THE DEVELOPMENT OF YOUNG CHILDREN’S EMOTION REGULATION
AND THEIR MOTHERS’ COPING STRATEGIES

by

KELLY WILSON SCHAEFERS

MARIA HERNANDEZ-REIF, COMMITTEE CHAIR
MARY E. CURTNER-SMITH
REBECCA S. ALLEN

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ABSTRACT

This study sought to establish correlations between maternal emotion regulation strategies and children’s emotion regulation understanding. Ninety-seven children three-to-six years old, together with their mothers, participated. Mothers completed the Emotion Regulation Questionnaire (ERQ) and Vignette and Strategy Questionnaire (VSQ) to report on their use of six emotion regulation strategies (reappraisal, suppression, passive, expressing, problem-solving, and seeking). Children participated in a puppet task designed to measure the child’s ability to identify healthy emotion regulation strategies. A multiple linear regression using the child’s age, the six maternal emotion regulation strategies, and the child’s performance on the puppet task revealed that only the child’s age significantly predicted performance. Positive correlations were found between reappraisal use and expressing, problem-solving, and seeking strategies. Suppression was negatively correlated with expressing. Contrary to expectations, passive strategy use did not correlate to either reappraisal or suppression. The findings suggest that mothers' coping strategies do not seem to impact young children's emotion regulation. Rather, young children's knowledge of healthy ways to control emotions appears to develop with age.
DEDICATION

This thesis is dedicated to my family. First, to my husband, Robert- thank you for loving me through this process and for all the grace you have poured into our first year of marriage together. Second, to my parents, Mike and Karen Wilson, and my sister, Kristy- thank you for your support and inspiration throughout my life and whole education. Finally, I would like to include all of my close friends and extended family who have provided encouragement throughout my graduate studies.
# LIST OF ABBREVIATIONS AND SYMBOLS

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\alpha$</td>
<td>Level of significance</td>
</tr>
<tr>
<td>$B$</td>
<td>Unstandardized regression coefficient: the change in the outcome associated with a unit change in the predictor</td>
</tr>
<tr>
<td>$\beta$</td>
<td>Standardized regression coefficient: the change in the outcome (in standard deviations) associated with a one standard deviation change in the predictor</td>
</tr>
<tr>
<td>$F$</td>
<td>The ratio of the average variability in the data explained by a model to the average variability unexplained by the model</td>
</tr>
<tr>
<td>$f^2$</td>
<td>Effect size: a standardized measure of the magnitude of an observed effect</td>
</tr>
<tr>
<td>$N$</td>
<td>Number of participants</td>
</tr>
<tr>
<td>$p$</td>
<td>Attained level of significance</td>
</tr>
<tr>
<td>$r$</td>
<td>Pearson product-moment correlation coefficient</td>
</tr>
<tr>
<td>$R^2$</td>
<td>Coefficient of determination: the proportion of variance in one variable explained by a second variable</td>
</tr>
<tr>
<td>$SD$</td>
<td>Standard deviation: an estimate of the average variability of a set of data measured in the same units of measurement as the data</td>
</tr>
<tr>
<td>$SE(B)$</td>
<td>Standard error of the estimate: standard deviation of the residuals</td>
</tr>
</tbody>
</table>
ACKNOWLEDGEMENTS

I would like to first and foremost express my sincere gratitude for the guidance of my mentor and committee chair, Dr. Hernandez-Reif. Her support, advice, and encouragement were critical to my development as a graduate student and the completion of this thesis. I would also like to thank my other committee members, Dr. Curtner-Smith and Dr. Allen, for their expertise and invigorating discussion in support of this manuscript. For their hours of companionship and research assistance, I am grateful to the entire team of the Pediatric Development Research Lab I had the pleasure of working with: Kenya Donovan, Sabrina Gerlich, Megan Ingram, Clark Ledford, Erin Lopez, Shemeka Phipps, Kaitlyn Robinson, and Hunter Sartain. The entire faculty and staff of the Department of Human Development and Family Studies has supported me like family, and I have been blessed to work with and study under such a great team of professionals. Finally, I would like to thank the preschools, mothers, and children who participated in this study.
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CHAPTER 1
INTRODUCTION

One challenge frequently cited in the study of emotion regulation is the lack of a consistent agreement on the definition of emotion regulation (Bariola, Gullone, & Hughes, 2011; Bridges, Denham, & Ganiban, 2004; Thompson, 1994). Thus, it has been recommended that any study of emotion regulation specify the definition of emotion regulation under which it is aligned. For this study, emotion regulation is defined as the collection of strategies individuals use to manage, or regulate, their experience of emotions (both positive and negative) and the intensity of emotional arousal (Thompson, 1994). These strategies can be conscious or unconscious, and they can be used to either enhance or inhibit emotional experience or expression.

This definition is more expansive than other models, such as the process model of emotion adopted by Gross (1998). His process model more strictly divides emotion regulation strategies according to whether they seek to manipulate emotional cues and triggers (referred to as antecedent-focused strategies) or manipulate the response to such cues (response-focused strategies). The definition adopted by this study distinguishes itself again from emotion regulation concepts that limit the definition to the mere control or inhibition of emotional expression (Garner & Power, 1996). As will be explained, different emotion regulation strategies can influence the degree to which an emotion is experienced- not just expressed (Gross & John, 2003).
**Literature Review**

**Significance of emotion regulation strategies.** The effectiveness and types of strategies used to regulate emotions affect both our physical and psychological health (Gross, 2013). Two well-researched emotion regulation strategies are *reappraisal* and *suppression*. Reappraisal involves mentally reframing a situation in a more favorable way to downgrade negative emotional effects (e.g., viewing conflict with a partner as an opportunity for greater understanding of the other rather than a personal emotional attack). With suppression, one tries to inhibit the emotional effects of a situation (e.g., trying to suppress feelings of anger during a conflict).

While both reappraisal and suppression are examples of emotion regulation strategies, the practice of them has different psychological and social effects. In one experimental design, participants were instructed to either use reappraisal or suppression before watching a disgusting video (Gross, 1998). A control group received no specific instructions. Both the reappraisal and suppression groups resulted in fewer displays of negative emotion (i.e., disgust) compared to the control group. However, only the reappraisal group reported less subjective experience of emotion when compared to the control group.

A more recent study by Gross and John took a multifaceted look at the effects of reappraisal versus suppression use (2003). Compared to suppression, reappraisal is associated with less experience of negative emotions yet more experience of positive emotions. The use of reappraisal is negatively correlated with depressive symptoms and positively correlated with feelings of well-being, satisfaction, and optimism. In the social context, people who use suppression share their emotions less frequently with others and are more uncomfortable in close relationships. These findings regarding interpersonal effects of suppression versus reappraisal are
supported in another experiment, in which participants who discussed an upsetting subject with a partner practicing suppression experienced more stress and disrupted communication (Butler et al., 2003). Thus, it is evident that some emotion regulation strategies, like reappraisal, are generally more effective and beneficial than others (John & Gross, 2004).

**Emotion regulation development.** Emotion regulation develops across the life span, undergoing shifts well into older adulthood (Coats & Blanchard-Fields, 2008). Infants mostly rely on others to help them regulate emotion (e.g., soothing when upset), but gaze aversion is one example of a self-regulatory ability present early in infancy (Crockenberg & Leerkes, 2004). More and increasingly complex emotion regulation strategies are learned rapidly. By the age of two, children are able to use active engagement (e.g., playing with a toy), passive use of exploring (e.g., exploring room without engaging in play), symbolic self-soothing (e.g., soothing self-talk), physical self-soothing (e.g., thumb sucking), other-directed comfort seeking (e.g., seeking proximity to caregiver), and refocusing of attention to regulate emotions during laboratory delay and parental separation tasks (Grolnick, Bridges, & Connell, 1996).

Skills learned during the early formative years shape outcomes throughout childhood. Among a group of four to eight year olds, being able to strategically shift attention as a way of managing emotion was associated with fewer internalizing and externalizing behaviors (Eisenberg et al., 2001). Within the study, this attention regulation skill improved with age. As children develop, a complex blend of child characteristics (i.e., temperament/reactivity), parenting styles, and emotional expressiveness in the family continue to influence the way children model and learn emotion regulation (Morris, Silk, Steinberg, Myers, & Robinson, 2007).
Attachment theory emphasizes the importance of healthy interactions between the primary caregiver and infant as a foundation for future development (Schore & Schore, 2008). As attachment theorists have incorporated neurobiological scientific advancements into their model, attachment theory has become increasingly grounded in the concept of self-regulation. Opportunities for the infant to regulate both positive and negative affect, which are highly prevalent in everyday interactions between the caregiver and child, actively contribute to the development of neural connections in the brain that are used to regulate emotion throughout the lifespan. Thus, due to the theoretical importance of this primary caregiver-infant relationship as a foundation for future self-regulation (in which research typically identifies the mother as the primary caregiver), the current study focused on mother-child dyads.

**Parental influences.** The influence of many aspects of parenting style on emotion regulation development has already been studied. In a study of 4th to 6th grade children, higher perceived parental care (as reported by the child) was positively correlated with higher use of the reappraisal strategy (Jaffe, Gullone, & Hughes, 2010). Lower perceived care was related to a higher use of suppression. In another study, children who measured low on emotion regulation abilities experienced a higher risk for developing externalizing and internalizing behavior problems when exposed to maternal hostility and psychological control, respectively (Morris et al., 2002).

In regards to parental expressiveness within the family, maternal displays of negative emotion (e.g., sadness) were negatively correlated with self-soothing behavior and emotion regulation in toddlers (Garner, 1995). Displays of positive emotions, however, were positively correlated with self-soothing behavior and emotion regulation. In a follow-up study, when faced with a disappointing situation (e.g., given a disappointing prize), preschoolers whose mothers
expressed more positive emotion in the home showed more positive affect (Garner & Power, 1996). In contrast, higher maternal displays of sadness were inversely correlated to positive affect.

**Current Study**

Of the many factors that have been correlated to child emotion regulation, the link between parents’ use of emotion regulation strategies and children’s emotion regulation abilities is missing. One literature review, published in 2011, identified only one study that measured parental emotion regulation strategies in association with child emotion regulation (Bariola et al., 2011). In the study, mothers and their children were asked how they would respond to a distressing scenario (Garber, Braafladt, & Zeman, 1991). The quality of the strategies proposed by the participants was rated from one (“poor”) to five (“excellent”) by independent researchers. Half of the mothers had been diagnosed with depression, and findings of the study showed that depressed mothers and their children proposed fewer and lower quality strategies than non-depressed mothers and their children. Reported results from the study were vague, and the authors only distinguished between “other” and “self” directed strategies. In contrast, the current study measured parental use and children’s understanding of specific strategies, offering a more detailed look at the emotion regulation processes.

This same review from 2011 specifically called for research connecting parental use of reappraisal and suppression with child outcomes (Bariola et al.). The current study utilized the Emotion Regulation Questionnaire (a self-report) to answer that call. Additionally, a recent literature review paper published in *Emotion* suggested an expansion of the number and types of emotion regulation strategies being studied (Gross, 2013). Between the two maternal self-report measures, this study explored six emotion regulation strategies (i.e., reappraisal, suppression,
passive, expressing, problem-solving, and seeking) practiced by mothers. The study of reappraisal and suppression, as reported above, has already shown these two strategies to have very different consequences on the individual using them (Gross & John, 2003). The proposed study expanded on the outcomes correlated to these two strategies while also diversifying the emotion regulation strategies being explored.

Exploring the relationships between emotion regulation processes of parents and the related outcomes surrounding children’s emotion regulation is an important addition to the study of emotion regulation. If certain emotion regulation strategies are correlated to better child emotion regulation outcomes, then future research designs could explore and possibly establish causal relationships between specific strategies. This would have important implications for parenting education, since it would suggest that the first step towards encouraging better emotion regulation in children would be to assist the parent in developing better emotion regulation practices. Being able to distinguish between adaptive and maladaptive strategies would provide guidance for how best to assist this development. The current study, by exploring the unique correlations of multiple emotion regulation strategies, lays the groundwork for this research.
CHAPTER 2

METHOD

Participants

A total of 106 children between the ages of three and six years and their mothers were recruited for the study. Based on exclusion criteria outlined in the study protocol, three children were excluded from the study based on the mother’s self-report that the child had a diagnosed major chronic illness, Attention Deficit Hyperactivity Disorder (ADHD), autism, or learning disability, since the focus of the study was typical development. Additionally, one mother returned a signed consent form prior to her child’s third birthday, so both mother and child were excluded from the study. Finally, two children refused assent for the puppet task, and for three cases the researcher was unable to arrange for the puppet task. Thus, a final sample of 97 mother-child dyads was used in the study.

Descriptives of the 97 mother-child dyads reporting age, gender, socioeconomic status (SES), and ethnicity are included in Table 1. The mean age of the children was 4.00 years ($SD = .94$). Socioeconomic status was calculated based on reported occupation and education of both parents (Hollingshead, 1975). Mother and father SES scores were calculated separately, and the higher of the two scores was used to represent the SES of the child. Five mothers did not report father occupation, and thus SES for the father could not be calculated. In these limited cases, the mother’s SES was used. Thus, there is a small bias towards lower reported SES.
Table 1  
*Descriptive Statistics*

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Child’s Age (year)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>37</td>
<td>38%</td>
</tr>
<tr>
<td>4</td>
<td>30</td>
<td>31%</td>
</tr>
<tr>
<td>5</td>
<td>24</td>
<td>25%</td>
</tr>
<tr>
<td>6</td>
<td>6</td>
<td>6%</td>
</tr>
<tr>
<td><strong>Child's Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>46</td>
<td>47%</td>
</tr>
<tr>
<td>Female</td>
<td>51</td>
<td>53%</td>
</tr>
<tr>
<td><strong>SES</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upper</td>
<td>44</td>
<td>45%</td>
</tr>
<tr>
<td>Upper-Middle</td>
<td>33</td>
<td>34%</td>
</tr>
<tr>
<td>Middle</td>
<td>17</td>
<td>18%</td>
</tr>
<tr>
<td>Lower-Middle</td>
<td>2</td>
<td>2%</td>
</tr>
<tr>
<td>Lower</td>
<td>1</td>
<td>1%</td>
</tr>
<tr>
<td><strong>Child's Ethnicity</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caucasian</td>
<td>84</td>
<td>87%</td>
</tr>
<tr>
<td>African American</td>
<td>5</td>
<td>5%</td>
</tr>
<tr>
<td>Hispanic</td>
<td>3</td>
<td>3%</td>
</tr>
<tr>
<td>Native American</td>
<td>1</td>
<td>1%</td>
</tr>
<tr>
<td>Asian</td>
<td>3</td>
<td>3%</td>
</tr>
<tr>
<td>Other</td>
<td>1</td>
<td>1%</td>
</tr>
</tbody>
</table>
Procedure

Participants were recruited through four local preschools, a faculty newsletter at the University of Alabama, and throughout the state of Alabama using word of mouth procedures. Fifty-five percent (n = 53) of participants were recruited from the preschools. At these preschools, consent forms and study questionnaires were sent home. Once mothers completed and returned consent forms and questionnaires, the puppet tasks were arranged at the preschool. For the newsletter and word of mouth procedures, interested participants were provided consent forms and questionnaires, and puppet tasks were arranged at the mothers’ preferred location. All puppet tasks were conducted in a location that ensured privacy of the child’s responses. The University of Alabama Institutional Review Board (IRB) approved all study procedures involving participants, and the IRB letter of approval is attached as Appendix A.

Materials

Demographic questionnaire. Mothers completed a short demographic questionnaire. Information gathered from this questionnaire included ethnicity and socioeconomic status of both parents and age of the child. Additionally, the mother was asked to indicate whether the child has a major chronic illness, ADHD, autism, a learning disability, or depression.

Emotion regulation questionnaire. Designed by Gross and John, the Emotion Regulation Questionnaire (ERQ) is a self-report survey for adults that measures individuals’ use of the reappraisal and suppression emotion regulation strategies (Gross & John, 2003). The ERQ is short, consisting of only ten statements that correspond either to reappraisal or suppression use. The statements ask about both emotional expression and emotional experience, and participants answer the items on a 7-point Likert scale. Scoring of the ERQ yields two continuous scores, one for reappraisal and suppression respectively, that represent the frequency
with which the strategies are used. Reappraisal scores could range from 6 to 42, and suppression scores could range from 4 to 28.

In development of the ERQ, evidence of construct validity was established through exploratory factor analysis and confirmatory factor analysis (Gross & John, 2003). These analyses confirmed that only two factors were being measured (reappraisal and suppression), and that the scores for reappraisal and suppression were independent. Convergent and discriminant validity tests demonstrated evidence of criterion-related validity. Reliability tests resulted in alphas averaging greater than .70 for both reappraisal and suppression. After three months, test-retest reliability was .69 for both reappraisal and suppression.

**Vignette and strategy questionnaire.** To expand on the number and variety of emotion regulation strategies measured in this study, a second self-report measure was selected for the mothers to complete. The Vignette and Strategy Questionnaire (VSQ) asks participants to imagine eight scenarios involving a close friend (Coats & Blanchard-Fields, 2008). Half of the scenarios are designed to elicit sadness, and the other half should elicit anger. For each vignette, the participant completes a questionnaire evaluating what strategies he or she would likely use in response to the situation. Answers to the 4-point scale for each item are then scored into the four emotion regulation strategy categories of passive (e.g., avoidance), expressing (e.g., venting), problem-solving, or seeking (e.g., reaching out for other sources of emotional support). Possible ranges for the strategies are listed in parentheses: passive (56-224), expressing (40-160), problem-solving (32-128), and seeking (48-192).

A pilot test during the development of the VSQ confirmed that adults related to the sadness and anger vignettes to the same degree, regardless of age (Coats & Blanchard-Fields, 2008). Facet-representative parcel technique was used to aggregate the measure questions into
the four strategies. Factor analysis supported the construct validity of this four-factor model. Comparing questionnaire responses across adults of different age groups aligned with previous research on age differences in emotion regulation strategy used, providing evidence of criterion-related validity (Blanchard-Fields, Stein, & Watson, 2004).

**Puppet task.** Children participating in the study completed a puppet task designed to test the child’s understanding of proper emotion regulation strategies (Cole, Dennis, Smith-Simon, & Cohen, 2009). The puppet task is led by a researcher, who uses three puppets and a script to set up three scenarios in which the puppets are asked to control feelings of happiness, sadness, and anger. Three times in each scenario, the puppets present two different strategies, and the child is asked to choose the best option. For each choice, there is an “appropriate” and “inappropriate” answer, and the number of correct answers given by the child is recorded to provide a score measuring the child’s understanding of healthy emotion regulation strategies (ranging 0 to 9). In the study developing the puppet strategy task, proper recognition of anger and/or sadness strategies was predictive of higher persistence, more solutions-seeking behavior, less support seeking, and less disruptive behavior during an impossible problem solving task designed to elicit emotional frustration.

The original script and design were modified from the original study by Cole et al. (2009). In the initial study, the child’s language ability was predictive of spontaneous strategy generation (by the child) but not correct strategy recognition. Thus, open ended questions regarding strategy generation by the child were removed. Since this change simplified the script and design, the number of research assistants conducting the task was reduced from two to one. Finally, “bubble cards” showing pictorial depictions of strategy choices were not used.
CHAPTER 3
RESULTS

Missing Data

Data from a total of 97 mother-child dyads, representing mother questionnaires from 86 unique mothers, are used in the following analyses. Only occasional items from the VSQ were missing, likely due to the length of the measure and participant response fatigue. As some missing items on the VSQ were expected, the order in which the vignettes were presented was randomized to account for any effects of sequence on the missing data. Since the missing items only constituted 1.2% of the total VSQ, missing items were handled using individual mean substitution based on recommendation from McCartney, Burchinal, and Bub (2006). For example, if item 15 was missing on one vignette scenario, the scores from item 15 on the other seven vignettes were averaged and substituted for the missing value. Missing puppet task data were handled similarly. One child asked to end the puppet task early after only completing one puppet vignette, leaving the other two vignettes as missing data. These two missing vignettes constitute less than 1% of total collected puppet data, and so the child’s score on the completed vignette was substituted for the two missing vignettes.

Multiple Linear Regression

The underlying purpose of the study was to explore correlations between parental emotion regulation strategies and children’s healthy understanding of emotion regulation. The first research question asked whether maternal use of reappraisal and suppression is predictive of better child emotion regulation understanding. The second research question expands on the first
question by asking which strategies among all six measured maternal strategies are most strongly associated with better child emotion regulation understanding. Since other aspects of parenting and emotional expression (e.g., parental care, parenting style, affective displays of emotion, etc.) have established correlational relationships with children’s emotion regulation, it was expected that parent emotion regulation strategies would also be correlated to children’s emotion regulation (Garner, 1995; Garner & Power, 1996; Jaffe et al, 2010; Morris et al., 2002).

Based on the research reviewed above on the positive outcomes of reappraisal versus suppression, it was expected that use of reappraisal would be positively correlated to child emotion regulation and suppression would not (Butler et al., 2003; Gross & John, 2003). Furthermore, since seeking, solving, and expressing strategies are closest in nature to reappraisal strategies, it was expected that they would also be positively correlated. Since the passive strategy, as measured by the Emotion Regulation Questionnaire, contains components similar to suppression, it was hypothesized that passive emotion regulation would be negatively correlated with the child emotion regulation score.

To address the first and second research questions, a hierarchical regression analysis was conducted to assess the predictive ability of maternal emotion regulation strategies on their child’s performance in the puppet task. Means and standard deviations for the variables are presented in Table 2. Using forced entry, child’s age was entered as step 1 to control for the effect age may have on performance. In step 2, reappraisal and suppression scores from the ERQ were added to address the first research question. Finally, VSQ scores representing use of passive, expressing, problem-solving, and seeking strategies were added to establish whether the four new strategies enhance predictive power. Using G*Power software, a post hoc computation
of power was conducted (Faul, Erdfelder, Lang, & Buchner, 2007). Setting input parameters for
effect size ($f^2$) at .15 and alpha at .05, power for the current analysis was computed at .80.

Table 2

Descriptive Statistics for Regression ($N = 97$)

<table>
<thead>
<tr>
<th></th>
<th>mean</th>
<th>sd</th>
</tr>
</thead>
<tbody>
<tr>
<td>Puppet Score</td>
<td>6.6</td>
<td>1.7</td>
</tr>
<tr>
<td>Child’s Age (years)</td>
<td>4.0</td>
<td>0.9</td>
</tr>
<tr>
<td>Reappraisal</td>
<td>32.4</td>
<td>4.9</td>
</tr>
<tr>
<td>Suppression</td>
<td>11.0</td>
<td>4.0</td>
</tr>
<tr>
<td>Passive</td>
<td>119.6</td>
<td>19.7</td>
</tr>
<tr>
<td>Expressing</td>
<td>111.0</td>
<td>18.9</td>
</tr>
<tr>
<td>Problem-Solving</td>
<td>90.4</td>
<td>16.0</td>
</tr>
<tr>
<td>Seeking</td>
<td>133.7</td>
<td>28.0</td>
</tr>
</tbody>
</table>

Data were examined to ensure all assumptions for a regression analysis were met. An
examination of scatterplots indicated no curvilinear relationships existed between predictors and
the outcome variable. Additionally, there was no evidence of homoscedasticity in a plot of
standardized residuals with standardized predicted values. Multicollinearity was not evident
given all predictor TIF values were greater than 0.2 and VIF values were substantially less than
10. An examination of a histogram of the residuals revealed a normal distribution, and a Durbin-
Watson value of 2.099 indicates that residuals are independent.

Results from the regression analysis can be reviewed in Table 3. At each step of the
analysis, the model was significant. For step 1 with only child age as the predictor, $F(1, 95) =
25.329, p < .001, R^2 = .210$, and adjusted $R^2 = .202$, indicating that child’s age was a good
predictor of puppet task performance. Thus, child’s age alone accounts for 21.0% of the variance
in puppet task scores, and increasing age corresponds to a higher score on the puppet task. Step 2 and step 3 models were also significant \(F(3, 93) = 9.861, p < .001\) and \(F(7, 89) = 4.654, p < .001\), respectively. However, further examination of the individual predictors revealed that, when controlling for child’s age, none of the maternal emotion regulation strategies were significant predictors of puppet task scores. Thus, no relationship between maternal emotion regulation strategies and child emotion regulation understanding could be determined.

Table 3

Regression of Maternal Emotion Regulation Strategies on Child Puppet Task Scores \((N = 97)\)

<table>
<thead>
<tr>
<th>Variable</th>
<th>(B)</th>
<th>(SE(B))</th>
<th>(\beta)</th>
<th>(\Delta R^2)</th>
</tr>
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<tbody>
<tr>
<td>Step 1</td>
<td></td>
<td></td>
<td></td>
<td>.210</td>
</tr>
<tr>
<td>Child's Age</td>
<td>.807</td>
<td>.160</td>
<td>.459**</td>
<td></td>
</tr>
<tr>
<td>Step 2</td>
<td></td>
<td></td>
<td></td>
<td>.031</td>
</tr>
<tr>
<td>Child's Age</td>
<td>.802</td>
<td>.160</td>
<td>.456**</td>
<td></td>
</tr>
<tr>
<td>Reappraisal</td>
<td>-.058</td>
<td>.030</td>
<td>.172</td>
<td></td>
</tr>
<tr>
<td>Suppression</td>
<td>-.012</td>
<td>.038</td>
<td>-.030</td>
<td></td>
</tr>
<tr>
<td>Step 3</td>
<td></td>
<td></td>
<td></td>
<td>.027</td>
</tr>
<tr>
<td>Child's Age</td>
<td>.788</td>
<td>.162</td>
<td>.448**</td>
<td></td>
</tr>
<tr>
<td>Reappraisal</td>
<td>-.070</td>
<td>.035</td>
<td>-.208</td>
<td></td>
</tr>
<tr>
<td>Suppression</td>
<td>-.028</td>
<td>.042</td>
<td>-.067</td>
<td></td>
</tr>
<tr>
<td>Passive</td>
<td>-.007</td>
<td>.009</td>
<td>-.082</td>
<td></td>
</tr>
<tr>
<td>Expressing</td>
<td>-.013</td>
<td>.012</td>
<td>-.148</td>
<td></td>
</tr>
<tr>
<td>Problem-Solving</td>
<td>.020</td>
<td>.013</td>
<td>.192</td>
<td></td>
</tr>
<tr>
<td>Seeking</td>
<td>-.004</td>
<td>.006</td>
<td>-.074</td>
<td></td>
</tr>
</tbody>
</table>

Note: *\(p < .05\), **\(p < .01\)
Correlations Between Strategies

The final research question asked which of the VSQ strategies (passive, expressing, problem-solving, and seeking) were correlated with reappraisal and suppressions use. It was expected that passive use would be negatively correlated to reappraisal use and positively correlated to suppression use. Use of expressing, problem-solving, and seeking was expected to positively correlate to reappraisal use and negatively correlate to suppression use. Of the 97 mother-child dyads recruited for the study, some dyads included the same mother. Thus, a two-tailed correlational analysis using Pearson’s $r$ for maternal emotion regulation strategies was performed with the 86 unique sets of maternal data.

Correlational results are presented in Table 4. As expected, use of expressing, problem-solving, and seeking strategies all positively correlated to reappraisal use ($r = .23, .42, \text{ and } .29$, respectively). Contrary to expectations, passive strategy use was not significantly related to either reappraisal or suppression. Expressing was negatively related to suppression use ($r = -.33$), indicating that mothers who used more suppression strategies were less likely to express their emotions. However, neither problem-solving nor seeking was related to suppression.

Although no research question specifically addressed correlations within the VSQ questionnaire, the correlational analysis resulted in some interesting relationships. Expressing, problem-solving, and seeking were all negatively related to passive use ($r = -.55, -.28, \text{ and } -.24$, respectively). Problem-solving and seeking were both positively correlated with expressing ($r = .54 \text{ and } r = .44$, respectively). Finally, seeking and problem-solving were positively correlated with each other, $r = .40$. Together, these results suggest the complexity of emotion regulation and the variety of strategies that are used by mothers.
Table 4

Correlations Between Maternal Emotion Regulation Strategies (N = 86)

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>mean</th>
<th>sd</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Reappraisal</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>31.98</td>
<td>4.87</td>
</tr>
<tr>
<td>2. Suppression</td>
<td>.05</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>10.97</td>
<td>4.16</td>
</tr>
<tr>
<td>3. Passive</td>
<td>-.01</td>
<td>.21</td>
<td></td>
<td></td>
<td></td>
<td>119.73</td>
<td>19.70</td>
</tr>
<tr>
<td>4. Expressing</td>
<td>.23*</td>
<td>-.33**</td>
<td>-.55**</td>
<td></td>
<td></td>
<td>109.31</td>
<td>19.10</td>
</tr>
<tr>
<td>5. Problem-Solving</td>
<td>.42**</td>
<td>-.07</td>
<td>-.28**</td>
<td>.54**</td>
<td></td>
<td>89.04</td>
<td>16.83</td>
</tr>
<tr>
<td>6. Seeking</td>
<td>.29**</td>
<td>-.19</td>
<td>-.24*</td>
<td>.44**</td>
<td>.40**</td>
<td>129.98</td>
<td>27.43</td>
</tr>
</tbody>
</table>

Notes: *p < .05, **p < .01
CHAPTER 4
DISCUSSION

The primary purpose of the study was to explore possible relationships between the emotion regulation strategies used by mothers and their preschool age child’s understanding of healthy emotion regulation. Since other aspects of parenting and maternal behavior have been associated with children’s emotion regulation (Garner, 1995; Garner & Power, 1996; Jaffe et al., 2010), it was expected that there would also be associations between specific strategies and children’s performance on a puppet task designed to measure their emotion regulation understanding. Results from a multiple linear regression analysis did not support this expectation. Instead, only the child’s age significantly predicted the child’s performance on the puppet task, with older children performing better.

There are several possibilities to explain why no relationship was found between maternal strategies and children’s understanding. It may be that there is no relationship between maternal emotion regulation strategies and child emotion regulation understanding. However, sample size was selected for a medium effect size, thus the study did not have the power to detect small effects of strategies on child’s puppet scores. Perhaps a different selection of measures might also produce different results. For example, neither the ERQ nor VSQ targeted situations in which mothers were regulating emotions in front of their children. Thus, using or developing a measure specifically to capture strategies that mothers use more frequently around their children might be more appropriate, given the research question. Regardless, the results showing that age explained 21% of the variance in puppet scores is still important. They support
the developmental nature of emotion regulation and the importance of the preschool age, as the older children tended to perform better than those younger. This direct measure of children’s emotion regulation understanding, rather than relying on parent or teacher reports, was a strength of the study.

Generalizability of results is limited, due to the participant recruitment procedures and sample demographics. Participants were recruited from both preschools and other community sources through word of mouth, but the sample was skewed towards higher SES families, and a majority of the mother-child dyads were Caucasian (87%). Finally, the caregiver role was restricted to mothers due to the exploratory nature of the study, but more research with other caregivers (e.g., fathers, grandparents, etc.) is needed.

Analysis for research question three, asking which of the four VSQ strategies correlated to reappraisal and suppression, resulted in findings mostly consistent with hypotheses. As expected, maternal use of expressing, problem-solving, and seeking strategies all positively correlated with reappraisal use. Since reappraisal is cited in research as the generally more desirable strategy (John & Gross, 2004), perhaps those strategies that are positively correlated to reappraisal are healthier strategies. Although problem-solving and seeking strategies showed no significant relationship with suppression use, expressing use was consistent with expectations in that it negatively correlated to suppression use. This relationship is supported by Gross and John’s finding that people who use suppression more tend to share their emotions less frequently with others (2003). Finally, passive use defied all hypotheses, in that it did not correlate to either reappraisal or suppression use. It appears then that the passive emotion regulation strategy deserves to be differentiated from suppression. Passive use negatively correlated to expressing,
problem-solving, and seeking, thus it is possible that the passive emotion regulation strategy is an inverse of these other strategies.

These findings regarding the VSQ strategies reveal the complex and dynamic nature of emotion regulation. Adults have many strategies at their disposal beyond just the reappraisal and suppression strategies that dominate research. In the same way that research on reappraisal and suppression use has been studied with regards to diverse physical, psychological, and interpersonal effects, so too do other strategies deserve more research. Correlations between different strategies hint at unique and fascinating relationships between them, and future research should find ways to determine whether and how multiple strategies can be used simultaneously or interchangeably.
REFERENCES


APPENDIX A

IRB Approval

October 2, 2014

Kelly Schaefers
Department of Human Development and Family Studies
College of Human Environmental Sciences
Box 870160

Re: IRB#: 14-OR-341 "Correlations Between Maternal Emotion Regulation Strategies and Child Emotion Regulation Understanding"

Dear Ms. Schaefers:

The University of Alabama Institutional Review Board has granted approval for your proposed research.

Your application has been given expedited approval according to 45 CFR part 46. Approval has been given under expedited review category 7 as outlined below:

(7) Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies

Your application will expire on September 30, 2015. If your research will continue beyond this date, complete the relevant portions of the IRB Renewal Application. If you wish to modify the application, complete the Modification of an Approved Protocol Form. Changes in this study cannot be initiated without IRB approval, except when necessary to eliminate apparent immediate hazards to participants. When the study closes, complete the appropriate portions of the IRB Request for Study Closure Form.

Please use reproductions of the IRB approved stamped consent/assent forms to obtain consent from your participants.

Should you need to submit any further correspondence regarding this proposal, please include the above application number.

Good luck with your research.

Sincerely,

Carpanato T. Myles, MSM, CIM, CIP
Director & Research Compliance Officer
Office of Research Compliance

358 Raw Administration Building
Box 870127
Tuscaloosa, Alabama 35487-0127
(205) 348-8461
FAX (205) 348-7189
TOLL FREE (877) 850-5966