Symptoms of Major Depression in a Sample of Fathers: Prevalence, Correlates, and Associations with Father's Individual and Family-Level Functioning

(DRAFT)

Jacinta Bronte-Tinkew, Ph.D.,

Kristin A. Moore, Ph.D., &

Gregory Matthews, B.A.,

Child Trends, Inc.

4301 Connecticut Avenue, NW

Suite 100

Washington, DC 20008

* Research for this project was made possible by the generous support of the National Institute of Child Health and Human Development (NICHD) through Grant #R03-HD042108-01A1.

Abstract

Depression has been extensively studied for mothers but has been all but ignored for fathers. This study examines the 12-month prevalence of major depression in a nationally representative sample of fathers using the Composite International Diagnostic Interview-Short Form (CIDI-SF). Using data from the Fragile Families and Child Well-being 12-Month Father Survey, the study examines the prevalence of major depression, its socio-demographic correlates, and its associations with fathers' individual and family-level functioning for a sample of 2,139 resident and 801 non-resident fathers.

Results indicate that the 12-month prevalence of major depressive symptoms was 5.4% for resident fathers and 2.8% for non-resident fathers. Findings also suggest that the prevalence of major depression differs significantly based on father's socio-demographic characteristics such as race, marital status, and employment status. Results of Ordinary Least Squares Regressions (OLS) models indicate that major depressive symptoms is negatively associated with father-child activities (engagement), positively associated with paternal aggravation/stress in parenting, and negatively associated with co-parental conflict and relationship supportiveness. These findings may be important for identifying a sub-group of fathers for whom more specific and intensive interventions directed at more careful follow-up and intensive treatment for depression are needed.

Fathers CIDI-SF Major Depression Parenting Prevalence

INTRODUCTION

Reliable and valid assessments of paternal depression are of considerable interest to fatherhood researchers. Unfortunately, while depression has been studied extensively among mothers, the topic has received little attention with regard to fathers (Deckard, Pickering, Dunn, & Golding, 1998; Dudley, Roy, Kelp & Bernard, 2001). Although men are less likely to suffer depression than are women, an estimated six million men in the United States suffer from a depressive disorder and they are less likely to be diagnosed (National Institute of Mental Health, 2002). Despite a growing body of literature on the positive and changing role of fathers, the benefits to children of paternal involvement, and the importance of men's health for family functioning (Dudley et al., 2001), little prior research has focused on the prevalence of major depression in samples of fathers. The role of men's mental health, and the consequences for children and families, is a timely research and policy issue, and understanding fathers' experiences is paramount to this dialogue. The creation of short form measures of depression such as the Composite International Diagnostic Interview – Short Form for Major Depression (CIDI- SFMD) appears to hold great promise for examining the prevalence and consequences of major depressive symptoms for fathers in new and emerging samples of men.

The CIDI is a comprehensive, standardized instrument used to assess the presence of mental disorders as defined by the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) (American Psychiatric Association, 1994). Widely used and well-known for its strong psychometric properties, the CIDI evaluates seven DSM-IV mental disorders: major depression, generalized anxiety, specific phobia, social phobia, agoraphobia, panic attack, and obsessive-compulsive disorder, as well as alcohol and drug dependence (Walters, Kessler, Nelson, & Mroczek 2002). The length of the original CIDI instrument prompted investigators to adopt items based on fewer single item measures to create a short form measure that would reduce research costs in large-scale studies (Kessler et al., in press). The Short Form was created in part to reduce the time spent identifying

symptoms of mental illness during long surveys. The CIDI-Short Form for Major Depression (CIDI-SFMD) is intended for use in epidemiological and cross-cultural studies and for clinical and research purposes.

One concern about the CIDI- SF is the lack of information on how the measure works in general population samples. While several national surveys in the United States use modified versions of the full CIDI, fewer national surveys use the Short Form for Major Depression. Several studies that use the CIDI-SF are usually done outside the US with the exception of the US Health and Retirement Study and the National Health Interview Survey. In short, how the CIDI-SFMD performs in general population samples, specifically men, has not been the focus of prior research. A second and even more central issue motivating these analyses is to examine how the presence of depressive symptoms is related to men's family roles. Considerable evidence links maternal depression with impaired parenting and poorer child development. We hypothesize similar patterns for paternal depression. However, given fathers' lower involvement in parenting (Hofferth, 1998), particularly for nonresident fathers, the possibility exists that paternal depression is not related to parenting or to the development of children.

Despite a theoretical rationale and preliminary support for the importance of identifying paternal depression, at present little research exists that documents its prevalence and consequences for fathers. In light of these gaps and shortcomings in existing research, we use a sample of resident and non-resident fathers in the Fragile Families and Child Well-Being Study to pose three research questions:(1) What is the prevalence of 12-month major depression among resident and non-resident fathers?; (2)What are the socio-demographic correlates of 12-month major depression? and; (3) Is major depression associated with father's individual-level and family-level functioning?

In the present study, we examine 12-month prevalence estimates of father's major depression for resident and non-resident fathers. We also examine prevalence estimates stratified by age, race, education, marital status, socio-economic status, and employment status. We analyze the extent to

which major depression predicts to three important aspect's of father's family functioning—father-child activities (father engagement), paternal aggravation/stress in parenting, and the quality of the father-mother relationship. We conduct analyses using a recent sample of fathers in the Fragile Families and Child Well-Being Study (Fragile Families). Considering the growing awareness of the importance of fathers in children's lives, it is important to clarify how measures of fathers' depression may work since paternal depression may serve as a risk factor in the development of maladjustment in children (Phares, 1997).

LITERATURE REVIEW

Paternal Depression

There are a number of ways to conceptualize depression, from a depressive mood to a depressive syndrome, to a major depressive disorder (Petersen et al., 1993). Major depressive order is a condition characterized by one or more major depressive episodes. Symptoms of depression can include a persistent sad, anxious, or empty mood; feelings of hopelessness, pessimism, guilt, worthlessness, and helplessness; a loss of interest or pleasure in activities that were once enjoyed; loss of energy, appetite and weight, or weight gain; insomnia, early-morning awakening, or oversleeping; and difficulty concentrating and making decisions. While a disposition toward depression may be inherited, other psychosocial factors such as stress and low self-esteem (NIMH, 2002) have been found to contribute to depression (National Institute of Mental Health, 2002).

While depression has been extensively studied among mothers, relatively little attention has been paid to paternal depression. The prevalence rate for depression differs greatly depending on which definition is used. Reviews of several epidemiological studies suggest that the prevalence rate for major depression varies from 2.6% to 5.5% for men, and is often higher for women. In welfare samples, the incidence of major depression has been found to be much higher –4.3% (NEWWS, 1998). Results from the National Comorbidity Survey (NCS) using a national community sample

ages 15 through 54 years of age found that prevalence estimates were 2.8% for men compared to 5.9% for women (Blazer, Kessler, McGonagle, & Swartz, 1994).

Available research indicates that depressed men tend to act out their distress externally, through alcohol or drug use, or excessive work hours. Signs of male depression often do not include the hopelessness and helplessness associated with depressed women, but instead men can become irritable, angry, and discouraged. More visible signs of male depression include difficulty sleeping, dramatic weight gain or loss, sadness, difficulty making decisions, and a complete loss of interest in the outside world (Smyth, 2003). The causes of depression for men tend to come from a feeling of disconnectedness from others and from their needs, rather than the disempowerment associated with female depression (Real, 2000). Even if men accept that they are depressed, they tend to be less willing to seek help than women (NIMH, 2002). Extant research suggests that men's psychological disorders and distress are different from those of women. They have poorer social supports, and they less often ask for professional help (Wilhelm et al., 1998).

While women are more likely to be depressed after the birth of a child, a substantial minority of fathers also experience symptoms of depression during this period (Ballard and Davies, 1996). Following the birth of a child, men's partners may be preoccupied with the infant, low in energy, disinterested in sex, not wanting social contact, thus impacting men's emotional well-being (Zelkowiz and Milet, 1996). Fathers may see such signs of maternal depression as rejection, perhaps leading to paternal depression (Pope, 2000). A large and growing body of research suggests that major depression is a psychiatric disorder that can generate considerable impairment in the person's functioning, comparable to-or sometimes worse-than that caused by a chronic medical condition (Cross-National Collaborative Group, 1992). Depression in men has been shown to increase the likelihood of marital separation or divorce and is a crucial factor in determining partner's depressive symptoms for two to three years following childbirth (Carro, Grant, Gotlib, and Compas, 1993).

Demographic Correlates of Major Depression

A vast literature documents that the prevalence of depression tends to vary by socio-demographic characteristics (Bulletin of the World Health Organization, 2000; Blazer, Kessler, McGonagle, & Swartz, 1994). Several factors have been found to be associated with the occurrence of depression: age, income, educational level, employment status, race, and marital status. While these factors have been validated in some studies (Blazer et al., 1994), findings are inconsistent and inconclusive and have not been confirmed in other studies.

Age. Some studies find an association between age and depression, however findings are inconsistent. Some literature suggests that the likelihood of depression is rare before adolescence (Birmaher et al., 1996), and tends to decline in later middle age or early old age. Among young adults, depression centers around progress from being single to being a spouse or a parent. Fathers may be at risk if their partner is caught up in the demands of caring for a baby. On the other hand some studies provide evidence that the highest prevalence occurs among the youngest age groups (WHO International Consortium in Psychiatric Epidemiology, 2000). One study found that men who fathered during adolescence have significantly greater rates of depression than men who fathered as adults, even when controlling for socio-economic status, race, fertility, and age (Heath, McKendry, and Leigh, 1995). In contrast, recent evidence from patient samples and community samples in the USA and Europe suggest that major depression is higher among older adults (Beekman et al., 2002).

Income. The available epidemiological information on depression in the general population indicates that the experience of poverty and fluctuations in income and socio-economic disadvantage are likely to be associated with depression (Mojtabai & Olson, 2004), however findings are not consistent. Some studies show that socioeconomic risk is positively correlated with depression (Brown, Brody, Stoneman, 2000) and therefore depression tends to be higher among persons of low socioeconomic status (Lehtinen & Joukamaa, 1994). However, in a recent cross-national comparison of mental disorders conducted by the WHO across seven countries, the highest estimated prevalence

of mental disorders (including depression) revealed a pattern that was not entirely consistent in linking low income to higher prevalence estimates (WHO International Consortium in Psychiatric Epidemiology, 2000).

Educational Level. Prior research suggests that the highest estimated prevalence of mental disorders (including depression) tends to be among respondents at the lowest level of educational attainment. In short, low education has been found to be associated with a high estimated prevalence of mental disorders (WHO International Consortium in Psychiatric Epidemiology, 2000).

Employment Status. Reviews of several epidemiological studies suggest that employment status is related to mental health disorders (WHO International Consortium in Psychiatric Epidemiology, 2000). In a recent study conducted across seven countries, unemployed respondents consistently reported the highest prevalence while employed respondents had the lowest estimated prevalence.

Race. Research examining whether depression varies by race has been inconclusive. Some studies find no significant differences in the prevalence of depression by race (Cummings, Neff, & Husaini, 1995), while other studies do find differences. A recent study on major depression documented that non-whites tend to report more depression than whites (Oquendo, Ellis, Greenwald, Malone, Weissman, & Mann, 2001). The 1-year prevalence rates of major depression were 3.6% for whites, 3.5% for blacks, 2.8% for Mexican Americans, 2.5% for Cuban Americans, and 6.9% for Puerto Ricans. Compared to the rate for whites, the rate of depression was significantly higher for Puerto Ricans and significantly lower for Mexican Americans. In a more recent epidemiological study- the National Comorbidity Survey (NCS)-higher prevalence rates for all ethnic groups were reported. Major depression was lower for African-Americans than for Whites and Latinos, and the prevalence rates did not differ between these two ethnic groups (Saez-santiago & Bernal, 2002).

Marital Status. Prior research indicates that the prevalence of major depression may differ by marital status. A study conducted by the WHO reported that the lowest estimated prevalence of

mental disorders (including depression) was reported among married respondents compared to unmarried respondents (WHO International Consortium in Psychiatric Epidemiology, 2000). Research done with U.S.-based populations also suggests that depression is higher in persons who are separated, divorced, or widowed (Lehtinen & Joukamaa, 1994).

Paternal Depression and Links to Father's Individual and Family- Level Functioning

Little is known about how men's depression influences their individual and family-level functioning. A recurring theme in the literature however, is that impending and new fatherhood confronts all men with a set of difficulties, but for only a small percentage who suffer from mental disorders (including depression) will these factors contribute to behaviors and interactions that may influence their individual and family-level functioning. Some findings suggest that paternal depression is associated with functional differences in interactions with family members regarding positivity (Cox & Paley, 1997), and with interactions in the parent-child relationship (Jacob & Johnson, 2001).

Father-Child Activities (Father Engagement). The literature linking paternal depression to father's functioning suggests that paternal depression may affect a father's ability to engage his child in activities (Ballard & Davies, 1996). When fathers have negative emotion or moods (both of which are symptoms of depression), engagement with children becomes more conflictual (Larson and Pleck, 1997), and levels of positive engagement decrease (Pleck, 1997). Fathers experiencing psychological distress are also more likely to not respond to their children, or even become hostile (Conger, Conger, Elder, Lorenz, Simons, and Whitbeck, 1993; Almeida, Wethington, and McDonald, 2001). In general, depressed parents can be less warm, and provide less structure for interaction (Cohn, Cowan, Cowan, and Pearson, 1993, as cited in Herring and Kaslow, 2002). Prior research suggests that paternal depression may be accompanied by less caring and nurturant behavior towards children (Hops et al., 1987; Short & Johnson, 1997). Depressed fathers tend to label their children as weaker, less cuddly, less smart and not paying attention (Hart, Field, Stone, & Jones,

1997) and may hold negative stereotypes of infants with regard to their behaviors and competence. Research done with depressed mothers also suggest that mothers appear more negative and less positive in their communications towards children than do mothers without depression (Messer & Gross, 1995). Based on prior research, it is likely to expect that father reporting major depression will be less engaged with children and involved in fewer father-child activities.

Father's Aggravation/Stress in Parenting. Studies on mental health and aggravation/stress in parenting are scant, and the majority of those that do exist, focus on maternal stress to the exclusion of studying fathers. What is known about parenting among depressed mothers suggest that parenting skills such as emotional availability, reciprocal behavior, involvement, and positive attitudes and interactions tend to be less common for depressed mothers compared to non-depressed mothers (Mowbray, Oyserman, Bybee, and MacFarlane, 2002). Studies have found that depressed mothers provide less encouragement, affection and responsiveness in their parenting (Scherer, Melloh, Buyck, Anderson, and Foster, 1996; Goodman and Brumley, 1990). While no specific links have been found between paternal depression and parental aggravation/stress in parenting, some research suggests that psychological distress disrupts effective parenting behaviors (perhaps through parental stress) resulting in strained parent-child dyads and less positive parenting behaviors (Gyamfi, Brooks-Gunn, and Jackson, 2001; Almeida, Wethington, & Chandler, 1999; Crouter, Bumpus, Head, & McHale, 2001). High stress has been found to be associated with fathers' perceptions of competence in parenting (McBride, 1989), and in prior research (mostly done on mothers), maternal emotional distress has been linked to hostile and less responsive parenting practices (Short & Johnson, 1997). Paternal depression is therefore expected to be positively associated with paternal aggravation/stress in parenting.

The Co-Parental Relationship. Paternal depression has been found to associated with functional differences in marital interactions regarding positivity, a pattern that appears to have strong repercussions for the marital dyad (Jacob & Johnson, 2001). For example, couples with a

depressed husband show less positivity following positive remarks- that is when either partner makes a positive remark, it decreases the odds that the other partner would make a positive remark in response (Johnson & Jacob, 2000). Some studies also suggest that marital relationships may be worse when only one parent is depressed (Field, Hossain, & Malphurs, 1999). Among depressed married couples, there exists evidence suggesting that impaired mental states have a detrimental impact on the quality of marriage (Hulson, 1992; Mannion, Mueser, & Solomon, 1994; Whisman & Bruce, 1999). Divorce rates are significantly higher among couples in which at least one member suffers from depression (Hulson, 1992), and depressed couples tend to rate their marriages significantly worse in all areas of functioning than do non-depressed couples and to state that their marriages do not meet their expectations. Depression often causes lifestyle changes such as restricted social and leisure activities, economic hardship, feelings of isolation, and a lack of support. These changes may account for a decrease in marital quality among individuals suffering from depression (Hulson, 1992; Mannion, Mueser, & Solomon, 1994), and marital difficulties may persist even after the symptoms of mental distress subside (Merikangas, Prusoff, Kupfer & Frank, 1985). Based on prior research, we anticipate that paternal depression will have a negative influence on the quality of the co-parental relationship.

Combining the extant literature, we will test the following hypotheses in the present study:

Hypothesis 1: We hypothesize that the prevalence of major depression will be highest among fathers in situations of socio-economic disadvantage, among fathers with the lowest levels of education, among unemployed fathers, among fathers from minority groups, and among divorced and unmarried fathers. We expect that there will be significant differences in the prevalence of major depression by age, but given the lack of a clear prediction from the previous literature, there are no specific predictions regarding whether it will be more common among younger as opposed to older fathers.

Hypothesis 2: We hypothesize that major depression will be negatively associated with the frequency of father-child activities (engagement), positively associated with paternal aggravation/stress in parenting, negatively associated with co-parental conflict and negatively associated with co-parental relationship supportiveness.

Contributions of the Present Study

The CIDI-SF is a brief instrument designed to identify episodes of major depression (Kessler et al., 1998) with established reliability and criterion validity (Kessler et al., 1998; Turvey et al., 1999; Steffick, 2000). The instrument was developed for inclusion in the US National Health Interview Survey (NHIS) and has also been used in the Canadian National Population Health Survey (NPHS). The short form differs from the long form in that a sub-sample of questions are selected through scientific methods that would accurately reflect diagnoses that would be produced by the full CIDI. However, the CIDI-SF for major depression has had limited use specifically in general population samples including samples of fathers. Even less research been done on how major depression as captured by the CIDI-SF is associated with individual and family-level functioning. Our purpose is to address these shortcomings in existing research. We will: (a) examine the prevalence of major depression among a sample of resident and non-resident fathers using the CIDI-SFMD; 2) examine the socio-demographic correlates of fathers reporting major depression; and 3) to examine how major depression is associated with father's individual and family-level functioning.

METHODS

Data

These analyses are based on data from The Fragile Families and Child Well-being Study (Fragile Families) 12-month Father Surveys. The Fragile Families and Child Well-being Study is a nationally representative longitudinal study of marital and non-marital births in cities with populations over 200,000. Data collection is being conducted during 1998-2005. The study provides

information on the characteristics and capabilities of new unwed fathers, on the relationships between unwed mothers and fathers, on the factors that push unwed parents together or apart, and on how public policies such as welfare reform affect parents' behaviors and living arrangements. The study includes a sample of close to 5,000 families from 20 cities[1] across the United States, including 3,712 unmarried couples and 1,186 married couples (McLanahan et al., 2001). Sample weights make these data representative of non-marital births in large U.S. cities with populations over 200,000. Families are interviewed at the birth of the child, and further interviews are scheduled when the child is 1, 3, and 5 years old. Sampled fathers are drawn from births at 75 hospitals in 20 cities. Both fathers and mothers were interviewed in the hospital separately following the birth of their child. When the father was not present at birth, the mother reported on the father of the baby; thus, there is information on father characteristics, even when the mother has no current relationship with the father. In this study we use data from the 12-month father survey in all 20 cities of the Fragile Families study.

Sample

A total of 2,137 resident fathers in 18 cities received the CIDI-SFMD. These fathers age in range from 17 to 81 years. These resident fathers have children age 1-32 months. A total of 801 non-resident fathers who had contact with their child in the past month in 18 cities received the CIDI-SFMD during the 12-month interview. These fathers age in range from 17 to 66 years. Their children range in age from 1-32 months.

Dependent Variables

We examine three aspects of father's individual and family level functioning as reported by fathers.

[1] The 20 cities are Oakland, CA; San Jose, CA; Jacksonville, FL; Chicago, IL; Indianapolis, IN; Boston, MA; Baltimore, MD; Detroit, MI; Newark, NJ; New York, NY; Toledo, OH; Philadelphia, PA; Nashville, TN; Austin, TX; Corpus Christi, TX,; San Antonio, TX; Norfolk, VA; Richmond, VA; and Milwaukee, WI.

Father-Child Activities (Father Engagement). An index was created from items adapted from the Home Observation for Measurement of the Environment (HOME) Scale (Caldwell & Bradley, 1984). The items used in the index resemble a modified version of the HOME scale, called the HOME-Short Form (HOME-SF) that was created in the National Longitudinal Survey of Youth (NLSY; Baker et al., 1993). The Home Scale has been typically used to examine the quality of the home environment for its importance for children's development. The sub-scales capture both cognitive stimulation and emotional supportiveness. The father-child activity (engagement) index is comprised of 8 items asked of both resident and non-resident fathers regarding whether the father participated in the following activities with the child in a week: Plays games like " peek-a-boo" or "gotcha"; Sings songs or nursery rhymes; Reads stories; Plays inside with toys such as blocks or legos; Takes the child to visit relatives; Hugs or shows affection; Puts child to bed; and Tells stories. The responses are measured on a 7-point scale ranging from strongly agree to strongly disagree. Scores could range from 0 to 56 (alpha = .84 for resident fathers; alpha = .83 for non-resident fathers). Higher scores indicate that fathers participate with greater frequency in activities with their children. For resident fathers, these scores are negatively skewed, indicating higher scores on the index. For non-residential fathers (who had contact with the child in the last month), these scores are positively skewed, indicating a trend towards lower scores on the index. There is substantial variation in the distribution of scores on the index for both residential and non-residential fathers. The level of non-response (item) on the index is low for both residential and non-residential fathers. Preliminary tests of concurrent validity (correlations) indicate that the index is working in the expected direction based on theoretically derived expectations.

Father's Aggravation/Stress in Parenting. An index was created from items selected from the Aggravation/Stress in Parenting Scale (Abidin, 1995). This scale was originally used in the National Evaluation of Welfare-to-Work Strategies (NEWWS) Child Outcome Study, and these items were adapted for use in the Fragile Families 12- month Father Survey. This index is comprised of 4 items

asked of both resident and non-resident fathers regarding whether: Being a parent is harder than I thought it would be; I feel trapped by my responsibilities as a parent; I find that taking care of my child(ren) is much more work than pleasure; I often feel tired, worn our or exhausted from raising a family. The responses are measured on a 4-point scale ranging from strongly agree to strongly disagree. Scores on the paternal aggravation/stress in parenting scale range from 0 to 12 (alpha = .60 for resident fathers; alpha = .50 for non-resident fathers). For both resident and non-resident fathers (who had contact with the child in the past month), these scores are positively skewed, indicating a trend towards lower scores on the scale. Higher scores indicate that fathers experience higher levels of parental aggravation/stress in parenting. There is substantial variation in the distribution of scores on the index for both residential and non-residential fathers. The level of non-response on the index is low for both residential and non-residential fathers. Preliminary tests of validity indicate that the index is working in the expected direction, based on theoretically derived expectations and prior research.

Co-Parental Relationship (Supportiveness). We created an index of the overall frequency of relationship supportiveness related to: the mother being fair and willing to compromise when mother and father have a disagreement; the mother insulting or criticizing father or father's ideas; the mother encouraging/helping father with important things; mother expressing affection or love for father; the mother trying to keep father from seeing or talking with father's friends or family; the mother trying to prevent the father from going to work or school; the mother withholding money, making father ask for money, or taking father's money; mother listening to father when father needs someone to talk to; and mother understanding father's hurts and joys. For these items fathers indicated whether this was (1) often, (2) sometimes, or (3) never. We reverse coded some of the items and created an index of the overall frequency of supportiveness ranging from 0 to 18 by adding scores from each of the 9 items (alpha = .71 for fathers who were married or romantically involved; alpha = .82 for fathers who were no longer together with mother). Higher scores indicate more supportiveness.

Co-Parental Relationship (Conflict). Conflict was measured using an index about how often: the mother acts like the mother you want for child when she is with child; the father can trust the mother to take good care of child; the mother respects schedules/rules the father makes for child; the mother supports the father in the way to raise child; and the father and mother talk about problems that come up raising child. For these items fathers indicated whether this was (1) always true, (2) sometimes true, or (3) rarely true. The items were added to obtain an overall conflict score (range = 0 to 10; alpha = .68 for residential fathers; alpha = .78 for non resident fathers), with higher scores indicating a higher level of conflict. Preliminary analyses indicate that for residential fathers, these scores are negatively skewed, indicating higher scores on the index. For non-residential fathers (who had contact with the child in the last month), these scores are positively skewed, indicating a trend towards lower scores on the index. There is substantial variation in the distribution of scores on the index for both residential and non-residential fathers. The level of non-response (item) on the index is low for both residential and non-residential fathers. Preliminary tests of concurrent validity (correlations) indicate that the index is working in the expected direction based on theoretically derived expectations.

Independent Variables

Major Depression. Major depression was assessed by the short form of the Composite International Diagnostic Interview (CIDI-SF)[2] (Kessler et al., 1998) based on the criteria for major

[2] The CIDI-SF yields a probability of caseness ranging from 0.0 to 1.0. This score can be interpreted as the probability that a respondent with a particular response profile would meet the full diagnostic criteria if given the complete CIDI. The diagnostic stem requirement to determine major depression was derived in two stages: by either endorsing all questions about having two weeks of dysphoric moods or endorsing all questions about having two weeks of anhedonia. Each of these series requires the respondents to report two weeks of this symptom lasting at least most of the day, every day. Either denying the existence of the symptoms or denying persistence leads to a skip-out and the respondent receives a probability of caseness equal to zero. If the respondent endorsed the stem series, an additional seven symptom questions are asked: losing interest, feeling tired, change in weight, trouble with sleep, trouble concentrating, feeling down, and thoughts about death. Respondents who do not endorse this series are skipped to a second series that provides a second chance to meet the stem question requirements for a diagnosis of Major Depression. Respondents who fail this series are skipped out of the section with a probability of caseness equal to zero. Those who pass through the series are asked a series of six symptom questions identical to those above.

depression in DSM-III-R (APA, 1987). Respondents of the short form who affirmed stem questions were asked about seven symptoms: losing interest, feeling tired, change in weight, trouble with sleep, trouble concentrating, feeling down, and thoughts about death. A numeric score ranging from 0 to 7 was converted to a probability of caseness between 0 and 1. Respondents reporting three or more symptoms with a probability score greater than 0.5 are considered to have major depression (Walters, Kessler, Nelson, and Mroczek, 2002). The responses were rated as a dichotomous variable. (Appendix A shows the questions).

Fathers' Socio-Demographic Characteristics. Prior research indicates that major depression is associated with several socio-demographic characteristics (Bulletin of the World Health Organization, 2000). We include a variety of self-reported information on father's socio-demographic characteristics. Demographic covariates include categorical variables for fathers' age (17-24, 25-29, 30-44, 45+ years of age), educational attainment (less than high school, high school/GED, and high school and higher), race (Non-Hispanic White, non-Hispanic Black, Hispanic, and other), marital status (separated/divorced, married, never married, and cohabiting), poverty status (less than 100% of the poverty line, above the poverty line), and employment status (working in the week prior to the survey, not working in the week prior to the survey). More detailed information is not available about father's employment history and so this measure is used as a proxy for father's labor force attachment.

Child Characteristics. We include a dummy variable indicating the sex of the child. Female is the omitted category.

Substance Use. We include a dummy variable indicating whether the father had a history of substance use based on fathers' responses to two questions: (1) whether the father had smoked pot or marijuana in the past month; and (2) whether the father used cocaine/crack/ speed/LSD/heroin or other hard drug in the past month. Respondents who replied yes to either of these questions were coded as 1 (substance use), respondents replying no to both of these questions were coded as 0 (no

substance use). Respondents responding no to either one of these questions, but missing the other question received a missing value.

Mother Characteristics. We include a variety of self-reported information about mothers. Demographic characteristics include age-measured as a continuous variable, and the number of children the father has with the mother, also measured as a continuous variable.

Analytical Strategy

Analyses were conducted in three stages. First, we derived the 12-month prevalence estimates for major depression for the full sample of resident fathers with ages from 17-81and non-resident fathers with ages from 17-66. All estimates were weighted by national sampling weights to adjust for selection probabilities and demographic characteristics. Therefore data are representative of all non-marital births in the 20 U.S. cities with populations over 200,000. Second, the socio-demographic correlates of major depression were examined using contingency table analyses. Third, we used Ordinary Least Squares Regression models controlling for social and demographic covariates to examine whether father's reports of major depression were associated with measures of father's individual and family level functioning. In other words, we examined whether major depression predicted to father-child activities, father's aggravation/stress in parenting, and the quality of the co-parental relationship (conflict and supportiveness).

OLS models were built using hierarchical regression. First, each event of interest is modeled using the major depression as the primary predictor. At the second stage of the model building process, the effects of father's socio-demographic characteristics are tested independently of other variables. At a subsequent stage, additional variables, including child characteristics and mother characteristics, are added to the models to measure their effects on father's individual and family-level functioning and the size and statistical significance of the major depression coefficient.

RESULTS

Demographic Characteristics of the Sample

Table 1 presents the demographic characteristics of the sample. The results were weighted to make these data representative of non-marital births in large U.S. cities with populations over 200,000.

Resident Fathers. A total of 2,137 resident fathers in 18 cities received the CIDI-SFMD. At the time of the 12-month interview, these fathers ranged in age from 17 to 81 years with the mean age being 29.9 years. The largest group of respondents were non-Hispanic black (67.7%), followed by Hispanic (17.2 %), non-Hispanic white (10.6) Asian (2.7 %), and American Indian/Eskimo/Aleut (1.8%). The majority of these fathers received less than high school level education (38.6%), followed by high school level education (36.1%) and high school and higher level education (25.2%). The majority of these fathers are employed—65%, while 35% are unemployed. Less than 19% live below the poverty line. These resident fathers have children with ages that range from 1-32 months. Roughly 10.4 % of these fathers reported having ever used marijuana/pot/cocaine/crack/heroin/LSD in the month prior to the survey. Roughly 7.4 percent of resident fathers reported major depression in the month prior to the survey.

Non-Resident Fathers. A total of 801 non-resident fathers who had contact with the child in the past month in 18 cities received the CIDI-SFMD during the 12-month interview. At the time of the 12-month interview, these fathers ranged in age from 17 to 66 years with a mean age of 27.4 years. Almost 40 % of non-resident fathers are non-Hispanic black, 27% are Hispanic, 26.9% are non-Hispanic white, and 6.1% belong to the "other" racial category. These fathers have a variety of educational backgrounds, with 28.5% of non-residential fathers reported having less than high school or lower level of education, 32.1% completed high school or a GED, and 39.4% completed high school or higher education. Roughly 19.1% of these fathers lived in households with incomes below the poverty line. Their children range in age from 1-32 months. Roughly 6.3 % of these fathers

reported having ever used marijuana/pot/cocaine/crack/heroin/LSD in the month prior to the survey. Roughly 2.8% of non-resident fathers reported 12-month major depression.

[Table 1 about here]

Prevalence of 12-month major depression

Estimates of the prevalence of major depression are presented in Table 2 for both resident and non-resident fathers. The 12-month period prevalence of major depression among resident fathers age 17-81 in the Fragile Families 12-month Father survey was 5.4 % with 95% confidence limits of 4.3% and 10.4 %. For non-resident fathers age 17-66 the 12 –month period prevalence of major depression was 2.8% with 95% confidence limits of 1.5% and 4.4 percent.

[Table 2 about here]

Socio-demographic correlates of 12-month major depression

We examined the socio-demographic correlates of major depression in Table 2. The results are presented separately for resident and non-resident fathers.

Resident Fathers. The prevalence of major depression according to father's socio-demographic characteristics is for the most part in accordance with prior research (Blazer, Kessler, McGonagle, & Swartz, 1994. While there are no statistically significant differences in prevalence estimates by age group, the highest prevalence of 12-month major depression according to age-group is for fathers age 35-44 with 9% of fathers in this age group reporting 12-month major depression. There are significant differences by race in the prevalence of major depression. Results indicate that the highest estimated prevalence of major depression is among Hispanic fathers who reported 7.7% prevalence. Prevalence estimates differ significantly by marital status. Separated/divorced fathers reported a higher prevalence of depression compared to never-married fathers with the lowest prevalence—6.4% compared to 1.5%. Analyses done according to educational level also indicate that prevalence estimates do not differ significantly by educational levels. Prevalence estimates do not significantly differ by educational levels, but they do however, differ by employment status.

Unemployed resident fathers reported the highest prevalence (14.2%) while employed fathers reported the lowest estimated prevalence (8.3%)-indicating significant differences by employment status. Similarly, fathers below the poverty line reported the highest estimated prevalence of 12-month major depression—7.5% while fathers above the poverty line reported a lower prevalence (4.9%), although findings are not significantly different by poverty status. Resident fathers with a history of substance use reported a significantly higher prevalence of 12- month depression (13.9%) compared with resident fathers with no history of substance use who reported a lower prevalence (6.5%).

Non-Resident Fathers. Among non-resident fathers, prevalence estimates for major depression are consistent with the literature linking socio-demographic characteristics to major depression. Table 2 shows that among non-resident fathers, there are no significant prevalence estimates by age. Prevalence estimates do however differ significantly according to race. The results indicate that the highest estimated prevalence of major depression among non-resident fathers is among Hispanic fathers with reported prevalence estimates of 5.2%. Prevalence estimates also differ significantly according to marital status with separated/divorced fathers reporting a significantly higher prevalence of depression (5.2%) compared to never-married fathers with the lowest reported prevalence (1.9%). Differences in the prevalence of major depression by educational level are not significant, but are significantly different according to employment status. Unemployed resident fathers report the highest prevalence, (3.2%) while employed fathers reported the lowest estimated prevalence (2.6%). Similarly, prevalence estimates differ by poverty status. Non-resident fathers below the poverty line reported the highest estimated prevalence of 12-month major depression—5.2% while fathers above the poverty line reported a lower prevalence (2.1%). Non-resident fathers with a history of substance use reported a significantly higher prevalence of 12- month depression (4 %) compared with resident fathers with no history of substance use who reported a lower prevalence (2.0%).

[Table 2 about here]

Associations between 12-month major depression and father's individual and family functioning

To estimate the associations between 12-month major depression and measures of father's individual and family-level functioning, we estimated a series of ordinary least squares regression models (OLS). Table 3 presents the results of these analyses for father-child activities, paternal aggravation/stress in parenting, and the quality of the co-parental relationship (conflict and supportiveness).

Major Depression and Father-Child Activities. Table 3 *(Models 1 and 2)* presents the results of our analyses regarding the association between 12-month major depression and father-child activities (father engagement). We hypothesized that major depression would be negatively associated with father-child activities (engagement) for both resident and non-resident fathers. This hypothesis is supported because there is a significant negative association between depression and father-child activities, suggesting that the presence of depression reduces the frequency of fathers' engagement with young children. This association holds for both resident and non-resident fathers controlling for a variety of socio-demographic characteristics. Table 3 (*Model 1)* shows that for resident fathers, additional factors that are negatively associated with father-child activities include being in the race category "other", being never married, and having more than one child with the mother of the child. Covariates that are positively associated with father-child activities include being a young father (age 17-24), and not being employed in the week prior to the survey (being unemployed). For non-resident fathers (*Model 2*), the factors that are positively associated with father-child activities include being a younger father (ages 17-24). Factors that are negatively associated with father-child activities include living below the poverty line (as opposed to above), being a never-married non-resident father, not having regular work in the week prior to the survey (being unemployed), and having more than one child with the biological mother. Taken together

these results suggests that paternal depression as measured by the CIDI-SF appears to be a valid construct that overlaps with relevant aspects of father's functioning—specifically father-child interactions.

Major Depression and Paternal Aggravation/Stress in Parenting. Table 3 (*Models 3 & 4*) show the results of the test of the associations between father's 12-month major depression and paternal aggravation/stress in parenting. Consistent with prior research done on mothers, the results here also indicate that depression is positively associated with aggravation/stress in the parenting role for fathers. There is a significant positive association between father's aggravation/stress in parenting and 12-month major depression for both resident and non-resident fathers controlling for various socio-demographic characteristics. For *resident* fathers, the covariate that is negatively associated with paternal aggravation/stress in parenting is being a Hispanic father. Covariates that are positively associated with paternal aggravation/stress in parenting for resident fathers include belonging to the race category "other," having less than high school level education (compared with high school and above), and not being employed in the week prior to the survey. Among *non-resident* fathers, the covariates that are significant and positively associated with paternal aggravation/stress in parenting include belonging to the "other" race category, and having spent time in a correctional facility. The covariates that significantly reduce paternal aggravation/stress in parenting are having a father age 35-44, being a Hispanic father (as opposed to non-Hispanic white), being never-married, and being in a cohabiting union or being separated/divorced. In sum, these results suggest that major depression is associated with father's parenting specifically increases in paternal aggravation/stress in parenting.

Major Depression and the Co-Parental Relationship (Support). For resident fathers we estimated models of the associations between paternal depression and the levels of supportiveness between mothers and fathers. Table 3 (*Models 5 & 6*) shows that depression is negatively associated with relationship support controlling for various social and demographic covariates. These findings suggest that being a depressed father reduces co-parental relationship support. Other covariates that

are significant and negatively associated with co-parental support for resident fathers include being a younger father (age 17-24), being of the racial category "other", and being never-married. For non-resident fathers, there is no significant association between major depression and co-parental relationship support.

Major Depression and the Father-Mother Relationship (Conflict). Table 3 (*Models 7 & 8)* show the results of the association between major depression and co-parental relationship conflict. For resident fathers there is a significant negative association between major depression and co-parental conflict. This association is not significant for non-resident fathers. Among resident men, the covariates that are significant and negatively associated with co-parental conflict include belonging to the race category other", being never-married, living below the poverty line, and having spent time in a correctional institution. For non-resident other factors that are significant and positively associated with relationship conflict include being a father age 35-44, or being classified as belonging to the "other" race. Covariates that are significant and negatively associated with co-parental relationship conflict include being a never-married non-resident father, being separated or divorced, and having high school and high school or GED level education.

[Table 3 about here]

DISCUSSION

Recall that the goal of these analyses was to examine the prevalence of 12-month major depression measured by the CIDI-SF, the socio-demographic correlates of major depression, and associations with father's individual level and family-level functioning in a sample of resident and non-resident fathers. These analyses were conducted using 12-month data from fathers in the Fragile Families and Child Well-Being Study. There was little missing data for the measure for both resident and non-resident fathers, suggesting that fathers are not reluctant to respond to questions that have been developed to assess the extent to which they have depressive symptoms. Our analyses support most of our hypotheses.

Our first objective was to derive prevalence estimates of major depression. Our analyses indicate 5.4 percent of resident fathers report depressive symptoms, while 2.8 percent of non-resident fathers report depressive symptoms. These prevalence estimates are consistent with prior research done on the prevalence of major depression using the CIDI-SF among samples of men, although not fathers. Prevalence estimates are very similar to those from reviews of several epidemiological studies that suggest that the prevalence rate for depression varies from 2.6% to 5.5% for men (Blazer, Kessler, McGonagle, & Swartz, 1994).

Our second objective was to examine the socio-demographic correlates of major depression. We hypothesized that the prevalence of major depression will differ according to father's socio-demographic characteristics: age, education, income-level, race, marital status, and employment status. Consistent with our hypotheses, for the most part, the socio-demographic correlates reported here are consistent with previous investigations in suggesting variations in the prevalence of major depression.

With regard to marital status for example, we find that for both resident and non-resident fathers there are significant differences in the prevalence of major depression, with the highest estimated prevalence of major depression among the divorced/separated. A vast literature documents that divorced persons have lower levels of psychological well-being than their married counterparts (Mirowsky & Ross, 1989). This includes depression. Divorced fathers with absent children often feel guilt, frustration, anxiety, a sense of longing, sadness, and emptiness due to the loss of an ongoing relationship with their children (Gerson, 1993; Kruk, 1992). Similarly, non-resident fathers often feel a loss of control over their children's lives (Feldman, 1990), and in the divorce process (Arendell, 1995; Umberson & Williams, 1993). This loss of control may be manifested as psychological distress (Mirowsky & Ross, 1989).

Our findings about differences in the prevalence of depression by income and employment status are also consistent with prior research that has shown that depression is higher among fathers

with low socio-economic status (with regard to income, education, and employment) (Stack, 1990,Gove, 1990). This general pattern suggests that mental disorders are most likely to occur in disadvantaged sectors of society. However, the causal dynamics of this are less clear because this pattern could be due to the cumulative effects of environmental adversity or to selection processes, or to some combination of social causation and selection (WHO, 2000).

Our findings also suggest differences in the prevalence of major depression by race. We find that depression is highest among fathers who are ethnic minorities. There are divergent views in the literature questioning the relationship between ethnicity/race and depression, suggesting that the relationships between ethnicity and race are debatable. Our findings suggest that particular characteristics of ethnicity and race may influence psychological well-being (National Advisory Mental Health Council, 1998). These differences in depression by race may be a result of cultural beliefs about the nature of mental illness that may influence the fathers' view of the course of treatment of any condition; may reflect differences in how fathers from different cultural backgrounds experience and manifest symptoms of mental illness; and the diagnoses of mental disorders may vary across cultures and moreover among subcultures. Race differences in depression may also reflect the fact that some fathers are more vulnerable to develop depression as a result of their subordinated and defeated status (as in the case of members of minority groups).

Like some previous studies on the relationship between major depression and age, our study finds that for both resident and non-resident fathers there are no significant differences in prevalence estimates for younger versus older fathers. Several studies find an association between age and depression, however findings are inconclusive. Some studies suggest that the likelihood of depression is rare before adolescence (Birmaher et al., 1996), and declines in later middle age or early old age. In contrast, recent evidence from patient samples and community samples in the USA and Europe suggest that major depression is common in older adults (Beekman et al., 2002). Our study finds that differences in prevalence estimates by age are not significant.

Our third objective was to examine associations between paternal depression and father's individual level and family-level functioning. Specifically we hypothesized that major depression will be negatively associated with father-child activities (engagement), positively associated with paternal aggravation/stress in parenting, and negatively associated with co-parental conflict and relationship supportiveness. Our analyses support all of these hypotheses. These associations were found for both resident and non-resident fathers.

Consistent with our hypothesis, our results suggest that the presence of major depression reduces the frequency of fathers' engagement with young children. The literature linking paternal depression to father's functioning suggests that paternal depression may affect a father's ability to engage his child in activities (Ballard & Davies, 1996). When fathers have negative emotion or moods, both symptoms of depression, engagement with children becomes more conflictual (Larson and Pleck, 1997), and levels of positive engagement decrease (Pleck, 1997). Fathers experiencing psychological distress are also more likely to not respond to their children, or even become hostile (Conger, Conger, Elder, Lorenz, Simons, and Whitbeck, 1993; DeLuccie and Davis, 1991; Almeida, Wethington, and McDonald, 2001). In general, depressed parents can be less warm, and provide less structure for interaction (Cohn, Cowan, Cowan, and Pearson, 1993, as cited in Herring and Kaslow, 2002). Our results suggest that this is also the case for fathers in this sample.

We also tested the hypothesis that paternal depression would be positively associated with paternal aggravation/stress in parenting. We found that this hypothesis was supported for both resident and non-resident fathers. While little has been done on depression and paternal aggravation/stress in parenting for fathers, what we do know about parenting among depressed mothers suggests that parenting skills such as emotional availability, reciprocal behavior, involvement, and positive attitudes and interactions tend to be less common for depressed mothers compared to non-depressed mothers (Mowbray, Oyserman, Bybee, and MacFarlane, 2002). Studies have found that depressed mothers provide less encouragement, affection and responsiveness in their

parenting (Scherer, Melloh, Buyck, Anderson, and Foster, 1996; Goodman and Brumley, 1990). Psychological distress disrupts effective parenting behaviors (perhaps through parental stress) resulting in strained parent-child dyads and less positive parenting behaviors (Gyamfi, Brooks-Gunn, and Jackson, 2001; Almeida, Wethington, & Chandler, 1999; Crouter, Bumpus, Head, & McHale, 2001). We find this to be supported in our analyses for both resident and non-resident fathers.

Finally, we tested the hypothesis that depression will be negatively associated with the co-parental relationship (quality and supportiveness). We found that for resident fathers there is a significant negative association between major depression and the quality of the co-parental relationship as well as relationship support controlling for various social and demographic covariates. These associations were not however significant for non-resident fathers. Prior research suggests that among married individuals who do suffer from mental illness, there exists evidence suggesting that their impaired mental states have a detrimental impact on the quality of marriage (Hulson, 1992; Mannion, Mueser, & Solomon, 1994; Whisman & Bruce, 1999). Divorce rates are significantly higher among couples in which at least one member suffers from a psychiatric condition (Hulson, 1992). Depressed couples tend to rate their marriages significantly worse in all areas of functioning than do non-depressed couples and to state that their marriages did not meet their expectations. Marital discord is often experienced both by the depressed individual and by the non-depressed spouse. Mental illness often causes lifestyle changes such as restricted social and leisure activities, economic hardship, feelings of isolation, and a lack of support. These changes may account for a decrease in marital quality among individuals suffering from mental illness (Hulson, 1992; Mannion, Mueser, & Solomon, 1994). Our findings are in support of this literature.

While our findings are promising, there are several limitations of this work that should be noted. First, unlike some studies that validate the CIDI-SF using various research diagnostic criteria, this study took such findings concerning the diagnostic screening potential of the CIDI-SFMD as given. It used the CIDI-SF not as a diagnostic tool, but as an index of the severity of depression

(Weissman & Klerman, 1997). Second, it is conceivable that prevalence estimates based on these data are less accurate that those in the modified versions of the instrument or that the CIDI diagnoses are less consistent with clinical diagnoses. It is likely that some respondents in community surveys consciously fail to disclose information about mental disorders or substance-use disorders both to lay interviewers and to clinical interviewers because of embarrassment or concerns about discrimination. The type the bias could be stronger among males than others, which could account for differences in our prevalence estimates for fathers compared to those in other epidemiological studies.

Third, it does not necessarily follow that short form measures such as the one used in this study will achieve equivalent precision in measuring depression. Although some sacrifice in precision is likely with short measures, compared with lengthier ones, these short form instruments may represent a gain in precision relative to single item measures that are more coarse. Tradeoffs between short and long-form measures in detecting changes in depression over time are currently being evaluated in the National Comorbidity Survey (Kessler et al., in press).

Our study is also limited by the fact that these data are cross-sectional, and longitudinal data are not yet available to examine consistency in prevalence estimates and changes over time in major depression in our sample of fathers. Future studies of this short form measure should evaluate how well it discriminates among groups differing in diagnosis and disease severity. This will help establish the limits of the short form measure and understand the tradeoffs involved in its use.

In addition, critics of the CIDI-SF for major depression claim that this instrument may identify depressive symptoms that are closely related to, but not identical with DSM-IV defined major depression. Patten (1997) found that unlike the full CIDI, the CIDI-SFMD incorporates no distinction between depressive disorders and bereavement. The instrument does not exclude depressive symptoms that are related to physical illness or drug exposures, nor does it differentiate those circumstance where severe depressive symptoms are not pathological, such as bereavement. In

short the CIDI Short Form is vulnerable to errors in diagnostic classification that may translate into systematic error in the estimation of population parameters such as relative risk.

Despite these limitations, the present study offers much to the field. First, correlations among the depression measures and socio-demographic characteristics were similar to correlations observed using other measures of depression (cite). It seems particularly important to replicate findings to assess the stability of these patterns, to determine whether estimates generalize across different samples and measurement characteristics. The findings from this study also provide data on a central issues in understanding paternal depression: that depressed mood is a fairly prevalent experience for new fathers, and further, that it is linked to distinctive behavior patterns in families, involving both mother-father and father-infant interactions. The study underlines the importance of considering the possibility of paternal depression among new fathers. The coping capacity of men in relation to issues of family functioning has long been taken for granted. Clearly, while all families in which the father is depressed require intervention, some families will need more specific and intensive interventions directed at the depression of both partners, or less commonly, of the father alone.

References

Almeida, D.M., Wethington, E., & McDonald, D.A. (2001). Daily variation in parental engagement and negative mood: implications for emotionally supportive and conflictual interactions. *Journal of Marriage and the Family 63*(2), 417-429.

Andrews, G. & Peters, L. The CIDI-Auto: A computerized diagnostic interview for psychiatry. World Health Organization Collaborating Centre for Mental Health and Substance Abuse. Retrieved April 1, 2004 from http://www.crufad.unsw.edu.au/cidi/discuss.htm.

Areias, M. E. G., Kumar, R., Barros, H., & Figueiredo, E. (1996). Correlates of postnatal depression in mothers and fathers. *British Journal of Psychiatry*, 169, 36-41.

Ballard, C. & Davies, R. (1996). Postnatal depression in fathers. *International Review of Psychiatry 8*(1), 54-72.

Ballard, C.G., Davis, R., Cullen, R. N., Mohan, R.N., Dean, C. (1994). Prevalence of postnatal psychiatric morbidity in mothers and fathers. *British Journal of Psychiatry 164*, 782-788.

Beaudet MP. (1996). Depression. *Health Reports 7*(4), 11-24.

Brown, A.C., Brody, G.H., & Stoneman, Z. (2000). Rural black women and depression: A contextual analysis. *Journal of Marriage and the Family 62*(1), 187-198.

Carro, M. G., Grant, K. E., Gotlib, I. H., & Compas, B. E. (1993). Postpartum depression and child development: An investigation of mothers and fathers as sources of risk and resilience. *Development and Psychopathology 5*, 567-579.

Cohn, D.A., Cowan, P.A., Cowan, C.P., & Pearson, J. (1993). Mothers' and fathers' working models of childhood attachment relationships, parenting styles, and child behavior. *Development of Psychopathology 4*, 417-431.

Conger, R.D., Conger, K.J., Elder, G.H., Lorenz, E.O., Simons, R.L., & Whitbeck, L.B. (1993). Family economic stress and adjustment in early adolescent girls. *Developmental Psychology 29*, 206-219.

Crawford, D. (2000, May 7). Depression Associated with Increased Risk for Heart Disease in Men and Women; Depressed Men Also Have Increased Risk of Death [Press release]. *Archives of Internal Medicine, May 8, 2000.*

Deater-Deckard, K., Pickering, K., Dunn, J., & Golding, J. (1998). Family structure and depressive symptoms in men preceding and following the birth of a child. *American Journal of Psychiatry, 155*(6), 818-823.

DeLuccie, M.E., & Davis, A.J. (1991). Do men's adult life concerns affect their fathering orientations? *Journal of Psychology 125*, 175-188.

Dudley, M., Roy, K., Kelk, N., & Bernard. D. (2001). Psychological correlates of depression in fathers and mothers in the first postnatal year. *Journal of Reproductive and Infant Psychology 19*(3), 187-202.

Ferketick A. K., Schwartzbaum J. A., Frid D. J., & Moeschberger M. L. (2000). Depression as an antecedent to heart disease among women and men in the NHANES I study. National Health and Nutrition Examination Survey. *Archives of Internal Medicine*,*160*(9), 1261-1268.

Field, T.M., Hossain, Z., & Malphurs, J. (1999). "Depressed" fathers' interactions with their infants. *Infant Mental Health Journal, 20*(3), 322-332.

Foley, D.L., Pickles, A., Simonoff, E., Maes, H.H., Silberg, J.L., Hewitt, J.K., et al. (2001). Parental concordance and comorbidity for psychiatric disorder and associated risks for current psychiatric symptoms and disorders in a community sample of juvenile twins. *Journal of Child Psychology and Psychiatry and Applied Disciplines 42*, 381-394.

Gelfand, D. M., & Teti, D. M. (1990). The effects of maternal depression on children. *Clinical Psychology Review, 10*, 329-353.

Heath, D.T., McKenry, P.C., & Leigh, G.K. The consequences of adolescent parenthood on men's depression, parental satisfaction, and fertility in adulthood. *Journal of Social Service Research 20*(3-4), 127-148.

Herring, M. & Kaslow, N.J. (2002). Depression and attachment in families: A child-focused perspective. *Family Process 41*, 494-518.

Hoard, L.R., & Anderson, E.A. (2004). Factors related to depression in rural and urban noncustodial, low-income fathers. *Journal of Community Psychology 32*(1), 103-119.

Hossain, Z., Field, T., Pickens, J., Gonzalez, J., Malphurs, J., & Delvalle, C. (1994). Infants of "depressed" mothers interact better with their nondepressed fathers. *Infant Mental Health Journal, 15*, 348-357.

Johnson, S.L., & Jacob, T. (2000). Moderators of child outcome in families with depressed mothers and fathers. In Johnson, Hayes, et al. (Eds.) *Stress, Coping, and Depression*. Mahwah, NJ: Lawrence Erlbaum Associates, Publishers.

Keitner, G.I. (Ed.) (1990). *Depression and Families: Impact and Treatment.* Washington, DC: American Psychiatric Press, Inc.

Kessler, R.C., Andrews, G., Mroczek, D., Utsun, B., & Wittchen, H. (1998). The World Health Organization Composite International Diagnostic Interview Short-Form (CIDI-SF). *International Journal of Methods in Psychiatric Research, 7*(4), 171-185.

King, C.A., Segal, H.G., Naylor, M., & Evans, T. (1993). Family functioning and suicidal behavior in adolescent inpatients with mood disorders. *Journal of the American Academy of Child & Adolescent Psychiatry 32*(6), 1198-1206.

Larson, R. & Pleck, J. (1999). Hidden feelings: Emotionality in boys and men. In Bernstein, D. (Ed.), *Gender and motivation*. Lincoln, NE: University of Nebraska Press.

Marchand, J.F., & Hock, E. (2003). Mothers' and fathers' depressive symptoms and conflict-resolution strategies in the marriage and children's externalizing and internalizing behaviors. *The Journal of Genetic Psychology, 164*(2), 227-239.

Marmorstein, N.R., & Iacono, W.G. (2004). Major depression and conduct disorder in youth: Associations with parental psychopathology and parent-child conflict. *Journal of Child Psychology & Psychiatry & Allied Disciplines 45*(2), 377-386.

McBride, B.A. (1989). Stress and father's parental competence: Implications for family life and parent educators. *Family Relations 38*, 385-389.

Merikangas, K.R., Prusoff, B.A., & Weissman, M.M. (1988). Parental concordance for affective disorders: Psychopathology in offspring. *Journal of Affective Disorders 15*, 279-290.

National Institute of Mental Health. (2002). Depression. Bethesda, MD: Author. Retrieved March 25, 2004, from http://www.nimh.nih.gov/publicat/depression.cfm.

Nelson, C.B., Kessler, R.C., and Mroczek, D. (1998). *Scoring the World Health Organization's Composite International Diagnostic Interview Short Form* (CIDI-SF; v1.0 NOV98).

O'Hara, M. W. (1995). Depression and marital adjustment during pregnancy and after delivery. *American Journal of Family Therapy, 4,* 49-55.

Oquendo, M. A., Ellis, S. P., Greenwald, S., Malone, K. M., Weissman, M. M., & Mann, J. J. (2001). Ethnic and sex differences in suicide rates relative to major depression in the United States. *American Journal of Psychiatry, 158*, 1652-1658.

Patten, S.B. (1997). Performance of the Composite International Diagnostic Interview Short Form for Major Depression in Community and Clinical Samples. *Chronic Diseases in Canada 18*(3).

Patten, S.B., Brandon-Christie, J., Devji, J., & Sedmak, B. (2000). Performance of the Composite International Diagnostic Interview Short Form for Major Depression in a Community Sample. *Chronic Diseases in Canada 21*(2).

Pesonen, A., Raikkonen, K., Strandberg, T., Keltikangas-Jarvinen, L., & Jarvenpaa, A. (2004). Insecure adult attachment style and depressive symptoms: Implications for parental perceptions of infant temperament. *Infant Mental Health Journal 25*(2), 99-116.

Phares, V. (1997). Psychological adjustment, maladjustment, and father-child relationships. In M. E. Lamb (Ed.), *The role of the father in child development*. New York: John Wiley & Sons.

Pleck, J. (1997). Paternal involvement: Levels, sources, and consequences. In M. E. Lamb (Ed.), *The role of the father in child development*. New York: John Wiley & Sons.

Pope, S. (2000). *Postnatal depression: A systematic review of published scientific literature to 1999.* Canberra, Australia: NHMRC.

Preuss, U.W., Schuckit, M.A., Smith, T.L., Barnow, S., & Danko, G.P. (2002). Mood and anxiety symptoms among 140 children from alcoholic and control families. *Drug & Alcohol Dependence 67*(3), 235-242.

Psychiatric Times. (2003). NIMH launches campaign aimed at men with depression. *Psychiatric Times 20*(5), 19.

Real, T. (2000). Depression: The hidden epidemic. *Psychology Today*, Jan/Feb 2000, 14.

Smyth, J. (2003, November 9). New fathers not immune from postpartum depression. *Chicago Sun-Times*. Retrieved November 21, 2003, from http://www.suntimes.com/output/health/cst-nws-dep09.html

Walters, E.E., Kessler, R.C., Nelson, C.B., & Mroczek, D. (2002). Scoring the World Health Organization's Composite International Diagnostic Interview Short Form (CIDI-SF). Retrieved May 14, 2004, from http://www3.who.int/cidi/CIDISFScoringMemo12-03-02.pdf.

Zaslow, M.J., Pedersen, F.A., Cain, R.L., Suwalsky, J.T.D., & Kramer, E.L. (1985). Depressed mood in new fathers: Associations with parent infant interactions. *Genetic, Social, and General Psychology Monographs 111*, 133-150.

Zelkowitz, P. & Milet, T. H. (1995). Screening for postpartum depression in a community sample. *Canadian Medical Association Journal, 40*, 80-85.

Appendix A.

CIDI Short Form for Major Depression, Fragile Families Father Survey

During the past 12 months, has there ever been a time when you felt sad, blue, or depressed for two or more weeks in a row?

YES NO NO, ON MEDICATION/ANTI-DEPRESSANTS

For the next two questions, please think of the two week period during the past 12 months when these feelings were the worst. During that time, did the feelings of sad, blue, or depressed usually last . . .

All day long, Most of the day, About half of the day, or Less than half of the day?

During those two weeks, did you feel this way . . .

Every day, Almost every day, or Less often?

During those two weeks, did you lose interest in most things like hobbies, work, or activities that usually give you pleasure?

YES NO

WAS RESPONDENT SAD, BLUE, OR DEPRESSED FOR 2 WEEKS?

YES *NO*

DID FEELING LAST ALL, MOST, OR HALF OF THE DAY?

YES NO

DID RESPONDENT FEEL THIS WAY EVERY DAY OR ALMOST EVERY DAY?

YES NO

During the past 12 months, has there ever been a time lasting two weeks or more when you lost interest in most things like hobbies, work, or activities that usually give you pleasure?

YES NO NO, ON MEDICATION/ANTI-DEPRESSANTS

For the next few questions, please think of the two-week period during the past 12 months when you had the most complete loss of interest in things. During that two-week period, did the loss of interest usually last . . .

All day long, Most of the day, About half of the day, or Less than half of the day?

Did you feel this way every day, almost every day, or less often during the two weeks?

Every day, Almost every day, or Less often?

Thinking about the same two weeks, did you feel more tired out or low on energy than is usual for you?

YES NO

Did you gain or lose weight without trying, or did you stay about the same? PROBE: We are still talking about the same two weeks.

GAIN LOSE IF VOLUNTEERED: BOTH GAINED AND LOST WEIGHT

STAY ABOUT THE SAME IF VOLUNTEERED: MOTHER WAS ON A DIET

About how much did(you gain/ you lose/your weight change)?

/INSERT #/ POUNDS

Did you have more trouble falling asleep than you usually do during those two weeks?

YES NO

Did that happen every night, nearly every night or less often during those two weeks?

EVERY NIGHT NEARLY EVERY NIGHT LESS OFTEN

During those two weeks, did you have a lot more trouble concentrating than usual? PROBE: We are still talking about the same two weeks.

YES NO

People sometimes feel down on themselves, no good, or worthless. During that two week period, did you feel this way?

YES NO

Did you think a lot about death – either your own, someone else's, or death in general during those two weeks?

YES NO

Table 1: Descriptive Statistics of Variables Used in the Analysis, Major Depression among Fathers in the Fragile Families, 12-Month Father Survey

	Non-resident Fathers		Resident Fathers	
Variable	**Mean or frequency**	**SD**	**Mean or frequency**	**SD**
Major Depression (CIDI-SF)				
12-Month Major Depression	5.4	0.3	2.8	0.4
Father's Age				
17-24	45.3	0.49	26.8	0.44
25-29	39.3	0.48	47.9	0.49
30-44	12.4	0.32	21.9	0.41
45+	3.2	0.17	3.4	0.48
Father's Education Level				
Less than high school	38.6	0.48	28.5	0.45
High school/ GED	36.1	0.48	32.1	0.46
High school +	25.2	0.43	39.4	0.48
Father's Employment Status				
Unemployed	65.0	0.50	83.4	0.62
Employed	35.1	0.47	16.6	0.37
Father's Race				
Non-Hispanic White	10.6	0.44	26.8	0.44
Non-Hispanic Black	67.7	0.49	41.7	0.49
Hispanic	17.2	0.44	27.1	0.44
Other	4.6	0.20	4.4	0.20
Marital Status				
Seperated/Divorced	3.9	0.07	0.6	0.07
Married	3.4	0.49	47.8	0.49
Never Married	79.2	0.22	5.4	0.22
Cohabiting	13.6	0.49	46.3	0.49
Poverty Level				
< Poverty Line (100%)	18.7	0.45	19.1	0.39
> Poverty Line	81.3	0.55	80.9	0.60
Child Gender				
Male	51.3	0.49	52.4	0.49
Female	49.7	0.50	47.6	0.50
Substance Use				
Used marijuana or pot	10.4	0.24	6.3	0.24
Number of Children with the Mother	1.4	0.79	1.6	0.91
Mother's Age	24.8	5.65	27.3	6.18
Dependent Variables				
Father-Child Activities (Engagement)	24.3	14.10	38.3	9.88
Paternal Aggravation/Stress in Parenting	4.1	2.67	4.6	2.74
Father-Mother Relationship (Conflict)	15.2	2.70	12.9	3.96
Father-Mother Relationship (Support)	9.2	1.35	8.1	2.24
n	801		2,137	

Table 2. Prevalence of major depression by socio-demographic characteristics of resident and non-resident fathers in the Fragile Families and Child Well-Being Study, 12-Month Father Survey

	Resident Fathers			Non-Resident Fathers		
Characteristic	**Unweighted, n**	**Percentage (95% CI) with major depression**	**Contingency table analysis results**	**Unweighted, n**	**Percentage (95% CI) with major depression**	**Contingency table analysis results[a]**
Total	2,137	5.4 (4.3-10.4)	—	801	2.8% (1.5%-4.4%)	—
Age (Years)						
17-24	572	7.3 (5.0-6.7)		363	2.2 (1.7-2.8)	
25-29	1023	7.0 (5.1-8.8)		315	2.1 (1.6-2.6)	
30-44	469	9.0 (6.5-11.5)		99	2.1 (1.2-3.1)	
45+	73	7.6 (0.8-14.5)	F= 1.60	24	1.0 (-1.2-3.2)	F= 1.02
Race/Ethnicity						
Non-Hispanic White	560	6.8 (4.7-8.9)		81	2.3 (1.1- 3.4)	
Non-Hispanic Black	872	7.0 (4.2-9.8)		516	1.9 (1.4- 3.6)	
Hispanic	566	7.7 (5.4-10.0)		131	5.2 (3.0- 8.1)	
Other	91	1.6 (1.0-2.1)	F= 3.16*	35	0.5 (0.2- 2.2)	F= 5.68***
Marital Status						
Seperated/Divorced	12	6.5 (3.4-9.6)		31	5.2 (4.2-6.3)	
Married	1021	2.7 (1.7-3.2)		27	2.3 (0.9-3.7)	
Never Married	115	1.6 (0.7-2.4)		631	1.9 (1.5-2.3)	
Cohabiting	989	0.6 (0.3-0.8)	F= 6.15***	108	2.5 (-0.3-1.4)	F= 15.72***
Education						
< High School	609	8.3 (5.6-10.9)		309	2.3 (1.7-2.9)	
High School/ GED	985	6.1 (3.6-8.6)		289	1.8 (1.2-2.4)	
High School +	840	8.2 (6.3-10.2)	F= 0.68	202	2.3 (1.7-2.9)	F= 0.57
Current Employment Status						
Unemployed	354	14.3 (10.4-18.1)		279	3.2 (2.7-3.9)	
Employed	1776	8.3 (5.6-9.1)	F= 12.62***	522	2.6 (1.5- 3.6)	F= 19.58***
Poverty Level						
< Poverty Line (100%)	294	7.6 (5.9-9.2)		84	5.2 (2.2- 6.8)	
> Poverty Line	1274	5.0 (1.3-8.7)	F= 1.52	717	2.1 (0.9-3.4)	F= 4.0
Substance Use						
History of Substance Use	135	14.0 (7.4-20.6)	F= 3.76*	83	4.1 (2.9-5.2)	
No History of Substance Use	1998	6.5 (4.0-8.1)		718	2 (1.6-2.3)	F= 11.74***

[a] Design-based F test

* p <0.05; ** p >0.01; ***p >0.001

Table 3. Ordinary Least Squares (OLS) Regression Models of the Effects of Paternal Depression on Father Child Activities, Paternal Aggravation, and the Co-Parental Relationship (Conflict and Support), Fragile Families 12-Month Father Survey

Variable	Father-Child Activities				Paternal Aggravation/Stress in Parenting				Co-Parental Relationship (Support)				Co-Parental Relationship (Conflict)			
	Resident Fathers Model 1		Non-Resident Fathers Model 2		Resident Fathers Model 3		Non-Resident Fathers Model 4		Resident Fathers Model 5		Non-Resident Fathers Model 6		Resident Fathers Model 7		Non-Resident Fathers Model 8	
	β	S. E.	β	S. E.	β	S. E.	β	S. E.	β	S. E.	β	S. E.	β	S. E.	β	S. E.
Paternal Depression	-1.10 *	(1.12)	-1.63 *	(2.22)	0.59 *	(0.30)	1.53 **	(0.46)	-1.65 ***	0.30	0.21	(0.73)	-0.74 **	(0.14)	0.62	0.46
Father's Age																
17-24	1.18 +	(0.93)	3.77 +	(2.06)	0.36	(0.25)	0.29	(0.43)	-0.42	0.24	-0.05	(0.68)	-0.42 ***	(0.12)	-0.74 *	0.37
35-44	0.35	(0.76)	0.80	(2.84)	0.31	(0.20)	-1.50 *	(0.60)	-0.03	0.20	3.30 ***	(0.97)	-0.11	(0.10)	0.66	0.49
45+	1.91	(1.61)	1.32	(4.96)	-0.34	(0.43)	0.55	(1.10)	-0.40	0.42	0.52	(2.44)	-0.03	(0.20)	0.49	1.15
Father's Race																
Non-Hispanic black	0.89	(0.83)	-0.49	(2.29)	-0.23	(0.22)	-0.58	(0.49)	-0.23	0.22	1.25	(0.77)	-0.04	(0.11)	0.34	0.43
Hispanic	-0.94	(0.75)	-1.42	(2.66)	-0.46 *	(0.20)	-1.13 *	(0.55)	0.14	0.20	1.71 +	(0.86)	0.01	(0.10)	0.81 +	0.47
Other	-2.55 *	(1.19)	0.10	(3.28)	1.23 ***	(0.32)	1.69 *	(0.71)	-1.41 ***	0.31	3.90 ***	(1.09)	-0.57 ***	(0.15)	1.41 *	0.59
Marital Status																
Never-married	-6.73 ***	(1.90)	-3.39 ***	(3.56)	0.65	(0.51)	-2.32 **	(0.72)	-3.38 ***	0.54	-1.93 +	(1.02)	-1.10 ***	(0.25)	-1.65 **	0.53
Cohabiting	0.50	(0.82)	-2.86	(4.19)	0.08	(0.22)	-2.40 **	(0.86)	-0.08	0.21	0.50	(1.24)	-0.09	(0.10)	-0.67	0.64
Separated/divorced	-6.20	(9.80)	-6.56	(4.11)	0.56	(2.60)	-4.57 ***	(0.83)	0.32	2.99	-6.27 ***	(1.19)	-0.53	(1.19)	-2.61 ***	0.73
Poverty																
(1= Below pov. line)	-0.56	(0.86)	-8.52 ***	(2.42)	-0.24	(0.23)	0.67	(0.51)	-0.56 *	0.23	-1.25	(0.82)	0.21 +	(0.11)	-0.54	0.45
Education Level																
<High School	-0.25	(0.88)	-1.06	(2.22)	0.60 **	(0.23)	0.11	(0.46)	0.00	0.23	-1.24 +	(0.71)	0.06	(0.11)	-0.98 **	0.37
HS/GED	0.77	(0.72)	-1.89	(2.06)	0.35 +	(0.19)	0.32	(0.44)	0.11	0.19	-2.69 ***	(0.72)	0.06	(0.09)	-0.43	0.36
Employment Status																
(1= Unemployed)	3.16 **	(1.01)	-8.10 ***	(2.16)	0.64 **	(0.27)	-0.14	(0.44)	0.48 +	0.26	-0.03	(0.66)	0.11	(0.13)	0.26	0.36
Criminal Justice Experience																
(1= Spent time in jail	-0.68	(1.12)	0.33	(2.42)	0.40	(0.30)	1.31 **	(0.50)	-0.89 **	0.29	-1.42 +	(0.79)	-0.04	(0.14)	-0.42	0.38
Substance Use																
(1= History of substance use)	-1.42	(1.54)	-1.06	(2.80)	0.24	(0.41)	1.02	(0.63)	-0.52	0.40	-0.40	(0.96)	-0.32	(0.20)	-0.58	0.61
Number of Children	-1.71 ***	(0.33)	2.64 **	(0.89)	-0.08	(0.09)	0.28	(0.19)	-0.12	0.09	0.04	(0.28)	-0.05	(0.04)	0.31 *	0.15
Mother's Age	-0.05	(0.07)	-0.35 +	(0.18)	0.04 +	(0.02)	0.05	(0.04)	-0.02	0.02	-0.01	(0.07)	0.00	(0.00)	-0.03	0.03
Child's Age (Months)	0.12	(0.09)	0.05	(0.23)	-0.02	(0.02)	-0.05	(0.05)	0.02	0.02	0.16	(0.07)	0.00	(0.01)	0.04	0.04
Child Gender																
(1= Male)	0.88	(0.57)	2.24	(1.67)	0.01	(0.15)	0.39	(0.36)	0.26 +	0.15	0.08	(0.56)	0.07	(0.07)	-0.86 **	0.30
R2																
η																

*p<.05. **p<.01. ***p<.001.