

# Impact of a Father Figure's Presence in the Household on Children's Psychiatric Diagnoses and Functioning in Families at High Risk for Depression

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**Abstract** The consequences of living in single-parent households on children's wellbeing are well documented, but less is known about the impact of living in single-mother households among children with high familial risk for depression. Utilizing data from an ongoing three-generation study of high-risk families, this preliminary study examined a sample of 161 grandchildren of probands diagnosed with major depressive disorder, comparing those in single-parent households to those in dual-parent households with household status defined as the full-time presence of a resident male in the home. High-risk children were compared across households in terms of psychiatric diagnoses (measured by Schedule for Affective Disorders and Schizophrenia for School-Age Children; K-SADS-PL) and global functioning (assessed by Global Assessment Scale, child version; C-GAS). Results indicated that high-risk children in single-parent households had 4.7 times greater odds for developing a mood disorder and had significantly lower mean C-GAS scores ( $p = 0.01$ ) compared to those in dual-parent

households. Differences remained significant when controlling for household income, child's age, and either parent's depression status. There were no significant differences between high-risk children across households when household status was instead defined as legal marital status. This study has several limitations: sample size was small, probands were recruited from a clinical population, and participants had not passed completely through the period of risk for adult psychiatric disorders. These findings point towards the importance of identifying and closely monitoring children at risk for depression, particularly if they reside in households without a resident father figure.

**Keywords** Fathers · Single mothers · Marital status · Depression · Child psychiatric diagnoses

## Introduction

The number of children living in single-parent homes is a fast-growing segment in society. According to the Census Bureau, in 2011 there were over 14 million single-parent households in the United States, more than 80 % of which are headed by single mothers (Grall 2013). In 2009, one-fourth of the 75 million children under age 18 resided in a single-mother family (Mather 2010). This trend is of interest given a substantial body of research showing consistently poorer cognitive, socioemotional, and behavioral outcomes among children raised in single-parent families compared to children living in dual-parent families. These outcomes include higher externalizing behavioral problems (Ackerman et al. 2001; Carlson and Corcoran 2001), academic impairment (Gross et al. 2001; Pong et al. 2003), delinquency (Anderson 2002), earlier

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initiation of substance use and sexual activity (Flewelling and Bauman 1990), as well as internalizing problems, depression and anxiety (Franz et al. 2003; Hetherington 2008; Pryor and Rodgers 2001; Rydell 2010; Thomson et al. 1994).

While the exact mechanisms by which family structure affects children's wellbeing are not yet fully understood, studies have postulated that children living in single-parent homes face multiple environmental stressors, placing them at risk for developing emotional and behavioral difficulties. Studies suggest that, compared with children raised by two parents in the same household, children in single-parent households, particularly those from single-mother ones, are exposed to higher rates of poverty, adverse life events, and lower levels of perceived social support from friends and family (Cairney et al. 2003; Wang 2004; Weinraub and Wolf 1983). Relatedly, single parents tend to experience higher rates of stress and psychopathology than do those in dual-parent households, with particularly negative consequences for their children who are deprived of healthy interactions in the absence of a second caregiver (Cairney et al. 2003; Connell and Goodman 2002; Franz et al. 2003; Weissman et al. 1987).

The effects of single-parenthood on children's well-being may be far more deleterious among offspring that are already at increased risk for psychopathology due to familial risk for depression. The intergenerational transmission of major depressive disorder (MDD) is well documented in the literature (Sullivan et al. 2000). Children of depressed parents are three times more likely to develop depression themselves than those of nondepressed parents, and the risk for psychopathology is even higher for children who come from families with two generations of MDD (Weissman et al. 2005). Among this high-risk population, the additional burden of living in a single-parent home may be particularly detrimental.

Research suggests that the presence of a father figure in the household may provide a form of support that buffers the effect of familial risk of depression for the child. This is partly explained by the fact that, in dual-parent households, presence of a father figure provides financial support and offers greater financial stability (Luthar 1999). However, the salutary effects of father involvement on child adjustment extend far beyond the tangible economic benefits of living in dual-parent homes. Single parents might have a limited capacity to monitor their children's well-being due to the increased load of occupational and caregiving obligations. In this light, father figure presence is a much needed source of social and emotional support, a well-established factor in promoting child resilience (Armstrong et al. 2005). Considering that single-mothers have disproportionately higher rates of MDD and elevated levels of psychological distress compared to married mothers

(Cairney et al. 2003), the absence of a father figure may be particularly damaging for children raised in single-mother households. Evidence suggests that paternal support is associated with lower maternal depression symptomatology and decreased level of risk in children, even after adjusting for financial factors (Goodman and Gotlib 1999; Talati et al. 2007). However, little attention has been directed to the role of father figure presence on child well-being among high risk families.

The goal of the present study was to address this gap in the literature by examining the role of a father figure's presence in the household among high-risk youth who are susceptible to mental health problems due to high familial risk for depression. The study utilized previously collected data from a three-generation study of high risk families (depressed probands, their children, and their grandchildren). This preliminary study examined a subsample of the original dataset to examine whether children in single-parent households (no father figure present in the household) would have more psychiatric diagnoses and lower global functioning than children of dual-parent households (father figure present in the household). Father figure presence was defined in two ways: (1) full-time residence in the household; and (2) legal marital status. Results contribute to the growing body of literature investigating the role of a father figure in the intergenerational risk of depression. It also begins a line of research on a specific sample of high-risk children.

## Method

### Participants

The present study focuses on children from the third generation of an ongoing longitudinal, three-generation study that was initiated in 1982 examining longitudinal patterns of MDD within families (Weissman et al. 2005, 2006). The study sample has been described elsewhere in detail; probands (referred to as Generation 1; G1), their children (G2) and their grandchildren (G3) have undergone multiple follow-ups: wave 1 (baseline), wave 2 (2 year follow-up), wave 3 (10-year follow-up) and wave 4 (20-year follow-up).

Of the 188 offspring eligible for inclusion, information was obtained on 156 (83 %) at wave 4. An additional 15 offspring (8 %) who were interviewed at wave 3 but were unavailable for wave 4 data collection were added to the sample, resulting in information on 171 of the 188 G3 offspring. The authors determined that combining data in this manner was methodologically sound because: (1) outcome data is lifetime, and not based on current or wave-

specific diagnoses; (2) the statistical models take into account varying follow-up lengths; and, (3) offspring with no Wave 4 data were evenly distributed between the single- and dual-parent households. Similar approaches have been used in a number of other publications based on this sample (Weissman et al. 2005, 2006).

While collecting data, the original investigators found that 10 of the 171 G2 offspring were not biologically related to G1 but were adopted or were offspring of married-in G1 participants. These offspring were excluded from the present analyses, yielding a final sample of 161 (85.6 %) of the 188 G3 offspring. Data were available from direct interviews of 133 (83 %) of 161 G3 offspring. Twenty-eight (17 %) of the 161 G3 offspring had information provided by the parent only. There were no significant differences between offspring with interview versus informant-only information by G1 diagnostic status. Ninety-three percent (80/86) of G2 with eligible G3 offspring were re-interviewed during the current wave of data collection.

The G3 offspring used in the current analyses did not significantly differ by G1 depression status or by gender, however, they differed significantly by age [ $M_{(low-risk\ group)}$  10.7 years;  $M_{(high-risk\ group)}$  13.8 years]. There were 91 high-risk G3 offspring, with 15 % ( $n = 14$ ) from nine families living in single-parent households, and 60 low-risk G3 offspring with 20 % ( $n = 12$ ) living in single-parent households (see Fig. 1). However, because relatively few low-risk G3 offspring had psychiatric diagnoses and were generally low in psychopathology, a formal test of differences between the high- and low-risk groups could not be conducted.

The current analyses are preliminary and use a subsample of G3 high-risk children (children with

grandparents diagnosed with MDD). Because the goal of this study was to examine the role of the father's presence in the household on psychiatric diagnoses and functioning in offspring at high familial risk for depression, and not in a population setting, focus was maintained on the high-risk families. While directly comparing rates across the high and low risk families might have further enriched analyses, there were both fewer offspring and lower rates of psychopathology in the low-risk groups, and so there lacked sufficient power to independently examine the low-risk group or to directly test for differences between the high and low risk offspring.

## Procedure

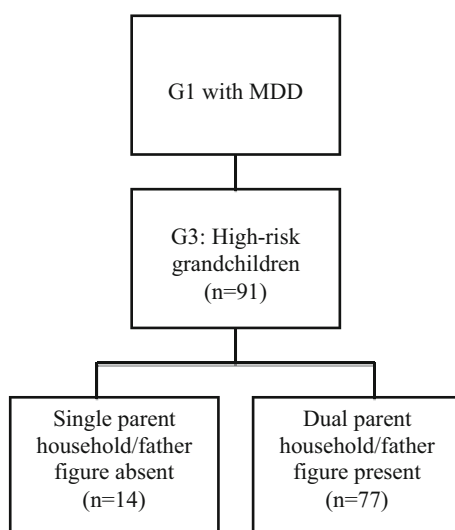
The full details of the procedure for waves 1–4 have been previously described (Weissman 1997; Weissman et al. 1987, 1992, 2006). Briefly, in the original study probands (G1) with MDD were selected from outpatient clinical specialty settings for the treatment of mood disorders and had moderate to severe MDD that resulted in functional impairment. Nondepressed probands without any lifetime history of psychiatric illness were selected at the same time from a sample of adults from the same community. Children (G2) and grandchildren (G3) followed, forming the second and third generations, respectively.

This study uses data collected from the 10-year (Wave 3) and 20-year follow-up (Wave 4). The G3 s were assessed during the 20-year follow-up (Wave 4 data collection). The authors chose to examine outcomes at Wave 4, as more offspring would have entered the age of risk for major psychopathology. High-risk status could not be defined by depression status in G2 because the study design was based on the depression status of G1. It has been previously shown in this sample that transmission of major depression is multi-generational, and that both children and grandchildren of depressed probands are at increased risk for adverse psychopathological and behavioral outcomes (Weissman et al. 2005, 2006). Additionally, the present analyses could not examine the role of the presence of a father figure on G2 because most of G1 remained married throughout the study.

Data collection and analyses of the sample used in this study were approved by the Institutional Review Board at New York State Psychiatric Institute/Columbia University, and informed consent was obtained from all participants.

## Classification of Household Status

G3 offspring were categorized into two groups depending on whether they were living with a full-time resident male who was the biological father of at least one child in the household: (1) single-parent households characterized by



**Fig. 1** Flow-chart of sample

absence of a father figure; and (2) dual-parent households, in which a father figure was present. Household status was determined based on G2 data during the 10-year follow-up (Wave 3). Because this determination was made prior to the assessment of children's psychiatric diagnoses and functioning (potentially running the risk that household status could change when psychiatric diagnoses and global functioning were assessed), an additional sensitivity analysis was conducted focusing only on those high-risk children that had no resident father figure for the entire duration of data collection, and there was no significant difference in findings. Of note, there were no unmarried G2 mothers in the sample residing with father figures, preventing us from making comparisons between G3 offspring with legally married parents and G3 offspring with co-residing (but not legally married) parents.

## Measures

Diagnostic interviews across all waves were conducted using a semistructured diagnostic assessment, the Schedule for Affective Disorders and Schizophrenia-Lifetime Version for adults (SADS-L; Mannuzza et al. 1986) and the child version, the Schedule for Affective Disorders and Schizophrenia for School-Age Children—Present and Lifetime Version (K-SADS-PL; Kaufman et al. 1997) modified for the DSM-IV (American Psychiatric Association 2000). Wave 4 data collection utilized the K-SADS-PL (Kaufman et al. 1997). The Global Assessment Scale (GAS; Endicott et al. 1976) was completed by Best-Estimate diagnoses (see below). The instrument is rated on a 100 % scale and provides an overall estimate of the person's current functioning based on all available information. A child version of the GAS (C-GAS; Shaffer et al. 1983) was used for children between the ages of 6 and 17 years. Scores lower than 70 on the C-GAS indicate functional impairment.

### *Interviewers and Best-Estimate Procedures*

The diagnostic assessments were administered by trained doctoral- and masters-level mental health professionals. All assessors were blind to the clinical status and previous history of the parents and grandparents. Training remained the same across all waves of data collection (see Weissman et al. 1992 for full description of training). Final diagnoses for all generations were based on the best-estimate (BE) procedure commonly used in psychiatric interviews (Leckman et al. 1982). Briefly, it consists of two experienced clinicians who are not involved in the interviewing of the participant and are blind to depression status of other family members. BE interviewers review the interview forms and narrative accounts, as well as the participant's past diagnostic and

medical history, and assign a DSM diagnosis for current period as well as for lifetime together with a global functioning score. When there is disagreement among raters, a consensus diagnosis is reached. The inter-rater reliability scores for depressive disorders have been excellent, as previously reported (see Weissman et al. 2005).

In the current study, two experienced clinicians, a child psychiatrist (D.P.) and a psychologist (H.V.), who were not involved in the interviewing, and were independently blind to the diagnostic status of the previous generation or prior assessments, reviewed all the material and assigned a DSM-IV diagnosis and GAS score to each participant. One hundred seventy-eight cases randomly selected from all generations were co-rated by the two diagnosticians. Interrater reliability kappa scores were good to excellent (MDD, 0.82; dysthymia, 0.89; anxiety disorder, 0.65; alcohol abuse/dependency, 0.94; and drug abuse/dependency, 1.00). Diagnoses were cumulative across all waves of data collection. DSM-IV diagnoses at the probable/definite level of certainty were used for G3 because they had not fully aged through the risk period for psychopathology, whereas a diagnosis at the definite level was required for G1 and G2. A definite diagnosis required five out of the eight criteria for MDD to be met, with duration of depressed mood or loss of interest for 2 weeks or more, whereas a diagnosis at the probable level required either (1) three of the eight symptoms to be present, with the duration for the depressed mood/loss of interest for 2 weeks or more; or (2) four of the eight symptoms to be present, with the duration of the depressed mood/loss of interest for 1 week or more.

## Data Analyses

The association between presence/absence of a father figure and child diagnosis was estimated using a logistic regression analysis with presence/absence of child diagnosis as the binary dependent variable and father figure presence/absence as the independent variable. In order to determine whether G2 parental depression partly explained the association between father figure presence/absence and child diagnoses, parental depression was also included in the regression model, and the change in parameter representing the association between fathers's presence and child's diagnoses was investigated. Analyses were also adjusted for household income to control for the possible confounding effect of income on household status, as frequently reported in the literature (e.g., Brown and Moran 1997; Cairney et al. 2003; McLanahan and Sandefur 1994). Income was treated in the model both as a categorical variable (>\$40,000 = high income vs. <\$40,000 = low income, a cut-off derived from the distribution of the data) and a continuous variable to control for effects of arbitrary

cutoff, and the findings were unchanged as discussed below.

The association between father presence/absence and child C-GAS scores was estimated using a linear regression analysis with child C-GAS scores as the continuous dependent variable and father presence/absence as the independent variable. Parental depression status and household income were also included in the model in the same manner and for reasons described above. Associations between binary child outcomes and predictor variables were assessed by means of odds ratios while the effect of relevant predictors on continuous outcomes were assessed by means of beta parameters from linear regression models representing the rate of change in the conditional mean of the outcome variable with respect to a one unit change in the predictor variable. Both the logistic regression and linear regression analyses were performed within the framework of the generalized estimating equations (GEE) approach (Liang and Zeger 1986) by means of the GENMOD procedure within the SAS software package, in order to obtain estimates adjusted for non-independence of outcomes of offspring from the same family (SAS Institute Inc. 2012). Exchangeable working correlation matrices were used to account for correlation within each sibship for each family. Statistical tests of significance were based on empirical (robust) standard errors.

A note on table presentation: The authors focused on the three broad categories of “any mood disorder”, “any anxiety disorder”, and global functioning (C-GAS score), listing significant findings at the top of Tables 1 and 2. In the absence of significance testing, descriptive statistics on other diagnoses are listed below significant findings.

## Results

### Diagnoses and Functioning

After controlling for the age of G3 ( $M_{\text{dual parent}} = 12.08$  years,  $SD_{\text{dual parent}} = 5.00$ ;  $M_{\text{single parent}} = 10.3$  years,  $SD_{\text{single parent}} = 3.77$ ), 36 % ( $n = 5$ ) of high-risk G3 offspring in single-parent households were diagnosed with a mood disorder compared to 20 % ( $n = 15$ ) of high-risk G3 offspring in dual-parent households. Twenty-one percent ( $n = 3$ ) of high risk G3 offspring in single-parent households were diagnosed with MDD as compared to 10 % ( $n = 8$ ) of high risk G3 offspring in dual-parent households. The odds of being diagnosed with a mood disorder were 4.7 greater for high-risk G3 offspring in single-parent households compared to high-risk G3 offspring in dual-parent households (OR: 4.7, CI: 1.4, 15.3;  $p < 0.01$ ) (See Table 1). In terms of anxiety disorders, 14.3 % ( $n = 2$ ) of G3 offspring living in single-parent households were

overanxious compared to 2.6 % ( $n = 2$ ) of high-risk G3 offspring living in dual-parent households. For all major outcomes, offspring with psychiatric diagnoses did not cluster within the same family.

In terms of functional adjustment, high-risk G3 offspring were functioning significantly better when living in dual-parent households compared with those in single-parent households, as evidenced by a mean C-GAS score of 80.1 (“good functioning in all areas”) compared to 75.5 (“minor impairment”), respectively ( $p = 0.01$ ) (See Table 1). Furthermore, 38 % of G3 offspring without father figures had mean C-GAS scores below 70 (functional impairment) compared to only 11.5 % of G3 offspring with father figures ( $\chi^2 = 6.2$ ,  $p = 0.01$ ; see Table 1).

### Controlling for Household Income

In order to investigate whether household income was confounded with single-parent status, analyses with statistically significant findings were re-run, controlling for household income. When household income was controlled, high-risk G3 offspring in single-parent households were still significantly more likely to be diagnosed with a mood disorder compared to high-risk G3 offspring in dual-parent households. This finding was significant whether household income was controlled as a continuous variable (OR 4.48, CI 1.22, 18.17,  $p = 0.02$ ; see Table 1) or as a categorical variable with \$40,000 used as the cut-off (OR 4.06; CI 1.17, 14.88,  $p = 0.03$ ; data not shown). In terms of functional adjustment, the finding that high-risk G3 offspring in dual-parent households were functioning significantly better than those in single-parent households became marginally significant when household income was controlled as a continuous variable ( $B = -6.3$ ,  $SE = 3.5$ ,  $p = 0.06$ ; Table 1), but did not reach statistical significance when income was treated as a categorical variable ( $B = -5.2$ ,  $SE = 3.7$ ,  $p > 0.05$ ; data not shown).

### Controlling for G2 Depression Status

When analyses were adjusted to account for age and depression in *either* G2 parent, the association between high-risk G3 offspring in single-parent households and the likelihood of being diagnosed with a mood disorder remained significant (OR 4.1, CI 1.1, 11.1;  $p = 0.03$ ; see Table 1); the finding that high-risk G3 offspring in dual-parent households were functioning significantly better than those in single-parent households also remained significant ( $p = 0.03$ ; see Table 1).

Furthermore, when analyses were adjusted to account for age and *maternal* G2 depression the association between high-risk G3 offspring in single-parent households

**Table 1** Effects of father status on DSM-IV disorders and C-GAS scores

G3 diagnoses	Father figure (N = 77) N (%)	No Father figure (N = 14) N (%)	Model 1 OR (95 % CI)	Model 2 OR (95 % CI)	Model 3 OR (95 % CI)
Any mood disorder	15 (20.0)	5 (35.7)	4.7 (1.4, 15.3)**	4.48 (1.22,18.17)*	4.1 (1.1, 11.1)*
Any anxiety	25 (32.5)	4 (28.6)	0.92 (0.23, 3.63)	0.67 (0.20, 2.36)	0.53 (0.23, 1.18)
CGAS score	80.1 (10.1)†	75.5 (11.6)†	−8.3 (3.1) **‡	−6.3 (3.5)+‡	−7.1 (3.2)**‡
<i>G3 diagnoses (descriptives)</i>					
MDD	8 (10.4)	3 (21.4)			
Dysthymia	7 (9.1)	2 (14.3)			
Panic	2 (2.6)	2 (14.3)			
Separation anxiety	4 (5.1)	1 (7.1)			
OCD	1 (1.3)	0 (0.0)			
Overanxious	2 (2.6)	2 (14.3)			
Any phobia	18 (23)	2 (14.3)			
Mood or anxiety	28 (36.4)	5 (35.7)			
Conduct disorder	3 (3.9)	0 (0.0)			
ADD	5 (6.5)	2 (14.3)			
Any disruptive	15 (19.0)	2 (14.3)			
Any substance	4 (5.2)	1 (7.1)			
Any disorder	33 (42.9)	6 (42.9)			

38 % of offspring with no father-figure had C-GAS scores below 70, while only 11.5 % of offspring with fathers has C-GAS scores under 70 ( $\chi^2 = 6.2, p = 0.013$ )

OR odds ratio, CI confidence interval, SE standard error

Model 1 = Adjusted for age only

Model 2 = Adjusted for age and household income (continuous variable)

Model 3 = Adjusted for age and either parent MDD

† Mean (SE)

‡ Beta (SE)

+  $p < 0.10$ ; \*  $p < 0.05$ ; \*\*  $p < 0.01$

and the likelihood of being diagnosed with a mood disorder remained significant (OR 3.7, CI 1.2, 11.1,  $p = 0.02$ ). The finding that high-risk G3 offspring in dual-parent households were functioning significantly better than those in single-parent households also remained significant ( $p = 0.01$ ). However, when analyses were adjusted to account for G3 age and *paternal G2 depression* the association between high-risk G3 offspring in single-parent households and the likelihood of being diagnosed with a mood disorder trended toward significance (OR 3.7, CI 0.09, 14.4;  $p = 0.06$ ), and the finding that high-risk offspring in dual-parent households were functioning significantly better than those in single-parent households was no longer significant.

Thus, the association between high-risk G3 offspring in single-parent households and the likelihood of being diagnosed with a mood disorder was not accounted for by G2 depression status when entered in analyses as *either* maternal or paternal G2 depression, or as maternal G2 depression individually. However, when paternal G2

depression status was entered into analyses individually the associations lost significance.

### Marital Status Versus Father Presence in the Home

No significant differences were found between high-risk G3 offspring in single- versus dual-parent households when household status was determined using *legal marital status* instead of *actual presence of a resident father figure*, even after adjusting for age, income, and G2 MDD status (See Table 2). These results indicate that by using actual father figure presence to determine household status, analyses are more sensitive to significant findings that would have been masked if household status was determined by legal marital status. In the present study, for example, all fathers who met the presence in the home criteria were also legally married, but the converse was not true; 6 fathers (30 % more) met the legally defined status but were not present in the home.

**Table 2** Effects of father status on DSM-IV disorders and C-GAS scores, using legal marital status instead of presence of resident father-figure

G3 diagnoses	Father figure ( <i>N</i> = 63) <i>N</i> (%)	No father figure ( <i>N</i> = 20) <i>N</i> (%)	Model 1	Model 2	Model 3
Any mood disorder	13 (20.6)	5 (25.0)	1.26 (0.40, 4.01)	0.83 (0.25, 3.00)	1.36 (0.38, 4.95)
Any anxiety	2 (3.2)	2 (10)	0.65 (0.18, 0.42)	0.35 (0.14, 0.99)	0.61 (0.16, 2.34)
C-GAS score	80.8 (1.4) <sup>†</sup>	76.3 (2.7) <sup>†</sup>	−4.35 (2.79) <sup>‡</sup>	−4.70 (3.29) <sup>‡</sup>	−4.70 (3.39) <sup>‡</sup>
<i>G3 diagnoses (descriptives)</i>					
MDD	8 (12.7)	3 (15.0)			
Dysthymia	7 (11.1)	2 (10.0)			
Panic	21 (33.3)	5 (25.0)			
Separation anxiety	4 (6.0)	1 (5.0)			
OCD	1 (1.5)	0 (0.0)			
Overanxious	2 (3.1)	2 (10)			
Any phobia	15 (23.8)	3 (15.0)			
Mood or anxiety	24 (38.1)	6 (30.0)			
Conduct disorder	2 (3.1)	0 (0.0)			
ADD	4 (6.3)	2 (10.0)			
Any disruptive	14 (22.2)	3 (15.0)			
Any substance	3 (4.7)	2 (10.0)			
Any disorder	28 (44.4)	8 (40.0)			

OR odds ratio, SE standard error, CI confidence interval

Model 1 = Adjusted for age only

Model 2 = Adjusted for age and household income

Model 3 = Adjusted for age and either parent MDD

<sup>†</sup> Mean (SE)

<sup>‡</sup> Beta (SE)

## Discussion

The study aimed to investigate the association between presence of a father figure in the household and child psychopathology and functioning in a sample of high-risk youth. The major finding of this study was that the presence of a father figure in the household was significantly associated with lower risk for mood disorders among high-risk G3 offspring. Our results indicated that the odds of developing a mood disorder were 4.7 times greater for high-risk G3 offspring living in single-parent households without a father figure present, compared to those residing with a father figure in dual-parent homes. Not only were these children at greater risk for developing a mood disorder, they had significantly lower mean C-GAS scores suggesting that the children without a father figure present in the household functioned significantly worse than those with a resident father figure.

The relative risk for developing a mood disorder among high-risk G3 children without resident father figures remained significant even when household income was controlled either continuously or categorically. This finding is in sharp contrast with other studies showing poverty or

financial hardship to be the principal mediating factor in the relationship between single-parent status and psychological well-being in these parents (e.g., Brown and Moran 1997; Cunningham and Knoester 2007; Hope et al. 1999; McLanahan and Sandefur 1994). Our results are in agreement with Cairney et al. (2003) who found that even when taking into account household income, social stressors (e.g., perceived social support) had the most impact on the relationship between single-parent status and depression.

Analyses further revealed that the relative risk for developing a mood disorder among high-risk G3 children without resident father figures held true even when controlling for MDD in either G2 parent. Examining the depression status of either G2 parent more closely, results indicated that the likelihood of a mood disorder diagnosis in G3 children remained significant ( $p = 0.02$ ) when analyses adjusted for maternal MDD, whereas the finding trended toward significance ( $p = 0.06$ ) when analyses adjusted for paternal MDD. Thus, when paternal MDD was controlled, the differences between high-risk children with and without a father figure present became less salient, suggesting that there is more to investigate in high-risk dual-parent households beyond father presence or absence.

The way in which father presence interacts with child adjustment is still not completely understood, especially in light of this finding. Other variables (i.e., the quality of the child's relationship with either parent) may be significantly related to the child's well-being, and warrant further investigation based on these findings.

Additionally, by using actual father figure presence to determine household status, analyses were more sensitive to significant findings that would have been masked if household status was determined by legal marital status. The presence of a male companion might have provided social support that enabled the mothers to function better and to respond better when undergoing treatment for depression (Talati et al. 2007). If the current analyses had examined father presence by legal marital status only, as opposed to residence status, they would have missed the contribution that "companionship" made to our findings. These analyses provide evidence to support assessing household status by actual father figure presence in the household in addition to legal marital status, and assessing it in multiple ways to be sure that measurements and findings related to this construct are truly valid.

This study is limited by several factors. First, G1 probands were selected from an ambulatory depression clinic, so results may not be generalizable to community samples. Second, the sample size of this study was small, which lowered the power of the analyses, increased the chances of Type I error, and did not allow for exploration of demographic characteristics such as gender, education, and ethnicity. Without exploring these and other potentially explanatory variables, the current analyses do not provide a clear understanding of how the presence of a resident father figure influences child mood disorders. For instance, some research (Lamb 1987; Tannenbaum and Forehand 1994) has drawn attention to the importance of the quality of the relationship between father and child, and gaining a more refined understanding of father involvement that includes engagement, accessibility, and responsibility. Future research should investigate salient dimensions of father involvement and the quality of the relationship with the child, such as closeness, warmth, accessibility, and trust.

Also limiting this study is the uncharacteristically small number of single-parent households in this sample (15 %), which, among other things, suggests that the sample may not be representative of the general population. Another limiting factor is the timing of the determination of single-parent household status. Because this was ascertained at the time of data collection, it is possible that household status might have changed over the course of the study. However, the running of an additional sensitivity analysis, focusing only on those high-risk children that had no father figure in the household for the entire duration of assessment, found no significant difference in findings.

Finally, the mean age of G3 participants at the time of data collection was 13.4 ( $SD = 5.4$ ), which is an age where these children have not yet passed through the period of risk for adult psychiatric disorders. Even though this is a limiting factor, it is still important to initiate an investigation of a specific group of children. Starting this line of research has important clinical implications; it allows for further investigations and follow-ups conducted by future investigators as more data is collected.

These findings have important clinical and research implications. Children of grandparents diagnosed with MDD and who lack a resident father figure should be identified and considered for treatment by health professionals, who are likely to have a family mental health history available to them and are also likely to know a child's current household make-up. Intervention is particularly essential among depressed single-mothers, as the impact of maternal depression on child functioning appears to be heightened and long-lasting in the absence of a resident father figure. Talati et al. (2007) examined the relationship of the presence of a father figure in the household to maternal depression remission and child outcomes. The authors followed mothers who reached full remission over 3 months of treatment and dichotomized their mother-child pairs based on the presence or absence of a full-time resident male in the household. They found that, even after adjusting for socioeconomic indicators and maternal mental health variables, a significant association existed between father presence in the household and maternal depression remission. Compared to children of dual-parent households, children of depressed single mothers exhibited lower global functioning scores that remained stable even when their mother's depression remitted. In addition, children of single mothers who did not remit exhibited a 2.6 % increase in diagnoses (Talati et al. 2007).

The current findings extend Talati et al.'s findings, suggesting that even when maternal depression status was controlled, high-risk G3 children in households without a father figure present were still more likely to be diagnosed with a mood disorder and suffer more impaired functioning compared to high-risk children in households with a father figure present. These findings are consistent with past research supporting the moderating effects of paternal presence in high-risk families (Goodman and Gotlib 1999; Smith and Howard 2008; Tannenbaum and Forehand 1994).

Although fathers have an influence on various aspects of children's functioning, it is not clear how these effects vary across different family contexts. For example, father involvement may counteract the effects of negative circumstances in a child's life, such as those associated with maternal depression. Having a father figure present in the home may work indirectly by facilitating the mother's



improvement, which in turn may affect her children. It may also work directly, in that fathers might have interacted with children in a manner that may have buffered the impact of the mother's depression on her children. Results of these analyses suggest that father presence makes a significant difference in the lives of children at risk for depression, and future studies should investigate this finding further.

The findings of this preliminary study suggest that children of grandparents diagnosed with MDD should be identified and monitored closely for potential treatment, particularly if they reside in households without a father figure present, as this appears to increase their risk of developing a mood disorder and impairing their functioning. Future studies should investigate whether the presence of a father figure is a protective factor for high-risk youth, and if so, under what environmental conditions and for how long. Future work should also explore the quality of the father-child relationship and at what developmental stages and/or time points a father's presence is most effective in protecting a high-risk child from developing a psychiatric disorder or experiencing poorer global functioning.

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