The Effects of Multiple Dimensions of Risk and Protective Factors on Depressive Symptoms Among Nonresident African American Fathers

Kazumi Tsuchiya, MPH[1]

Yiqing Qian, MPH[1]

Alvin Thomas, PhD[2]

E. Hill De Loney, MA[3]

Cleopatra Howard Caldwell, PhD[1]

[1]University of Michigan, School of Public Health, Department of Health Behavior and Health Education, 1415 Washington Heights, Ann Arbor, MI, 48109

[2] Palo Alto University, 1791 Arastradero Road, Palo Alto, CA, 94304

[3]Flint Odyssey House, 1225 Martin Luther King Dr, Flint, MI 48502

Kazumi Tsuchiya - email: ktsuchi@umich.edu

Yiqing Qian - email: yqq@umich.edu

Alvin Thomas - email: athomas@paloaltou.edu

E. Hill De Loney - email: cpyd442@yahoo.com

Cleopatra Howard Caldwell - email: cleoc@umich.edu

Correspondence for this article should be addressed to Kazumi Tsuchiya, University of Michigan School of Public Health, Department of Health Behavior and Health Education, 1415 Washington Heights, Ann Arbor, MI, 48109. Email: ktsuchi@umich.edu.

Abstract

Compared to other groups, African American men experience proportionately greater adverse social and economic circumstances, which have been linked to poor mental health. A growing body of literature has begun to examine depressive symptoms among African American men; however, limited literature has examined the concurrent contributions of risk and protective factors among nonresident African American fathers. This study examined the relative contribution of perceived financial strain, perceived neighborhood characteristics, and interpersonal stress on depressive symptoms among 347 nonresident African American fathers. Social support was examined as a protective factor for depressive symptoms. Results from hierarchical regression analyses indicated interpersonal stress was associated with depressive symptoms even after controlling for perceived financial strain, perceived neighborhood characteristics, and specific socio-demographic factors. Additionally, among fathers with high interpersonal stress, having more social support buffered the negative effect of interpersonal stress on depressive symptoms. Findings suggest experiencing strain from multiple dimensions can increase the risk of depressive symptoms among nonresident African American fathers. We also found that interpersonal stress was especially harmful for mental health. Family service providers and mental health professionals should incorporate stress management techniques to reduce stressful interpersonal relationships as a way to lower depressive symptoms among nonresident African American fathers.

Introduction

Compared to other groups, African American men experience proportionally greater adverse social and economic circumstances that negatively affect their health (Watkins, 2012; Williams, 2003) and lead to disproportionate burdens in morbidity and mortality (Gilbert et al., 2016). However, the majority of the research has focused on the overall health of African American men rather than their mental health (Watkins, 2012), even though mental health is the

most stigmatized of all the health concerns faced by this group (Holden, McGregor, Blanks, & Mahaffey, 2012). An understanding of the correlates of African American men's mental health requires a consideration of how social context, including their role as fathers, impacts mental health (Garfield, Clark-Kaufmann, & Davis, 2006). Psychosocial (e.g., perceived neighborhood quality, perceived discrimination) and socio-demographic (e.g., income, employment) factors have been linked to poor mental health outcomes for African American men (Gary, Stark, & LaVeist, 2007; Ward & Mengesha, 2013; Watkins, 2012). Social support has also been found to be protective for mental health (Anderson, Kohler, & Letiecq, 2005; Lincoln, Taylor, Watkins, & Chatters, 2011). However, little is known about predictors of mental health among African American fathers, and specifically, among fathers who do not live with their children.

Sinkewicz and Lee (2010) found that over a twelve-month period, African American fathers had higher rates of depressive symptoms compared to the general population. A national study also found high rates of depression among fathers who were US-born Blacks of Caribbean descent and low rates of mental health service use for both African American and foreign-born Caribbean Black fathers (Author). Based on prior empirical evidence, exploring potential risk factors (e.g., perceptions of the physical and social environment) in addition to critical socio-demographic and protective factors (e.g., social support) is necessary for understanding depressive symptoms among nonresident African American fathers.

Socio-demographic shifts in the US have profoundly affected family structures and dynamics, and the role of fathers (Garfield, et al., 2006). Rates of non-marital births have also increased, with approximately 70% of African American children being born to unmarried mothers (Hamilton, Martin & Osterman, 2016). Despite these changes, most African American fathers prioritize and value their roles and responsibilities as fathers and providers (Edin, Tach, & Mincy, 2009). In addition, nonresident fathers are often involved in their child(ren)'s lives, independent from their relationship with the mother (Author; Tach, Mincy, & Edin, 2010). Among middle-aged African American men, their perceived stress around fulfilling their role as a provider and father (role stain) is central to their identity as men (Hammond & Mattis, 2005). These men may face additional challenges in fulfilling the provider role when they are experiencing poor mental health (Watkins, 2012).

Nonresident African American fathers face multiple sources of stress including role strain due to employment and income challenges. Using a risk and resiliency framework we examine

multiple factors related to depressive symptoms among this population. Compensatory models of risk and resilience have examined simultaneously the relative contributions of stressors and protective factors on health outcomes (Fergus & Zimmerman, 2005), like depressive symptoms. Numerous scholars have examined the protective role of perceived social support on depressive symptoms (Anderson et al., 2005; Taylor, Chae, Lincoln, & Chatters, 2015); however, this link has not been explored among nonresident African American fathers while considering multiple risk factors. The purpose of this study is to examine the influence of perceived financial strain, perceived neighborhood characteristics, interpersonal stress, and social support on depressive symptoms among nonresident African American fathers.

Multiple Risk Factors and Nonresident African American Fathers

Disproportionate numbers of African American men face low socioeconomic status (SES) and barriers to education (Williams, 2003). Additionally, at every educational level, African American men earn less compared to white men (Issacs, Sawhill, & Haskins, 2007). Using national data, Lincoln and colleagues (2011) found that employment may be protective against depressive symptoms among African American men, over and above the effects of education and income. A study comprised of low-income African American and Latino fathers found that over half of these fathers were not working due to poor health or a disability and about 40 percent of these fathers had not graduated from high school (Sorenson & Oliver, 2002).

Manhood and fatherhood have been interlinked with economic success, and barriers to achieving economic prosperity among African American fathers function as a form of gendered stress (Summers, 2004). African American men experience male gender role expectations that are derived from social and cultural norms, which may be a source of role strain for many of these men (Bowman, 2006). Some nonresident African American fathers face challenges in paying child support (Anderson, et al., 2005), which is a barrier to father involvement, especially among low-income nonresident fathers (Huang, Mincy, & Garfinkel, 2005). These fathers may also experience financial strain, which can be linked to a psychological response to economic hardship (Gutman & Eccles, 1999) and which has been linked to depressive symptoms (Kahn & Pearlin, 2006). Financial strain is associated with, but independent of income where the variation in the severity of financial stress among those with similar income levels may be due to the diversity of demands on income (e.g., family size, location of residence) (Kahn & Pearlin, 2006).

Despite the wealth in literature on income and health, financial strain and income have distinct differences in meaning and individual consequences for health.

A potential reciprocal association may also exist where fathers who are unable to pay child support may have poorer quality relationships with the mother and their child(ren) (Huang, et al., 2005), and vice versa (Paulson, Dauber, & Leiferman, 2011). Evidence has also shown that experiencing economic hardship influences interactions among family members, and contributes to lower relationship quality (Gutman, McLyod, & Tokoyawa, 2005; Ward & Mengesha, 2013). Low levels of paternal involvement have been linked to depressive symptoms among nonresident African American fathers, where symptoms in turn affected father's level of involvement (Author). Conversely, greater involvement was protective of fathers' mental health (Carlson & Turner, 2010). In sum, economic and relational risk factors contribute to a continual cycle that leads to multiple challenges, and further compromises the ability of African American fathers to fulfill their fatherhood roles. This in turn may contribute to depressive symptoms.

In addition, African American men often live in urban economically disadvantaged areas with high levels of unemployment and crime (Williams, 2003), which has implications for their mental health. Scholars have examined neighborhood effects on health (English, Lambert, Evans, & Zonderman, 2014; Florez, et al., 2016; Mujahid, Diez Roux, Morenoff, & Raghunathan, 2007), with an emerging area of research focused on perceived neighborhood characteristics and health (Kim, 2008; Rollings, Wells, & Evans, 2015). A large body of work has examined these effects using administrative U.S. Census data (neighborhood SES, racial and ethnic composition) (English, et al., 2014; Mujahid, et al., 2007); however, these objective measures do not include perceived neighborhood characteristics, which provide further nuance for how neighborhoods are salient for health (Kim, 2008). Perceived neighborhood characteristics including physical and social features of neighborhoods (e.g., graffiti, transportation, schools, crime, drugs) have been associated with psychological distress and depressive symptoms (Florez, et al., 2016; Gary, et al., 2007). Conversely, Florez and colleagues (2016) found that perceived neighborhood safety was associated with lower psychological distress among African Americans. The disintegration of processes and structures that maintain order and safety in the community may also affect mental health (Cutrona, Wallace, & Wesner, 2006). While neighborhood effects on mental health among African American residents have been explored (Gary, et al., 2007; English, et al., 2014; Florez, et al., 2016), additional

examination of these risk factors for depressive symptoms among nonresident African American fathers is warranted.

Social Support and Depressive Symptoms Among Nonresident African American Fathers

Positive social ties and number of social ties in one's network have been linked to fewer depressive symptoms among African Americans (Anderson, et al., 2005; Florez, et al., 2016; Taylor, et al., 2015). Social support is a multidimensional construct that has been assessed both at the community (e.g., social cohesion, integration), and the individual levels (e.g., quality of the relationship, network size) (Anderson, et al., 2005; Marcus, et al., 2015; Florez, et al., 2016; Woodward, Taylor, & Chatters, 2011). Social support can be perceived or provided along multiple dimensions including emotional (e.g., care), instrumental (e.g., material aid), and informational (e.g., advice) support (Cohen & Wills, 1985). Support is also examined as a global construct reflecting perceptions of quality of relationships and assistance from network ties (e.g., family, spouse, friends). Compared to African American women, African American men have smaller networks of support, are less likely to ask for help, and are more likely to seek assistance from fewer informal helpers relying on trusted and respected individuals of family and friends (Woodward, et al., 2011). Regarding the type of helper, African American men are more likely to seek help from their mothers or female partners (Plowden, et al., 2006; Allen, Griffith, & Gaines, 2012). However, the nuance in understanding who may be most supportive may differ across relationships. Little is known about multiple types of helpers in relation to the mental health among nonresident African American fathers. These fathers experience additional stress as a result of strained interpersonal relationships with the mother of their child(ren). For nonresident African American fathers, it is vital to understand how having multiple sources of support may be a protection against depressive symptoms in the presence of risk factors.

The Current Study

Using a risk and resilience framework (Fergus & Zimmerman, 2005), we specifically examined the contributions of perceived financial strain and neighborhood characteristics, interpersonal stress, along with social support on depressive symptoms among nonresident African American fathers. This framework posits that though nonresident fathers face adverse circumstances they may have access to social support that may mitigate the potential harmful effects of multiple risks that contribute to elevated depressive symptoms. These pathways represent the compensatory component of the risk and resiliency model. We also examined the

stress buffering effect of social support on interpersonal stress and depressive symptoms because of the challenges faced by these fathers in co-parenting relationships.

Hypotheses were tested based on prior evidence regarding the impact of the aforementioned risks and protective factors on depressive symptoms. Given the existing knowledge of the impact of financial hardship on depressive symptoms, we hypothesize that high levels of perceived financial strain will be associated with more depressive symptoms, even after controlling for socio-demographic covariates. We also hypothesized that perceived neighborhood characteristics will exacerbate depressive symptoms because of the risks that arise from living in disadvantaged communities. Due to the chronic and conflictual nature of co-parenting relationships among nonresident fathers, interpersonal stress may be salient to depressive symptoms over and above financial strain and neighborhood characteristics. As indicated above, social support will have a direct effect on depressive symptoms, and will moderate the effect of interpersonal stress on depressive symptoms among nonresident African American fathers. We expect that greater levels of support will reduce depressive symptoms among fathers with high levels of interpersonal stress.

Methods

Study Design and Sample

The sample used for the current study is from the Fathers and Sons Project. The Fathers and Sons Project is a theory-based and culturally relevant family intervention study funded by the Center for Disease Control and Prevention (Author). The study was developed to test the effectiveness of a family-based intervention for nonresident African American fathers and their pre-adolescent biological sons (see Author for evaluation results).

In the current study, we used baseline data from the intervention and comparison group of fathers prior to participating in the intervention (N=347). Fathers were surveyed one time prior to participating in the intervention (pretest), hence reflecting a cross-sectional design for the current analysis. The two groups were similar on all socio-demographic characteristics based on bivariate chi-square and t-test analyses, except that for the comparison group fathers were more likely to have lived with their son (see Author for further details). To account for these differences, "ever lived with son" was included as a covariate in the multivariate analysis. Families recruited into the study were located in two Mid-western industrial cities with similar demographic characteristics (see Author for further recruitment details). The majority of families

were recruited through schools with mothers and legal guardians as the initial source of contact by school staff. Fathers were recruited into the study through mothers. Local community organizations (e.g., churches and youth serving organizations) also assisted with recruitment. This study received Institutional Review Board (IRB) approval from both the university and a local hospital in the city where the intervention was conducted.

Fathers who participated in the Fathers and Sons Program were either already actively involved or were interested in being more engaged in their son's lives. Focus groups were conducted with nonresident African American men located in the city of the intervention with similar demographic characteristics as the sample. Findings indicated that fatherhood was a salient source of identity and experienced stress around fulfilling their provider role (Author). In the current study, the majority of the fathers (73%) indicated having a child support agreement for their sons (Author) and the majority were involved (some level of contact, closeness with their sons, monitoring), and reported low levels of conflict with their sons (Author). Depressed fathers had lower levels of involvement (less contact and engagement) with their sons (Author).

Measures

Depressive symptoms. A modified 12-item Center for Epidemiology Studies Depressive scale (CES-D) was used to measure depressive symptoms (Radloff, 1977). This scale has been reported to have good internal consistency and adequate psychometric properties. Numerous researchers have used this scale to examine psychological distress among African Americans and specifically, among men (Anderson, et al., 2005; Author; Roberts & Sobhan, 1992). The original CES-D measure includes 20-items; however, we used the modified 12-item measure created by Roberts and Sobhan (1992). Sample items included were: "I felt depressed," "My sleep was restless," and "I had crying spells." Response categories ranged from 0 (rarely) to 3 (most or all the time). The total CES-D score ranged from 0 to 36, and a score of nine and above indicates high depressive symptoms (Roberts & Sobhan, 1992). This scale demonstrated acceptable internal reliability ($\alpha = .72$) for the current sample.

Perceived Financial Strain. Perceived financial strain was measured using a one-item measure of father's perceptions regarding their current financial situation. Response categories included from 1 (more than enough to get by), 2 (enough to get by, but no extras), 3 (barely enough to get by), 4 (not enough to get by). This measure examines perceptions of economic hardship or the overall subjective experience of financial burden, as perceptions are salient for

mental health (Kahn & Pearlin, 2006; Lincoln & Chae, 2010). This single-item measure and similar measures to the one used in the study has been successfully used in national surveys with African American populations including National Survey of American Life (Jackson et al., 2004) and National Longitudinal Survey of Youth. For the multivariate analysis, this item was dichotomized into categories of barely enough/ not enough to get by and enough/ more than enough to get by, with barely enough/ not enough to get by, as the reference category.

Perceived Neighborhood Characteristics. Fathers' perceived neighborhood characteristics were measured by their perceptions of problems in their neighborhood. This six-item measure examines different issues in their neighborhood, including not enough transportation, poor quality of schools, not enough police protection, crime and violence, drug use or drug dealing, and tension with the police. Response categories included from 0 (not a problem), 1 (somewhat of a problem), 2 (a big problem). Responses were averaged for the perceived neighborhood characteristics scale, with higher scores indicating more neighborhood problems. This scale had good reliability ($\alpha = .79$).

Interpersonal Stress. Negative interactions among network ties can be potential sources of stress. To measure father's interpersonal relationship stress, we used a four-item scale that asked fathers to assess their levels of stress in the past six months around several domains (e.g., sons, family, friends, personal issues). The responses ranged from 1 (very low stress) to 5 (very high stress). Responses were averaged to form the interpersonal stress scale. The reliability of this scale was marginal and fell slightly below the cutoff of 0.7 ($\alpha = .68$), which may be due to varying degrees of stress across each source (see Results for the distribution), with lower stress scores in one category (sons) and higher stress scores in another category (family), affecting the overall reliability. Nevertheless, the aggregate score of fathers' interpersonal stress levels from intimate ties may have implications for their mental health (Taylor, et al., 2015).

Social Support. Building on prior work, the current study uses a perceived global social support measure that indicates the amount of help received from different helpers from their network. The overall breadth of support across social network members has implications for mental health (Anderson, et al., 2005; Taylor, et al., 2015) and thus, an aggregate score of global perceived social support was used rather than support provided by specific network members. The scale was adapted from Sarason, Pierce, and Sarason's (1994) perceived social support scale. After a series of questions about reciprocity in receiving support from close ties, fathers

were asked how much support they had received from the following sources: their father, mother, wife/partner, other family members, and friends. Responses categories ranged from 1 (none) to 5 (a whole lot). Responses were averaged across the five-items, with higher scores meaning more support received from multiple helpers. The reliability of the scale was marginal ($\alpha = .64$), perhaps due to fathers receiving varying degrees of support, where one network member may have provided high levels of support (mother) while others provided low levels of support (father), affecting the overall scale reliability (see Results for the distribution).

Socio-demographic Characteristics. These included age, education, employment and ever live with son. Age was measured in years. Education was examined using a dichotomized measure (less than 12 years/12 years versus more than 12 years, with less than 12 years/12 years as the reference category) using the mean as the cut point for the measure. Employment was measured using a binary measure of whether father was employed or not, with not employed as the reference category. Ever live with son was assessed using a binary measure, with never lived with son as the reference category.

Missing Data

Missing data existed for the key variables; thus, we created a dichotomous variable for all variables with missing data and conducted bivariate regression to determine that the data were missing at random (MAR). Results suggest that the missing data were likely MAR. Thus, missing data was replaced using multiple imputation methods in R Studio (Buuren & Groothuis-Oudshoorn, 2010), using the Multivariate Imputation by Chained Equations (MICE) algorithms, where each variable has its own imputation model. Multiple imputation through using chained equation algorithms has been shown to be a powerful method for producing statistically valid inferences for large datasets (Liu & De, 2015).

Analytic Strategy

Analyses were conducted using SAS 9.4 (SAS Institute Inc. Cary, NC). We calculated the descriptive statistics (Table 1) and Pearson's correlations (Table 2) for demographic and predictor variables used in the analysis. Hierarchical regression analyses were conducted to determine the contributions of perceived financial strain, perceived neighborhood characteristics, interpersonal stress, and social support as a protective factor in explaining the variance in depressive symptoms. Model 1 controlled for socio-demographic covariates. Perceived financial strain was entered in Model 2 to determine the association between financial strain and

depressive symptoms and whether additional variance was accounted for over and above socio-demographic factors, as hypothesized. We entered perceived financial strain first as the strongest risk correlated with depressive symptoms based on prior literature. Next, perceived neighborhood characteristics was entered in Model 3 to determine the unique variance explained by this important risk factor. Interpersonal stress was entered in Model 4 to determine the association with fathers' depressive symptoms over and above the direct effects of perceived financial strain and neighborhood characteristics. As a test of the compensatory effects of the risk and resiliency model, social support was entered in Model 5. Finally, the interaction between social support and interpersonal stress was entered in Model 6, to determine whether interpersonal stress and depressive symptoms varied by level of social support (i.e., social support x interpersonal stress). Social support was dichotomized based on the median split (3.2) before creating the interaction for low versus high social support. The procedures developed by Aiken and West (1991) were used to represent the significant interaction.

Results

Descriptive Results

The descriptive data for the sample is presented in Table 1. Father's age ranged from 22 to 63 years old, with a mean age of 37.2 years old. The majority of fathers had previously lived with their sons (73.2%), more than half (55.3%) had either less than 12 years or 12 years of education, and about half (49.9%) were employed. Additionally, the majority of fathers reported experiencing (56.5%) some financial strain as either "barely enough to get by" or "not enough to get by." Fathers indicated neighborhood problems to be somewhat of a problem (M = 0.96, SD = 0.54), and they also reported moderate levels of interpersonal stress (M = 2.20, SD = 0.80). Descriptive results of interpersonal stress (not shown), fathers reported higher levels of interpersonal stress from personal issues (M = 2.98, SD = 1.31), followed by their family (M = 2.19, SD = 1.14), sons (M = 1.82, SD = 1.00), and friends (M = 1.79, SD = 0.99). Fathers indicated receiving some social support (M = 3.14, SD = 0.85). Examining across multiple sources of social support (results not shown), these fathers reported high levels of perceived support from their mothers (M = 3.95, SD = 1.33), followed by their wives/partners (M = 3.36, SD = 1.39), other family members (M = 3.03, SD = 1.17), fathers (M = 2.78, SD = 1.58), and friends (M = 2.57, SD = 1.09). The mean depressive symptoms score (M = 10.1, SD = 5.63) fell within the range of high depressive symptoms (cut-off score of 9 or above) in the sample.

[INSERT TABLE 1 HERE]

Based on bivariate analysis (Table 2), depressive symptoms was positively correlated with interpersonal stress and perceived financial strain, and negatively correlated with social support, ever lived with son, education, and employment. Each risk factor was positively correlated with the other respective risk factors. Perceived financial strain and interpersonal stress was inversely associated with social support.

[INSERT TABLE 2 HERE]

Multivariate Results

Hierarchical regression results are presented in Table 3. Living with son in the past and being employed were significantly associated with less depressive symptoms (Model 1). Perceived financial strain was marginally associated with more depressive symptoms (Model 2), $F(5, 341) = 7.46$, p < .000, Adjusted $R^2 = .09$. The inclusion of perceived neighborhood characteristics was not associated with depressive symptoms (Model 3), with the overall model as significant $F(6, 340) = 6.46$, p < .000, Adjusted $R^2 = .09$. Interpersonal stress was associated with increased depressive symptoms (Model 4). The inclusion of interpersonal stress explained an additional 15% of the variance in depressive symptoms, and the overall model was significant $F(7, 339) = 16.25$, p < .000, Adjusted $R^2 = .24$. Social support factor was entered into Model 5, $F(8, 338) = 14.85$, p < .000, Adjusted $R^2 = .24$. Interpersonal stress remained a significant predictor in the model. That is, social support and interpersonal stress were associated with depressive symptoms. Finally, the inclusion of the interaction term (Model 6), social support with interpersonal stress on depressive symptoms further explained 1% of the variance in depressive symptoms, and the model was significant, $F(9, 337) = 13.37$, p < .000, Adjusted $R^2 = .25$. The full model (Model 6) accounted for 25.0% of the total variance in depressive symptoms. Social support moderated the relationship between interpersonal stress and depressive symptoms. That is, social support buffered high interpersonal stress on depressive symptoms.

The effect of the interaction term between social support and interpersonal stress is illustrated in Figure 1. According to Figure 1, interpersonal stress was associated with more depressive symptoms, among fathers with low social support. Additionally, high social support buffers the effect of interpersonal stress on depressive symptoms.

[INSERT TABLE 3 HERE]

[INSERT FIGURE 1 HERE]

Discussion

This study examined multiple risk and protective factors experienced by nonresident African American fathers and their role in depressive symptoms. We found partial support for our hypotheses, in that financial strain (marginally significant) and interpersonal stress (highly significant) were associated with more depressive symptoms. After controlling for perceived neighborhood characteristics and interpersonal stress, perceived financial strain was no longer associated with depressive symptoms. Additionally, perceived neighborhood characteristics were not related to depressive symptoms.

We found that interpersonal stress was the biggest predictor of depressive symptoms among fathers. Though very limited, research has suggested that fathers experience depressive symptoms in response to stressors related to their paternal role and their interactions with others including the mother of their children (Fagan, 2009; Paulson et al., 2011). Our study provides some support for the conclusion that financial limitations may contribute to depressive symptoms (Kahn & Pearlin, 2006) among fathers. After accounting for other risk factors, financial strain was no longer significant, suggesting that other chronic sources of stress including strained interpersonal relationships may be more salient for fathers' mental health. Fathers with lower education levels, for instance, are less likely to make regular child support payments (Cancian, et al., 2011; Huang, et al., 2005). The stress of meeting these legal and parenting expectations may be related to feelings of inadequacy and fear of legal repercussions, thus explaining some of the depressive symptoms, especially among low-income nonresident African American fathers (Anderson, et al., 2005). These interpersonal and legal challenges may also affect fathers' relationship with the mother and their child(ren) (Huang, et al., 2005). African American fathers are more likely to be low SES and live in disadvantaged neighborhoods (Williams, 2003) and this disparity in resource availability contributes to stress in co-parenting interactions. Our findings support the literature, that suggests that the challenges of maintaining a positive co-parenting relationship (Fagan, 2009) and providing financially for one's child (Anderson, et al., 2005), are related to more depressive symptoms.

We expected that perceived neighborhood characteristics would be associated with more depressive symptoms, but this was not the case. Further, about 44.7% of the fathers in our sample had more than a high school education, however, regardless of their level of education,

African American men in general earn less compared to their White counterparts (Issacs, et al., 2007). The SES of the majority of fathers in this study would place them in lower income neighborhoods (Williams, 2003); even so, the neighborhood context to which one has adapted may not be as impactful as the challenge of meeting child support payments or trying to work out interpersonal interactions with others, (e.g., family members, child's mother).

As expected, we found that social support is a protective factor for interpersonal stress among nonresident African American fathers in mitigating depressive symptoms. This finding supports the expectation that nonresident African American fathers receiving support from a variety of family members and friends is protective against depressive symptoms, even in the presence of other risk factors, including the stress derived from close relationship dynamics. Our study establishes the significance of interpersonal support relationships for the well-being of these African American men.

In the application of the risk and resilience model, the protective nature of social support is best demonstrated in the presence of higher levels of interpersonal stress. When interpersonal stress is high among nonresident African American fathers, they report experiencing more depressive symptoms. However, greater social support in the presence of high interpersonal stress is associated with fewer depressive symptoms, while less social support under the same conditions is linked to more depressive symptoms.

We found that social support and the interaction between social support and interpersonal stress were significant even after controlling for covariates; however, the effect sizes were small. This may be due to the inclusion of several other salient factors of ever live with son and employment, which were consistently significant across models, and interpersonal stress, which has considerable influence on depressive symptoms. Additionally, it is noteworthy in itself to find significant effects on interactions in an observational study like this one (McClelland & Judd, 1993). Nevertheless, despite the small effect sizes, the findings from this study provide us with a unique contribution to the literature in simultaneously examining perceived financial strain and neighborhood characteristics, and interpersonal stress and social support on depressive symptoms for nonresident African American fathers.

Limitations. Though the present study provides a critical contribution to the literature, several limitations must be noted. First, the results of the study are based on cross-sectional analysis and thus, causation cannot be inferred. Although we suggest that interpersonal stress

may influence depressive symptoms, it is also plausible that fathers with high depressive symptoms may experience more stress through their interpersonal relationships. Future studies are needed that examine these associations through a longitudinal analysis. Second, we used a convenience sample of nonresident African American fathers in two Midwestern cities, which limits the generalizability of the sample. Fathers were recruited through the biological mothers and thus, the sample may be more representative of biological fathers who have working relationships with the mother. Thus, fathers who have acrimonious relationships with mothers are underrepresented. Nevertheless, our approach helped us ensure that fathers should be involved in the child's life from the custodial parents' perspective. Third, our study evaluated neighborhood characteristics, which may differ based on location. Low variation was noted in the sample for these neighborhood characteristics, which may be due to the sampling from two demographically similar cities. Nonetheless, Mair and colleagues (2010) posited that neighborhood effects operate through individual perceptions. The use of perceptions of neighborhood characteristics versus administrative data has been found to be an effective alternative, as they may better capture actual access and exposure to resources and conditions, reflecting objective reality and function as important determinants of health (Elo, Mykyta, Margolis & Culhane, 2009; Kim, 2008). Further investigation of neighborhood effects on mental health of African American fathers is needed. Fourth, the reliability of the interpersonal stress and social support measures fell below the 0.70 reliability cut off, which may be due to the limited number of items (Cortina, 1993), thus, affecting the stability of these scales. Future studies should include stronger measures (with more items) for interpersonal stress and social support. Additionally, we were unable to examine differences between types of social support and further details of relationship dynamics in these fathers' lives. Studies in the future should examine specific forms of support on stress and the extent to which different types of support are associated with depressive symptoms.

Another limitation is the use of a single-item perceived financial strain measure. This measure was used because income and education do not confer the same benefits for African Americans compared to other groups. Thus, it is even more critical to examine their perceptions around economic hardship as perceptions matter for their mental health. Although we found a marginally significant association between perceived financial strain and depressive symptoms, this association may have been underestimated due to the low sensitivity of this measure. Some

single-item measures (e.g., self-rated health) have strong predictive validity for mortality and health (Bowling, 2005). Nevertheless, future studies should consider multi-item measures for financial strain. Further, despite ample evidence of the deleterious effects of discrimination on depressive symptoms on African American men (Williams, 2003), the current study did not examine discrimination as a risk factor. Additional studies are needed to examine multiple risk factors including discrimination and protective factors on depressive symptoms.

As one of the first studies to simultaneously examine the influence of multiple risk factors and social support on depressive symptoms, this study provides a foundation for future research. Many of these men may avoid seeking mental health services and involving trusted and respected individuals may be an effective way to reach these men (Plowden, et al., 2006). Future mental health programs should consider incorporating a social support element through including key members in the father's support network (e.g., mothers). Family service providers and mental health professionals who work with African American fathers should consider incorporating strategies that reduce interpersonal stress. Techniques such as stress management, interpersonal conflict resolution, and interpersonal communication skills may prove useful in reframing stress and enhancing emotional functioning. Attending to the quality and stressfulness of relationships within the father's social support system may be an effective strategy to reduce depressive symptoms among nonresident African American fathers.

Conclusion

Despite the challenges to nonresident father involvement, many nonresident African American fathers report high levels of involvement, which increases as their child ages. Ample evidence has found that high levels of social support and stronger social ties predict lower depressive symptoms. The current study expands this literature by validating our existing understanding of social support and expanding it to speak to the unique challenges of nonresident African American fathers. More broadly, this study reinforces the importance of research on understudied minority populations within the United States who have increased risks due to the cumulative impact of multiple risk factors for their mental health.

References

Aiken, L. S. & West, S. G. (1991). Multiple regression: Testing and interpreting interactions. Newbury Park, London, Sage.

Allen, J. O., Griffith, D. M., & Gaines, H. C. (2013). "She looks out for the meals, period": African American men's perceptions of how their wives influence their eating behavior and dietary health. Health Psychology, 32(4), 447.

Anderson, E. A., Kohler, J. K., & Letiecq, B. L. (2005). Predictors of depression among low-income, nonresidential fathers. Journal of Family Issues, 26(5), 547-567.

Bowman, P. J. (2006). Role strain and adaptation issues in the strength-based model: Diversity, multilevel, and life-span considerations. The Counseling Psychologist, 34(1), 118-133.

Bowling, A. (2005). Just one question: If one question works, why ask several? Journal of Epidemiology & Community Health, 5(59), 342-345.

Buuren, S. V., & Groothuis-Oudshoorn, K. (2010). Mice: Multivariate imputation by chained equations in R. Journal of statistical software, 1-68.

Cancian, M., Meyer, D.R., & Han, E. (2011). Child support: responsible fatherhood and the quid pro quo. The ANNALS of the American Academy of Political and Social Science, 635, 140-162.

Carlson, M. J., & Turner, K. J. (2010). Fathers' involvement and fathers' well-being over children's first five years. University of Wisconsin-Madison), working paper, 181-208.

Cohen, S., & Wills, T. A. (1985). Stress, social support, and the buffering hypothesis. Psychological bulletin, 98(2), 310.

Cortina, J. M. (1993). What is coefficient alpha? An examination of theory and applications. Journal of applied psychology, 78(1), 98.

Cutrona, C. E., Wallace, G., & Wesner, K. A. (2006). Neighborhood characteristics and depression: An examination of stress processes. Current directions in psychological science, 15(4), 188-192.

Edin, K., Tach, L., & Mincy, R. (2009). Claiming fatherhood: Race and the dynamics of paternal involvement among unmarried men. The Annals of the American Academy of Political and Social Science, 621, 149-177.

Elo, I. T., Mykyta, L., Margolis, R., & Culhane, J. F. (2009). Perceptions of neighborhood disorder: the role of individual and neighborhood characteristics. Social science quarterly, 90(5), 1298-1320.

English, D., Lambert, S. F., Evans, M. K., & Zonderman, A. B. (2014). Neighborhood racial composition, racial discrimination, and depressive symptoms in African Americans. American journal of community psychology, 54(3-4), 219-228.

Fagan, J. (2009). Relationship quality and changes in depressive symptoms among urban, married African Americans, Hispanics, and Whites. Family Relations, 58(3), 259-274.

Fergus, S., & Zimmerman, M. A. (2005). Adolescent resilience: A framework for understanding healthy development in the face of risk. Annual Review of Public Health, 26, 399 419.

Flórez, K. R., Ghosh- Dastidar, M. B., Beckman, R., Haye, K., Duru, O. K., Abraído- Lanza, A. F., & Dubowitz, T. (2016). The Power of Place: Social network characteristics, perceived neighborhood features, and psychological distress among African Americans in the historic Hill District in Pittsburgh, Pennsylvania. American Journal of Community Psychology, 58(1-2), 60-68.

Garfield, C. F., Clark-Kauffman, E., & Davis, M. M. (2006). Fatherhood as a component of men's health. Journal of the American Medical Association, 296, 2365-2368.

Gary, T. L., Stark, S. A., & LaVeist, T. A. (2007). Neighborhood characteristics and mental health among African Americans and whites living in a racially integrated urban community. Health & place, 13(2), 569-575.

Gilbert, K. L., Ray, R., Siddiqi, A., Shetty, S., Baker, E. A., Elder, K., & Griffith, D. M. (2016). Visible and invisible trends in black men's health: pitfalls and promises for addressing racial, ethnic, and gender inequities in health. Annual review of public health, 37, 295-311.

Gutman, L. M., & Eccles, J. S. (1999). Financial Strain, Parenting Behaviors, and Adolescents' Achievement: Testing Model Equivalence between African American and European American Single- and Two- Parent Families. Child development, 70(6), 1464-1476.

Hamilton, B. E., Martin, J. A., & Osterman, M. J. (2016). Births: Preliminary Data for 2015. National vital statistics reports: from the Centers for Disease Control and Prevention, National Center for Health Statistics, National Vital Statistics System, 65(3), 1-15.

Hammond, W. P., & Mattis, J. S. (2005). Being a man about it: Manhood meaning among African American men. Psychology of Men & Masculinity, 6, 114-126.

Holden, K. B., McGregor, B. S., Blanks, S. H., & Mahaffey, C. (2012). Psychosocial, socio-cultural, and environmental influences on mental health help-seeking among African-American men. Journal of men's health, 9(2), 63-69.

Huang, C. C., Mincy, R. B., & Garfinkel, I. (2005). Child Support Obligations and Low- Income Fathers. Journal of Marriage and Family, 67(5), 1213-1225.

Isaacs, J., Sawhill, I., & Haskins, R. (2007). Getting ahead or losing ground: Economic mobility in America. Washington, DC: Brookings Institution.

Jackson, J. S., Torres, M., Caldwell, C. H., Neighbors, H. W., Nesse, R. M., Taylor, R. J., ...& Williams, D. R. (2004). The National Survey of American Life: a study of racial, ethnic and cultural influences on mental disorders and mental health. International journal of methods in psychiatric research, 13(4), 196-207.

Kahn, J. R., & Pearlin, L. I. (2006). Financial strain over the life course and health among older adults. Journal of health and social behavior, 47(1), 17-31.

Kim, D. (2008). Blues from the neighborhood? Neighborhood characteristics and depression. Epidemiologic reviews, 30(1), 101-117.

Lincoln, K. D., & Chae, D. H. (2010). Stress, marital satisfaction, and psychological distress among African Americans. Journal of Family Issues, 31(8), 1081-1105.

Lincoln, K.D., Taylor, R.J., Watkins, D.C., & Chatters, L.M. (2011). Correlates of psychological distress and major depressive disorder among African American men. Research on social work practice, 21(3), 278-288.

Liu, Y., & De, A. (2015). Multiple imputation by fully conditional specification for dealing with missing data in a large epidemiologic study. International journal of statistics in medical research, 4(3), 287.

Mair, C., Roux, A. V. D., & Morenoff, J. D. (2010). Neighborhood stressors and social support as predictors of depressive symptoms in the Chicago Community Adult Health Study. Health & place, 16(5), 811-819.

Marcus, A. F., Echeverria, S. E., Holland, B. K., Abraido-Lanza, A. F., & Passannante, M. R. (2015). How neighborhood poverty structures types and levels of social integration. American Journal of Community Psychology, 56(1-2), 134-144.

McClelland, G. H., & Judd, C. M. (1993). Statistical difficulties of detecting interactions and moderator effects. Psychological bulletin, 114(2), 376.

Morrison Gutman, L., McLoyd, V. C., & Tokoyawa, T. (2005). Financial strain, neighborhood stress, parenting behaviors, and adolescent adjustment in urban African American families. Journal of Research on Adolescence, 15(4), 425-449.

Mujahid, M. S., Diez Roux, A. V., Morenoff, J. D., & Raghunathan, T. (2007). Assessing the measurement properties of neighborhood scales: from psychometrics to ecometrics. American journal of epidemiology, 165(8), 858-867.

Paulson, J.F., Dauber, S.E., & Leiferman, J.A. (2011). Parental depression, relationship quality, and nonresident father involvement with their infants. Journal of family issues, 32(4), 528-549.

Plowden, K.O., John, W., Vasquez, E., & Kimani, J. (2006). Reaching African American men: A qualitative analysis. Journal of community health nursing, 23(3), 147-158.

Radloff, L. S. (1977). The CES-D scale: A self-report depression scale for research in the general population. Applied psychological measurement, 1(3), 385-401.

Roberts, R.E., & Sobhan, M. (1992). Symptoms of depression in adolescence: A comparison of Anglo, African, and Hispanic Americans. Journal of Youth and Adolescence, 21, 639-651.

Sarason, I. G., Pierce, G. R., & Sarason, B. R. (1994). General and specific perceptions of social support. In Stress and mental health (pp. 151-177). Springer, Boston, MA.

Sinkewicz, M., & Lee, R. (2011). Prevalence, comorbidity, and course of depression among Black fathers in the United States. Research on Social Work Practice, 21(3), 289-297.

Sorenson, E., & Oliver, H. (2002). Policy reforms are needed to increase child support from poor fathers. The Urban Institute.

Summers, M.A. (2004). Manliness and its Discontents: The Black Middle-class and the Transformation of Masculinity, 1900-1930. Chapel Hill: University of North Carolina Press.

Tach, L., Mincy, R., & Edin, K. (2010). Parenting as a "package deal": Relationships, fertility, and nonresident father involvement among unmarried parents. Demography, 47, 181-204.

Taylor, R. J., Chae, D. H., Lincoln, K. D., & Chatters, L. M. (2015). Extended family and friendship support networks are both protective and risk factors for major depressive

disorder, and depressive symptoms among African Americans and Black Caribbeans. The Journal of nervous and mental disease, 203(2), 132.

Ward, E., & Mengesha, M. (2013). Depression in African American men: a review of what we know and where we need to go from here. American journal of orthopsychiatry, 83, 386-397.

Watkins, D.C. (2012). Depression Over the Adult Life Course for African American Men Toward a Framework for Research and Practice. American journal of men's health, 6(3), 194-210.

Williams, D.R. (2003). The health of men: structured inequalities and opportunities. American Journal of Public Health, 93(5), 724-731.

Woodward, A. T., Taylor, R. J., & Chatters, L. M. (2011). Use of professional and informal support by Black men with mental disorders. Research on social work practice, 21(3), 328-336

Table 1

Descriptive Statistics for Sample Characteristics and Key Study Variables (N = 347)

Variable	Mean	SD	Range	Frequency	Percentage
Age in years	37.22	7.68	22 - 63		
Ever lived with son					
No				93	26.80
Yes				254	73.20
Education Level					
Less than 12 years/ 12 years				192	55.33
More than 12 years				155	44.67
Employed					
No				174	50.14
Yes				173	49.86
Financial stress					
More than enough to get by				28	8.07
Enough to get by, but no extras				123	35.45
Barely enough to get by				97	27.95
Not enough to get by				99	28.53
Neighborhood stress	0.96	.54	0 – 2		
Interpersonal stress	2.20	.80	1 – 5		
Social support	3.14	.85	1 – 5		
Depressive symptoms	10.06	5.63	0 – 32		

Table 2

Correlation Matrix of Depressive Symptoms, Covariates, Stressors, and Social Support

	1	2	3	4	5	6	7	8	9
1 Age	1.00								
2 Ever lived with son	-.00	1.00							
3 Education	-.03	.05	1.00						
4 Employment	-.05	.08	.30***	1.00					
5 Financial strain	-.06	-.01	-.22***	-.38***	1.00				
6 Neighborhood characteristics	-.11*	.01	-.13*	-.02	.14**	1.00			
7 Interpersonal stress	-.00	.01	-.00	-.13*	.24***	.15**	1.00		
8 Social support	-.03	.00	.04	-.20***	-.14**	-.00	-.19***	1.00	
9 Depressive symptoms	.00	-.17**	-.15**	-.25***	.19***	.09	.43***	-.22***	1.00

Note: @ p - value < .1; * p - value < .05; ** p – value < .01; *** p – value < .001.

Table 3

Hierarchical Regression Analysis of Predictors of Depressive Symptoms in Nonresident African American fathers (N = 347)

Variable	Depressive symptoms											
	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
	β (SE)	95%CI	β (SE)	95%CI	β (SE)	95%CI	β (SE)	95%CI	β (SE)	95%CI	β (SE)	95% CI
Age	-.00	-.08,	-.00	-.07,	.00	-.07,	-.00	-.07,	-.00	-.07,	-.00	-.07,
	(.04)	.07	(.04)	.07	(.04)	.08	(.03)	.07	(.03)	.07	(.03)	.06
Ever live with son	-1.85**	-3.15,	-1.89**	-3.18,	-1.90**	-3.19,	-1.97**	-3.15,	-1.97***	-3.14,	-2.04***	-3.21,
	(.66)	-.56	(.66)	-.60	(.66)	-.61	(.60)	0.79	(.60)	-.80	(.59)	-.87
Education												
	-.99	-2.43,	-.82	-2.26,	-.71	-2.16,	-1.17@	-2.50,	-1.21@	-2.54,	-1.32@	-2.64,
	(.73)	.44	(.73)	.62	(.74)	.74	(.68)	.16	(.67)	.12	(.67)	.01
Employed	-2.42***	-3.62,	-1.99**	-3.26,	-2.03**	-3.31,	-1.68**	-2.85,	-1.50*	-2.68,	-1.43*	-2.61,
	(.61)	-1.22	(.65)	-.71	(.65)	-.76	(.59)	-.51	(.60)	-.32	(.60)	-.26
Financial Strain												
			1.24@	-.01,	1.15	-.12,	.20	-.98,	.09	-1.09,	.12	-1.06,
			(.64)	2.49	(.64)	2.41	(.60)	1.37	(.60)	1.27	(.60)	1.29
Neighborhood Characteristics					.65	-.42,	.09	-.91,	.09	-.90,	.04	-.95,
					(.55)	1.73	(.51)	1.08	(.50)	1.08	(.50)	1.02
Interpersonal stress (IS)							2.85***	2.16,	2.77***	2.08,	3.34***	2.46,
							(.35)	3.53	(.35)	3.45	(.45)	4.23
Social Support (SS)									-1.10*	-2.17,	1.88	-1.22,
									(.55)	-.02	(1.58)	4.99
IS x SS											-1.38*	-2.72,

							(.68)	-.03
R^2	.09		.10		.10		.25		.26		.27	
R^2 change			$.01^@$		.00		$.15^{***}$		$.01^*$		$.01^*$	
Adjusted R^2	.08		.09		.09		.24		.24		.25	

Note: $^@$ p - value < .1; * p - value < .05; ** p – value < .01; *** p – value < .001; CI: confidence interval.
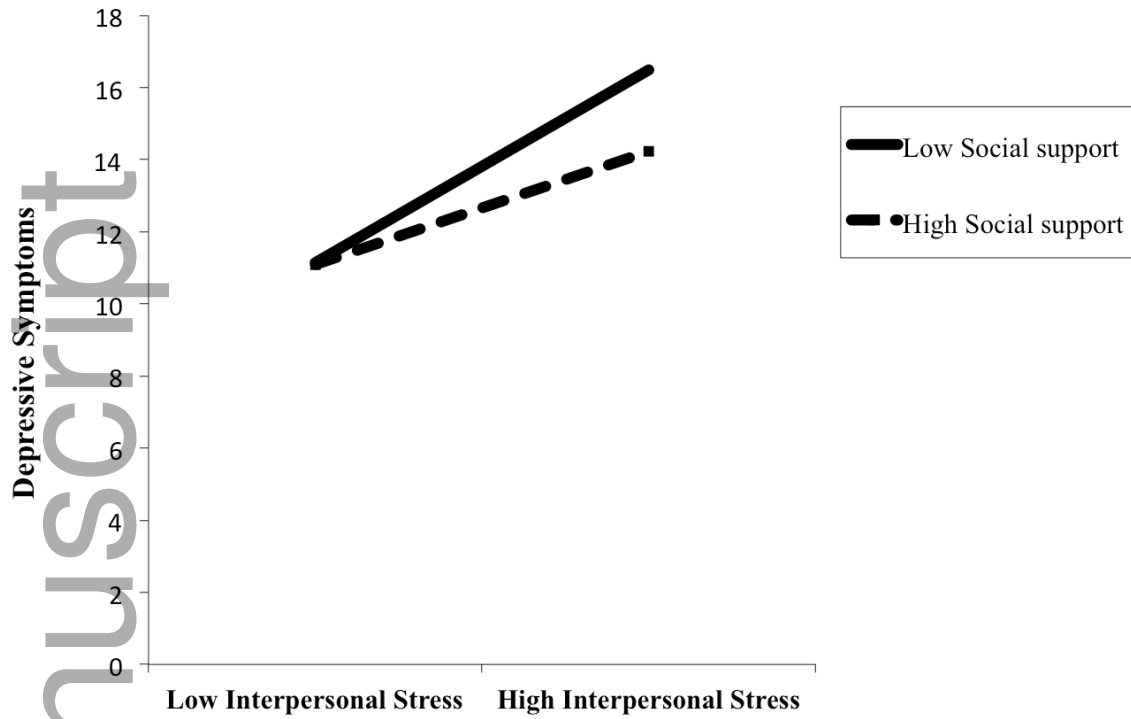
Figure 1. Social support as a moderator of interpersonal stress on depressive symptoms among nonresident African American fathers