues (2009). According to these authors, older children were better at understanding appropriate social behavior, so they would express greater willingness to interact with novel adults than younger children. Furthermore, between the ages of 3 and 6 years children's social experiences with novel adults broaden considerably. On the other hand, parents' perceptions of anger and fearfulness may primarily reflect stability in their children's behavior in the home setting.

Gender differences. I hypothesized that there would be a main effect of gender on mothers' and fathers' ratings of temperament. I predicted that parents would rate girls as more shy and fearful than boys, and boys as angrier than girls. However, no significant gender

discrepancies were found in mothers' or fathers' ratings of children's negative emotionality. These findings were consistent with some previous research on parents and children's assessments of emotions. In a study of emotion regulation in 7-12 year old children, Hourigan, Goodman, and Southam-Gerow (2011) found discrepancies in mothers' and children's reports of inhibition of anger, sadness, and worry. As the age of the child increased, mothers reported more inhibition of anger than children, whereas children reported more nonconstructive expressions of anger than mothers. They did not, however, find any effect of gender on parent-child discrepancies in reports of emotion regulation. Although this study analyzed children slightly older than the children in the current study, results reflect a similar lack of differences in parent reports of children's emotionality based on children's gender.

Conversely, studies of observed emotional interactions between parents and children have revealed that parents respond differently to emotional behaviors in girls and boys. For example, in a study of children from ages 4 to 7, Silk and colleagues (2006) found that parents reinforced sadness more frequently in girls and anger more frequently in boys. Similarly, Adams and colleagues (1995) found that parents discussed sad emotions more frequently with daughters than with sons who ranged in age from 3 through 6. Thus, these combined findings suggest that it is critical to differentiate three constructs relevant to the emergence of gender differences in children's emotion regulation: parents' generalized folk beliefs about emotionality in girls and boys; parents' ratings of their own children's emotionality; and parents' differential responsiveness to specific emotional expressions in girls and boys. In future research, it would be fascinating to examine the correspondence between all three of these constructs within the same families.

Gender and age interaction. I hypothesized that there would not be an interaction between gender and age in mothers' and fathers' reports of temperament. I predicted that parents would rate girls as more fearful and shy than boys at both ages and boys as angrier than girls at both ages. As expected, there were no significant gender x age differences in mothers' or fathers' ratings of children's fear, anger, or shyness. These findings were in agreement with other research. For example, Chaplin and colleagues (2005) studied gender differences in parental socialization of children's emotional expression at age 4, followed up with a second wave at age 6. They found gender differences and age differences but no overlap between the two. Thus, despite gender stereotyped folk beliefs, results showed that parents of preschool and school age children do not perceive their children's shy and fearful behaviors differently based on the gender of the child.

Implications

Results revealed both age and gender differences in children's emotion regulation across the preschool period. Differences between boys and girls in emotional expression were most salient at age 3. When they were frustrated during a mildly stressful laboratory task, 3-year-old girls were more likely than 3-year-old boys to tell the examiner that they felt "happy", reflecting early awareness of social display rules. As predicted, 3-year-old boys were more likely than girls to express anger in the same situation. However, these gender differences were not found 3 years later. Childhood gender differences in emotion regulation stabilized by the early school age in the disappointment task. This implies that boys and girls were better at regulating their emotions by the time they reached age 6, regardless of any previous displays of anger or task incongruent happiness. Therefore, authors who wish to write about gender differences must be careful to account for age differences before making inferences about a gender group. For

example, authors studying a group of children ranging from ages 3 to 6 might find overall gender differences in emotion regulation without recognizing the age discrepancy and subsequently make misguided generalizations about boys and girls from ages 3 to 6. In addition, teachers and parents must also be careful to avoid making assumptions about the emotionality of a gender group without first acknowledging the context of a given situation. It could be ineffective for an educator to condone a 6-year-old boy's frequent displays of anger solely because of his gender, for instance, but it could be more logical for an educator to make such allowances for a 3-year-old boy. While it is always important to pay attention to how girls and boys differ in emotion regulation, these results exemplified why it is equally as important to know the age at which the differences become no longer significant.

Recognizing that the disappointment task and CBQ ratings are extremely different measures of emotion, there was a great deal of information uncovered from studying both measures concurrently. CBQ ratings tended to uncover more age differences, while disappointment task results revealed more gender differences. This shows that children behave differently in different situations. Gender differences were most likely to be found in younger children who were exposed to emotion eliciting stressors. Conversely, there were fewer differences in how they behaved at home with their parents. Thus, researchers need a comprehensive assessment using multiple methods in order to make inferences about gender and age differences in the emotion regulation of children.

Strengths and Limitations

This study had a variety of strengths. The longitudinal approach allowed me to control for confounding variables that could arise from studying different subjects at each age. I was

able to monitor the change in emotionality across the same children, increasing the reliability of results.

Exploring gender and age together was a unique strength of this study. By studying the two variables together, I was able to uncover important information about the effect each one had on the development of emotion regulation across early childhood. For example, I was able to determine that age had a much larger effect on emotion regulation of children than gender. In addition, studying age and gender together allowed me to examine the interaction of the two variables on emotion regulation, which relatively few previous investigators have done.

A third strength was the use of both the disappointment task and CBQ survey across both age points. A mixed methods design allowed me to analyze children's emotionality in two different settings: observed responses to a mildly stressful laboratory task and mothers' and fathers' reports of children's negative emotionality in the home setting. Thus, I was able to make inferences about children's emotionality with more confidence. In addition, comparing parent reports with observed behavior uncovered rare knowledge about parents' perceptions and their effect on children's emotionality, or lack thereof. This led to the discovery of a discrepancy between parent perceptions and observed behavioral measures of children's emotionality. Using data from both measures fills in possible gaps and answers questions that might have been left unanswered otherwise.

Similarly, using both mothers' and fathers' reports of children's temperament provided the rare advantage of comparing the effects of parent gender on ratings of child emotionality across an important developmental period. The fact that mothers and fathers did not rate girls and boys differently at either age was fascinating and lends credence to the reliability of the parent report measure within and between ages.

There were also a number of limitations that must be addressed. First, most children were from intact, predominantly white middle-class families with two parents. Therefore, it was difficult to generalize these findings to other groups of families, such as children from single parent families, families with severe economic hardship or children from racial or ethnic minority backgrounds.

A second limitation was the use of only one laboratory test. The disappointment task was designed to elicit children's emotional responses following a minor stressor (receiving a disappointing prize). Using multiple tasks to assess children's emotional responses to other stressful situations, such as peer related stressors, parent-child stressors, or emotionally evocative video stimuli, would provide a broader spectrum of information about children's emotion regulation skills.

Finally, the last limitation of this study was the use of self-report by the parents. The CBQ measures could suffer from response bias or self-report bias of the parents. Parents could have provided answers they thought the researcher was looking for. Similarly, the survey questions might not have allowed the parents to recall their child's temperament to the best of their ability. Furthermore, many more mothers provided information than fathers, so there could have been a discrepancy between mothers and fathers that was not shown in these results.

Future Directions

In this study, I looked at children from ages 3 through 6 who came from predominantly white, middle-class families. Examining the generalizability of these findings to children from different backgrounds, ethnicities, and family constellations is an important direction for further research. Similarly, examining gender differences in emotion regulation across a broader

developmental spectrum that includes adolescence would likely reveal different conclusions about gender, age, and emotion regulation.

There were some inconsistencies between my results and the results of previous research. Specifically, I did not find a main effect of gender on the emotionality of the subjects in both the disappointment task as well as the parent reports. However, predicted gender differences were found at age 3 in relation to children's emotional responses to disappointment, but these findings did not generalize across age or across parent reports of child emotionality. These findings revealed the importance of assessing children's emotion regulation in different situational contexts with multiple measures. Moreover, research designs concerning gender differences in the development of emotion regulation must do justice to potential age differences, even within relatively homogeneous developmental periods such as early childhood.

Conclusion

Early childhood is a compelling period for examining the development of children's emotion regulation (Olson et al., 2009). Using a multiple method longitudinal design, these findings revealed that 3-year-old children showed predictable gender differences in their emotional responses to a stressful laboratory task. However, mothers' and fathers' evaluations of their children's negative emotionality in everyday home settings did not reveal differences between boys and girls. Moreover, gender differentiated responses to the laboratory stressors were not maintained 3 years later when the same children had entered kindergarten. Finally, children's responses to stress in the laboratory showed a predictable pattern of gender differences, whereas only parents' ratings of children's shyness showed the expected age differences. These findings revealed that gender differences in children's early emotion regulation are partly in the eye of the beholder and are most likely to be elicited by mildly

stressful events in controlled situations. Thus, future research on this topic must take into account not only the age of the child, but also the specific situational contexts in which emotional behavior is measured.

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Table 1

Age 3 mean scores and standard deviations of negative emotional reactivity, maternal ratings, and paternal ratings.

Emotion	Girls		Boys	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Negative Emotional Reactivity				
Joy	-8.29	19.38	-2.64	15.12
Sadness	10.22	18.16	11.16	18.66
Anger	0.68	4.70	2.95	7.99
Maternal Ratings				
Anger	4.56	0.73	4.58	0.76
Fear	3.65	0.99	3.63	0.91
Shyness	3.60	1.23	3.44	1.22
Paternal Ratings				
Anger	4.45	0.77	4.66	0.71
Fear	3.46	0.87	3.51	0.87
Shyness	3.52	1.08	3.53	1.08

Table 2

Age 6 mean scores and standard deviations of negative emotional reactivity, maternal ratings, and paternal ratings.

Emotion	Girls		Boys	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Negative Emotional Reactivity				
Joy	-20.22	21.53	-22.89	24.02
Sadness	1.18	2.37	0.14	9.00
Anger	-0.21	1.65	-1.76	9.42
Maternal Ratings				
Anger	4.48	0.82	4.54	0.79
Fear	3.61	0.87	3.84	0.90
Shyness	3.34	1.20	3.28	1.27
Paternal Ratings				
Anger	4.41	0.79	4.59	0.79
Fear	3.54	0.76	3.65	0.92
Shyness	3.33	1.17	3.31	1.22

Table 3

Age 3 bivariate correlations between negative emotional reactivity and parental ratings.¹

Variable	1	2	3	4	5	6	7	8	9
1. JoyDif	1.00	.013	.051	.039	.052	.125	-.092	.005	.060
2. SadDif		1.00	.154*	.045	-.019	.116	-.016	.167	.136
3. AngDif			1.00	-.010	-.054	.060	.182*	.084	.079
4. AngM				1.00	.295**	.071	.245**	.058	.104
5. FearM					1.00	.184**	.052	.330**	.137
6. ShyM						1.00	.014	.202*	.671**
7. AngF							1.00	.304**	.151
8. FearF								1.00	.299**
9. ShyF									1.00

¹ Negative emotional reactivity: joy (*JoyDif*), sadness (*SadDif*), and anger (*AngDif*); maternal ratings: anger (*AngM*), fear (*FearM*), and shyness (*ShyM*); and paternal ratings: anger (*AngF*), fear (*FearF*), and shyness (*ShyF*). * $p < .05$. ** $p < .01$.

Table 4

Age 6 bivariate correlations between negative emotional reactivity and parental ratings.²

Variable	1	2	3	4	5	6	7	8	9
1. JoyDif	1.00	-.128*	.188**	-.062	-.018	.035	-.206*	-.069	.035
2. SadDif		1.00	-.003	.088	.089	-.056	-.086	.152	-.026
3. AngDif			1.00	.083	.035	.019	-.133	-.050	.023
4. AngM				1.00	.225**	.083	.397**	.107	.044
5. FearM					1.00	.125	-.005	.372**	.096
6. ShyM						1.00	-.037	.218*	.682**
7. AngF							1.00	.147	.015
8. FearF								1.00	.256**
9. ShyF									1.00

² Negative emotional reactivity: joy (*JoyDif*), sadness (*SadDif*), and anger (*AngDif*); maternal ratings: anger (*AngM*), fear (*FearM*), and shyness (*ShyM*); and paternal ratings: anger (*AngF*), fear (*FearF*), and shyness (*ShyF*). * $p < .05$. ** $p < .01$.

Table 5

Paired samples t-test of emotions (joy, sadness, and anger) by age (3 and 6) in disappointment task.

Emotion	Age 3		Age 6		n	t	p	95% CI for Mean Difference	
	M	SD	M	SD				LL	UL
Joy	-5.30	17.44	-22.24	22.47	197	8.29	.000	12.91	20.98
Sadness	10.69	18.31	0.55	7.24	197	7.34	.000	7.42	12.87
Anger	1.88	6.70	-0.61	3.32	197	4.66	.000	1.44	3.55

Table 6

Paired samples t-test of emotions (anger, fear, and shyness) with age (3 and 6) in mother and father CBQ.

Emotion	Age 3		Age 6		n	t	p	95% CI for Mean Difference	
	M	SD	M	SD				LL	UL
Mother									
Anger	4.56	0.73	4.52	0.81	206	0.83	.410	-0.06	0.14
Fear	3.63	0.94	3.73	0.89	206	-1.64	.103	-0.22	0.02
Shyness	3.52	1.25	3.32	1.24	206	2.89	.004	0.07	0.35
Father									
Anger	4.57	0.72	4.54	0.76	118	0.46	.646	-0.09	0.15
Fear	3.47	0.86	3.61	0.86	118	-1.91	.058	-0.28	0.00
Shyness	3.56	1.12	3.26	1.21	117	3.70	.000	0.14	0.47

Table 7

Independent samples t-test of child emotions (joy, sadness, and anger) by age and gender in disappointment task.

Emotion	Male			Female			<i>t</i>	<i>p</i>	95% CI for Mean Difference	
	M	SD	n	M	SD	n			<i>LL</i>	<i>UL</i>
Joy										
Age 3	-2.64	15.12	103	-8.29	19.38	92	2.28	.024	0.77	10.53
Age 6	-22.89	24.02	122	-20.22	21.53	116	-0.90	.368	-8.50	3.17
Sadness										
Age 3	11.16	18.66	103	10.22	18.16	92	0.36	.722	-4.27	6.16
Age 6	0.14	9.00	122	1.18	2.37	116	-1.20	.230	-2.74	0.66
Anger										
Age 3	2.95	7.99	103	0.68	4.70	92	2.38	.018	0.39	4.15
Age 6	-1.76	9.42	122	-0.21	1.65	116	-1.75	.081	-3.31	0.19