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## Internalizing Symptoms in Youth: A Longitudinal Moderated Mediation Model of Maternal Symptoms and Parent-Child Interactions

Sarah Bostick  
*DePaul University*, [snbostick@sbcglobal.net](mailto:snbostick@sbcglobal.net)

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INTERNALIZING SYMPTOMS IN YOUTH: A LONGITUDINAL MODERATED  
MEDIATION MODEL OF MATERNAL SYMPTOMS AND PARENT-CHILD  
INTERACTIONS

A Thesis

Presented in

Partial Fulfillment of the  
Requirements for the Degree of  
Masters of Arts

BY

SARAH BOSTICK

JUNE, 2012

Department of Psychology  
College of Science and Health  
DePaul University  
Chicago, Illinois

THESIS COMMITTEE

Jocelyn Smith Carter, Ph.D.  
Chairperson

Kathryn E Grant, Ph.D.

VITA

The author was born in Fullerton, California, on April 16, 1985. She graduated from Brea Olinda High School, and received her Bachelor of Arts degree in Psychology from DePaul University in 2007.

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## CHAPTER 1

### INTRODUCTION

Late childhood through adolescence serves as a time of rapid development and increased risk for depressive symptoms, especially among low-income urban youth (Saluja, Iachan, Scheidt, Overpeck, Sun, & Giedd, 2004; Kovacs & Devlin, 1998; McLaughlin, Hilt, & Nolen-Hoeksema, 2007; Kennard, Mahtani, Hughes, Patel, & Emslie, 2006; Twenge & Nolen-Hoeksema, 2002). Lifetime prevalence rates of major depressive disorder (MDD) range from 10% to 18.5%, however the risk for MDD is particularly pronounced during adolescence (Kessler, Foster, Webster, & House, 1992). However, some longitudinal studies with multiple waves of data have shown that symptoms actually decrease over time, which may be due to the development of more adaptive coping strategies, habituation to measures over time, or increased social desirability (Chase-Lansdale et al., 2011; Twenge & Nolen-Hoeksema, 2002). Prevalence studies have estimated 28% of adolescents will have experienced a major depressive episode by the age of 19 (Lewinsohn & Essau, 2002; Lewinsohn, Rohde & Seeley, 1998). In a nationally representative sample of 6-10<sup>th</sup> grade adolescents, 18% reported symptoms meeting criteria for a depressive diagnosis, and the risk for depressive symptoms was especially pronounced for females (Saluja, Iachan, Scheidt, Overpeck, Sun, & Giedd, 2004). Overall, females tend to report more internalizing and depressive symptoms than males across ethnicity (Schwab-Stone, Chen, Greenberger, Silver, Lichtman, & Voyce, 1999; Avison & Mcalpine, 1992; Saluja, Iachan, Scheidt, Overpeck, Sun, & Giedd, 2004; Grant et al., 2004a). Internalizing problems in childhood impact

ones development into adulthood (Kasen & Cohen, 2009), thus highlighting the need to prevent and treat internalizing problems in youth.

In general, research shows ethnic minority youth to be at greater risk for the development of internalizing symptoms and to report higher rates of depressive symptoms (McLaughlin, Hilt & Nolen-Hoeksema, 2007; Anderson & Mayes, 2010; Saluja, Iachan, Scheidt, Overpeck, Sun, & Giedd, 2004; Kennard, Mahtani, Hughes, Patel, & Emslie, 2006; Twenge & Nolen-Hoeksema, 2002; Grant et al., 2004b). However, findings are mixed with some studies showing no ethnic differences in youth depression (Hammen, 1991), increased risk for White youth (Dornbusch et al., 1991; McLeod & Nonnemaker, 2000), increased risk for Hispanic youth (Saluja, Iachan, Scheidt, Overpeck, Sun, & Giedd, 2004; Wight, Aneshensel, Botticello, & Sepulveda, 2005), or reduced risk for African-American youth (Dornbusch et al., 1991). Socioeconomic variables, including parental education level and low socioeconomic status, might partially explain the associations between ethnicity and internalizing symptoms given that ethnic minority youth are more likely to live in poverty and experience increase stressors (Chen, 2010; Kennard, Mahtani, Hughes, Patel, & Emslie, 2006; Costello et al., 1996). In addition, research suggests that the longer African American and Caucasian youth live in poverty, the greater their risk for depressive symptoms (Goosby, 2007; McLeod & Shanahan, 1993). Overall, research examining internalizing symptoms in ethnic minority youth tends to confound ethnicity and socioeconomic variables, including poverty and parental education level, making it difficult to interpret effects. Thus, more research that includes individuals of the same



ethnicity, but at different income levels or compares ethnicities within a certain income level is needed to better disentangle the joint effects of income and ethnicity.

#### Maternal depression and youth internalizing symptoms

In addition to age of onset, female gender, and low socioeconomic status, one of the strongest predictors of youth internalizing problems is parental psychopathology, particularly maternal depression (Mufson, Dorta, Moreau, Weissman, 2004; Beardslee, Versage & Gladstone, 1998; Downey & Coyne, 1990; Gelfand & Teti, 1990, Tompson et al., 2010; Shelton & Harold, 2008; Fendrich, Warner & Weissman, 1990; Hammen, Burge, Burney & Adrian, 1990; Carter & Garber, 2011). A large body of research shows that depression runs in families. Across developmental stages, children of depressed parents show higher levels of internalizing symptoms and are three times more likely to develop depression than those without depressed parents (Downey & Coyne, 1990; Hammen, Burge, Burney, & Adrian, 1990; Weissman, Gammon, John, & Merikangas, 1987; Johnson & Flake, 2007; Hammen, 2003). This increased risk for depression occurs regardless of the severity of parental depression and has been found with both treatment-seeking parents and community samples (Beardslee et al., 1993, Hammen and Brennan, 2001). The increased risk for depressive symptoms in offspring of depressed mothers varies by gender with the relationship being stronger in females than males (Burt et al., 2005; Schwab-Stone, Chen, Greenberger, Silver, Lichtman, & Voyce, 1999, Avison & Mcalpine, 1992).

Psychosocial mechanisms through which maternal depression impacts youth depressive symptoms include parent-child interactions, attachment, parenting behaviors, and parent and child social support (Elgar, McGrath, Waschbusch, Stewart, & Curtis,

2004; Goodman & Gotlib, 1999). Depressed mothers show deficits in their interpersonal skills including relationships with their children, parenting behaviors, and low maternal social support towards their children (Hammen, Shih & Brennan, 2004; McCarty & McMahan, 2003; Lempers, Clark-Lempers, & Simons, 1989). Unfortunately, there are limited longitudinal studies spanning early adolescence into young adulthood conducted in low-income or ethnic minority populations that explore the impact of parent-child relationship quality in the transmission of maternal symptoms to youth internalizing symptoms. The current study seeks to fill this gap in the literature by using a longitudinal design and studying an ethnically diverse sample of low-income youth. The current study focuses on longitudinally examining the quality of parent-child relationships as the mediator between maternal symptoms and youth internalizing problems over time.

#### Parent-child relationships and youth internalizing symptoms

Although the importance of peer relationships increases during adolescence (Huebner, 2004), parent warmth and support continues to strongly influence youths' overall psychological well-being and life satisfaction (Schwarz et al., 2012). Extensive research has documented the effects of parenting on development in young children, and more recent research has illustrated the association of parenting (warmth, firmness, and psychological autonomy) and lower depression and anxiety in adolescence (Steinberg, 2001). Additionally, in a longitudinal study, high quality parent-adolescent relationships at baseline predicted increased well-being (happy, calm, and not depressed) in youth three to four years later (Hair, Moore, Garrett, Ling, & Cleveland, 2008). High quality parenting and parent-child relationships positively impact adolescents development and well-being, however child reported family conflict and parent-child

conflict have been shown to increase from pre to early adolescence making it more difficult to maintain positive parent-child relationships (Baer, 1999). Furthermore, difficulties with adolescents creating autonomy while holding positive relationships with their parents may lead to poor outcomes such as adolescent depression (Allen et al., 2006). A cross-sectional study has found associations between increased mother-child conflict and low youth perceived maternal support with increased internalizing symptoms in youth (Caples & Barrera, 2006). Furthermore, mother-child relations characterized by low warmth and family cohesion are found in children and adolescents with depression (Fendrich, Warner, & Weissman, 1990), and negative parent-child interactions are associated with maladaptive social skills, attachment deficits, negative cognitions about the self, and other indicators of impairment that are likely to elevate the risk of depression in youth (Goodman, Brogan, Lynch & Fielding, 1993; Jaenicke et al., 1987; Teti et al., 1995). Longitudinal studies with low-income diverse samples have found that baseline family conflict predicted youth internalizing symptoms at follow-up one year later (Santiago & Wadsworth, 2009), and in a primarily Caucasian sample youth perceptions of maternal rejection predicted increased internalizing symptoms (Shelton & Harold, 2008).

While most studies assume that deficits in parent-child relationships account for changes in youth internalizing symptoms, interpersonal theories highlight the transactional effects that youth internalizing symptoms might have on the parent-child relationship (Joiner & Coyne, 1999). At least two have tested these transactional effects in diverse samples. Reciprocal relationships between adolescent-reported quality of mother-child relationships (IPPA) and youth internalizing symptoms (YSR) during a one-

year period were found in an ethnically diverse sample (Caucasian, African American, and Hispanic) of early adolescents (Fanti, Henrich, Brookmeyer, & Kuperminc, 2008). Furthermore, a second six year longitudinal study of Caucasian and African American adolescent girls found that parenting behaviors (low warmth and high punishment) predicted changes in girls' conduct problems and depressive mood over time, and girls' conduct problems, but not depressed mood, predicted parenting behaviors (harsh punishment) over time (Hipwell, Keenan, Kasza, Loeber, Stouthamer-Loeber, & Bean, 2008).

Ethnicity and gender may impact the effect of parent-child relationships on youths' internalizing symptoms. Ethnic difference findings have shown that low levels of parent-child openness are associated with increased internalizing symptoms for White children, but not for African American youth (Vendlinski, Silk, Shaw & Lane, 2006). Additionally, in a sample of urban adolescent girls, maternal control was unrelated to depression for White and Latina girls, but higher levels of control were associated with fewer depressive symptoms in African American girls (Finkelstein, Donenberg, & Martinovich, 2001). Although previous research has documented ethnic differences in the relationship between parent-child relationship qualities and youth internalizing symptoms, a five wave longitudinal study of low-income African American and Hispanic adolescents found that the pattern of association between family functioning and youth internalizing symptoms over time was similar across ethnicity (Gorman-Smith, Tolan, Henry, & Florsheim, 2000). Findings on the role of gender in the relationship between family relationships and adolescent depressive symptoms have found that family social support and family cohesion were negatively and significantly related to depressive

symptoms for boys, but not girls (Cumsille & Epstein, 1994). However, other research evaluating the parent-child relationship specifically has suggested no gender differences in the relationship between adolescent perceived parent-child relationships, low parental support, and high conflict with parents and adolescent depressive symptoms (Jenkins, Goodness, & Buhrmester, 2002; Avison & McAlpine, 1992).

### Maternal depression and parent-child relationships

Many studies have shown that mothers who are depressed have impairments in their relationships with their children (Downey & Coyne, 1990; Lovejoy, Graczyk, O'Hare, & Neuman, 2000). Maternal depression is associated with a number of specific relationship variables including increased conflict, rejection, criticism, negative interaction and less closeness (Shelton & Harold, 2008; Tompson et al., 2010; Downey & Coyne, 1990). Moreover, depressed mothers are more likely to display negative and disengaged behaviors, and more depressed affect while interacting with youth than non-depressed mothers (Hamilton, Jones & Hammen, 1993; Radke-Yarrow, Nottelman, Belmont & Welsh, 1993; Lovejoy, Graczyk, O'Hare, & Neuman, 2000). To date, most of the research examining the role of maternal depression on parent-child relationships and interactions has focused primarily on middle-class ethnic majority samples. But extant research on low-income ethnic minority samples suggest that the associations between maternal depression and parent-child relationship quality also hold for low-income ethnic minority samples (Harnish, Dodge, & Valente, 1995). More research is needed on whether the same patterns of relationships between maternal symptoms and parent-child relationships exist across gender and ethnicity in low-income minority samples.

### Mediation Models

Limited longitudinal mediational studies have examined the role of child perceived parent-child relationships as the mechanism of risk between maternal symptoms and youth internalizing symptoms. At least four longitudinal mediation studies have examined the effects of parenting, perceived parental support, or family conflict on youth mental health, however previous longitudinal research on the mediational role of parent-child relationships has not been identified. Longitudinal studies evaluating mediation in the relationship between parenting and youth internalizing problems have found that maladaptive parenting mediated the effects of maternal psychiatric disorders (including anxiety and depression) on youth anxiety and depressive symptoms (Johnson, Cohen, Kasen, Smailes, & Brook, 2001), and that increased routine family activities and adolescent perceived support from parents mediated the relationship between high quality parent-adolescent relationships and later child reported increased mental health (Hair, Moore, Garrett, Ling, & Cleveland, 2008).

Preliminary evidence exists showing that these mediational models vary according to demographic features such as ethnicity and gender. One study found moderation effects for the mediating role of parenting on the relation between maternal and child depressive symptoms such that mediating effects were found for Caucasian and Latino, but not African American families (Pachter, Auinger, Palmer, & Weitzman, 2006). The direct effects of maternal depression on youth depression were found across all ethnicities, suggesting that that it is only the mediating effect that differs across ethnicity (Pachter, Auinger, Palmer, & Weitzman, 2006).

Gender might also moderate the mediating effects of parenting although different studies show differential effects for gender. In a sample of Caucasian children, family conflict mediated the relationship between maternal depression and child depressive symptoms for males but not females (Burt et al., 2005). However, the effects were only found with cross-sectional data and only when using maternal report. Conversely, in a longitudinal study of adolescent reported depressive symptoms, family discord partially mediated the relationship between parental depression and child depression for females, but not males (Davies & Windle, 1997).

These mediational studies suggest that parent and family environmental factors including perceived support, conflict, and parenting style play a role in the transmission of maternal symptoms to youth internalizing distress, and that there are ethnic and gender differences in how maternal symptoms transmit the risk to youth symptoms. However, no studies to date have examined both gender and ethnic differences in these models in a sample of low-income, urban youth across three waves of data. Mediational studies examining both sets of moderators within the same study are needed to clarify the conditions under which mediation is present.

#### Rationale

Research has frequently identified low-income urban youth and adolescents as being at increased risk for higher depressive symptoms. Research has also documented strong direct relationships between maternal depression and parent-child relationships on youth depression. However, little research has examined longitudinal relationships between maternal symptoms, parent-child relationship quality, and youth internalizing symptoms over time in a mixed ethnicity, low-income adolescent population.

Furthermore, research is limited with respect to examining the parent-child relationships as the mediator through which maternal depression influences youth depression (Hammen, 2003). The inclusion of this mediator is particularly important given that the study of ethnic differences in the effects of parent-child relationships on youth internalizing symptoms in low-income, minority youth has often been confounded by not controlling for other demographic factors including family income, which have been shown to contribute to depressive symptoms (Goosby, 2007; McLeod & Shanahan, 1993).

The purpose of the current study is to better understand longitudinal effects of parental psychopathology and the parent-child relationship on youth internalizing symptoms over time. This will be done by examining a comprehensive mediational model of the impact of baseline maternal symptoms on follow-up youth internalizing symptoms mediated by parent-child relationships. Gender and race moderation effects will be examined to better understand how the relationships may vary across different demographic groups. A better understanding of the mechanisms of risk associated with increased depressive symptoms in low-income urban youth will help inform prevention efforts aimed at decreasing psychopathology in these high-risk populations.

#### Statement of Hypotheses and Research Questions

Hypothesis I. Higher maternal psychopathology will predict increases in youth internalizing symptoms over time.

Hypothesis II. Poorer-quality parent-child relationships will predict increases in youth internalizing symptoms over time.



Hypothesis III. Poorer quality parent-child relationships will mediate the effects of higher maternal psychopathology on youth internalizing symptoms.

Research Question I. Do the effects of the parent-child relationship and parental psychopathology on youth internalizing symptoms vary according to gender?

Research Question II: Do the effects of the parent-child relationship and parental psychopathology on youth internalizing symptoms vary according to ethnicity?

## CHAPTER II

### METHOD

#### Research Participants

The current study utilizes data from a larger nationally representative longitudinal three site study in the United States: *Welfare, Children and Families: A Three-City Study*. The study was conducted in Boston, Chicago, and San Antonio starting in 1999. Caregivers were primarily biological mothers (92%) or another related female caregiver (grandmother or aunt). Youth, 1,211 (50.4%) male and 1190 (49.5%) female, were between the ages of 0-15 ( $M = 6.81$ ,  $SD = 5.13$ ) at baseline T1 (Winston et al., 1999). However, child-reported measures were not collected from children under the age of 10, thus the current study utilized data from youth who were 10 years of age or older during the course of the study. Study participants were ethnically diverse consisting of approximately 1,158 (48.2%) Hispanic, 1,044 (44%) African American, and 200 (8%) non-Hispanic White or other. Approximately 2,400 families participated with 1,888 having partial or complete data at Time 3. The participants were primarily low-income families, with 40% receiving welfare and 50% receiving Temporary Aid to Needy Families (TANF). At baseline, the mean total household income was \$1,068 ( $SD = 833.27$ ) from all sources in the preceding month.

#### Procedure

The current study is part of a larger longitudinal study investigating the effects of changes to welfare reform policies in the 1990s on low-income families receiving federal aid. Welfare policy changes include enactment of the more stringent Personal

Responsibility and Work Opportunity Reconciliation Act of 1996 (PRWORA) abolishing the Aid to Families with Dependent Children (AFDC).

Data was collected with youth and parents during intensive home surveys at three different time points. Time 1 of data collection took place from March to December of 1999 (T1); Time 2 of data collection took place from September 2000 to May 2001 (T2), and Time 3 of data collection from February 2005 to January 2006 (T3). Interviews were conducted in-person using a computerized instrument (audio CASI). The child interview lasted about 65 minutes and the caregiver interview lasted about 130 minutes. Parent and child participants each received \$30 as an incentive for participation. The parent interview consisted of questions regarding demographics, parent symptoms, family and social environment, parenting practices, and child symptoms and behaviors. The child interview consisted of questionnaires measuring child symptoms, language, school, family relationships, and parental monitoring and involvement.

Attrition analyses were conducted to determine if participants who completed the study differed significantly from participants who dropped out of the study and had no T3 data. One-way ANOVA analyses revealed no significant differences on any of the study continuous variables at T1 (mother and youth depression and anxiety and parent-child trust-communication and anger alienation scales). Additional chi-square analyses found no significant differences between groups in terms of child gender, however significant ethnic differences were found such that more Hispanics, than non-Hispanic Black,  $\chi^2(1, N = 2202) = 5.97, p = .02$ , had partial or complete T3 data.

## Measures

### Maternal and Youth Internalizing Symptoms

Maternal and youth symptoms of anxiety and depression were measured at all three time points using the 18-item version of the Brief Symptom Inventory (BSI-18; Derogatis, 2001). Mothers and youth reported on their own symptoms. The 18-item version contains three subscales: depression, anxiety, and somatization. The depression and anxiety subscales of the BSI were used as indicators of maternal internalizing symptoms. Items are rated on a five-point Likert scale from *Not at all (1)* to *Extremely (5)* on how much the symptom/problem bothered them in the past seven days. Sample items include: “Feeling lonely even when you are with people” and “Feeling no interest in things”. Total anxiety and depression subscale scores were computed by summing item responses. Higher scores on the depression and anxiety subscales represent current heightened internalizing symptoms. In order for the subscale score to be calculated, four valid responses were needed. If there were at least four valid responses, and missing values occurred, a rounded mean score across all remaining items was imputed and used in the calculation of the subscale score. Internal consistency of the BSI-18 ranges from .74 to .84 (Eckstain, Kolmodin & Naar-King, 2010; Derogatis, 2001), and reliability in the current study ranged from .83 to .89 for adults and from .78 to .89 for youth.

### Parent-child Relationships

To assess child perceptions of parent-child relationships, youth completed a 12-item version of the Inventory of Parent and Peer Attachment at all three time points (IPPA; Armsden and Greenberg 1987). The IPPA was only completed by youth over the age of 10 at T1. The scale yields three composite scores: total mother-child relationship,

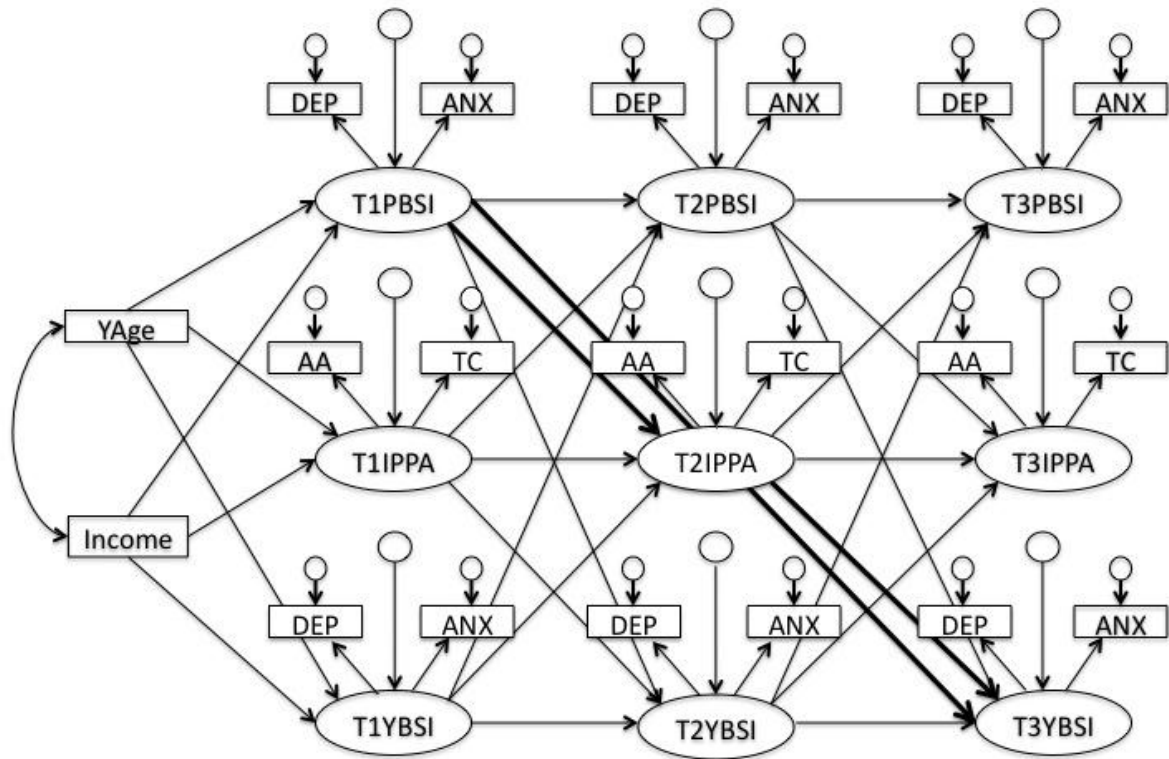
mother-child trust and communication, and mother-child anger and alienation. Items are rated on a five-point Likert scale from *Never true (1)* to *Always true (5)*. Sample items include, “I tell my [RELATIVE] about my problems and troubles” and “My [RELATIVE] accepts me as I am.” Where the questions states [RELATIVE], the fill will be based on the adult’s report of their relationship to the child in the demographic portion of the adult survey. Average scores for both the trust/communication and anger/alienation scales were computed. Scores were only calculated if at least 4 of the 6 items in each scale contained valid responses. Higher scores reflect more trust/communication and more anger/alienation. The average trust/communication scale was recoded so that higher scores represent lower levels of trust/communication. Thus, higher scores on both subscales indicate a poorer quality parent-child relationship. Reliability in the current sample ranged from .63 to .86 across time points.

### CHAPTER III

#### RESULTS AND ANALYSES

Data analyses proceeded in three steps. First, preliminary analyses examined means, standard deviations, and correlations, and tested for gender and ethnic differences in study variables at Time 1 (T1), Time 2 (T2), and Time 3 (T3). Second, path analysis was used to examine a mediational model that included relationships between maternal symptoms, parent-child relationships, and youth internalizing symptoms across three waves of data. This model was used to examine mother-child relationships and maternal psychopathology as predictors of youth internalizing symptoms. This model also tested whether T2 parent-child relationships mediated the relation between T1 maternal symptoms and T3 youth internalizing symptoms. Third, tests of model equivalence were conducted across race/ethnicity and gender groups using nested model comparisons in which a full model without constraints was compared to a reduced model in which factor loadings and structural covariances were constrained to equality between groups.

Figure 1. Full Mediation Model Controlling for Age and Income



### Preliminary Analyses

Table 1 displays the means and standard deviations of all study variables and shows the results of *t*-tests for group differences in study variables as a function of gender and ethnicity. Significant gender group differences were found for youth anxiety and depression, mother-child relationships, and maternal depression. Males had higher mother-child anger and alienation at T1, and higher maternal reported depressive symptoms at T2 compared to females. However, females had higher T1 anxiety and depressive symptoms compared to males. In addition, Hispanics indicated significantly higher T1 mother anxiety and depressive symptoms, and higher T3 youth reported depression and anxiety as compared to African American participants.



*Table 1. Means and Standard Deviations of Predictor and Outcome Variables by Gender and Ethnicity*

| Scale         | N    | Total       | Boys                | Girls                | African American | Hispanic             |
|---------------|------|-------------|---------------------|----------------------|------------------|----------------------|
| T1 Parent Anx | 2386 | 2.31 (3.60) | 2.22 (3.49)         | 2.39 (3.70)          | 2.01 (3.25)      | <b>2.46 (3.77)**</b> |
| T1 Parent Dep | 2385 | 3.10 (4.07) | 3.12 (4.07)         | 3.08 (4.08)          | 2.88 (3.73)      | <b>3.27 (4.33)*</b>  |
| T2 Parent Anx | 2176 | 2.28 (3.68) | 2.39 (3.76)         | 2.17 (3.60)          | 2.32 (3.80)      | 2.28 (3.59)          |
| T2 Parent Dep | 2176 | 2.91 (4.07) | <b>3.10 (4.18)*</b> | 2.72 (3.95)          | 2.97 (4.26)      | 2.84 (3.91)          |
| T3 Parent Anx | 1828 | 1.98 (3.67) | 1.93 (3.60)         | 2.05 (3.74)          | 1.96 (3.58)      | 2.03 (3.73)          |
| T3 Parent Dep | 1828 | 2.44 (3.95) | 2.41 (3.94)         | 2.48 (4.00)          | 2.55 (4.13)      | 2.41 (3.85)          |
| T1 Youth Anx  | 1132 | 2.12 (3.50) | 1.84 (3.29)         | <b>2.39 (3.67)*</b>  | 2.34 (3.86)      | 1.91 (3.08)          |
| T1 Youth Dep  | 1130 | 2.50 (3.80) | 2.07 (3.24)         | <b>2.91 (4.21)**</b> | 2.49 (3.85)      | 2.51 (3.67)          |
| T2 Youth Anx  | 1033 | 2.13 (3.40) | 2.15 (3.47)         | 2.11 (3.34)          | 2.09 (3.23)      | 2.12 (3.46)          |
| T2 Youth Dep  | 1033 | 2.74 (4.08) | 2.83 (4.25)         | 2.65 (3.88)          | 2.65 (3.93)      | 2.78 (4.07)          |
| T3 Youth Anx  | 922  | 2.08 (3.44) | 2.29 (3.64)         | 1.86 (3.21)          | 1.68 (2.85)      | <b>2.38 (3.80)*</b>  |
| T3 Youth Dep  | 923  | 3.06 (4.28) | 3.22 (4.42)         | 2.89 (4.12)          | 2.71 (4.03)      | <b>3.30 (4.44)*</b>  |
| T1 IPPA-AA    | 1133 | 3.55 (0.82) | <b>3.60 (0.76)*</b> | 3.50 (0.86)          | 3.59 (0.86)      | 3.50 (0.78)          |
| T1 IPPA-TC    | 1143 | 0.81 (0.75) | 0.81 (0.70)         | 0.81 (0.80)          | 0.79 (0.80)      | 0.84 (0.71)          |
| T2 IPPA-AA    | 1042 | 2.34 (0.87) | 2.34 (0.86)         | 2.35 (0.88)          | 2.35 (0.84)      | 2.32 (0.89)          |
| T2 IPPA-TC    | 1045 | 0.89 (0.79) | 0.88 (0.80)         | 0.90 (0.78)          | 0.89 (0.79)      | 0.89 (0.79)          |
| T3 IPPA-AA    | 928  | 2.34 (0.86) | 2.30 (0.85)         | 2.39 (0.87)          | 2.30 (0.88)      | 2.36 (0.85)          |
| T3 IPPA-TC    | 928  | 0.95 (0.87) | 0.90 (0.85)         | 0.99 (0.89)          | 0.95 (0.85)      | 0.95 (0.89)          |

\*Mean difference is significant at the .05 level.

\*\*Mean difference is significant at the 0.01 level (2-tailed).

Table 2 shows the correlations among demographic variables, predictor variables at T1, T2 and T3, and youth internalizing symptoms at T1, T2 and T3. Manifest variables representing each latent variable were significantly and positively correlated at each time point (i.e. T1 maternal depression and T1 maternal anxiety, T2 lack of mother-child trust/communication and T2 mother-child anger/alienation, etc.), except for T1 mother-child trust/communication and T1 mother-child anger/alienation, which were significantly and negatively correlated. Child age and household income were significantly correlated with several study variables, such that increased age was associated with higher T1 youth anxiety and depressive symptoms and lower T1 mother-child trust/communication, and lower income was associated with non-Hispanic Black participants. In addition, T1 youth anxiety was significantly and positively associated with T1 maternal depression and anxiety, and T1 youth depression was significantly and positively associated with T1 parent anxiety. Contrary to prediction, T2 and T3 youth symptoms were negatively associated with T2 maternal and T3 youth symptoms such T2 maternal anxiety and depression were negatively correlated with T3 youth anxiety, and T2 youth anxiety and depression were negatively correlated with T3 youth anxiety and depression. Youth symptoms were consistently and positively related to poorer quality maternal-child relationships (greater anger and alienation and less trust and communication) at all three time points, however T1 youth anxiety was negatively related to mother-child anger/alienation and trust/communication.

*Table 2. Correlations Among Study Variables at Each Time point*

|                     | 1     | 2     | 3     | 4    | 5     | 6      | 7      | 8     | 9     | 10   | 11     | 12    | 13    | 14     | 15    | 16    | 17     | 18   | 19    | 20   | 21    | 22   |  |
|---------------------|-------|-------|-------|------|-------|--------|--------|-------|-------|------|--------|-------|-------|--------|-------|-------|--------|------|-------|------|-------|------|--|
| 1 Child Age         | ----  |       |       |      |       |        |        |       |       |      |        |       |       |        |       |       |        |      |       |      |       |      |  |
| 2 Income            | -.03  | ----  |       |      |       |        |        |       |       |      |        |       |       |        |       |       |        |      |       |      |       |      |  |
| 3 Child Sex         | .05*  | -.05  | ----  |      |       |        |        |       |       |      |        |       |       |        |       |       |        |      |       |      |       |      |  |
| 4 Child Race        | -.04* | .08** | .02   | ---- |       |        |        |       |       |      |        |       |       |        |       |       |        |      |       |      |       |      |  |
| 5 T1 Parent Anxiety | .07** | -.02  | .02   | .00  | ----  |        |        |       |       |      |        |       |       |        |       |       |        |      |       |      |       |      |  |
| 6 T1 Parent Dep.    | .02   | -.04  | -.01  | .02  | .79** | ----   |        |       |       |      |        |       |       |        |       |       |        |      |       |      |       |      |  |
| 7 T2 Parent Anxiety | .01   | -.01  | -.03  | .02  | -.01  | -.01   | ----   |       |       |      |        |       |       |        |       |       |        |      |       |      |       |      |  |
| 8 T2 Parent Dep     | -.02  | -.01  | -.05* | .00  | .00   | -.00   | .81**  | ----  |       |      |        |       |       |        |       |       |        |      |       |      |       |      |  |
| 9 T3 Parent Anxiety | -.01  | -.03  | .02   | .02  | -.04  | -.04   | -.01   | -.00  | ----  |      |        |       |       |        |       |       |        |      |       |      |       |      |  |
| 10 T3 Parent Dep    | -.02  | -.02  | .01   | -.00 | -.05* | -.05*  | .01    | .02   | .83** | ---- |        |       |       |        |       |       |        |      |       |      |       |      |  |
| 11 T1 Youth Anxiety | .07*  | .03   | .08** | -.05 | .09** | .06*   | -.03   | -.05  | .03   | .01  | ----   |       |       |        |       |       |        |      |       |      |       |      |  |
| 12 T1 Youth Dep     | .12** | .01   | .11** | .01  | .07*  | .05    | -.03   | -.04  | .05   | .02  | .75**  | ----  |       |        |       |       |        |      |       |      |       |      |  |
| 13 T2 Youth Anxiety | -.06  | -.04  | -.01  | -.03 | .06   | .02    | .03    | .05   | .00   | .02  | .01    | -.04  | ----  |        |       |       |        |      |       |      |       |      |  |
| 14 T2 Youth Dep     | -.02  | -.03  | -.02  | -.01 | .06   | .02    | .03    | .06   | -.01  | .00  | .02    | -.02  | .80** | ----   |       |       |        |      |       |      |       |      |  |
| 15 T3 Youth Anxiety | -.04  | -.01  | -.06  | .05  | .04   | .04    | -.10** | -.08* | -.01  | -.05 | -.02   | .06   | -.08  | -.09   | ----  |       |        |      |       |      |       |      |  |
| 16 T3 Youth Dep     | -.03  | -.05  | -.04  | .03  | .03   | .03    | -.05   | -.07* | -.00  | -.04 | -.01   | .05   | -.10* | -.13** | .77** | ----  |        |      |       |      |       |      |  |
| 17 T1 IPPA-AA       | -.43  | .08*  | -.06* | -.04 | -.00  | -.10** | .04    | .02   | -.02  | -.02 | -.28** | .22** | -.04  | .01    | .07   | .15   | ----   |      |       |      |       |      |  |
| 18 T1 IPPA-TC       | .13** | .04   | .00   | .05  | .00   | .04    | -.02   | -.03  | .02   | -.02 | -.32** | .31** | -.02  | -.02   | .08   | .16** | -.30** | ---- |       |      |       |      |  |
| 19 T2 IPPA-AA       | .04   | .01   | .01   | -.02 | .04   | .02    | .06*   | .09** | -.03  | -.05 | .08    | -.09* | .45** | .28**  | -.09  | -.07  | .00    | .00  | ----  |      |       |      |  |
| 20 T2 IPPA-TC       | .03   | -.05  | -.01  | -.01 | -.00  | .05    | .01    | -.04  | .02   | .02  | .04    | -.07  | .47** | .32**  | -.07  | -.04  | .04    | -.01 | .48** | ---- |       |      |  |
| 21 T3 IPPA-AA       | .01   | -.02  | .05   | .01  | -.01  | -.01   | .01    | .01   | -.02  | -.04 | -.12*  | .12*  | -.08  | -.08   | .30** | .15** | -.03   | -.09 | .00   | .03  | ----  |      |  |
| 22 T3 IPPA-TC       | .00   | .00   | -.06  | .00  | -.01  | .01    | -.06   | -.07* | -.03  | -.01 | -.06   | .10*  | -.02  | -.05   | .41** | .25** | .09    | .08  | -.02  | -.02 | .58** | ---- |  |

\*\* . Correlation is significant at the 0.01 level (2-tailed).

\* . Correlation is significant at the 0.05 level (2-tailed).

*Note.* IPPA-AA = Parent-child relationships anger/alienation subscale

IPPA-TC = Reverse coded parent-relationships trust/communication subscale (higher scores reflect lower trust/communication)

Dep = Depressive symptoms

### Mediation Model

A full cross lag panel path analysis design was used to examine maternal symptoms and parent-child relationships as predictors of youth internalizing symptoms over time. Each latent construct in the model included two manifest variables. Parent and youth reported BSI anxiety and depression subscales loaded onto the maternal and youth internalizing latent factors, and the anger/alienation and trust/communication subscales of the IPPA loaded onto the parent-child relationships latent factor. Each latent factor was modeled at all three time points. Due to significant correlations between age and household income with several study manifest variables, age and income were modeled as manifest variables and predicted T1 maternal internalizing symptoms, youth internalizing symptoms, and parent-child relationships.

All models were estimated using AMOS 7.0 (Arbuckle, 2006). Model fit was assessed through the use of several fit indices: the chi-square statistic, Comparative Fit Index (CFI), and Root Mean Square Error of Approximation (RMSEA). A non-significant chi-square value also represents good model fit, but because of the large sample size used in the current study, a minimal discrepancy between the observed and model covariances is likely to result in a significant chi-square. Therefore, CFI values above .90 and RMSEA values below .06 will also be used to signify well-fitting models (Hu & Bentler, 1999).

Mediation was examined using the methods described by Cole and Maxwell (2003) for testing mediation in longitudinal structural equation modeling. The full model included a direct path from the independent variable (T1 maternal symptoms) to the dependent variable (T3 youth internalizing symptoms) as well as the mediation paths of

interest (path a: T1 maternal internalizing symptoms to T2 parent-child relationships and path b: T2 parent-child relationships to T3 youth internalizing symptoms). Auto-correlations among variables at each time point were modeled and error terms between these variables were allowed to correlate with each other. Reduced models that constrained the mediation paths (a and b) of interest to zero were then compared to the full model to determine whether there was a significant change in chi-square fit. A significant change in chi-square fit for both mediational paths a and b provides evidence of a non-zero product term that is consistent with mediation (Cole & Maxwell, 2003).

*Hypothesis I.* Higher maternal psychopathology will predict increases in youth internalizing symptoms over time.

*Hypothesis II.* Poorer-quality parent-child relationships will predict increases in youth internalizing symptoms over time.

This baseline model provided a good fit to the data ( $\chi^2(146) = 624.42, p < .001$ ; CFI = .96 and RMSEA = .04). Several significant path coefficients emerged. As predicted, T1 poor quality parent-child relationships predicted increased T2 youth internalizing symptoms and poorer quality T2 mother-child relationships. Additionally, the same significant paths emerged from T2 to T3 such that T2 poor quality parent-child relationships predicted increased T3 youth internalizing symptoms and poorer quality T3 mother-child relationships. Nonetheless, a few unexpected pathways emerged between T2 and T3. Parent and child internalizing symptoms were expected to predict increased child symptoms over time, however an examination of significant path coefficients indicated that T2 maternal and youth symptoms actually predicted decreased T3 youth

Table 3. Key parameter standardized estimates

| Parameter        | Full Model | Girl    | Boy      | Black    | Hispanic |
|------------------|------------|---------|----------|----------|----------|
| Age to T1BSI     | .04***     | .05**   | .05**    | .03**    | .08**    |
| Age to T1IPPA    | -.08       | -.26*** | .00      | -.05     | -.07     |
| Age to T1YInt    | .39***     | .58***  | -.05*    | -.01     | .35***   |
| Income to T1BSI  | .00        | .01     | .00      | .01      | -.05     |
| Income to T1IPPA | -.02       | -.01    | -.01     | .03      | -.04     |
| Income to T1YInt | .01        | .02     | .01      | .06      | .00      |
| T1BSI to T2BSI   | .00        | .01     | .00      | .02      | -.00     |
| T2BSI to T3BSI   | .01        | -.03    | .03      | -.03     | .02      |
| T1IPPA to T2IPPA | .80***     | .72***  | .53      | .76      | .74***   |
| T2IPPA to T3IPPA | .89***     | .08     | 1.00***  | 1.11***  | .48***   |
| T1YInt to T2YInt | .08        | .22***  | .04      | .17      | .07      |
| T2YInt to T3YInt | -.73***    | .03     | -1.07*** | -1.19*** | -.35**   |
| T1BSI to T3YInt  | .00        | .00     | .03      | -.01     | .02      |
| T1BSI to T2IPPA  | .03        | -.01    | .06      | .01      | .08      |
| T1BSI to T2YInt  | .03        | .00     | .07      | .01      | .10*     |
| T1IPPA to T2BSI  | .06        | .06     | -.00     | .02      | .12      |
| T1IPPA to T2YInt | .93**      | .79***  | 1.52     | 1.07     | .82***   |
| T1YInt to T2IPPA | .10        | .27***  | .00      | .11      | .14*     |
| T1YInt to T2BSI  | -.03       | -.00    | -.03     | -.06     | .02      |
| T2BSI to T3IPPA  | -.01       | -.06    | -.01     | -.01     | -.03     |
| T2BSI to T3YInt  | -.05*      | -.03    | -.12*    | -.08     | -.05     |
| T2IPPA to T3BSI  | -.07       | -.03    | -.05     | -.04     | -.04     |
| T2IPPA to T3YInt | .77***     | -.09*   | 1.03***  | 1.21***  | .34**    |
| T2YInt to T3IPPA | -.82***    | -.04    | -.92***  | -1.03*** | -.49***  |
| T2YInt to T3BSI  | .06        | -.01    | .02      | -.05     | .03      |

\*Pathway is significant at  $p < .05$ .

\*\* Pathway is significant at  $p < .01$ .

\*\*\* Pathway is significant at  $p < .001$ .

symptoms. In addition, contrary to prediction, greater T2 youth internalizing symptoms predicted better quality T3 mother child-relationships (see Table 3).

*Hypothesis III.* Poor quality parent-child relationships will mediate the effects of maternal psychopathology on youth internalizing symptoms.

Next mediational tests were conducted for the total sample. As predicted, constraining the path from T1 maternal symptoms to T2 mother-child relationships ( $\Delta\chi^2(1) = 8.50, p < .01$ ) and the path from T2 mother-child relationships to T3 youth

internalizing symptoms ( $\Delta\chi^2(1) = 31.82, p < .001$ ) both resulted in a significantly worse model fit indicating that mediation was present in the overall sample.

### Moderated Mediation Analyses

Cross-group comparisons for tests of moderation were also conducted to determine whether the relationships between study variables in the model varied according to gender or race. As is customary in multiple group analyses two primary models were fit to test for equivalence across each demographic group. First, a full model that allowed structural weights to be freely estimated separately across the groups (i.e. separate path coefficients for boys and girls) was estimated. Then, a reduced model that constrained all factor loadings and structural loadings to be equivalent across groups was estimated (i.e., the same path coefficients for boys and girls). The reduced models were nested under the full models and chi-square comparison tests were used to test for a significantly worse fit in the constrained model. A significant difference between the two models indicates that the hypothesis of full measurement equivalence should be rejected.

*Research Question 1.* Do the effects of the parent-child relationship and parental psychopathology on youth internalizing symptoms vary according to gender?

The first group comparison was between male and female adolescents. The unconstrained model ( $\chi^2(292) = 726.16, p < .001$ ; CFI = .96 and RMSEA = .03) and constrained model ( $\chi^2(342) = 821.62, p < .001$ ; CFI = .96 and RMSEA = .02) provided good fits to the data. The change in chi-square between the two models was significant ( $\Delta\chi^2(50) = 95.45, p < .001$ ) indicating that paths were different for both groups and moderation was present. Mediation tests were conducted for each gender's unconstrained model. For boys, constraining the path from T1 maternal symptoms to T2

mother-child relationships ( $\Delta\chi^2(1) = 3.87, p < .05$ ) and from T2 mother-child relationships to T3 youth internalizing symptoms ( $\Delta\chi^2(1) = 19.90, p < .001$ ) resulted in a significantly worse model fit indicating that mediation was present. In the unconstrained model, the path from T2 mother-child relationships to T3 youth internalizing symptoms was significant for boys, indicating that T2 mother-child relationships predicted increased T3 youth internalizing symptoms. Although the path from T1 maternal symptoms was not significantly predictive of T2 mother-child relationships, the significant change in chi-square when constraining this path to 0 indicates the path from T1 maternal symptoms to T2 mother-child relationships is significant and necessary to the model fit. Furthermore, significant path coefficients indicated that poor quality T2 mother-child relationships predicted poorer quality T3 mother-child relationships for boys. Contrary to prediction, a few incongruous findings occurred between T2 symptoms and T3 symptoms and mother-child relationships for boys. Both increased T2 maternal and youth symptoms predicted fewer symptoms T3 youth internalizing symptoms. In addition, increased boys' T2 youth internalizing symptoms predicted better quality T3 mother-child relationships.

For girls, constraining the mediational path from T2 mother-child relationships to T2 youth internalizing symptoms resulted in a significantly worse fitting model (path b:  $\Delta\chi^2(1) = 7.72, p < .01$ ), however constraining the mediational path from T1 maternal symptoms to T2 mother-child relationships could be constrained to zero without significantly worsening model fit suggesting that mediation was not present (path a:  $\Delta\chi^2(1) = .01, p = ns$ ). Although mediation was not present for girls, several significant paths emerged including poor quality T1 mother-child relationships predicting increased T2 youth internalizing symptoms and poorer quality T2 mother-child relationships. In



addition, increased T1 youth internalizing symptoms predicted increased T2 youth internalizing symptoms and poorer quality T2 mother-child relationships. However, contrary to prediction, poor quality T2 mother-child relationships predicted fewer girls' T3 internalizing symptoms (see Table 3).

*Research Question II: Do the effects of the parent-child relationship and parental psychopathology on youth internalizing symptoms vary according to ethnicity?*

The second group comparison was between African American and Latino youth, the two primary ethnic groups represented in the current sample. The unconstrained ( $\chi^2(292) = 754.59, p < .001$ ; CFI = .95 and RMSEA = .03) and constrained models ( $\chi^2(342) = 843.05, p < .001$ ; CFI = .95 and RMSEA = .03) provided good fits to the data. The change in chi-square between the two models was significant ( $\Delta\chi^2(50) = 88.46, p < .01$ ) indicating that paths differed across groups and moderation was present. The unconstrained model was used to further examine mediation. Constraining the mediation paths from T1 maternal symptoms to T2 mother-child relationships to zero did not result in a significantly worse model fit for either Latinos ( $\Delta\chi^2(1) = 2.65, ns$ ) or African Americans ( $\Delta\chi^2(1) = .88, p = ns$ ). This indicates that these paths were not required to provide a good fit to the data and mediation was not present.

Although no evidence of mediation was present for African American and Hispanic models, several paths emerged as significant for each group. For Hispanics, but not African Americans, poor quality T1 mother-child relations predicted increased T2 youth symptoms and poorer quality T2 mother-child relationships, T1 maternal symptoms predicted increased T2 youth internalizing symptoms, and T1 youth symptoms predicted poorer T2 mother-child relationships. Additionally, for both Hispanics and

African Americans poor quality T2 mother-child relationships predicted increased T3 youth internalizing symptoms and poorer quality T3 mother-child relationships.

Commensurate with the baseline model and contrary to prediction, increased T2 youth internalizing symptoms predicted lower T3 youth symptoms and better quality T3 mother-child relationships in both Hispanics and African Americans (see Table 3).

## CHAPTER IV

### DISCUSSION

The purpose of the current study was to gain a better understanding of maternal internalizing symptoms and parent-child relationship quality as prospective predictors of adolescents' internalizing symptoms in a low-income ethnically diverse sample. An interpersonal mediational model was also tested to better understand whether parent-child relationships mediate the relationship between maternal symptoms and internalizing symptoms. Ethnicity and gender were examined as moderators of the mediational model.

Hypothesis I that increased maternal internalizing symptoms would predict increased youth internalizing symptoms over time, was not supported. Maternal symptoms predicted fewer youth internalizing symptoms from T2 to T3. Hypothesis II that poor quality parent-child relationships would predict increased youth internalizing symptoms over time was supported. Poor quality T1 mother-child relationships predicted increased T2 youth symptoms, and poor quality T2 mother-child relationships predicted increased T3 youth internalizing symptoms. In addition, poor quality parent-child relationships predicted future poorer quality parent-child relationships across time points.

Support for research question I and II, regarding gender and ethnicity moderation effects was found. For boys, parent-child relationships mediated the relation between maternal symptoms and youth internalizing symptoms; poor quality T2 mother-child relationships were predictive of increased T3 youth internalizing symptoms. For girls, T1 youth internalizing symptoms predicted increased T2 youth internalizing symptoms. In addition, for girls, there was a bidirectional relationship between T1 and T2 youth symptoms and mother-child relationship quality. Poor quality T1 mother-child

relationships predicted increased T2 youth internalizing symptoms, and T1 youth internalizing symptoms predicted poor quality T2 mother-child relationships. The current model was moderated by race as well. The same bidirectional relationship between T1 and T2 poor quality mother-child relationships and increased internalizing symptoms for girls was also found for Hispanics but not African Americans. Furthermore, for Hispanics, T1 maternal symptoms predicted increased T2 youth internalizing symptoms. For both Hispanics and African Americans, T2 poor quality mother-child relationships predicted increased T3 youth internalizing symptoms and poorer quality T3 mother-child relationships.

#### Whole sample findings

Consistent with our hypotheses, mediation was found for the entire sample. Additionally, parent-child relationships at T2 predicted increased youth internalizing symptoms at T3. Contrary to prediction, no significant path coefficients illustrated direct effects of maternal symptoms predicting increased youth internalizing symptoms over time. Failure to find prospective effects of maternal symptoms is inconsistent with previous research documenting an association between maternal depression and a number of specific parent-child relationship variables (Shelton & Harold, 2008; Tompson et al., 2010; Downey & Coyne, 1990). However, the current study examined an ethnically diverse, low-income sample over a longer period of time than had been used in other studies, which might partially account for differences.

Current study findings of parent-child relationships as a predictor of internalizing symptoms are consistent with cross-sectional (Caples and Barrera, 2006; DeCarlo Santiago & Wadsworth, 2009; Garber, Robinson, & Valentiner, 1997) and longitudinal

studies (Allen, Insabella, Porter, Smith, Land, & Phillips, 2006) in which parent-child relationships predicted youth internalizing symptoms in diverse samples. Two other mediational studies with low-income ethnic minority youth have found support for parenting behaviors mediating the effects of maternal depression on negative child outcomes (Riley et al., 2009; Huang, Lewin, Mitchell, & Zhang, 2012). Differences between these studies and the current study include the specific type of outcome measured, whether it was parent or child report of symptoms, and the parenting construct examined. The current study extends previous research by examining longitudinal data across three time points and examining the effects of negative parent-child relationships on youth internalizing symptoms, as well as maternal internalizing symptoms.

#### Gender and ethnicity moderation effects

As hypothesized, the current model varied according to gender, with parent-child relationships mediating the relationship between maternal and youth internalizing symptoms for males only. Extensive literature has documented that the association between maternal depression and youth internalizing symptoms is stronger for females than males (Foster et al., 2008; Burt et al., 2005; Duggal, Carlson, Sroufe, & Egeland, 2001; Davies & Windle, 1997; Avison & Mcalpine, 1992). In addition, previous mediational research has demonstrated the effects of family discord between maternal and adolescent depressive symptoms for females, but not males (Davies & Windle, 1997; Hammen, Brennan, & Keenan-Miller, 2008).

Although this finding was contrary to previous research identifying a stronger association between parent and child symptoms for females, and given that maternal symptoms seem more closely related to externalizing symptoms in males (Gross, Shaw,

Burwell, & Nagin, 2009; Gross, Shaw, & Moilanen, 2008), other studies have found parent-child relationships to predict youth internalizing symptoms in males (Boutelle, Eisenberg, Gregory, Neumark-Sztainer, 2009; Branje, Hale, Frijns, & Meeus, 2010), demonstrated a stronger association between family functioning and structure and depression for males compared to females in an outpatient clinical setting (Cumsille & Epstein 1994), and to mediate the effects of maternal depression on males depressive symptoms (Burt et al., 2005). Ethnic minority males report increased stressors (Kistner, David-Ferdon, Lopez, & Dunkel, 2007; Carlson & Grant, 2008), which may further negatively impact the parent-child relationship, and in turn make them more vulnerable to the effects of maternal pathology.

Girls' internalizing symptoms predicted increased internalizing symptoms over a one-year period from T1 to T2, but not over the course of several years (from T2 to T3). Additionally, the current study found a reciprocal relationship between mother-child relationship quality and youth internalizing symptoms across the first one-year period. Although effects were found for youth symptoms and maternal-child relationships predicting future youth internalizing symptoms, unexpectedly, maternal depression did not predict youth internalizing symptoms for girls. Previous research has focused on the influence of maternal symptoms on youth's mental health, and has found the effects to be stronger for females than males (Burt et al., 2005).

As predicted, the current model found significant moderation effects with respect to race/ethnicity. For Hispanic youth, a longitudinal reciprocal relationship between mother-child relationship quality and youth internalizing symptoms over T1 and T2 was found, such that higher levels of youth internalizing symptoms predicted poorer quality

mother-child relationships, and poorer quality mother-child relationships predicted increased youth internalizing symptoms. For Hispanics, the current study found that maternal symptoms predicted increased youth internalizing symptoms one year later. The impact of maternal symptoms on youth internalizing symptoms for Hispanics aligns with previous research in Hispanic samples that have found maternal depression predicted increased youth internalizing symptoms (Corona, Lefkowitz, Sigman, & Romo, 2005; Patcher, Auinger, Palmer, & Weitzman, 2006). The increased effects of maternal symptoms on youth internalizing symptoms in the Hispanic sample may be influenced by cultural variables such as increased familism (family unity, support, and obligation) (Smokowski, Chapman, & Bacallao, 2007) and higher cultural orientation (Delgado, Updegraff, Roosa & Umana-Taylor, 2011) that have been associated with internalizing symptoms. Although these factors are typically seen as protective against the development of internalizing symptoms in the presence of stressors (Umaña-Taylor & Updegraff, 2007), these cultural variables related to increased family cohesion and closeness might increase the transmission of internalizing symptoms between parents and youth.

Furthermore, for Hispanics, poor quality mother-child relationships predicted increased youth internalizing symptoms across time, both at one year follow-up and approximately six years later. For African Americans, poor quality mother-child relationships predicted increased youth internalizing symptoms from time one to time two only. Previous research has been mixed with respect to ethnic differences in the relationship between parent-child relationships and child symptoms. For example, moderation effects for ethnicity were not found in one study of mixed ethnicity sixth and

seventh graders (Fanti et al., 2008), but were found in two other studies comparing European American, Hispanic, and African American youth (Vendlinski, Silk, Shaw & Lane, 2006; Finkelstein, Donenberg, & Martinovich, 2001). However, the latter two studies utilized clinical populations, either mothers with a childhood onset of a mood disorder and younger aged children, or adolescent girls seeking outpatient mental health services suggesting that ethnic differences in the impact of parent-child relationships on youth symptoms may be more pronounced when symptoms are of greater severity. Cultural differences in how families perceive and deal with youth pathology may also play a role in parent-child interactions.

It is possible that race/ethnicity has been confounded with income, which might account for differential effects. For example, ethnicity no longer moderated the relationship between family functioning and youth internalizing symptoms after controlling for socioeconomic status in low-income African American and Hispanic youth (Gorman-Smith, Tolan, Henry, & Florsheim, 2000). However, the ethnic groups in the current study had similar income levels, and income was controlled for, which suggests that there is a cultural component that contributes to these differences over and above the effects of income. Future research should focus on explicitly measuring culture (Polo & Lopez, 2009) in the course of internalizing symptoms.

### Implications

The findings from the current study suggest that parent-child relationships should be a focus of clinical work with youth with internalizing symptoms. Previous studies have found interpersonal psychotherapy prevention programs (Mufson, Dorta, Moreau, & Weissman, 2004) and systemic behavioral family therapy (Kolko, Brent, Baugher,



Bridge, & Birmaher, 2000; Horowitz, Garber, Young, & Mufson, 2007) to be effective in treating adolescent's depressive symptoms (Young, Mufson, & Davies, 2006). These interventions also significantly reduce family conflict and parent-child problems (Compas et al., 2010; Compas et al., 2011). Future work should examine changes in parent-child relationships as mediators of the relationship between treatment and outcomes to determine whether improvements in parent-child relationships are the mechanism responsible for changes in symptoms.

#### Strengths, Limitations, and Future Directions

The current study has several methodological strengths including: (1) the utilization of a large multisite national sample from three metropolitan cities in the United States, (2) longitudinal analyses with three waves of data spanning five years, (3) a low-income primarily ethnic minority sample, and (4) rigorous tests of moderated mediation. However, despite its many strengths, the current study has several limitations that provide directions for further research. For example, the current study utilized child report only of youth internalizing symptoms instead of a more comprehensive combined parent and self-report measure of internalizing symptoms. However, the results of the current study are comparable to those that used combined parent and child report of youth internalizing symptoms and diagnostic interviews of child depressive symptoms (Gorman-Smith, Tolan, Henry, & Florsheim, 2000, Raposa, Hammen, & Brennan, 2011).

Similarly, information about the quality of the parent-child relationship was obtained through youth self-report methods. Previous research examining parental behavior and parent-child interactions have found that child report is correlated with observational assessment of relationships (Low & Stocker, 2005), but a more

comprehensive assessment including parent report and behavioral observations would strengthen the utility for clinical recommendations (e.g., Teti, Gelfand, Messinger, & Isabella, 1995). In addition, the sample size for the parent-child relationship measure was much lower than the other scales, partially due to the fact that younger children were ineligible to complete this scale, thus utilizing other assessment tools to measure parent-child relationship quality would help to strengthen the understanding of effects on youth symptoms.

Although the utility of longitudinal data spanning several years is crucial to better understanding the casual effects of the current study variables over time, the uneven spacing between time points in the current study (1 year between T1 to T2 and 4-5 years between T2-T3) complicates the interpretation of study findings. Several findings were not consistent across time points, which may be explained by the large gap between T2 and T3. Future longitudinal research should include equal spacing of time points to better understand potential relationships and mechanisms of change over time (Cole & Maxwell, 2003). Furthermore, although the current data set provides a large diverse and nationally representative sample of three large US cities and three waves of longitudinal data, the pattern of findings differs somewhat than what is normally expected. For instance, the current study found that increased T2 maternal and youth symptoms were predictive of fewer T3 youth internalizing symptoms, and that increased T2 youth symptoms predicted poorer quality T3 mother child relationships. Other studies using this data have found similar contradictory findings (Prelow, Weaver, Bowman & Swenson, 2010; Chase-Lansdale et al., 2011), however further explanation is needed to fully understand the effects.

In the current study, maternal depression was not predictive of parent-child relationship quality suggesting that during this developmental age, other factors should be considered as influences of parent-child relationships. Such factors include mother's personality traits, child temperament, and stress, which have been associated with poor parenting and parent-child interactions (Clark, Kochanska, Ready, 2000; Crnic, Gaze, & Hoffman, 2005). Previous research has documented long-term consequences of childhood insecure attachment with chronic difficulties in emotional regulation, sensitivity to stress, and social functioning (Elgar et al., 2004). Other potential factors to consider include youth's perceptions of maternal support, emotional regulation, and paternal marriage satisfaction (Allen, Moore, Kuperminc, & Bell, 1998; Allen, Boykin, Kuperminc, & Jodl, 2004; Cassidy, 1994; Shek, 1998). Future research should test more complex models in which these factors are also included as predictors of parent-child relationships in adolescents.

## CHAPTER V

### SUMMARY

Prevalence rates for youth depressive symptoms begin to sharply increase during adolescence and into young adulthood as youth learn to adapt to new challenges and added stressors. Low-income urban youth may be at even greater risk for the development of depressive symptoms. Maternal depression and poor quality parent-child relationships are two risk factors that have been consistently associated with increased risk for the development of youth depression and internalizing symptoms.

The current study examined relationships between maternal depression and anxiety symptoms and maternal-child relationships on youth internalizing symptoms over three time points in a five-year period. Furthermore, the current study tested a comprehensive longitudinal mediation model in which parent-child relationships were predicted to mediate the effects of baseline maternal symptoms on follow-up youth internalizing symptoms. Furthermore, gender and ethnicity were examined as potential moderators of the proposed mediational model.

Mediation was found for the overall model, parent-child relationships predicted increased youth internalizing symptoms over time, and poor quality mother-child relationships predicted future poorer quality mother-child relationships over time. As predicted, both gender and race moderation effects were found. For boys, parent-child relationships mediated the relationship between maternal symptoms and youth internalizing symptoms. For girls, youth internalizing symptoms predicted future increased youth symptoms, and a bidirectional relationship between poor parent-child relationships and increased youth internalizing symptoms was found. In terms of

ethnicity, for Hispanics only, maternal symptoms were predictive of increased youth symptoms, and as with females there was a bidirectional longitudinal relationship between poor quality mother-child relationships and increased internalizing symptoms in youth. In addition, for both Hispanics and African Americans, parent-child relationships predicted increased youth symptoms and poorer mother-child relationships approximately six years later.

The current study illustrates the complexity of the relationships between parent-child relationships and maternal and youth internalizing symptoms over time, and more importantly, the patterns of effects across gender and race. The current study highlights the need to better understand the influence of longitudinal reciprocal effects of mother-child relationships and youth internalizing symptoms in both females and Hispanics. Future research identifying the mechanisms of transmission, including cultural constructs, between maternal and youth internalizing symptoms is needed to better inform individual and family prevention efforts targeting internalizing symptoms and family functioning in low-income urban ethnic minorities.

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