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Andrew J. Ross March 12, 2017

Parenting Self-Efficacy in Depressed and Non-Depressed Mothers of School-Aged Children: The Role of Mood, Stress, and Social Support

by

Andrew J. Ross

Dr. Sherryl H. Goodman
Adviser

Department of Psychology

Dr. Sherryl H. Goodman

Adviser

Dr. Jessica Barber

Committee Member

Dr. Miriam Udel

Committee Member

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Andrew J. Ross

Dr. Sherryl H. Goodman

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An abstract of
a thesis submitted to the Faculty of Emory College of Arts and Sciences
of Emory University in partial fulfillment
of the requirements of the degree of
Bachelor of Arts with Honors

Department of Psychology

2017

Abstract

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Parenting self-efficacy (PSE) in mothers of school-aged children is not fully understood, as the literature on PSE has primarily focused on mothers of infants and younger children. This study aimed to build on knowledge gained from cross-sectional correlational studies supporting an association between mood and PSE by testing the role of experimentally manipulated mood on mothers' PSE and potential moderation of that association by mothers' current depressive symptom level. Additional aims were to study associations between stress and social support and PSE. Mothers (N = 192) of 7 to 10-year-old children responded to a two-part online survey that included baseline questionnaire measures of depression symptom levels, PSE, mood, stress, and social support, as well as experimental manipulation of mood with film clips and repeated measures of mood and PSE. Consistent with hypotheses, lower PSE was significantly associated with higher depression and lower social support but not higher stress. The mood manipulation failed to elicit the expected positive or negative mood, the sad clip was not associated with lower PSE relative to baseline, and depression did not act as a moderator in the PSE-sad mood relationship. Despite the lack of clear information about the direction of the PSE-depressed mood relationship, this study provides support for the importance of mothers' depression and social support in their parenting confidence with school-aged children.

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Acknowledgements
I would like to thank Dr. Sherryl Goodman and Hannah Simon for their guidance and support throughout this process.

Table of Contents

According to Bandura (1977), the expected satisfaction of completing a task and the negative self-judgment that will arise if unable to reach the end goal motivate people to fulfill that task. Furthermore, the incentive to act is influenced by the desire to minimize the discrepancy between the goals and standards that people set for themselves and their self-evaluations. Expectations of one's ability to master a task influence the extent to which behaviors are initiated and maintained toward completion of the task (Bandura, 1977, 1993). The degree to which these expectations are positive or negative is shaped by self-efficacy. Self-efficacy refers to an individual's motivation and perception of his or her ability to exercise control over a certain task (Ozer & Bandura, 1990). Self-efficacy can determine how much effort an individual will put forward and how long he or she will persevere when met with challenging experiences. When people perceive an activity to be demanding or threatening but persist and succeed at the challenge, their positive efficacy is reinforced, while those who give up early maintain negative self-evaluations (Bandura, 1977).

Given the importance of self-efficacy across many areas of an individual's life, this concept has been extended to many specific domains, including parenting. Parenting self-efficacy (PSE) refers to the beliefs that a parent holds about his or her ability to manage and perform tasks related to raising a child (Teti & Gelfand, 1991). Findings from studies of PSE have revealed that lower PSE is correlated with less responsiveness to children's needs (Donovan & Leavitt, 1985; Donovan, Leavitt, & Walsh, 1990), lower frequency of engagement in direct parenting interactions (Mash & Johnston, 1983), and heightened parental perceptions of child difficulty (Bugental & Cortez, 1988; Cutrona & Troutman, 1986; Johnston & Mash, 1989). Low parenting self-efficacy therefore has important implications for the use of negative parenting strategies. As a result, the overarching goal of this study was to investigate the factors

associated with the parenting self-efficacy of mothers. Although self-efficacy of fathers is also relevant, the self-efficacy of mothers is especially important, given the plethora of challenges that test mothers' confidence in their parenting abilities and the subsequent consequences of their poor parenting on the emotional development of their children.

One factor that may contribute to women's perceptions of their strengths and weaknesses as a parent is their mood. Support for this idea comes from studies of self-efficacy beliefs, albeit not of parenting self-efficacy per se. In a study examining the impact of mood on general efficacy judgments, Kavanagh and Bower (1985) induced either a happy or sad mood by having participants recall memories of romantic success and failure. They found that the induction of certain moods significantly influenced participants' efficacy beliefs across a range of domains, including interpersonal skills. Furthermore, Tillema, Cervone, and Scott (2001) found that people with highly negative moods, in particular those living in a state of dysphoria, adopt performance standards for tasks that exceed their self-efficacy beliefs, further confirming negative perceptions of themselves. Thus, affective state has been shown to play a meaningful role in self-judgment, generating implications for how mood, particularly in the case of depressed women, can influence judgments of one's own ability to be an effective parent (Tillema et al., 2001). As such, one specific aim of this study was to examine the role of mood in mothers' perceptions of the parenting self-efficacy, as mood may be a meaningful target of interventions aimed to increase parenting self-efficacy among mothers.

Another factor that may contribute to mothers' PSE is depression. Depression is one of the most common psychological disorders, affecting more than 16 million Americans, and it impacts women at a rate 1.5 to 3 times greater than that of men, including during the childbearing years (Center for Behavioral Health Statistics and Quality, 2016; Kessler,

McGonagle, Swartz, Blazer, & Nelson, 1993). Depression in mothers is important because it is associated with lower quality parenting (Lovejoy, Graczyk, O'Hare, & Neuman, 2000) and children of depressed mothers, relative to those of non-depressed mothers, face an increased risk for the development of psychopathology and other problems (Goodman, 2007; Goodman et al., 2011; Hammen, Burge, Burney, & Adrian, 1990). Thus, it is not surprising that higher symptom levels of depression have been found to be associated with lower PSE (Bandura, 1989; Cutrona & Troutman, 1986; Muris, 2002; Teti & Gelfand, 1991).

One limitation of this research is that since support for this association has relied on correlational designs, the direction of the association is not clear. That is, it may be that individuals who perceive themselves to be inefficacious also feel that they lack the ability to control negative ruminative thoughts, increasing their vulnerability to experiencing the onset and recurrence of depressive episodes (Kavanagh & Wilson, 1989). Additionally, when people place high value on an outcome (e.g., fostering the health of a child) but self-efficacy is low, they may be likely to develop symptoms of depression because they believe that they are unable to attain the desirable outcome (Bandura, 1982, 1993; Maddux & Meier, 1995). However, with research on associations between PSE and symptoms of depression being solely correlational, we are unable to make inferences about causality in the relationship between the two constructs. Thus, another specific aim of this study was to experimentally manipulate sad mood to test its effect on parenting self-efficacy beliefs. Moreover, considering the integral role of sad mood in depression, it is possible that in the presence of high levels of depression symptoms, the strength of the relationship between mothers' mood and their perceptions of their strengths and weaknesses as a parent will be even stronger than when depression symptoms are less severe. Based on this premise, another specific aim of this study was to further explore the potential

moderating role of mother's depression symptom level in how strongly experimentally induced sad mood is associated with PSE.

The stress associated with the demands of parenting may be another factor that contributes to the PSE of mothers. When women make the transition into motherhood, the needs of their children and the strains on their time and energy may be perceived as too difficult to manage and can become a chronic stressor. Consistent with these ideas, higher levels of parental stress have been found to be associated with lower PSE (e.g., Berryhill, 2015; Wells-Parker, Miller, & Topping, 1990). Bandura, Reese, and Adams (1982) suggested that people who feel inefficacious at a task experience heightened stress and anxiety, due more to their negative self-evaluations rather than due to the challenging nature of the task itself. Although the findings are correlational, they are consistent with a model in which negative beliefs about one's ability to parent may affect levels of stress during demanding parenting situations, heightening depressive symptoms (Bandura, 1989; Bandura et al., 1982; Coleman & Karraker, 1997; Maciejewski, Prigerson, & Mazure, 2000). Given the importance of understanding parenting stress in relation to parenting self-efficacy beliefs, the current study sought to replicate findings suggesting a negative association between mothers' level of parenting stress and perceptions of their parenting abilities.

Considering the demanding nature of parenting, another factor that may contribute to a mother's PSE is the degree to which she perceives her social support system to be helpful. Social support has been suggested to promote the maintenance of self-esteem during stressful situations (Cobb, 1976; Cohen & McKay, 1984). In addition, Aneshensel and Stone (1982) suggested that stress has a more adverse effect on people with more limited sources of social support. In relation to the parenting domain, parents' perceptions of the availability of appropriate resources

for being a successful parent, including emotional support they receive from family and friends, can play a key role in how stressed they feel (Deater-Deckard, 1998; Goldstein, 1995). In a study examining the protective effects of social support for mothers of infants, Cutrona and Troutman (1986) suggested that social support may act as a buffer against the stress associated with demanding parenting situations. Moreover, they suggested that mothers who report higher levels of social support feel more confident in the parenting role and subsequently are less likely to experience depression in the months after giving birth, particularly in the face of temperamentally difficult children. The current study aimed to extend this literature by testing the association between social support and PSE in mothers of school-age children.

The Current Study

Despite strong support for an association between parenting self-efficacy and depression symptom levels in mothers, the support is limited to correlational studies, leaving the direction of the relationship unclear. This study sought to clarify the directionality of the relationship between parenting self-efficacy beliefs and mothers' depression by using an experimental manipulation of mood and testing its effect on PSE. In an examination of the effect of affective state on memory, Bower (1981) induced a happy or sad mood in participants through hypnotic suggestions, and then instructed participants to recall memories of events from years prior. Following the happy mood induction, participants retrieved a greater number of positive than negative memories, while the sad mood induction was associated with participants recalling a greater number of negative than positive memories (Bower, 1981). Moreover, Teasdale and Fogarty (1979) found that people in a happy mood are able to recall positive memories more quickly than sad ones, while people in a sad mood recall negative memories faster than positive ones. These studies' findings support the notion that mood may influence memory recollection,

which could potentially be expanded to the parenting domain, with respect to how positively or negatively a mother recalls previous interactions with her child. The current study aimed to extend these findings to the use of video clips from films to induce certain moods, in order to further examine the relationship between maternal mood and beliefs about parenting abilities. In a study of online mood induction, Loiacono, Taylor, and Djamasbi (2005) found that the emotional tone of stimuli presented through video clips or text, including advertisements and news articles, can induce corresponding moods. Films have been demonstrated to be as, or more, effective at eliciting both mild and strong emotional responses than other mood induction procedures such as hypnosis (Rottenberg, Ray, & Gross, 2007). The visual and auditory nature of films is conducive to capturing the attention of the viewer and the stimuli in films resemble real life situations to a greater extent than those of other mood manipulation techniques (Rottenberg et al., 2007).

We tested the effect of induced mood on PSE among mothers of children in middle childhood. Most research on parenting self-efficacy has focused on mothers of infants and young children. Thus, there is little information about PSE with respect to parents of school-aged children. Examination of this relationship is especially important given that parenting children at this age requires sensitivity to children's increased social and cognitive abilities and their expanding relationships with peers and other adults. Middle childhood also immediately precedes the age when rates of depression begin to increase (Costello, Copeland, & Angold, 2011). Thus, more information about how mothers' mood is associated with their parenting self-efficacy beliefs has the potential to contribute to the understanding of the impact of parenting during this important period in development. In our current study, we aimed to extend the

research on PSE and maternal depression to mothers of children aged 7 to 10, directly before their transition into adolescence.

Building on the literature on the cross-sectional association between PSE and depression, we expected to replicate the association between mothers' current symptoms of depression and PSE: that women with higher levels of depression symptoms would report lower levels of PSE and that, as a group, mothers who exceed clinical cutoffs on depression symptom levels would have lower PSE compared to mothers who do not have current symptoms of depression (Hypothesis 1). In addition, we hypothesized that mothers' self-reported greater parenting-related stress would be associated with their lower PSE (Hypothesis 2). Moreover, we hypothesized that mothers' greater belief that they have a strong and helpful social support system would be associated with their higher PSE beliefs (Hypothesis 3). Further, we hypothesized that exposure to a sad mood induction would be associated with lower PSE relative to baseline and either positive or neutral mood induction and that depression symptom level would moderate the relationship between negative mood and PSE beliefs, such that exposure to stimuli to induce a sad mood would have a stronger and more adverse effect on the PSE beliefs of women with current elevated symptoms of depression than those without symptoms of depression (Hypothesis 4).

Method

Participants

Data were collected using Qualtrics, a third-party online survey administration company (https://www.qualtrics.com). Qualtrics contacted members of their nationwide panel of adults who had previously expressed an interest in participating in Qualtrics research projects. Participation was solicited only from women who were mothers of at least one child between the

ages of 7 and 10. Among the estimated 1286 potential respondents who received the initial solicitation, 969 individuals viewed the survey link, with 192 individuals meeting study criteria and completing the survey in its entirety. Participants were compensated through reward points provided by Qualtrics, which could be redeemed for rewards of the participants' choice, including airline miles and gift cards. Qualtrics compensated participants in the current study with 10 reward points for complete responses on all measures. A sample was sought such that half of the mothers (n = 96) screened positive for current symptoms of depression and half screened negative for current symptoms of depression. See Table 1 for demographic characteristics of the sample.

Materials and Procedures

Upon opening the survey link, prospective participants read the study's informed consent document, which they electronically signed if they agreed to the conditions and wanted to proceed with the study. The university institutional review board approved all study procedures. Participants then reported if they were a mother and if they had at least one child between the ages of 7 and 10. Those who did not meet both of these qualifications were redirected to an exit page on the survey, preventing them from providing additional responses. Those who met study criteria next responded to the Patient Health Questionnaire (PHQ-2), a two-question depression screening measure that uses a 4-point Likert scale ranging from 0 (not at all) to 3 (nearly every day), asking about the frequency of depressed mood and anhedonia over the past two weeks (Kroenke, Spitzer, & Williams, 2003). The established cutoff of 3 was used to designate women as having screened positive for current symptoms of depression or not. This designation was used to ensure that half of participants met this criterion for elevated depression symptom levels and half did not.

Participants were instructed to respond to the survey in a quiet space and to use headphones when viewing three film clips. They were additionally asked to report the setting in which they responded and who else was present during their participation. To account for participants having more than one child in the 7 to 10 age range, a random half of participants were instructed to respond about their youngest child and the other half were instructed to respond about their oldest child in the age range. They responded to several self-report measures and viewed three short film clips as part of the experimental mood induction process. The order in which they viewed each video clip was randomized to control for possible order effects. Based on pilot testing, it was anticipated that participants would devote approximately 30 minutes to the entire study, with participants ultimately spending an average of 33.86 minutes on the survey. A minimum time limit of 20 minutes and a maximum limit of 50 minutes were set to promote thoughtful responses and support the time-sensitive nature of the mood manipulation procedure.

Measures

This study consisted of two phases of measurement. In the first phase, participants provided demographic information, were screened for depression, completed baseline measures of mood and parenting self-efficacy, and were shown each of the mood induction clips. After each induction, participants again rated their mood and completed the measure of parenting self-efficacy. In the second phase, participants completed questionnaires assessing parenting stress, social support, and general self-efficacy.

Demographic characteristics. Participants were asked to report their age, ethnicity, and highest education level, as well as how many children they had and each of their ages. The majority of participants were asked to report their marital status, as this question was added in the middle of the data collection process.

Depression screener. Participants completed the Patient Health Questionnaire (PHQ-9), a commonly used depression screening measure that assesses the severity of current depressive symptoms. Participants rate the frequency of nine depressive symptoms (e.g., "Feeling tired or having little energy") over the past two weeks on a 4-point Likert scale, ranging from 0 (not at all) to 3 (nearly every day). (Kroenke, Spitzer, & Williams, 2001). The score of the PHQ-9 is the total across items, potentially ranging from 0 to 27. We used the PHQ-9 as a confirmation of a positive or negative PHQ-2 result. A cutoff score of 10 has been found to identify clinically significant levels of depression. The PHQ-9 has demonstrated strong internal consistency (α = 0.89), as well as a sensitivity of 88% and a specificity of 88% for Major Depressive Disorder for scores above 10 (Kroenke et al., 2001). For the current sample, internal consistency was 0.90.

Mood. Participants responded to the Positive and Negative Affect Schedule-Short Form (PANAS; Watson, Clark, & Tellegen, 1988), which involves rating to what extent they are experiencing 20 different feelings or emotions (e.g., "Distressed"; "Attentive") currently. Participants indicated how they felt at the start of the survey as a baseline of mood and responded to the measure three more times after each mood induction procedure. Ratings are based on a 5-point Likert Scale, ranging from 1 (very slightly or not at all) to 5 (extremely). The PANAS yields two scores, which are the sum of the positive and negative affect items, such that a higher positive score indicates more positive affect and a higher negative score indicates more negative affect, with each score potentially ranging from 10 to 50 (Watson et al., 1988). Cronbach's alpha for the positive affect and negative affect scales were suggested to be 0.89 and 0.85, respectively, and support has been provided for construct validity (Crawford & Henry, 2004). For the current sample, internal consistency for the positive affect and negative affect scales were 0.92 and 0.92, respectively.

Parenting self-efficacy. The Self-Efficacy for Parenting Tasks Index-School Age (SEPTI; Coleman & Karraker, 2000) is a 36-item questionnaire measure of PSE beliefs of parents of elementary school-aged children. Items fall into five categories of parenting tasks: facilitating child's academic achievement (Achievement), supporting child's recreation and socialization with peers (Recreation), encouragement of structure and discipline (Discipline), nurturance, and health. Items include "I have trouble expressing my affection for my child" and "My child never seems to listen to me when I want him/her to do something," and are rated on a 6-point Likert scale, ranging from 1 (strongly agree) to 6 (strongly disagree), with a subset of items reverse coded. Individual item scores are summed and divided by 36, resulting in a total mean score, potentially ranging from 1 to 6. Higher scores indicate higher self-efficacy on all subscales. Coleman and Karraker (2000) report Cronbach's alpha of 0.91 for the full scale. SEPTI has also demonstrated good discriminant validity (Coleman & Karraker, 2000). Cronbach's alpha for the full scale was 0.92 for the current sample. This scale was administered once at the beginning of the survey as a baseline measure and again after each of the three mood induction film clips.

Parenting appraisal. The Parenting Sense of Competence (PSOC) scale (Johnston & Mash, 1989) consists of 17 items, assessing parents' satisfaction and self-efficacy pertaining to their role as parents. Items include "I meet my own personal expectations for expertise in caring for my child," and are rated on a 6-point Likert scale, ranging from 1 (strongly agree) to 6 (strongly disagree), with a subset of items being reverse-scored. Scores on each item are summed to obtain a total score, with a greater score indicating higher competency. This scale is among the most commonly used measures of parenting self-efficacy (Jones & Prinz, 2005). This measure

was collected to test another hypothesis that was not included in this study. Internal consistency for the current sample was 0.74.

Mood manipulation. Participants were instructed to watch three film clips, each about three minutes long, which were positive, negative, or neutral in tone and content. The positive clip, a series of various scenes of animals from the movie, *The Adventures of Milo and Otis* (Kakutani & Ogata, 1986), was intended to induce enjoyment within the participants. The negative clip, a death scene from the film *The Champ* (Lovell, 1979), was intended to induce sadness. The neutral clip, entitled *Alaska's Wild Denali* (Hardesty, 2003), depicted the Alaskan landscape. These clips had been validated for use in emotion elicitation based on their intensity, complexity, and attentional capture (Dearing & Gotlib, 2009; Rottenberg, Ray, & Gross, 2007). After watching each clip, participants were asked if they had previously seen the clip.

General self-efficacy. General self-efficacy was measured using the New General Self-Efficacy Scale (NGSE; Chen, Gully, & Eden, 2001), which defines general self-efficacy as "individuals' perception of their ability to perform across a wide variety of different situations" (Judge, Erez, & Bono, 1998). This scale consists of 8 items, rated on a 5-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). The NGSE yields a total score on general self-efficacy, which is a sum of the items, potentially ranging from 8 to 40; higher scores indicate higher self-efficacy. Chen et al. (2001) provide support for sufficient content and predictive validity. Internal consistency for the current sample was 0.95. This measure was collected to test another hypothesis that was not included in this study.

Parenting stress. Participants completed the Parenting Stress Index-Short Form (PSI), which consists of 36 questions (condensed from the original 120-question PSI). Although the measure yields scores on three subscales, Parental distress (PD; e.g., "Since having my child I

feel that I am almost never able to do things that I like to do"), parent-child dysfunctional interaction (PCDI; e.g., "My child is not able to do as much as I expected"), and difficult child (DC; e.g., "My child gets upset easily over the smallest thing"), we relied on the total score (Abidin, 1995). Each question asks respondents to rate their level of agreement, rated from 1 (strongly disagree) to 5 (strongly agree). The Total Stress scale is a sum of the item scores, potentially ranging from 36 to 180 with higher scores signifying greater levels of stress. Abidin (1995) reported test-retest reliability over 360 days of 0.84 and internal consistency of 0.91. Support was additionally provided for convergent and discriminant validity of this measure (Abidin, 1995). For the current sample, internal consistency for the Total Stress scale was 0.95.

Social support. Perception of social support was measured with the Multidimensional Scale of Perceived Social Support (MSPSS). The MSPSS consists of 12 questions pertaining to the subjective adequacy of one's social support from three sources: Family, friends, and a significant other (G. Zimet, Dahlem, S. Zimet, & Farley, 1988). Participants rated their level of agreement with support-related statements (e.g., "I get the emotional help and support I need from my family") on a 7-point Likert Scale, ranging from 1 (very strongly disagree) to 7 (very strongly agree). Although the measure yields scores for support from each source, we relied on the total score, which is obtained by summing the mean scores (across sources) from each of the 12 items. For this total score, Zimet et al. (1988) reported Cronbach's alpha of 0.88 for the overall scale, test-retest reliability over two to three months of 0.85, and moderate construct validity. For the current sample, internal consistency was 0.94.

Plan of Analysis

All data were exported from Qualtrics into SPSS, Version 23. There was no missing data for participants who completed the survey in its entirety, as all questions were force-response.

Descriptive analyses. We performed analyses of descriptive statistics to find the mean, standard deviation, and range of participants' age, ethnicity, highest education level, and marital status, as well as their number of children and each of the children's ages.

Depression check. We examined the match between the results of the two depression screening measures, the PHQ-2 and the PHQ-9. We found that 80.2% of the participants who screened positive on the PHQ-2 also screened positive on the PHQ-9, while 85.4% of those who screened negative on the PHQ-2 also screened negative on the PHQ-9. Additionally, the PHQ-2 and PHQ-9 measures were strongly correlated, $r = .81$, $p < .001$. Nonetheless, 14.6% of the participants ($n = 14$) screened negative on the PHQ-2 but positive on the PHQ-9, while 19.8% ($n = 19$) screened positive on the PHQ-2 but negative on the PHQ-9. For hypothesis testing, we designated women who screened positive on both measures as being high on depression symptom severity. This approach resulted in $n = 115$ non-depressed and $n = 77$ depressed women, therefore the non-depressed group included participants ($n = 33$) who still screened positive on one of the measures.

Correlation of measures. We ran correlations between all measures to evaluate how strongly all constructs aligned with each other.

Hypothesis 1. We conducted an independent-samples t-test to assess the hypothesis that mothers with current high depression symptom levels would report lower levels of baseline PSE from the SEPTI measure than those of mothers currently low on symptoms of depression. We also ran a correlational test of the degree of association between PSE and PHQ-9.

Hypothesis 2. We ran a correlation between the total stress score from the Parenting Stress Index and the baseline rating of PSE in order to test the hypothesis that level of parenting

stress would be negatively associated with PSE, such that mothers' greater stress would be associated with their lower PSE.

Hypothesis 3. We ran a correlation between perceived social support and the baseline rating of PSE in order to test the hypothesis that perceived social support would be positively associated with PSE, such that mothers' greater belief that they have a strong social support system would be associated with their higher PSE.

Hypothesis 4. To ensure that the order in which the video clips were presented was not associated with positive or negative mood following the sad clip, we ran two one-way ANOVAs for the positive and negative PANAS scores following the sad clip. To evaluate the effectiveness of the mood manipulation procedure in significantly altering participants' mood ratings from baseline to the time after viewing each film clip, we conducted two two-way repeated-measures analyses of covariance (ANCOVA), one for the positive and one for the negative scale of the PANAS mood measure, controlling for order of administration of the clips and considering a potential role of depression status. We tested the hypothesized effect of induced sad mood on PSE and proposed moderation by mothers' depression symptom level with a two-way repeated measures ANCOVA with one between-group variable (depression status) and one within-group variable (the film clips), controlling for order of administration, comparing baseline PSE ratings to those provided after viewing each film clip. All three analyses had four levels, representing the ratings at baseline and after the positive, negative, and neutral film clips, with depression status at the between-subjects variable and order of film clips as the covariate.

Results

Preliminary Analyses

The sample characteristics are shown in Table 1. The correlations among all of the measures are shown in Table 2. We ran two one-way ANOVAs to check that the order in which the sad mood clip was administered was not associated with mood, testing the effect of order on, first, the PANAS positive score following the sad clip and, second, the PANAS negative score following the sad clip. Contrary to expectation, both were significant, F (5, 191) = 3.09, p = .01, and F (5, 191) = 7.53, p < .001, respectively. PANAS negative scores following the sad clip ranged from 13.72 (order 4; positive, neutral, then sad) to 24.82 (order 2; sad, neutral, then positive). Planned comparisons revealed that PANAS positive following the sad clip was significantly lower when the sad clip was shown first (order 2; M = 23.28) from when it was shown second (order 3; M = 30.91), p < .05. PANAS negative following the sad clip was significantly higher when the sad clip was shown first (order 1; M = 22.47) from when it was shown third (order 4; M = 13.72; order 5; M = 15.88) and second (order 6; M = 15.43), p = .002, p = .04, p = .03, respectively. PANAS negative was also significantly higher when the sad clip was shown first for order 2 (M = 24.84) than for orders 3 (M = 17.63), 4 (M = 13.72), 5 (M = 15.88), and 6 (M = 15.53), in which the sad clip was shown second or third, p = .02, p < .001, p = .001, p = .001, respectively. PANAS positive scores following the sad clip ranged from 22.81 (order 2; sad, neutral, then positive) to 30.91 (order 3; positive, sad, then neutral) and PANAS negative scores following the sad clip ranged from 13.72 (order 4; positive, neutral, then sad) to 24.84 (order 2; sad, neutral, then positive). Based on these unexpected findings, we controlled for order of administration in tests of mood manipulation (Hypothesis 4).

Based on participants' reports, 88% of participants (n = 169) responded to the survey at home, 6.3% (n = 12) responded at work, and 5.7% (n = 11) provided an unrelated answer regarding response setting. When reporting who else was present at the time of participation in

the study, 63% of participants (n = 121) reported that no one else was present, 9.9% (n = 19) reported their spouse, 18.2% (n = 35) reported their children, 6.3% (n = 12) reported another person outside of the family, and 2.6% (n = 5) provided an unrelated answer.

PSE of Depressed and Non-Depressed Mothers (Hypothesis 1)

An independent-samples t-test revealed that baseline PSE from the SEPTI was significantly higher in non-depressed mothers (M = 4.65, SD = 0.57) than depressed mothers (M = 4.20, SD = 0.73), t = 4.69, p < .001. There was a moderate and significant negative correlation between the PHQ-9 and baseline PSE, r = -.40, p < .001.

Stress (Hypothesis 2) and Social Support (Hypothesis 3)

Contrary to Hypothesis 2, we failed to find support for a statistically significant relationship between baseline PSE and level of stress, r = .12, p = .10. Consistent with Hypothesis 3, we found a significant, albeit small, positive correlation between baseline PSE and perceived social support, r = .22, p = .002.

Manipulation Checks

Negative mood. Mauchly's test indicated that the assumption of sphericity was violated, X^2 = 12.0, p = .04, therefore a Greenhouse-Geisser correction was used (ε = .96). A repeated-measures ANCOVA revealed that the order in which each film clip was presented did not have a significant main effect on negative mood, F (1, 189) = .92, p = .34, d = .14. There was a significant main effect of viewing the film clips on negative mood, F (2.89, 545.42) = 21.34, p < .001, d = .67. In addition, depression status had a significant main effect on negative mood, F (1, 189) = 30.80, p < .001, d = .81. The interaction between viewing each film clip and the order in which each clip was presented, and between viewing each film clip and depression status, both significantly predicted negative mood, F (2.89, 545.42) = 23.71, p < .001, d = .71, and F (2.89,

545.52) = 8.55, $p < .001$, $d = .42$, respectively. After correcting for order, as seen in Figure 1, mothers with high depression symptom levels had higher negative mood than non-depressed mothers after viewing each film clip. Contrary to the planned manipulation, accounting for depression status, planned comparisons revealed that negative mood following watching the sad clip did not significantly differ from negative mood at baseline, F (1, 189) = 3.71, $p = .06$, $d = .28$; however, negative mood following watching the positive and neutral clips were significantly different from baseline, F (1, 189) = 6.95, $p = .009$, $d = .38$, and F (1, 189) = 30.20, $p < .001$, $d = .80$, respectively.

Positive mood. A repeated-measures ANCOVA revealed that neither order of the clips nor depression status had significant main effects on positive mood, F (1, 189) = .18, $p = .67$, $d = .06$, and F (1, 189) = .34, $p = .56$, $d = .09$, respectively. Consistent with the expected effect of the manipulation, there was a significant main effect of viewing the film clips on positive mood, F (3, 567) = 16.26, $p < .001$, $d = .59$. However, that main effect on positive mood was qualified by two significant interactions: Between viewing each film clip and order and between viewing each clip and depression status, F (3, 567) = 5.56, $p = .001$, $d = .35$, and F (3, 567) = 4.28, $p = .001$, $d = .30$, respectively. Accounting for depression status, planned comparisons revealed that positive mood following watching the positive, sad, and neutral clips each significantly differed from positive mood at baseline, F (1, 189) = 25.20, $p < .001$, $d = .73$, F (1, 189) = 42.89, $p < .001$, $d = .95$, and F (1, 189) = 14.13, $p < .001$, $d = .55$, respectively. However, contrary to the expected effect of the mood manipulation (that the positive clip would be associated with more positive mood relative to baseline), examination of means revealed that, after controlling for order, as seen in Figure 2, both depressed and non-depressed mothers reported lower positive mood after baseline regardless of having just viewed the positive, sad, or neutral clip.

Parenting Self-Efficacy (Hypothesis 4)

Next, despite the failed manipulation check, we tested Hypothesis 4, that the sad mood manipulation would be associated with lower PSE relative to baseline and that the association would be stronger for women with elevated depression symptom levels relative to women with no depression. Mauchly's test indicated that the assumption of sphericity was violated, $X^2 = 67.52$, $p < .001$, therefore a Greenhouse-Geisser correction was used ($\varepsilon = .80$). A two-way repeated-measures ANCOVA revealed a significant main effect of viewing the film clips on PSE, F (2.39, 451.50) = 2.92, $p < .05$, $d = .25$. There was no main effect of the order in which the clips were presented on PSE, F (1, 189) = .06, $p = .81$, $d = .00$, nor was there a significant interaction between viewing film clips and order, F (2.39, 451.50) = 1.63, $p = .19$, $d = .19$. Depression status was a significant predictor of PSE, F (1, 189) = 19.27, $p < .001$, $d = .64$, however the hypothesized interaction between viewing film clips and depression status was not statistically significant in the prediction of PSE, F (2.39, 451.50) = .64, $p = .56$, $d = .11$. Contrary to the predicted main effect of sad mood and the predicted interaction with elevated depression status, for the sample as a whole, regardless of depression status, with small effect sizes, PSE following all three of the film clips (positive, sad, and neutral) were significantly different from PSE at baseline, F (1, 189) = 3.99, $p < .05$, $d = .29$, F (1, 189) = 4.90, $p = .03$, $d = .32$, and F (1, 189) = 4.83, $p = .03$, $d = .32$, respectively. As seen in Figure 3, contrary to our prediction, PSE did not significantly decline from baseline to after viewing the sad film clip.

Discussion

The primary goal of this study was to explore associations between depressed mood, parenting stress, and social support and the parenting self-efficacy of mothers of 7 to 10-year-old children. Though previous research has established an association between parenting self-

efficacy and maternal depression in relation to mothers of infants and young children, there is less known about how depressed mothers of school-aged children perceive their parenting abilities. Depressed mothers have been found to be more likely to engage in negative parenting behaviors, including greater hostility and less effective communication (Lovejoy et al., 2000), which may ultimately shape their children's development in a harmful way (Goodman, 2007; Goodman et al., 2011). The 7 to 10-year-old age range in childhood precedes a time of heightened risk for depression, suggesting an important role of parenting in shaping children's development (Costello et al., 2011). We took steps to improve on the primary reliance of correlational designs in the published literature on mood and PSE, with the aim of clarifying the directionality of the relationship between symptoms of depression and PSE, by conducting an experimental mood manipulation procedure and examining the potential moderating role of elevated depression symptom level in the relationship between negative mood and PSE beliefs.

Consistent with the literature and our hypothesis, we found that mothers with elevated symptoms of depression reported significantly lower PSE beliefs than those of non-depressed mothers, supporting our first hypothesis. This finding aligns with those of previous studies that suggest an association between greater severity of symptoms of depression and lower PSE among mothers of infants (Cutrona & Troutman, 1986; Teti & Gelfand, 1991). This finding suggests that the association between depression symptom levels and PSE is not limited to parenting in infancy and early childhood. Rather, the two constructs continue to be associated in middle childhood.

Our second hypothesis, that level of parenting stress would be negatively associated with PSE, was not supported. Specifically, no significant relationship was found between the constructs. That is, we failed to replicate Berryhill (2015) and Well-Parker et al.'s (1990)

findings of higher levels of parental stress being associated with lower PSE. However, Berryhill (2015) and Wells-Parker et al. (1990) did not focus on mothers who only had children in the specific 7 to 10-year-old age range. Moreover, Wells-Parker et al. (1990) created their own measure of self-efficacy pertaining to four different domains of a mother's life, including being a parent and wife and maintaining a job. Furthermore, Berryhill (2015) used a longitudinal design and a sample comprised of over 2600 mothers, in comparison to the 192 mothers involved in the current study. These differing study characteristics may explain the discrepancies between current and previous findings.

In support of our third hypothesis, we found a significant but small positive correlation between perceived social support and PSE, such that higher levels of perceived social support were associated with higher levels of PSE. This aligns with Cutrona and Troutman's (1986) finding of an association between greater social support and higher confidence in the parenting role among mothers of infants. With our findings, that correlation is now extended to mothers of school-aged children, underscoring the associations between mothers feeling supported by family, friends, and others and their sense of competence in parenting.

We were constrained in our ability to test our fourth hypothesis given the unexpected finding that the mood manipulation procedure was not associated with the expected changes in reported mood. Both positive and negative mood after viewing all film clips were significantly lower than at baseline, indicating that the manipulation procedure was not effective. Although mood was significantly altered, positive mood was not significantly higher than baseline after the positive clip and negative mood was not significantly higher than baseline after the sad clip, as was expected in consideration of the literature supporting the procedure (Joormann, Talbot, & Gotlib, 2007; Rottenberg et al., 2007). It is possible that participants grew bored or tired as the

survey proceeded, considering the substantial number of questions that were asked between the initial mood rating and each film clip, and therefore may not have felt as strongly engaged or emotionally connected when viewing each clip and responding about their mood. Nonetheless, given the support for the effectiveness of these clips in inducing mood, this finding was surprising.

Although our manipulation was not effective, we proceeded to test the hypothesized effect of sad mood on PSE and of depression status as a moderator of that association. We failed to support either expectation. PSE was not significantly lower after viewing the sad clip relative to baseline PSE nor did depression status moderate that association. PSE after viewing the sad clip was not lower than at baseline for either depressed or non-depressed mothers. Considering these findings, our fourth hypothesis was not supported. We anticipated that PSE after induced sad mood would be lower compared to PSE at baseline and would decline in a more severe way for depressed mothers than for non-depressed mothers. We therefore do not have more clarity about the direction of the relationship between depression and PSE relative to the published findings with correlational approaches.

The ineffectiveness of the mood manipulation procedure and the unexpected findings on PSE may be explained by the online nature of the study. As participants responded to our survey online and in their own time, it is possible that they were distracted or were in an environment that affected their level of attention when viewing the clips and responding to the mood-related questions. We provided explicit instructions for participants to view the clips carefully while wearing headphones and to respond thoughtfully, but there was no way to ensure that they obliged. We asked participants to report the setting in which they responded and who else was present, but we did not ask about specific characteristics of the environment, such as noise level

and other distractors or stressors. Although previous studies validated the use of films for mood manipulation (Joormann et al., 2007; Mata, Hogan, Joormann, Waugh, & Gotlib, 2013), they tested participants in a lab setting, where the environment could be controlled as much as possible, unlike in our current study. This difference may account for the discrepancy between our results and those of previous studies. Additionally, Joormann et al. (2007) used film clips that were each about six minutes in length and were followed by guided imagery asking participants to think about how they would feel if placed in the situation that had just been depicted. The current study, however, used clips that were three minutes long and did not include follow-up film-specific questions, as we wanted to minimize the length of the entire survey to prevent participants from becoming too tired or frustrated with the amount of time they were devoting.

Limitations

Study results should be considered in the context of several limitations. First, as discussed earlier, this study was conducted entirely online, which we expect may account for the ineffectiveness of the mood manipulation procedure. We were not able to control the environment in which participants responded and consequently, they could have been exposed to a number of unknown variables that may have redirected their attention and made them less likely to experience the expected mood with each of the clips. In addition to being distracted, it is possible that participants worked on a separate task simultaneously, or simply did not pay attention to the clips at all. Second, although we provided explicit instructions for how to view the film clips, 65 out of the 192 participants reported that they did not wear headphones while viewing them, which likely meant that they were not fully immersed in the task and could have been distracted by other stimuli. Furthermore, although we set minimum and maximum time

limits for the survey as a whole, we could not guarantee that participants viewed the film clips from beginning to end without pausing or speeding through them. These factors, all related to the online nature of the study, likely contributed to the results of the mood manipulation procedure. Third, with respect to the online nature of the study, we only included self-reported responses, as opposed to incorporating a diagnostic interview or observational component into the study. In particular, we asked participants to make their own judgments of their symptoms of depression, rather than use a clinician to make diagnoses, although we did rely on a two-stage screening to designate women as high or low in depression. Overall, we relied solely on participants to provide thoughtful and unbiased responses, albeit with psychometrically sound measures for which we found high levels of internal consistency.

Future Directions

Next steps with the current dataset will be to examine theory-based hypotheses about the role of social support as a moderator of the relationship between stress and PSE at baseline, given the findings of Aneshensel and Stone (1982) and Cutrona and Troutman (1986). It would additionally be worthwhile to consider associations between PSE and mothers' demographic characteristics, such as education level and marital status.

Despite the inconclusive findings about the direction of the relationship between depression and parenting self-efficacy, this study still provided some insight into the correlates of PSE of mothers of school-aged children. This study demonstrated that among mothers of school-aged children, lower PSE is associated with higher symptom levels of depression and less perceived social support, highlighting the context in which low PSE occurs. As we were not able to clarify causality in the relationship between depression and PSE, it is essential that future studies continue to address this question. Given the prevalence of depression among women and

mothers and the subsequent risks for their children, closer investigation of the ways in which symptoms of depression shape different aspects of parenting is of particular importance and has the potential to inform preventative interventions.

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Table 1

Participant demographic characteristics

	Non-Depressed		Depressed		Overall Sample		Statistical Tests	
Characteristic	*n (%)*	*M (SD)*	*n (%)*	*M (SD)*	*n (%)*	*M (SD)*	X^2	*T-value*
Age (years)		34.00 (5.75)		34.68 (6.00)		34.27 (5.84)		-.78
Number of Children		2.20 (1.13)		2.43 (1.29)		2.29 (1.20)		-1.29
Ethnicity							4.60	
White or Caucasian	92 (80.0)		63 (81.8)		155 (80.7)			
Black or African American	14 (12.2)		5 (6.5)		19 (9.9)			
Asian	4 (3.5)		5 (6.5)		9 (4.7)			
American Indian	1 (0.9)		0 (0.0)		1 (0.5)			
Native Hawaiian	1 (0.9)		0 (0.0)		1 (0.5)			
Other	3 (2.6)		4 (5.2)		7 (3.6)			
Marital Status							1.44	
Single	16 (18.4)		14 (21.5)		30 (19.7)			
Married	60 (69.0)		44 (67.7)		104 (68.4)			
Divorced	10 (11.5)		5 (7.7)		15 (9.9)			
Widowed	1 (1.1)		2 (3.1)		3 (2.0)			
Education Level							11.78*	
High School	23 (20.0)		23 (29.9)		46 (24.0)			
Some College	46 (40.0)		25 (32.5)		71 (37.0)			
Bachelor's Degree	34 (29.6)		20 (26.0)		54 (28.1)			
Master's Degree	12 (10.4)		4 (5.2)		16 (8.3)			
Doctorate Degree	0 (0.0)		5 (6.5)		5 (2.6)			

Note. * $p < .05$.

Table 2

Correlations of scores on all survey measures (N = 192)

Measures	1	2	3	4	5	6	7	8	9
1. PSE at Baseline	--								
2. PSE after Positive Clip	.84**	--							
3. PSE after Sad Clip	.90**	.92**	--						
4. PSE after Neutral Clip	.81**	.92**	.89**	--					
5. PHQ-9	-.40**	-.33**	-.33**	-.31**	--				
6. MSPSS	.22**	.29**	.29**	.30**	-.19**	--			
7. PSI Total Stress Scale	.12	.06	.10	.05	-.02	.02	--		
8. PANAS Positive at Baseline	.33**	.28**	.29**	.25**	-.16*	.29**	-.01	--	
9. PANAS Negative at Baseline	-.40**	-.39**	-.40**	-.34**	.62**	-.06	.06	.03	--

Table 2

Continued

Measures	1	2	3	4	5	6	7	8	9
10. PANAS Positive after Positive Clip	-.001	-.003	.001	-.01	.10	.18*	.08	.53**	.23**
11. PANAS Positive after Sad Clip	-.01	-.05	-.03	-.07	.05	.09	.01	.54**	.21**
12. PANAS Positive after Neutral Clip	-.01	-.03	-.01	-.01	.03	.31**	.04	.59**	.21**
13. PANAS Negative after Positive Clip	-.20**	-.25**	-.21**	-.23**	.30**	-.002	.04	.21**	.60**
14. PANAS Negative after Sad Clip	-.23**	-.27**	-.28**	-.23**	.28**	-.04	-.05	.16*	.56**
15. PANAS Negative after Neutral Clip	-.20**	-.32**	-.25**	-.30**	.24**	.05	.11	.21**	.50**

Table 2

Continued

Measures	10	11	12	13	14	15
10. PANAS Positive after Positive Clip	--					
11. PANAS Positive after Sad Clip	.64**	--				
12. PANAS Positive after Neutral Clip	.61**	.60**	--			
13. PANAS Negative after Positive Clip	.30**	.34**	.41**	--		
14. PANAS Negative after Sad Clip	.37**	.24**	.28**	.50**	--	
15. PANAS Negative after Neutral Clip	.44**	.32**	.33**	.63**	.47**	--

Note. For all scales, higher scores are indicative of more extreme responding in the direction of the construct assessed.
PHQ-9 = Patient Health Questionnaire; MSPSS = Multidimensional Scale of Perceived Social Support; PSI = Parenting Stress Index; PANAS Positive = Positive and Negative Affect Schedule, positive affect scale; PANAS Negative = Positive and Negative Affect Schedule, negative affect scale.
* $p < .05$. ** $p < .01$.

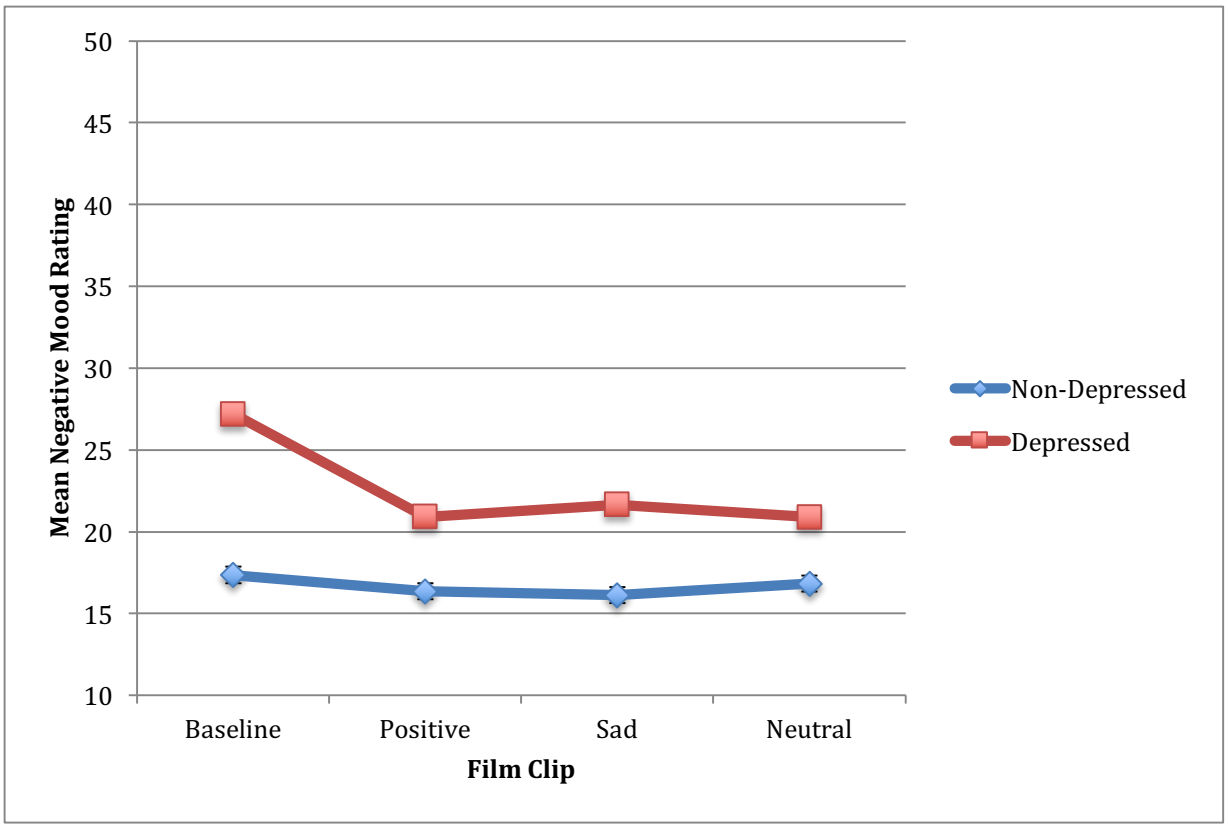

Figure 1. Negative mood ratings on PANAS measure of depressed and non-depressed participants, provided after viewing each film clip as part of the mood manipulation procedure. Error bars, though very small, represent standard errors.

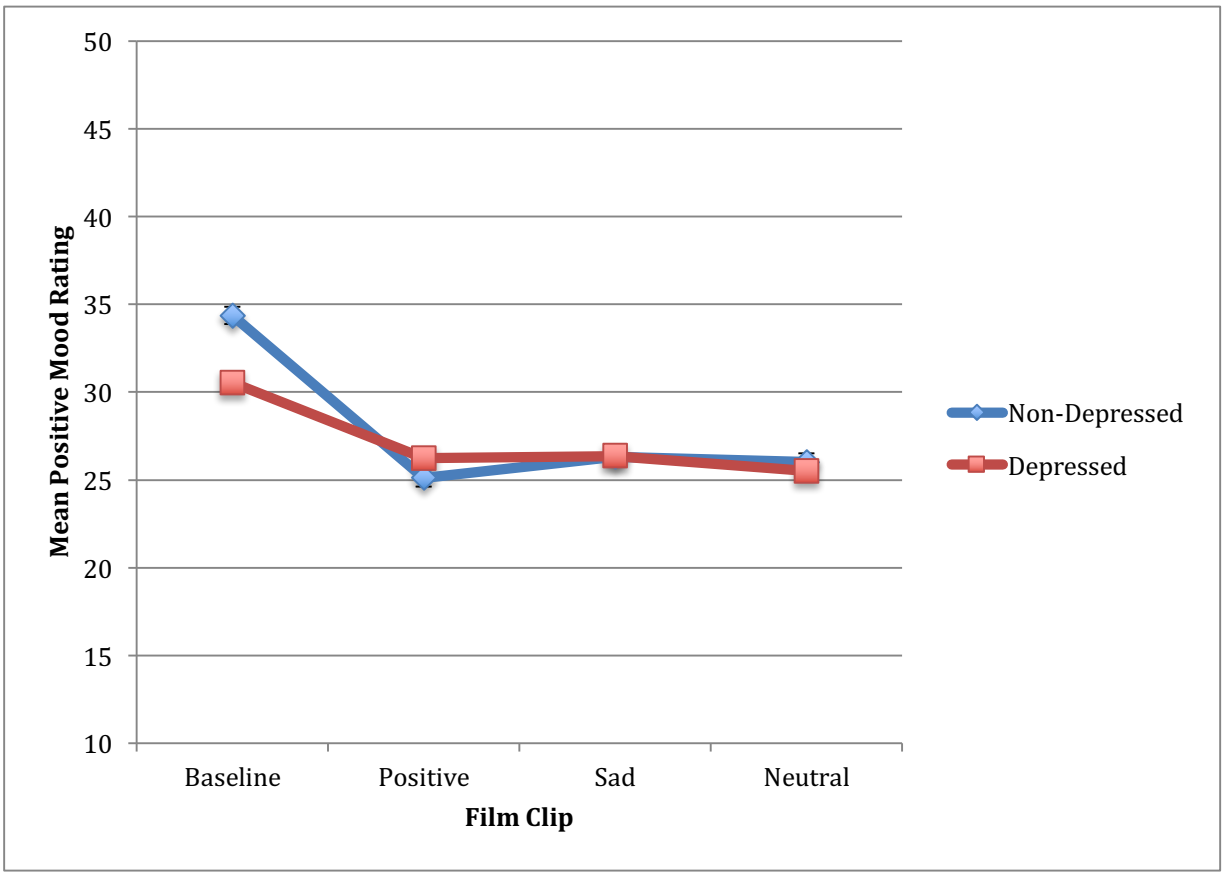

Figure 2. Positive mood ratings on PANAS measure of depressed and non-depressed participants, provided after viewing each film clip as part of the mood manipulation procedure. Error bars, though very small, represent standard errors.

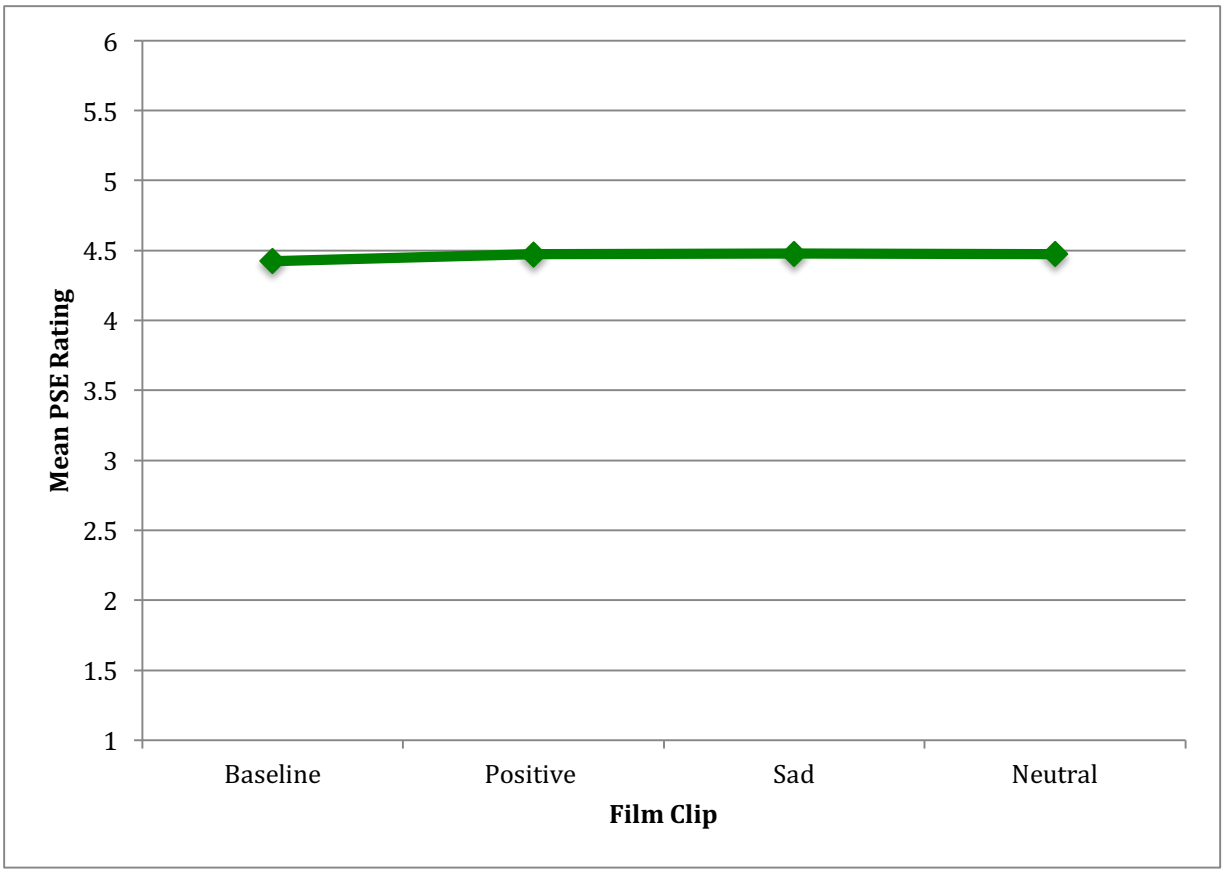

Figure 3. Parenting self-efficacy ratings on SEPTI measure for the sample as a whole, provided after viewing each film clip as part of the mood manipulation procedure. Error bars, though very small, represent standard errors.