Examining Maternal Depressive Symptoms in the Family Context: The Associations with Adolescent Children’s Problem Behaviors and Family Environment

THESIS

Presented in Partial Fulfillment of the Requirements for the Degree Master of Science in the Graduate School of The Ohio State University

By

Xiamei Guo

Graduate Program in Human Development and Family Science

The Ohio State University

2010

Master's Examination Committee:

Natasha Slesnick, Advisor
Suzanne Bartle-Haring
Abstract

This study examined the relationship between adolescents’ problem behaviors and maternal depressive symptoms, and the moderating effect by adolescent gender on this relationship. The current study also assessed the relationship between maternal depressive symptoms and the family environment, above and beyond adolescents’ problem behaviors and the interactive effects of gender. Data were collected from 137 mothers of runaway adolescents. The mothers reported on their children’s internalizing and externalizing problem behaviors, cohesion and conflict in the family environment, as well as their own depressive symptoms. Results showed that the problem behaviors of adolescent girls were significantly associated with maternal depressive symptoms, while boys’ problem behaviors were not. Results also showed that family cohesion was significantly related to maternal depressive symptoms above and beyond adolescent problem behaviors, whereas family conflict was not. These findings indicate that adolescent children’s problem behaviors and mothers’ perceptions of family environment might jointly contribute to maternal depressive symptoms, highlighting the potential utility of the family systems theoretical framework for understanding mothers’ emotional problems in the family context.
Dedication

Dedicated to my supportive family and friends.
Acknowledgments

I would like to thank my committee members for their help and guidance. A very special thanks is due to my advisor, Dr. Slesnick, for her helpful suggestions and patient guidance which she has given for this thesis, and her extensive assistance and support throughout these two years. I also would like to thank my dear friends, especially Steven, Sam and Pat, for their continuing encouragement and care. And finally, I am deeply grateful to my parents for always believing in me and for their endless love.
VITA

July 2007………………………………B.S. Psychology, Beijing Normal University

September 2009 to present………………..Graduate Research Associate, Department of

Human Development and Family Science,

The Ohio State University

FIELD OF STUDY

Major Field: Human Development and Family Science
Table of Contents

Abstract ............................................................................................................................... ii

Dedication ......................................................................................................................... iii

Acknowledgments ........................................................................................................... iv

Vita ...................................................................................................................................... v

List of Tables ................................................................................................................... viii

List of Figures .................................................................................................................... ix

Chapter 1: Introduction ..................................................................................................... 1

  Literature Review ............................................................................................................ 1

  Current Study ................................................................................................................ 12

Chapter 2: Method ............................................................................................................ 14

  Participants .................................................................................................................... 14

  Sample Characteristics ................................................................................................. 14

  Measures ....................................................................................................................... 15

  Analytic Strategy .......................................................................................................... 16

Chapter 3: Results ............................................................................................................. 18

  Descriptive Analysis ................................................................................................... 18
List of Tables

Table 1. Demographic characteristics of participants................................. 46
Table 2. Means and standard deviations of all continuous variables..................... 47
Table 3. Pearson correlation among variables for mothers of boys........................ 48
Table 4. Pearson correlation among variables for mothers of girls........................ 48
Table 4. Multiple linear regression predicting maternal depressive symptoms.......... 49
List of Figures

Figure 1. Interaction between child gender and internalizing behaviors on maternal depressive symptoms ................................................................. 51

Figure 2. Interaction between child gender and externalizing behaviors on maternal depressive symptoms .......................................................... 51
CHAPTER 1

INTRODUCTION

Literature Review

The report from the World Health Organization (2004) highlighted that depression is one of the most prevalent psychological problems. In the United States, approximately 15 million American adults are affected by depression in a given year (Kessler, Chiu, Demler, & Walters, 2005). Depression is a particular concern for women given the higher incidence of depression in this group (Kessler et al., 2003). Abundant research evidence show that maternal depression is associated with child’s externalizing problems, poor academic performance, depression and other psychosocial problems (Brennan, Hammen, Katz, & Brocque, 2002; Bureau, Easterbrooks, & Lyons-Ruth, 2009; Halligan, Murray, Martins, & Cooper, 2007). In addition, most of the extant studies have primarily focused on the parent-to-child influence, with an implicit assumption that children are passive recipients of parents’ socialization practices (Pardini, 2008). However, the child-to-parent influence has not received much attention. Based on the reciprocal or transactional model (Bell, 1968; Patterson, 1982), the dynamic between child and parent is bidirectional, that is, each person influences and is influenced by the other. Several studies focused on the child-to-parent influence suggest that it may be as
strong as the parent-to-child influence, if not stronger (Pardini, 2008). Although there is both theoretical and empirical support for the importance of the influence from child to parent, more efforts are needed to investigate this relationship.

Runaway adolescents are an at-risk population, with a high prevalence and severity of problem behaviors such as externalizing and internalizing problems, substance use, and risky sexual behaviors (Marshall, Kerr, Shoveller, Montaner, & Wood, 2009; Peterson, Baer, Wells, Ginzler, & Garrett, 2006). The limited number of studies with primary caretakers (PCs) of runaway adolescents as a part of their samples showed elevated levels of stress and depression among those PCs, compared with that of non-runaways (Slesnick & Prestopnik, 2004). Although the previous studies have examined the influence of maternal depression on runaway adolescents, none have examined the influence of runaway adolescents’ behaviors on maternal depressive symptoms. To address this gap in the literature, this study will explore the predictive role of runaway adolescent’s internalizing and externalizing problems on their mother’s level of depressive symptoms.

The family environment has been linked with the onset, maintenance and resolution of depressive symptoms among family members (Ashida et al., 2008; Park, Garber, Ciesla, & Ellis, 2008; Reinherz, Paradis, Giaconia, Stashwick, & Fitzmaurice, 2003). Cohesion and conflict in the family environment are two of the most frequently studied family environment variables and both have been identified as strong predictors of family members’ depressive symptoms (Marmorstein & Iacono, 2004; Rice, Harold, Shelton, & Thapar, 2006). However, among the previous studies of child-to-parent
influence on parental depression, none have considered the role of family environment. In order to examine and compare the influence of both child and family environment on parental depression symptoms, this study also investigated the predictive role of cohesion and conflict in the family environment on these mothers’ depressive symptoms.

**Parent Influences on Child Maladjustment**

Children’s development is strongly influenced by their parents. Parent’s well-being and parenting practices are linked to their children’s behavior and well-being. Both maternal and paternal authoritarian parenting styles have been identified as risk factors for child’s conduct problems, delinquent activity and substance use (Bronte-Tinkew, Moore & Carrano, 2006; Thompson, Hollis & Richards, 2003). Adolescents perceiving less parental monitoring were more likely to engaging risky sexual behaviors, substance use and aggressive behaviors (Barnes, Hoffman, Welte, Farrell & Dintcheff, 2006; DiClemente et al., 2001). Consistent evidence shows that child maltreatment is associated with adolescent alcohol and drug use problems, and aggressive and delinquent behaviors (Bank & Burraston, 2001). Children of alcoholic parents have a higher risk for substance use problems as well as other behavioral problems compared to children of non-alcoholic parents (Eiden, Edwards, & Leonard, 2007; Slutske et al., 2008). Overall, a wealth of evidence shows that children are influenced by their parents, and this influence is lasting, even as the children enter into adulthood (Kearns-Bodkin and Leonard, 2008).

**Parent-to-Child Influence among Runaways**

Runaway adolescents are especially at risk but considerably understudied. In general, runaway adolescents exhibit elevated problem behaviors such as substance use
(Kooperman, Rosario, & Rotheram-Borus, 1994), delinquency (Kaufman & Widom, 1999), risky sex behaviors (Marshall et al., 2009), as well as having higher prevalence of mental health problems and comorbidity (Whitbeck, Johnson, Hoyt, & Cauce, 2004) compared to housed youth. There is a dearth of research investigating parental effects on these adolescents, which might be due to the difficulty of engaging their parents in research studies. Among the available research findings, parent alcohol problems were found to be indirectly associated with runaway adolescent’s alcohol use through parental rejection (McMorris, Tyler, Whitbeck, & Hoyt, 2002). Stein, Milburn, Zane, and Rotheram-Borus (2009) examined the influence of parent-child relationships on recent problem behaviors among 501 currently homeless and runaway adolescents, and the results showed that positive paternal relationships significantly predicted less substance use and less criminal behavior, whereas positive maternal relationships predicted less survival sex behavior. Slesnick and colleagues (2009) examined the predictors of motivation for changing substance use among 140 runaway adolescents and their parents/primary caretakers (PC), and found that as the negativity in the family environment increased, the depressive symptoms experienced by the PC increased and the adolescent’s motivation to reduce alcohol use increased. In addition, PC’s and adolescent’s depressive symptoms mediated the relationship between family environment and motivation to change. In summary, similar to samples of non-runaways, research on runaway adolescents highlights the powerful influence of parents and the family environment on child behavior.
Theoretical Support for Child-to-Parent Influence

The majority of previous research examined only parent-to-child influences, with a bias in the field towards considering children passive recipients of parental influence, as noted earlier. However, more recently, an increasing number of researchers suggest that parents are also likely to be influenced by their children, and the dynamics between parents and children more likely to be bidirectional rather than unidirectional. Bell (1968, 1979) is widely cited as the first researcher emphasizing the importance of examining bidirectional parent-child effects in developmental research. He argued against the traditional view that parents socialize children without consideration of the child’s influence, and asserted that this unidirectional view was illogical because it overlooked the child as a potent part of the environment for the parent. He also stated that the basic principle of parent-offspring interaction is reciprocal influence, “a moving bidirectional system in which the responses of each participant serve not only as the stimuli for the other but also change as a result of the same stimulus exchanges, leading to the possibility of altered response on the part of the other” (Bell, 1979). In addition, he emphasized that “demonstrated child effects are especially needed to complement and put into perspective findings from the preponderance of studies devoted for over 40 years to identifying parent effects” (Bell, 1979).

Besides Bell’s prominent proposition, several other researchers also have generalized insightful theories or models which are helpful for better understanding the bidirectional influences between children and parents. One of them is Patterson’s (1982)
coercion theory. He proposed a bidirectional model of parent-child interactions which focuses on the escalation and maintenance of children’s antisocial behaviors within the context of coercive parent-child interchanges. The basic premise of this model is that children with an irritable and defiant temperament cause unskilled parents to use increasingly harsh discipline techniques in order to gain control of their child’s aversive behaviors. However, these aversive behaviors are more likely to be escalated by the harsh parenting practices rather than being eliminated. As the conflicts between parents and children intensify during these aversive exchanges, many of these unskilled parents tend to escape from their child’s aversive behaviors, by withdrawing from the interaction with their child. As a result, children learn that parents’ requests can be avoided by increasing the intensity and/or duration of their aversive behaviors, which reinforces an escalation in their conduct problems over time.

Based on Systems Theory’s viewpoint, Minuchin (1985) stated that the family as a system operates as an organized whole, and individuals within the family system are necessarily interdependent. That is, each individual family member influences, and is influenced by each other. Thus, in order to understand an individual in a family system, the context (other members in the system) should also be taken into account. In addition, the interaction patterns in the family system are circular, as a spiral of recursive feedback loops, rather than linear. From this viewpoint, the linear causality assumption that parents exercise a predominantly unidirectional influence on children is questionable. These theoretical perspectives are very helpful for understanding the dynamics between parent and children, and also provide the basis of the belief that children can also influence their
parents. The current study aims at contributing to the literature by examining the child-to-parent influence, which to date has received relatively little attention.

*Studies of Child-to-Parent Influence*

One well-known study conducted by Pelham and colleagues’ (1997) examined the effects of deviant child behavior on parental distress and alcohol consumption. In this study, boys were trained to exhibit externalizing behavior disorders—attention-deficit hyperactivity disorder (ADHD), conduct disorder (CD), and oppositional defiant disorder (ODD). Interactions of adults with “deviant” child confederates resulted in feelings of role inadequacy, and led to significantly more anxiety, depression and hostility compared to adult participants who interacted with “normal” children. Specifically, adult participants’ ratings of the unpleasantness of the interactions were approximately 13 times more negative in the deviant condition than in the normal condition. Also, the adult participants consumed more alcohol after interacting with deviant child confederates as opposed to normal child confederates. With the magnitude of changes of negative feelings and the short period of interaction with “deviant” child confederates (20 minutes) taken into account, Pelham et al. concluded that deviant child behavior is causally related to parental stress and negative mood, and these child-to-adult effects can be astonishingly powerful.

In the recent years there are a growing number of studies about reciprocal influences between parents and children which provide valuable information regarding child-to-parent influences as well. Hipwell et al. (2008) conducted a longitudinal study about reciprocal influences between girls’ conduct problems and depression, and parental
punishment and warmth. They found that conduct problems among girls significantly predicted changes in harsh parenting between ages, and girls’ prior depressed mood significantly predicted changes in low parental warmth. Sheehan and Watson (2008) found that child aggression at younger ages (7-13 years) predicted an increase in mother’s use of aggressive discipline. They also found that child aggression at all ages predicted an increase in the use of reasoning techniques but not vice versa.

*Predicting Maternal Depressive Symptoms by Child Variables*

Research findings show that children can be a source of parental stress and/or depression. Keller and Honig (2004) examined stress factors among families with a school-aged, disabled child. Findings showed that the level of stress experienced by parents was strongly influenced by characteristics of the child. The high demand for care of the child contributed to maternal stress and also had a negative effect on family harmony. Kahn and colleagues (1999) found that 48% of mothers who brought in their children for pediatric care screened positive for depression, which was much higher compared to the estimated lifetime depression rate (10-20%) among females (Kring, Torgersen, & Cramer, 2001).

During the past few years, it has been widely acknowledged that maternal depression is a risk factor for child’s adjustment problems. However, living with a child who has emotional or behavioral disturbances is also likely to increase the risk of or exacerbate maternal depression (e.g. Elgar et al., 2004). Murray, Stanley, Hooper, King, and Fiori-Cowley (1996) investigated the role of infant factors in predicting postnatal maternal depression. They found that neonatal irritability and poor motor functioning
were significant predictors of postnatal maternal depression. Moreover, in the mother-child interaction tasks it was shown that these aspects of neonatal functioning were also associated with more poorly rated infant behavior in interaction with the mother at two months. In another study, Harrison and Sofronoff (2002) found that the total problem score on the Child Behavior Checklist (Achenbach & Edelbrock, 1983) was a strong predictor of maternal stress and depression among a sample of 100 mothers of ADHD children. Overall, maternal stress and depression was predicted by severity of child behavioral disturbance as well as lower perceived parental control over child behaviors. These factors were more powerful predictors than demographic characteristics and maternal knowledge of ADHD.

Gross and colleagues (2008a, 2008b, & 2009) conducted a series of investigations on the reciprocal association between child disruptive behavior and parental depression. They found that observed child noncompliance at age two was significantly associated with maternal depressive symptoms when the child was four-years-old (Gross, Shaw, Moilanen, Dishion, & Wilson, 2008b). For those mothers who exhibited higher levels of depressive symptoms when their children were two-years-old, their children were more likely to have increased child internalizing behaviors at age four. To advance the understanding of reciprocal influences on child disruptive behavior and maternal depression, Gross, Shaw, Burwell, and Nagin (2009) conducted a longitudinal study by following boys from age four to twelve years of age. Mothers were categorized into four groups depending on the level of depressive symptoms: low, moderately low, moderately high, or chronically high. Analyses showed that among noncompliant, aggressive and
irritable infants, noncompliance at age two was the most robust predictor of chronic and elevated levels of maternal depression. In another study of reciprocal relations between early adolescent boys’ externalizing behaviors and maternal depression (Gross, Shaw, & Moilanen, 2008a), evidence was found for both mother-to-child and child-to-mother effects. The child-to-mother effects were especially evident during the transition to adolescence (boys’ age 11 to 12). These findings lend great support to the bidirectional associations between child behavior and parental depression.

*Family Environment and Adult Depression*

Family environment variables have been linked with depressive symptoms among young children and adolescents. Low family cohesion and high family conflict are salient predictors of depressive symptoms for young children and adolescents (Park et al., 2008; Reinherz et al., 2003; Rice et al., 2006; Marmorstein & Iacono, 2004). Considerably less research has examined this relationship among adults. Among the few adult studies, Park et al. (2008) found that different methods of assessing the family environment similarly yield the constructs of positive and of negative family environment. In addition, the family environment was significantly associated with depression among both mothers and their children, and the results of different ways of assessing the family environment converged. Ashida et al. (2008) examined the impact of family environment on depression scores after genetic testing for cancer susceptibility. They found that lower perceived family cohesion was associated with higher depression scores at 12-month follow-up. In another study, family factors, including couple-related support and satisfaction, accounted for 44.5% of the variance in maternal depression (Malik et al.,
In addition, child aggression was significantly and indirectly related to maternal depression via family factors. In summary, the influence of family environment on adult depression is limited compared to that focused on child and adolescent depression. To address this gap in the literature, the current study will examine the influence of cohesion and conflict in the family environment on depressive symptoms among a sample of mothers of runaway adolescents.

*Child Gender as A Moderator of Child-to-Parent Influence*

Research findings consistently show gender difference in adolescents’ internalizing and externalizing problems. Adolescent boys outnumber girls in aggressive and criminal behaviors (Card, Stucky, Sawalani, & Little, 2008; Loeber & Stouthamer-Loeber, 1997), whereas adolescent girls show higher levels and more prevalence of internalizing problems, such as depression and anxiety disorders (Galambos, Leadbeater, & Barker, 2004; Lewinsohn, Zinbarg, Seeley, Lewinsohn, & Sack, 1997). Among the previous studies of child-to-parent influence, researchers tended to merely focus on the boys (e.g., Gross et al., 2009; Gross et al., 2008a; Pardini, Fite & Burke, 2008) or externalizing behaviors (e.g., Combs-Ronto, Olson, Lunkenheimer, & Sameroff, 2009; Larsson, Viding, Rijsdijk, & Plomin, 2008). Although prior research showed evidence that the association between girls’ problem behaviors (both internalizing and externalizing) and maternal variables (e.g., parenting behaviors and depressive symptoms) was different from that of boys (e.g., Leung et al., 2009; Fergusson, Horwood & Lynsky, 1995), the gender effect on the child-to-parent influence remains rarely examined. The current study will contribute to the literature by examining the child-to-parent influence among both
adolescent boys and girls. Considering the gender differences found for internalizing and externalizing behaviors, it is expected that girl’s internalizing and boy’s externalizing problems will significantly predict maternal depression.

Current Study

In order to address the gap in the literature, the current study will examine whether maternal depressive symptoms can be predicted by mother’s report of her child’s internalizing and externalizing behaviors, with child’s gender used as a moderator in the analyses. Given that previous studies reveal the important role of the family environment on family member’s depression, the current study will also include family cohesion and conflict as predictors. The focus of this study is on predictors of maternal depressive symptoms; therefore, only mother’s report of her family environment and child behaviors will be used. That is, children may have little knowledge of their mother’s depressive symptoms, and mother’s perspective is of primary interest. The majority of previous studies examining the child-to-parent influence on maternal depression have used mother report as well (e.g., Gross et al., 2008a & 2008b).

The hypotheses of the current study are: 1) maternal depressive symptoms are significantly associated with child internalizing/externalizing problems regardless of child gender; 2) gender moderates the association between maternal depressive symptoms and adolescents’ problem behaviors, and this association will be stronger among mother-daughter dyads than mother-son dyads; 3) maternal depressive symptoms can be predicted by mother’s report of family cohesion and conflict above and beyond children’s problem behaviors.
The current study will contribute to the literature by 1) examining the child-to-parent influence, which has been infrequently studied in prior research; 2) examining the moderating role of child gender on maternal depressive symptoms, which has been understudied as well; and 3) examining the contribution of family environment variables to maternal depressive symptoms above and beyond the influence of child problem behaviors.
CHAPTER 2

Method

Participants

Participants were recruited as part of a larger randomized clinical trial evaluating substance abuse treatment among runaway adolescents. Baseline data from the original study were utilized for the current project. Adolescents were recruited from the only runaway crisis shelter in a Midwestern city from February 2005 to April 2007. To be eligible for the study, youth had to be residing at the crisis shelter, be between the ages of 12 to 17 years, have the legal option of returning to a home situation (including foster home or with another family member), meet DSM-IV diagnostic criteria for Psychoactive Substance Use or Alcohol disorder as assessed by the Computerized Diagnostic Interview Schedule for Children (CDISC; Shaffer, 1992), and have at least one parent or a surrogate parent (primary caretaker) willing to participate in the study. Of the 467 youth who were approached, 62.7% (N = 293) were eligible and 61.4% (N = 180) of eligible youth were successfully engaged into the study. Among the 170 PCs assessed at baseline, 137 PCs were mothers of the runaway adolescents. Data from the 137 mothers were used in this study.
Sample Characteristics

Of the 137 adolescents, the mean age was 15.30 years (range from 12 to 17 years old, SD = 1.26) (Table 1), and 66 (50.77%) were female. Of the 137 mothers, the mean age was 39.83 (range 17-69, SD = 6.84). The majority of mothers were African American (66.4%, n = 91), approximately one-fourth of the mothers were White, non-Hispanic (23.4%, n = 32), 0.7% (n = 1) were Hispanic and 1.5% (n = 2) were Native American. Adolescents reported repetitive runaway episodes (M = 3.3, SD = 4.4), and high alcohol and substance use with an average percentage of 44.3% days of use in the prior 90 days (Range = 3.5-100, SD = 36.6). Mother’s employment status, total annual income and the highest education level are presented in Table 1.

Measures

A demographic questionnaire was used to assess mother’s and adolescent’s age, gender, ethnicity, as well as youth’s runaway behavior and homeless experiences.

The Computerized Diagnostic Interview Schedule for Children (CDISC, Shaffer, 1992) was utilized to determine formal eligibility. CDISC is a computerized structured instrument, consisting of 263 items that measure the criteria for the Diagnostic and Statistical Manual of Mental Disorders (4th ed.) diagnoses among children and adolescents.

The Beck Depression Inventory-II (BDI-II, Beck et al., 1996) was utilized to measure the depressive symptoms of the mothers. BDI-II consists of 21 items, each of which has four self-evaluative statements scored from 0 to 3; total scores range from 0 to 63, with higher scores indicating greater depressive symptomatology. A cutoff score of
21 or above is typically used to identify patients with at least moderate symptoms of depression (Beck et al., 1996). In the current sample, the coefficient alpha of the total depression score was 0.93.

The Family Environment Scale (FES, Moos & Moos, 1986) was utilized to evaluate mother’s perceptions of the family environment and family relations. Two subscales, cohesion (Cronbach’s α = 0.75) and conflict, were used in the current study. Each subscale was composed of nine items, with possible subscale scores ranging from 0 to 9. Higher scores indicate higher levels of cohesion and conflict, respectively. Because the reliability of the conflict subscale was fairly low (0.54 with all items included) in the current sample, four items were deleted from the conflict subscale in order to get better reliability according to the result of “Cronbach’s α when item deleted” in SPSS reliability analysis, and that led to a 0.66 Cronbach’s α of the conflict subscale.

The Child Behavior Checklist/6-18 (CBCL; Achenbach, 2001) was utilized to measure mother’s global perceptions of her child’s problem behaviors. The CBCL is a widely used 113-item checklist in which parents use a 3-point scale to report on the occurrence and frequency of a number of problem behaviors exhibited by their child. The Internalizing (Cronbach’s α = 0.87) and Externalizing (Cronbach’s α = 0.90) scales of CBCL were used in the present study.

Analytic Strategy

Descriptive analysis was conducted first on mothers’ BDI score, mothers’ FES cohesion and conflict score, and mothers’ report on their children’s internalizing and externalizing behaviors. In the second step, correlations between mothers’ BDI score and
all predictors were calculated. Then all predictors were entered into a hierarchical linear regression model with all continuous variables mean-centered and the products of child gender and internalizing problems as well as child gender and externalizing problems computed. The demographic variables (mother’s age and ethnicity, and child’s age and gender) were entered in the first step; child variables, including CBCL internalizing and externalizing scores, and the interaction terms were entered in the second step; family environment variables, including both family cohesion and conflict were entered in the third step. Corresponding simple effects would be further examined if any of the interaction terms was significant. The rationale for entering sequence is that the second step replicates previous studies which only used child problem behaviors as predictors, and the third step serves as an extension of prior findings.
CHAPTER 3

RESULTS

*Descriptive Analysis*

The distributions of the continuous variables were examined at the first step. The maternal depressive symptoms scores were slightly positively skewed (skewness = 1.12), so were mother’s ages (skewness = 1.12). A large number of mother participants fell into the normal range of depressive symptoms (BDI score $\leq 14$). A small number of mothers had a BDI score higher than 21, which was the cut-off score typically used to identify patients with at least moderate symptoms of depression (Beck et al., 1996). Approximately two thirds of mothers were 40-year-old or younger. Given that the skewness of these two variables was not severe, the original data were used in the regression analysis. Means and standard deviations of all continuous variables are shown in Table 2.

Independent-samples t-tests are used to examine differences among family environment variables, children’s problem behaviors and maternal depressive symptoms between ethnic/racial and gender groups. African American mothers rated their children as having significantly less internalizing [$t(130) = 2.32, p < .05$] and externalizing behaviors [$t(130)=2.26, p<.05$] compared to non-African American mothers. In addition,
African American mothers reported having significantly less depressive symptoms compared to those mothers who were not African American \([t(130) = 2.32, p < .05]\).

Boys’ mothers and girls’ mothers did not report significant differences regarding their children’s problem behaviors, the family environment or their own depressive symptoms.

Correlations among mothers’ reported depressive symptoms and their perceptions of children behaviors and the family environment were also examined separately for boys and girls. Among mothers of boys (Table 3), higher levels of depressive symptoms are significantly associated with lower family cohesion \((r = -.40, p < .01)\). The correlation among mothers’ depressive symptoms and boys’ externalizing behaviors was also significant \((r = .25, p < .05)\). Mothers’ depressive symptoms were not significantly correlated with perceived family conflict, or with boys’ internalizing behaviors. Among mothers of girls (Table 4), mothers’ depressive symptoms were not correlated with either girls’ internalizing or externalizing behaviors or mothers’ perception of family cohesion and conflict (all \(ps > .05\)).

*Multiple Linear Regression*

Hierarchical linear regression was used to further examine the predictive relationship between mothers’ depressive symptoms, children’s problem behaviors and family environment variables. Mother’s ethnicity, age, and total number of children, as well as child’s age and gender were entered in the first step as control variables. Mother’s ethnicity was dummy coded as African American (coded as 1) or other (coded as 0) for convenience of interpretation. All the continuous predictors, including family cohesion and conflict, as well as children’s internalizing and externalizing behaviors were mean
centered to reduce multicollinearity. Children’s internalizing and externalizing behaviors, as well as the interaction terms of child gender and children’s problem behaviors were entered in the second step. Family cohesion and conflict were entered in the third step.

Among the demographic factors in the first step, ethnicity was a significant predictor of mothers’ depressive symptoms \[	au(116) = -2.31, p < .05\]. African American mothers reported significantly lower levels of depressive symptoms compared to non-African American mothers. The model fit was not significant at the first step \[F(5,116) = 1.53, p > .10\].

The block of children variables resulted in a 0.097 \(R^2\) change, which was statistically significant \[F(4,112) = 3.22, p < .05\]. The omnibus test of model fit became significant after entering the children variables \[F(9,112) = 2.35, p < .05\]. Children’s externalizing behaviors had a significant main effect on mothers’ depressive symptoms (\(\beta = 0.36, p < .05\)); the more externalizing problems that children exhibited, the more depressive symptoms mothers reported. Children’s internalizing behaviors did not show a significant main effect. The interaction between child gender and children’s internalizing behaviors was significant (\(\beta = 0.41, p < .01\)), so was the interaction between child gender and externalizing behaviors (\(\beta = -0.51, p < .01\)).

To further detect the interaction relationships, the simple effects were probed using the SPSS script of MODPROBE (Hayes & Matthes, 2009). The simple effect of children’s internalizing problems on maternal depressive symptoms was significant among girls (\(b = 0.37, t = 2.43, p < .05\)), but not among boys. Mothers who perceived more internalizing behaviors among their daughters reported experiencing significantly
more depressive symptoms themselves. The simple effects of children’s externalizing behaviors on maternal depressive symptoms were significant among both boys (b = 0.31, t = 2.24, p < .05) and girls (b = -0.26, t = -2.31, p < .05). In addition, the relationships among boys and girls were in the opposite direction. Higher levels of maternal depressive symptoms were related to higher levels of externalizing problems among boys and lower externalizing problems among girls.

Adding the third block of variables, including family cohesion and conflict, led to a 0.053 increase in R², which was significant [F(2,110) = 3.68, p < .05] (Table 5). The omnibus test for the model fit was significant as well [F(11,110) = 2.68, p < .01]. The main effect of ethnicity remained significant in the final model (β = -0.19, p < .05), whereas the main effect of child’s externalizing behaviors became non-significant. The interaction effect between child gender and internalizing behaviors remained significant (β = 0.37, p < .05), so did the interaction effect between child gender and externalizing behaviors (β = -0.47, p < .01). These interactions were plotted (Figure 1 and Figure 2) using the method suggested by Aiken and West (1991) in order to ease the interpretation. Family cohesion also showed as significantly associated with maternal depressive symptoms (β = -0.24, p < .05). The more cohesion the mothers perceived in the family environment, the less depressive symptoms they reported. However, family conflict was not a significant predictor of mothers’ depressive symptoms.

The simple effects of children’s internalizing/externalizing behaviors on maternal depressive symptoms based on child gender were analyzed again with the family environment variables included in the model. There was a significant positive
relationship between girls’ internalizing behaviors and maternal depressive symptoms while other variables were held constant [b = 0.34, \( t = 2.23, p < .05 \)]. The association between girls’ externalizing behaviors and maternal depressive symptoms was also significant [b = -0.27, \( t = -2.41, p < .05 \)]. Neither boys’ internalizing nor externalizing behaviors was significantly associated with maternal depressive symptoms at this step.
Chapter 4

Discussion

The primary objective of the current study was to explore the influence of both male and female adolescent children on the parent, in particular, the association between adolescents’ internalizing and externalizing problem behaviors on their mothers’ depressive symptoms. The findings, in general, support the hypothesis that the relationship between adolescents’ problem behaviors and maternal depressive symptoms differs by child gender. The current study also sought to examine the relationship between maternal depressive symptoms and family environment variables, cohesion and conflict specifically, controlling for the influences of children’s problem behaviors. Family cohesion appeared to be significantly associated with maternal depressive symptoms, whereas family conflict was not. Taken together, these findings expand on prior research by including both boys and girls in the sample and by investigating the association between the family environment and maternal depressive symptoms.

Family systems theory

From a family systems viewpoint, individuals in the family are interdependent, mutually influencing each other and therefore can best be understood in the context of the family (Minuchin, 1985). The current findings provide some support to the family
systems perspective as it was found that children’s behaviors and family environment characteristics were significantly associated with maternal depressive symptoms. Future research is needed to confirm the influence of children’s behaviors on parental well-being through the use of longitudinal research designs. In particular, longitudinal designs can identify the temporal ordering in the relationship between children’s behaviors and parental outcomes. In the current study, mothers’ perception of family cohesion and conflict were used as proximate measures of the family system’s environment. Higher family cohesion and lower conflict might reflect positive interactions among family members, whereas higher conflict and lower cohesion likely indicate more negative interactions. In the current study, as family cohesion increased, maternal depressive symptoms decreased, even after controlling for the effects of children’s problem behaviors. This finding suggests that the family environment, in addition to child behaviors, influence mothers’ emotional health. Overall, this study highlights the importance of adopting a complex family systems framework when seeking to understand emotional health among individual family members.

The influence of child’s internalizing and externalizing behaviors on maternal depressive symptoms

The first hypothesis of the current study was that maternal depressive symptoms would be associated with adolescent children’s problem behaviors regardless of gender. This hypothesis was not supported, as child gender appeared to matter. Results showed that maternal depressive symptoms were positively associated with girls’ internalizing behaviors but negatively associated with boys’ internalizing behaviors, whereas for
externalizing behaviors the opposite was found (see Figures 1 and 2). In other words, the
relationship between adolescents’ problem behaviors and maternal depressive symptoms
differed depending upon whether the adolescent was male or female. When this
relationship was not examined separately for boys and girls, the gender differences
cancelled out, appearing as if there was no relationship between adolescents’ problem
behaviors and maternal depressive symptoms.

Gender as a moderator of the influence of child’s internalizing and externalizing
behaviors on maternal depressive symptoms

The second study hypothesis was that adolescent gender would moderate the
relationship between adolescent’s problem behaviors and maternal depressive symptoms,
and the association would be stronger among mother-daughter dyads than mother-son
dyads. This hypothesis was partially supported in that significant associations between
adolescents’ problem behaviors and maternal depressive symptoms were found among
girls but not among boys. For girls, mothers’ depressive symptoms significantly
increased as girls’ internalizing behaviors increased or externalizing behaviors decreased.
These findings are similar to prior research findings in this area. For example, Leung et
al. (2009) found that gender moderated the association between adolescents’ depressive
symptoms and maternal negative affect. Specifically, the increase of adolescent girls’
depressive symptoms was associated with a greater magnitude increase of maternal
depressive symptoms than those of adolescent boys. Burt et al.’s (2005) findings also
suggested that maternal depression was more strongly associated with daughters’ rather
than sons’ psychopathology. Fergusson et al. (1995) reported gender differences in the
association between maternal depression and adolescent depressive symptoms as well, with a significant association found among female adolescents and their mothers.

However, other researchers reported different findings. For example, Elgar, Curtis, McGrath, Waschbusch and Stewart (2003) found no gender difference in the relationship between children’s hyperactivity, aggression and emotional problems and maternal depression. This inconsistency might be due to age differences among samples used in these studies. Leung et al. (2009), Fergusson et al. (1995) and the current study all used a sample of adolescents, whereas Elgar et al. (2003) used younger children (4 to 11-year-olds). Possibly, the moderating effect of child gender on maternal depressive symptoms is more evident during adolescence than early childhood. It is possible that social role modeling occurs intensively after entering adolescence in which mothers may act as a role model for daughters whereas fathers may act as a role model for sons. As a way of learning shared roles, daughters may interact more with mothers than sons do. Consequently, the more that daughters interact with their mothers, the more likely that they will influence and be influenced by each other. Similarly, the association between sons and fathers may be stronger than that between daughters and fathers. Future studies should also use data from early childhood to adolescence to examine child gender as a moderator on the relationship between children’s problem behaviors and parental (both mother and father) outcomes across time.

In the current study, boys’ externalizing behaviors were significantly related to maternal depressive symptoms before taking the family environment variables into account. Similar to the findings of prior studies (e.g., Burke, Pardini & Loeber, 2008;
Gross et al., 2008a) the current study found that as boys’ externalizing behaviors increased, maternal depressive symptoms significantly increased as well. However, after controlling for the influence of family cohesion and conflict, boy’s externalizing behaviors were no longer associated with maternal depressive symptoms. This finding might indicate that for mothers with an adolescent boy, family environment, especially family cohesion, mediates the association between boys’ externalizing behaviors and maternal depressive symptoms. In other words, future longitudinal research might show that family cohesion serves as a protective factor for the mothers, buffering them from the negative influence of boys’ externalizing behaviors.

Among girls, higher levels of internalizing behaviors were associated with higher levels of maternal depressive symptoms, whereas elevated externalizing problems were associated with lower levels of maternal depressive symptoms. Although the direction of these effects cannot be determined by this study, future research should consider the role of child ‘acting out’ behaviors on parents’ depressive symptoms. Perhaps, as daughter’s externalizing behaviors increase, mothers have less time to concentrate on their own negative emotional and cognitive experiences. A family systems interpretation might suggest that daughters’ behaviors function to distract their mothers and protect their mothers from their own negative (depressive) emotional states.

*The role of family cohesion and conflict on maternal depressive symptoms*

The third hypothesis of the current study was that maternal depressive symptoms would be predicted by mothers’ perception of family cohesion and conflict. This hypothesis was partially supported by the current findings, in that only family cohesion,
but not conflict, was significantly associated with maternal depressive symptoms. As mothers’ perception of cohesion in their family environment increased, their depressive symptoms decreased. This finding is consistent with prior research findings which found a negative relationship between family cohesion and depression among adult family members (e.g., Ashida et al., 2008; Park et al., 2008). In addition, many studies among young adults or adolescents similarly show that low family cohesion is associated with higher levels of depression (e.g., Harris & Molock, 2000; Reinherz et al., 2003). Possibly, family cohesion might serve as a protective factor for depressive symptoms for all family members regardless of age. Given that the relationship between family environment and depression among adult family members, parents especially, remains much understudied compared to that of children, more research is needed to further explore this relationship.

Unlike family cohesion, family conflict was not associated with maternal depressive symptoms. Previous studies examining the relationship between family conflict and depressive symptoms among adult family members have reported mixed findings. Some researchers reported a positive association between family conflict and depressive symptoms (e.g., Semple, Strathdee, Patterson & Zians, 2009; Nolen-Hoeksema, Wong, Fitzgerald & Zucker, 2006). However, Miles et al. (1997) found that family conflict was not a significant predictor of depressive symptoms among a sample of HIV-infected mothers. Consistent with Miles et al. (1997), the results from the current study also suggest that family conflict is not associated with maternal depressive symptoms.
Different explanations could be provided for this non-significant relationship between family conflict and maternal depressive symptoms. As noted by Johnson and Kliewer (1997), the Family Environment Scale (Moos & Moos, 1986), which was used to measure family conflict in the current study, might not be the most appropriate measure due to the true-false format and mix of verbal and physical expressions of conflict. Thus the non-significant finding in the current study might be attributed to measurement error. However, it might be also possible that for those mothers in the current sample, the perception of family conflict was not a risk factor for their depressive symptoms. Studies conducted among couples suggest that positive affect is the only variable that predicts relationship satisfaction and stability, whereas negative affect does not predict negative marital outcomes (Gottman, Coan, Carrere & Swanson, 1998). Findings from the current study might be interpreted in a similar way, that is, positivity within the family environment (e.g. cohesion) is of primary importance to individual well-being. The presence of negativity (e.g. conflict) within the family environment might not discriminate mothers’ depressive symptoms because it is characteristic of all families in the current sample. Future research may need to further investigate the relationship between family environment and maternal depressive symptoms given inconsistent findings in the literature.

It is worthy noting that the current study also showed that African American mothers reported significantly fewer depressive symptoms, compared to non-African-American mothers. Previous studies have reported similar findings. For example, Riolo, Nguyen, Greden and King (2005) found that the prevalence of major depressive disorder
was significantly lower among African Americans than among Whites. In addition, Williams et al. (2007) reported that the prevalence estimates of lifetime major depressive disorder were higher for Whites (17.9%) than African Americans (10.4%). The results from the current study are consistent with these previous findings showing that African Americans might have a lower risk of depression. Future studies may need to examine specific mechanisms associated with African American mothers’ resilience to depressive symptoms.

Limitations

Several limitations of the current study should be mentioned. First, the current study did not directly test bidirectional parent-child influences. However, this study sought to contribute to the literature by examining the child-to-parent influence, which has been understudied compared to the parent-to-child influence. In addition, the use of a cross-sectional study design precluded the identification of time sequences among variables. Although mother’s self-reported depressive symptoms score was entered as the dependent variable in the regression model, this does not suggest that maternal depressive symptoms were caused by children’s problem behaviors. Longitudinal study designs are needed to explore the reciprocal relationship between child’s problem behaviors and maternal depressive symptoms. Third, the current sample included runaway adolescents with substance use problems. It is likely that the dynamics between these adolescents and their mothers may be different from non-runaways and their mothers, and among those families in which the adolescent has no substance use history. Thus the generalizability of the current findings to other populations is unknown. Last but not least, only mothers’
self-reports were utilized in the current study. It is possible that mothers who feel more depressed have a greater tendency to exaggerate the severity of their children’s problem behaviors. Although there is evidence showing that maternal depressive symptoms do not seriously bias mothers’ report on children’s internalizing problems (van der Toorn et al., 2010), it is possible that in this study the experience of depressive symptoms among mothers influenced their perception of children’s problem behaviors and the family environment. Future research could incorporate observational methods or ratings from other informants, and compare to mothers’ self-reports ratings. This might help determine whether observers’ and mothers’ ratings vary depending on the level of mothers’ depressive symptoms.

Conclusions

Despite these limitations, the current study also has several strengths. First, the moderating effect of child gender on the relationship between adolescents’ internalizing and externalizing behaviors and maternal depressive symptoms was investigated and this relationship remains understudied in the literature. Second, the current study examined the relationship between maternal depressive symptoms and family environment characteristics above and beyond adolescents’ problem behaviors in order to systemically examine maternal depressive symptoms in the family context.

In sum, the present study provides some evidence for the family systems theoretical framework by showing that maternal depressive symptoms are related to both adolescent children’s problem behaviors and the family environment. These findings may offer some direction for future research. However, given the limited number of studies
regarding child effects on parental mental health and the inconsistent findings in the existing literature, more work is still needed in this area. Such work can continue to shed light on the potential effects of child behaviors on parents’ well-being. A family systems theoretical framework can serve as a useful guide for researchers to format the research hypotheses and to better understand individual family members as nested in the family system. Future studies should also utilize longitudinal research designs to study the mutual influence between child (both male and female) problem behaviors and parental (both mother and father) well-being in the family context and to establish the temporal sequence of behaviors.

Several implications for intervention with maternal depression can be offered. Family therapy may be more effective than individual therapy since maternal depressive symptoms are correlated with both children’s problem behaviors and family environment variables. In addition, therapists working with depressive mothers should pay special attention to children’s problem behaviors, girls’ especially, and how those problem behaviors might perpetuate mothers’ depressive symptoms. Further, in addition to decreasing conflict in the family environment, therapists should focus on enhancing family level cohesion since family cohesion might protect against maternal depressive symptoms.
REFERENCES


APPENDIX A

TABLES
Table 1. Demographic characteristics of participants (N = 137)

<table>
<thead>
<tr>
<th>Variable</th>
<th>n   (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>67 (48.9)</td>
</tr>
<tr>
<td>Female</td>
<td>70 (51.1)</td>
</tr>
<tr>
<td><strong>Mother’s Ethnicity</strong></td>
<td></td>
</tr>
<tr>
<td>African American</td>
<td>91 (66.4)</td>
</tr>
<tr>
<td>White</td>
<td>32 (23.4)</td>
</tr>
<tr>
<td>Hispanic</td>
<td>1 (0.7)</td>
</tr>
<tr>
<td>Native American</td>
<td>2 (1.5)</td>
</tr>
<tr>
<td>Other</td>
<td>7 (5.1)</td>
</tr>
<tr>
<td><strong>Mother’s Employment Status</strong></td>
<td></td>
</tr>
<tr>
<td>Work 40 hours a week</td>
<td>80 (58.4)</td>
</tr>
<tr>
<td>Work fewer than 40 hours a week</td>
<td>17 (12.4)</td>
</tr>
<tr>
<td>Homemaker</td>
<td>5 (3.6)</td>
</tr>
<tr>
<td>Unemployed</td>
<td>31 (22.6)</td>
</tr>
<tr>
<td><strong>Total Annual Income in Family</strong></td>
<td></td>
</tr>
<tr>
<td>$0-5000</td>
<td>17 (12.4)</td>
</tr>
<tr>
<td>$5001-15000</td>
<td>30 (21.9)</td>
</tr>
<tr>
<td>$15001-30000</td>
<td>36 (26.3)</td>
</tr>
<tr>
<td>$30001-45000</td>
<td>19 (13.9)</td>
</tr>
<tr>
<td>$45001 or above</td>
<td>13 (9.5)</td>
</tr>
<tr>
<td><strong>Mother’s Highest Level of Education</strong></td>
<td></td>
</tr>
<tr>
<td>11th grade and below</td>
<td>36 (13.8)</td>
</tr>
<tr>
<td>High school graduate (Not GED)</td>
<td>39 (28.5)</td>
</tr>
<tr>
<td>1-3 year full-time post-secondary</td>
<td>45 (32.8)</td>
</tr>
<tr>
<td>College graduate</td>
<td>12 (8.8)</td>
</tr>
</tbody>
</table>
Table 2. Means and standard deviations of continuous variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>(M, SD)</th>
<th>Possible Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Children in Family</td>
<td>3.4 (1.7)</td>
<td>1 - 10</td>
</tr>
<tr>
<td>Child's Age</td>
<td>15.3 (1.3)</td>
<td>12 - 17</td>
</tr>
<tr>
<td>Mother's Age</td>
<td>39.8 (6.8)</td>
<td>28 - 69</td>
</tr>
<tr>
<td>FES Family Cohesion</td>
<td>5.5 (2.5)</td>
<td>0 - 9</td>
</tr>
<tr>
<td>FES Family Conflict</td>
<td>2.5 (1.6)</td>
<td>0 - 5</td>
</tr>
<tr>
<td>CBCL Child Internalizing</td>
<td>15.2 (9.9)</td>
<td>0 - 64</td>
</tr>
<tr>
<td>CBCL Child Externalizing</td>
<td>33.1 (12.6)</td>
<td>0 - 70</td>
</tr>
<tr>
<td>Mother’s BDI</td>
<td>12.3 (10.7)</td>
<td>0 - 63</td>
</tr>
</tbody>
</table>
Table 3. Pearson correlation among variables for mothers of boys

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 BDI Total Score</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 FES Cohesion</td>
<td>-0.40**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 FES Conflict</td>
<td>0.16</td>
<td>-0.50**</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 CBCL Internalizing</td>
<td>-0.01</td>
<td>-0.01</td>
<td>-0.02</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>5 CBCL Externalizing</td>
<td>0.25*</td>
<td>-0.70</td>
<td>0.29*</td>
<td>0.52**</td>
<td>1</td>
</tr>
</tbody>
</table>

*p<.05; **p<.01

Table 4. Pearson correlation among variables for mothers of girls

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 BDI Total Score</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 FES Cohesion</td>
<td>-0.19</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 FES Conflict</td>
<td>0.11</td>
<td>-0.33**</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 CBCL Internalizing</td>
<td>-0.20</td>
<td>-0.12</td>
<td>-0.10</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>5 CBCL Externalizing</td>
<td>-0.10</td>
<td>-0.11</td>
<td>0.20</td>
<td>0.52**</td>
<td>1</td>
</tr>
</tbody>
</table>

*p<.05; **p<.01
Table 5. Multiple linear regression predicting maternal depressive symptoms

<table>
<thead>
<tr>
<th>Predictors</th>
<th>B</th>
<th>SE</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 1</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Child Gender</td>
<td>1.15</td>
<td>1.95</td>
<td>0.05</td>
</tr>
<tr>
<td>Child Age</td>
<td>0.22</td>
<td>0.82</td>
<td>0.03</td>
</tr>
<tr>
<td>Mother Age</td>
<td>-0.04</td>
<td>0.14</td>
<td>-0.02</td>
</tr>
<tr>
<td>Total Children</td>
<td>0.30</td>
<td>0.59</td>
<td>0.05</td>
</tr>
<tr>
<td>Ethnicity</td>
<td>-4.61</td>
<td>2.10</td>
<td>-0.19*</td>
</tr>
<tr>
<td><strong>Step 2</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CBCL Internalizing</td>
<td>-0.21</td>
<td>0.17</td>
<td>-0.20</td>
</tr>
<tr>
<td>CBCL Externalizing</td>
<td>0.25</td>
<td>0.14</td>
<td>0.30</td>
</tr>
<tr>
<td>Child Gender × CBCL Internalizing</td>
<td>0.55</td>
<td>0.22</td>
<td>0.37*</td>
</tr>
<tr>
<td>Child Gender × CBCL Externalizing</td>
<td>-0.52</td>
<td>0.18</td>
<td>-0.47**</td>
</tr>
<tr>
<td><strong>Step 3</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Family Cohesion</td>
<td>-1.08</td>
<td>0.43</td>
<td>-0.24*</td>
</tr>
<tr>
<td>Family Conflict</td>
<td>-0.01</td>
<td>0.68</td>
<td>-0.002</td>
</tr>
<tr>
<td><strong>Full Model</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall F</td>
<td>2.68**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total $R^2$</td>
<td>0.21</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adjusted $R^2$</td>
<td>0.13</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p<.05; **p<.01

NOTE: B, SE, β are presented for the final model after all predictor variables have been entered.
APPENDIX B

FIGURES
Figure 1. Interaction between child gender and internalizing behaviors on maternal depressive symptoms

NOTE: “High” internalizing refers to those CBCL Internalizing scores higher than the sample mean. “Low” internalizing refers to those lower than the sample mean. So do Figure 2.

Figure 2. Interaction between child gender and externalizing behaviors on maternal depressive symptoms