Among the myriad factors that influence the development of depression in children, maternal mental health has garnered considerable interest (Boyle & Pickles, 1997; Hammen & Brannan, 2003). Self, parent, and teacher reports all converge, revealing that preadolescent children of depressed mothers display higher levels of internalizing symptoms than children of nondepressed mothers (Billings & Moos, 1983; Breslau, Davis, & Prabucki, 1988; Lee & Gotlib, 1989). Considering the grave impacts that depression can have on children in the academic, social, and emotional domains (Diamond, Siqueland, & Diamond, 2003), understanding the development of depression in children is crucial.

Researchers have generated numerous explanations for the correlation between mother and child depression. Some posited that the link is biologically based, citing genetic heritability and alterations of neuroregulatory mechanisms during early development as the root cause (Allen, 1976; Goodman & Gotlib, 1999). However, twin and adoption studies have illustrated that genetics can only partially explain the relationship. For example, in one study, 60% of monozygotic twins were discordant for unipolar depression (Allen, 1976; Burbach & Borduin, 1986). Others maintained that both mother and child depression may occur due to shared experiences such as marital conflict, poverty, or abuse (Kendler, Karkowski, & Prescott, 1999).

ABSTRACT. Children of depressed mothers are more likely to develop depression than their counterparts whose mothers are not depressed. However, not every depressed mother raises a depressed child. Therefore, other factors likely moderate the probability that a child of a depressed mother will develop depression. Child attachment security to their mothers may be one factor that moderates the association between mother and child depression. Specifically, insecure attachments may place children of depressed mothers at a heightened risk for developing depression, and secure attachments may serve as a buffer against the onset of depression by promoting children’s emotion regulation and effective coping strategies during times of stress. In the current study, we investigated this possibility among a subsample of mother-child dyads in which the mother scored above the clinical cutoff for mild depression on the Beck Depression Inventory \((n = 30, \text{derived from a larger sample of } N = 107)\) Child participants (ages 8–12 years old) completed the Child Attachment Interview and the Children’s Depression Inventory, and mothers completed the Beck Depression Inventory. Results indicated that attachment security moderated the association between mother and child depressive symptoms such that higher levels of maternal depressive symptoms were associated with higher levels of child depressive symptoms for children with lower attachment security \((\beta = .93, p = .02)\), but not for children with higher attachment security \((\beta = .09, p = .65)\). Results are discussed in terms of their contribution to the understanding of risk factors for child depression.

Attachment Moderates the Association Between Mother and Child Depressive Symptoms
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Maternal Depression, Child Depression, and Attachment

Shaw, Swearingen, Cohen, & Owens, 2001). However, significant variability exists in the psychological functioning of children with depressed mothers, indicating that the relationship between mother and child depressive symptoms may be qualified by other important factors.

Maternal parenting behavior may be one such factor that aids in the transmission of maternal to child depression. Depression has been shown to impede many mothers’ ability to affectionately and consistently in their responses to their children (Downey & Coyne, 1990). Depressed mothers may rely on strategies requiring less cognitive effort more frequently than do nondepressed mothers such as inflexibly enforcing obedience or withdrawing when facing child rebellion (Cohn, Matias, Tronick, Connell, & Lyons-Ruth, 1986). If these cognitive strategies are used, children may be at greater risk for developing many psychosocial problems themselves including depression (Downey & Coyne, 1990). Therefore, in the current study, we hypothesized that maternal depressive symptoms would be related to child depressive symptoms, in that the greater the maternal depressive symptoms, the greater the child’s depressive symptoms.

Importantly, not all children with depressed mothers develop depression. Therefore, it is useful to examine individual differences in mother-child relationship quality that impact the development of depression in children. Attachment theory, one framework for understanding variations in parent-child relationship quality, may provide insight into differences in the development of depression among children with depressed mothers. According to attachment theory, the quality of a caregiver’s response to their child’s requests for support and protection shapes the child’s behavior within the parent-child relationship as well as his or her thoughts and feelings related to attachment relationships in general (Bowlby, 1973). Parents of secure children are more sensitive and consistently responsive to their children’s needs and distress than are parents of insecure children (Ainsworth, Blehar, Waters, & Wall, 1978; see De Wolff & van IJzendoorn, 1997, for a meta-analysis). As a result, securely attached children learn that their distress and negative emotions can be resolved effectively by relying on their caregiver for support. Indeed, secure attachment in infancy is associated with better emotion regulation and the ability to maintain healthy relationships in the preschool years (Sroufe, Carlson, Levy, & Egeland, 1999; Vondra, Shaw, Swearingen, Cohen, & Owens, 2001). Insecure attachment in infancy and childhood predicts conduct problems in school, as well as adjustment and internalizing symptoms such as depression in childhood and adulthood, ostensibly because these children are less effective at regulating emotion and maintaining a balance of negative and positive emotional experiences (Cassidy, 1994; Downey & Coyne, 1990; Moss, Cyr, & Dubois-Comtois, 2004; Moss, Rousseau, Parent, St-Laurent, & Saintonge, 1998; Shaw & Vondra, 1995). Therefore, in the current study, we predicted that child attachment security would be related to child depressive symptoms, in that lower attachment security would be associated with more child depressive symptoms.

According to attachment theory, secure children, by virtue of their mothers’ sensitive parenting, learn that their distress is manageable and has a resolution (Bowlby, 1973). Therefore, it is possible that, when faced with maternal depression, children with a secure representation are able to regulate their emotions effectively and thus are no more likely to develop depression than their counterparts without depressed mothers. However, when faced with maternal depression, insecure children may be vulnerable to developing the disorder themselves because they have not learned to regulate their emotions and distress successfully early in life (Borelli, David, Crowley, & Mayes, 2010; Cassidy, 1994). Thus, it is possible that a secure attachment representation formed in infancy serves as a buffer against affective problems as the child ages such that maternal and child depressive symptoms may be more strongly associated among insecure children and less strongly associated among secure children.

Despite a plethora of research linking insecure attachment to emotion dysregulation and maternal depression to child depression (Allen, 1976; Cassidy, 1994; Downey & Coyne, 1990; Goodman & Gotlib, 1999; Moss et al., 2004), to date, only one study has examined how maternal depressive symptoms and attachment security interact in predicting child depressive symptoms. Milan, Snow, and Belay (2009) found that the severity of maternal depression interacted with children’s attachment security (measured by the Strange Situation at age 3; Ainsworth et al., 1978) to predict children’s self-reported depressive symptoms as they entered adolescence. Securely attached children who had severely depressed mothers displayed fewer depressive symptoms than insecurely attached children whose mothers were similarly depressed.

In the current study, we built upon previous
work by assessing attachment security and depression in middle childhood. To date, most research on attachment and depression has focused on the adolescent years, the developmental period associated with profound increases in the prevalence of depression (Hankin & Abramson, 2001; Nolen-Hoeksema & Girgus, 1994). Less is known about depressive symptoms in middle childhood although short-term longitudinal studies have suggested that middle childhood depressive symptoms and associated constructs such as rumination are associated with worsening depressive symptoms over time (Abela, Aydin, & Auerbach, 2007; Abela, Brozina, & Haigh, 2002). Late middle childhood (i.e., ages 8–12), the developmental period preceding adolescence, may represent an important phase for studying risk factors for the development of depression (Hankin et al., 1998). If the development of depressive symptoms can be better understood during the phase preceding adolescence, interventions may be able to stem the tide of emotion dysregulation, acting as preventative, rather than reactive.

Further, only recently has middle childhood become a prominent focus of attachment research (Kerns, 2008), primarily owing to the advent of assessment tools designed to probe attachment in middle childhood (Kerns, Abraham, Schlegelmilch, & Morgan, 2007; Kerns, Aspelmeier, Gentzler, & Grabill, 2001; Target, Fonagy, & Shmueli-Goetz, 2003). In terms of relationships, the transition from early middle childhood to adolescence is marked by a dramatic increase in the influence of peer interactions (Qualter, Brown, Munn, & Rotenberg, 2010), which has the potential to be a complicated transition for some youth. Therefore, the links between attachment and depressive symptoms in this age range may provide important insight regarding risk for relational and psychiatric distress during adolescence.

In the present study, we used a cross-sectional design to test two central hypotheses regarding the concurrent interrelations of maternal depressive symptoms, child depressive symptoms, and child attachment security. Consistent with extant literature, we hypothesized that maternal depressive symptoms and attachment security would be uniquely associated with children’s depressive symptoms in middle childhood and that attachment security would moderate the association between mother and child depressive symptoms, such that maternal and child depressive symptoms would be more strongly positively associated among children with lower levels of attachment security in middle childhood.

Method

Participants
Mother-child dyads (N = 107) participating in a larger study of children’s socioemotional adjustment were recruited through flyers and Internet postings in southern California. Parents and children each received a $50 compensation for their time. Our full sample included children (53% girls) who ranged in age from 8 to 12 years old (M = 9.74, SD = 1.48). The sample was socioeconomically diverse, with 40% of participants having a household income of less than $40,000 per year. Further, 29% of participants had a college degree or higher, and 57% of the sample was married or cohabiting with a romantic partner. Our sample was comprised of 34% Latino, 30% European American, 16% African American, 8% biracial, and 12% of participants who declined to report their ethnicity. Due to our desire to examine our hypotheses among mothers reporting high levels of depressive symptoms, we restricted our sample to mothers whose scores on the Beck Depression Inventory (BDI-II; Beck, Steer, & Brown, 1996) fell above the clinical cutoff for mild depression (> 14). On average, the mothers in our clinical subsample were 40 years old (M = 39.14, SD = 6.69), had two children (M = 2.37, SD = 0.85), were married or had a domestic partner (52%), and had not been divorced (55%).

Procedure
The present study was part of a larger cross-sectional study that involved two 1.5 hr sessions, approximately one to two weeks apart. Institutional review board approval was received for the study. During the first session, participants and their parents completed assent, consent, and demographic forms. Children then completed the Child attachment Interview (CAI) with a trained research assistant. Afterward, both child and parent completed a battery of questionnaires by hand including self-report assessments of depressive symptoms (Children’s Depression Inventory [CDI] and Beck Depression Inventory [BDI-II]).

Measures
Child attachment. The CAI (Shmueli-Goetz, Target, Fonagy, & Datta, 2008) is a semistructured interview for 8- to 13-year-olds and is parallel in structure to the Adult Attachment Interview (George, Kaplan,
Maternal Depression, Child Depression, and Attachment

& Main, 1984). It consists of 19 questions regarding the children’s current and past experiences with their primary caregivers (e.g., “Have you ever felt like your parents don’t really love you?” and “What happens when mom and/or dad gets upset or angry?”). The interview is approximately 30 min long and is videotaped, transcribed, and coded on eight 9-point scales based on the quality of the narrative the child generates (e.g., narrative coherence, balance of positive/negative references to attachment figures). The narrative coherence score can be used as a continuous measure of attachment security (Borelli, Crowley, et al., 2010), which is how it was used in the current study. CAI classification is correlated with child attachment security as measured in the Separation Anxiety Test (Wright, Binney, & Smith, 1995) and has been associated with variations in children’s socioemotional functioning (Borelli, Crowley, et al., 2010; Borelli, David et al., 2010).

In the present study, CAIs were administered by trained undergraduate research assistants and were coded by a researcher who had been certified as a reliable CAI coder. A subset (n = 16) of the CAIs were double-coded by another certified CAI coder, and the interrater reliability was high: four-way Kappa = .91, p < .001, Intraclass Correlation Coefficient for narrative coherence scale = .83, p < .001.

Parental depressive symptoms. Parents completed the BDI-II, a 21-item self-report scale, which assesses cognitive, behavioral, affective, and somatic dimensions of depression. Each question has four response choices (e.g., “I do not feel sad,” “I feel sad,” “I am sad all the time and I can’t snap out of it,” and “I am so sad and unhappy that I can’t stand it”). Each item is scored on a 4-point scale from 0 (no signs of symptom) to 3 (full endorsement of the symptom). The BDI-II has been found to demonstrate high internal consistency (α = .92; Beck et al., 1996). Adequate validity has been demonstrated, and diagnostic discrimination has been established (Scogin, Beutler, Corbishley, & Hamblin, 1998). In this sample, Cronbach’s α was .88.

For the current analyses, due to our non-clinical pool, we limited our sample to mothers who scored above the mild clinical cut-off for depression (> 14) on the BDI-II because the link between maternal depressive symptoms and child depressive symptoms may be most important to understand among mothers experiencing clinically significant depressive symptoms.

Child depressive symptoms. Children completed the CDI (Kovacs, 1992), a 27-item questionnaire that assesses the behavioral, cognitive, emotional, and physiological features of depression in children ages 7 to 17. Children chose one of three statements which best described their symptoms over the past 2 weeks (e.g., “I am sad once in a while,” “I am sad many times,” “I am sad all the time”). Responses were coded on a scale ranging from 0 to 2, with higher scores indicating more severe depressive symptoms. A score of 13 or above is thought to indicate the cutoff for clinical depressive symptoms (Kovacs, 1992). The psychometric properties of the CDI have been reported in the literature (Kovacs, 1992). Cronbach’s α for this sample was .86.

Results

Descriptive Data

Table 1 includes means and standard deviations for all primary variables in the current study. We computed zero-order correlations for all study variables. Importantly, child age and sex were unrelated to child or maternal depressive symptoms and attachment. Due to the fact that child age and sex were unrelated to our independent or dependent variables, we did not control for them in subsequent analyses. In the sample at large (N= 107 dyads), mothers reported an average of 9.84 (SD = 7.91) depressive symptoms, and children reported an average of 8.12 (SD = 6.17) depressive symptoms.

Concurrent Associations Among Mothers and Children

We hypothesized that, for mothers with depressive symptoms, maternal depressive symptoms would predict child depressive symptoms. Furthermore, we predicted that, for children of mothers with clinically significant depressive symptoms, child attachment security would be associated with child depressive symptoms. Results of a hierarchical linear regression revealed that mothers’ scores on

<p>| TABLE 1 |</p>
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<th>Sample Characteristics</th>
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<td>Demographic characteristics</td>
</tr>
<tr>
<td>Parent’s age</td>
</tr>
<tr>
<td>Child’s age</td>
</tr>
<tr>
<td>Maternal depressive symptoms</td>
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<tr>
<td>Child depressive symptoms</td>
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<tr>
<td>Attachment security</td>
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the BDI-II were not a significant predictor of child depressive symptoms, $R^2 = .04$, $p = .28$. Similarly, a second regression revealed that attachment security was not significantly associated with child depressive symptoms, $R^2 = .01$, $p = .91$

**Moderating Variable**

Next we conducted a hierarchical linear regression to evaluate whether attachment security moderated the association between maternal depressive symptoms and child depressive symptoms. Consistent with Holmbeck’s (2002) recommendations for evaluating moderators, prior to conducting analyses, we centered continuous independent variables. The main effects of maternal depressive symptoms and attachment security were entered as a first step, and the interaction between maternal depressive symptoms and attachment security was entered as a second step. Analyses revealed a significant Maternal Depressive Symptoms x Attachment Security interaction effect for the prediction of child depressive symptoms, $\Delta R^2 = .12$, $p = .03$. Holmbeck’s (2002) guidelines for post-hoc probing of significant moderational effects were used to examine the nature of this interaction. This included (a) computation of new product terms at different levels of the moderator variable (e.g., for high security and low security), (b) computation of simple slope estimates by including these new product terms in reduced regression models (e.g., including covariates and only significant predictors), and (c) examining the statistical significance of these slopes at different levels of the moderator variable. For the interaction effect of Maternal Depressive Symptoms x Attachment Security, results revealed a significant slope for children with low security, $\beta = .93$, $p = .02$, but not for children with high security, $\beta = .09$, $p = .65$, indicating that higher maternal depressive symptoms were associated with higher child depressive symptoms for children with low security, but not for children with high security (see Figure 1 and Table 2).

**Discussion**

We conducted the present study to provide a cross-sectional extension of Milan and colleagues’ (2009) paper examining whether child attachment security moderated the association between maternal and child depressive symptoms. In the present project, we examined whether concurrent associations between school-aged children’s and mothers’ depressive symptoms were moderated by child attachment security.

With respect to our first hypothesis, results indicated that attachment security was not associated with child depressive symptoms. Although our analyses focused on the subsample of mothers with mild depressive symptoms, the lack of association between child attachment security and child depressive symptoms held for the larger sample. These findings, inconsistent with the literature (Allen, 1976; Borelli, Crowley, et al., 2010; Cicchetti & Toth, 1995; Goodman & Gotlib, 1999; Lyons-Ruth, Easterbrooks, & Cibelli, 1997), are somewhat difficult to reconcile. One potential explanation consists of the demographic make-up of the sample. In contrast to previous work examining attachment and depressive symptoms in middle childhood (Borelli, Crowley, et al., 2010), as well as the link between maternal and child depressive symptoms in middle childhood (Burbach & Borduin, 1986), the present study comprised a socioeconomically diverse sample. Previous research has hinted that the association between maternal behavior, attachment security, and child psychopathology may be different in samples with lower socioeconomic status (SES). For example, De Wolff and van IJzendoorn (1997) reported that the association between maternal sensitivity and attachment security was moderated by SES; the lower class samples generated a smaller effect size than did middle class samples. Research has also highlighted the need to consider the accumulation of risk factors.
Maternal Depression, Child Depression, and Attachment

could contribute in important ways to attachment and emotional experience in lower SES samples. One study attempted to examine these cumulative stressors as predictors of attachment security in a low-income sample (Shaw & Vondra, 1995). The authors did not find any significant associations between individual stressors and attachment security. Further, the results suggested that families with two stressors were more likely to have secure infants, whereas families with three or four stressors were more likely to have insecurely attached infants. These studies indicated that the influence of attachment security on psychosocial functioning may operate differently among lower SES families.

Consistent with previous research (Milan et al., 2009), attachment security moderated the relationship between mother and child depressive symptoms. Post-hoc analyses revealed that maternal depressive symptoms were only positively associated with children’s depressive symptoms when children had low attachment security with respect to their attachment relationships. It is of note that this study was cross-sectional. Thus, we cannot infer that child insecure attachment preceded the concordance in depressive symptoms. However, this finding is of interest because it suggested that, if children have high attachment security, and therefore are more likely to have effective skills for regulating emotion and/or reduced emotion reactivity (Borelli, David, et al., 2010; Cassidy, 1994), they may be no more likely to develop depressive symptoms than children with healthy mothers. These results highlighted the importance of considering moderating variables in the transmission of clinical disorders between parents and children.

Our findings added to the current literature in providing the first cross-sectional support for Milan and colleagues’ (2009) longitudinal study. Further, our study provided an important contribution to the literature in that we assessed attachment security in middle childhood, an understudied developmental phase. Understanding depressive symptoms during middle childhood may help prevent or better treat adolescent and adult depression. Further, our study illuminated the limitations of purely hereditary or event-based models for the transgenerational transmission of depression because it indicated that moderating factors, in particular relationship quality, play a key role in the development of depression in children.

Although our findings were preliminary, if replicated, they would suggest that interventions for depressed children that target attachment relationships may be particularly important. For example, family-focused therapy for depressed children such as Attachment-Based Family Therapy (ABFT; Diamond et al., 2003) may be useful. ABFT is a developmentally based, semi-structured intervention tailored to the particular needs of depressed children. Because parent-child relationships can influence the development of depressive symptoms in children, therapy focused on restructuring and enhancing these relationships is important.

Limitations of the current study should be noted and addressed in future research. First, it would be of interest to measure the moderating effect of child attachment among a clinical sample of mothers in addition to community samples. Second, it would be interesting to assess depression using standardized diagnostic interviews, rather than relying on self-report data exclusively, which can be influenced by many uncontrollable factors such as desire to please or lack of insight (Podsakoff & Organ, 1986). To further explore issues raised in the present study, it would also be fruitful to measure the course of the mother’s depression at several time points throughout the child’s development to determine if length of depressive episodes or the age of the child during the mother’s episodes helps to explain the transmission of symptoms as well. Furthermore, given that previous research

| TABLE 2 |

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<th>Criterion</th>
<th>Step</th>
<th>Child Depressive Symptoms</th>
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<tr>
<td></td>
<td></td>
<td>B (SE)</td>
<td>95% CI</td>
<td>R² Δ (SE)</td>
</tr>
<tr>
<td>Security²</td>
<td>1</td>
<td>-.012 (.007)</td>
<td>[-.074, .070]</td>
<td>.037 (.258)</td>
</tr>
<tr>
<td>Maternal depressive symptoms</td>
<td></td>
<td>.194 (.002)</td>
<td>[.007, .20]</td>
<td></td>
</tr>
<tr>
<td>Security x Maternal depressive symptoms</td>
<td>2</td>
<td>-.467*</td>
<td>[-.021, -.10]</td>
<td>.121 (.239)</td>
</tr>
<tr>
<td>Total R²</td>
<td>.158</td>
<td>.</td>
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p < .05; *Security = Attachment security on the CAI.
has suggested that the link between relationship quality and psychopathology may be more complex among lower SES families, future research should attempt to consider the unique stressors and factors influencing lower SES families to better understand patterns of psychopathology. It would also be useful to examine the effects of fathers’ depressive symptoms on the model as well.

When considering the findings of the present study, it should be noted that mothers with depressive symptoms and insecure children may differ in other ways from mothers who have depressive symptoms and secure children. These differences could explain the observed link between mother and child depressive symptoms among insecure children, but not among secure children. For example, perhaps mothers who have secure children have greater support systems, more parental training, or better treatment available. Alternatively, perhaps mothers who currently exhibit depressive symptoms and have secure children were not depressed during their children’s early years of life.

Despite these limitations, the current study contributed to the literature by suggesting the importance of examining moderating factors in understanding the intergenerational transmission of depressive symptoms from mother to child. Mother-child relationship quality, specifically high levels of attachment security, may serve as a buffer for the transmission of symptoms. This study also extended the current attachment and depression literature to middle childhood. If replicated, these findings would have implications for interventions, therapy, and relational strategies for depressed mothers and children. Future work should further explore this phenomenon throughout development.

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