

## Modifiable Risk and Protective Factors for Depressive Symptoms in Low-Income African American Mothers

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Low-income African American mothers of young children experience high rates of depression, but many of the risk factors that have been identified provide little direction for intervention. The authors examined modifiable risk and protective factors for probable depression (Center for Epidemiological Studies Depression Scale  $\geq 23$ ) in 824 African American mothers living in the 39 poorest census tracts in Detroit. Household food insufficiency and deteriorated housing significantly increased the odds of likely depression, whereas availability of a loan in a crisis, help with childcare, and transportation were protective. However, more frequent experiences of everyday discrimination greatly increased the odds of elevated depressive symptoms. These findings support the need for interventions that operate across individual and societal levels to address the fundamental causes of poor mental health.

*Keywords:* depression, mothers, African American, socioeconomic status, discrimination

Depression is highly prevalent among low-income mothers of young children, and African American mothers, who are overrepresented among the poor, are at increased risk (Chung, McCollum, Elo, Lee, & Culhane, 2004; McLennan, Kotelchuck & Cho, 2001). This is of great concern, because maternal depression is not only associated with significant impairment in social and psychological functioning but can have profoundly negative effects on parenting and child development, including serious health and behavioral

consequences (Field, 1998; Goodman & Gotlib, 1999; NICHD, 1999; Petterson & Albers, 2001; To et al., 2004; Weissman, Warner, Wickramaratne, Moreau, & Olfson, 1997; Wells, Sturm, Sherbourne, & Meredith, 1996). A recent study of a nationally representative sample of U.S. mothers found that those with elevated depressive symptoms were significantly more likely than those without such symptoms to report child behavior problems, including frequent temper tantrums, difficulty getting along with other children, difficulty in managing the child, or that the child was unhappy or fearful (Civic & Holt, 2000). However, traditional sociodemographic risk factors for depression—having young children, inner-city residence, low income, and low education, for example—are ubiquitous among poor mothers, and depression frequently remains undetected or inadequately treated in this group (Cooper et al., 2003; Heneghan, Johnson Silver, Westbrook, Stein, & Bauman, 1998; Siefert, Bowman, Heflin, Danziger, & Williams, 2000; Wells et al., 1996).

Although many studies have identified biological, social, and demographic risk factors for depression, the pathways whereby such risk factors lead to depression are not fully understood (Brown, 2002; Culbertson, 1997; Goodman & Gotlib, 1999; Siefert et al., 2000; Weissman & Olfson, 1995). In a recent review of his pioneering research on the social origins of depression, begun in the 1970s, George W. Brown observed that poverty must play a role in depression because of its potential influence on the other etiological factors that have been identified (Brown, 2002; Brown & Harris, 1978; Brown & Moran, 1997). However, he also cautioned that it would be naïve to assume that poverty explains depression on its own; the advances in knowledge that have been

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made only highlight how much remains to be understood (Brown, 2002). In addition, many of the major risk factors for depression that have been identified, such as female gender, low socioeconomic status, and genetic endowment, are not readily modified or are global and provide little practical direction for intervention (Heneghan et al., 1998; National Advisory Mental Health Council Workgroup on Mental Disorders Prevention Research, 1998; Siefert, Heflin, Corcoran, & Williams, 2000). For example, Ennis, Hobfoll, and Schroder (2000) note that the specific aspects of poverty that are depressogenic are unclear: One of the questions that remains is whether it is the chronic nature of poverty or its acute ramifications, such as difficulty in obtaining the necessary resources for living, that determine the mental health effects of economic stressors. This distinction is important, because the acute stressors engendered by poverty may be amenable to specific interventions.

The present study sought to identify modifiable risk and protective factors for maternal depressive symptoms in a large, community-based sample of very poor African American mothers, a group that is particularly vulnerable and often studied but whose mental health is poorly understood. Our conceptual framework derives from epidemiological theories of the social production of disease, which posit that individuals' relative economic and social positioning—that is, their race, gender, and class—determine their exposure to risk factors such as material hardship and discrimination, factors only recently considered as determinants of mental health (Belle, 1990; Belle & Doucet, 2003; Heflin, Siefert & Williams, 2005; Krieger & Zierler, 1995; Link & Phelan, 1995; Siefert et al., 2000, 2001; Siefert et al., 2004; Williams, Yu, Jackson, & Anderson, 1997; Williams, 1997).

We also draw on theoretical and empirical studies of protective factors for mental disorders, which indicate that the deleterious effects of exposure to risk factors can be ameliorated by individual and social resources that serve protective functions (Belle, 1990; Belle & Doucet, 2003; Boyce et al., 1998; Coie et al., 1993; Ennis et al., 2000; Reiss & Price, 1996). We hypothesized that specific risk factors related to mothers' social position—that is, their poverty and racial/ethnic minority status—would predict depressive symptoms beyond traditional and more generic risk factors such as low income and low education. We further hypothesized that instrumental or practical support would mitigate the effects of poverty-related risk factors on maternal depression, and that emotional support and religiosity would provide protection against the depressogenic effects of discrimination.

### Risk and Protective Factors Associated With Poverty and Race

The association between poverty and high rates of psychological distress and psychiatric disorder is well established (Hope, Power, & Rodgers, 1999). Bruce, Takeuchi, and Leaf (1991) reported an odds ratio of 2.29 for major depression among the poor versus the nonpoor, adjusting for gender. High rates of depression have consistently been reported among both African American and white women of low socioeconomic status (Belle & Doucet, 2003; Blazer, Kessler, McGonagle, & Swartz, 1994; Hobfoll, Johnson, Ennis, & Jackson, 2003; Williams, Takeuchi, & Adair, 1992), and poor mothers of several children and single mothers are at espe-

cially high risk (Heneghan et al., 1998; Hobfoll et al., 2003; Hobfoll, Ritter, Lavin, Hulsizer, & Cameron, 1995).

Poverty increases the likelihood of exposure to both chronic and acute stressors, such as residence in an unsafe neighborhood, unemployment, insufficient food, and housing and transportation problems. It also decreases access to the resources that can buffer stress, such as money for goods and services, the security of a safe neighborhood, and the presence of a supportive partner, as well as the means to extricate oneself from a dangerous or draining relationship (Bassuk, Browne, & Buckner, 1996; Belle, 1990; Belle & Doucet, 2003; Hobfoll et al., 1995; Siefert et al., 2000). However, not everyone living in poverty experiences the same poverty-related stressors, and those who suffer from chronic poverty need to be differentiated on the specific factors that may affect their mental health (Ennis et al., 2000).

African American mothers are not only overrepresented among the poor but are also exposed to the additional risk of racial discrimination, which has consistently been associated with poorer mental health status and may exacerbate the impact of poverty (Belle & Doucet, 2003; Ennis et al., 2000; Landrine & Klonoff, 1996; Landrine, Klonoff, Corral, Fernandez, & Roesch, 2006; Williams, Neighbors, & Jackson, 2003). Although they have comparable or lower rates of mental illness than Whites, African Americans report more experiences of discrimination, which are positively associated with psychological distress, depressive symptoms, and major depression (Kessler, Michelson, & Williams, 1999; Landrine & Klonoff, 1996; Landrine et al., 2006; Williams et al., 2003). The exact mechanisms whereby discrimination affects mental health are unclear, but some research suggests that it is the generic perception of unfair treatment rather than the perceived reason for the discrimination that adversely affects mental health (Kessler et al., 1999). In addition, as Belle and Doucet (2003) note, much discrimination is continuous and routine, and research has shown that chronic stress is more damaging to individuals than episodic events.

The effects of poverty and discrimination on maternal mental health may be affected differently by protective factors, that is, the social and personal resources available to the mother (Belle & Doucet, 2003; Hobfoll et al., 2003). A recent study of the effects of social support on acute material hardship among low-income African American and white women reported a stress-buffering effect for African Americans but not for Whites (Ennis et al., 2000). For African Americans, the stress-buffering effect of social support had an increased effect as material hardship increased. This finding is consistent with the African American community's reliance on the strengths and resources to be found in family and friends (Ennis et al., 2000; Taylor, Chatters, & Levin, 2004). Gee and his colleagues (2006) note that social support has been understudied in relation to discrimination, although the emotional support (empathy) provided by social networks could potentially mitigate its stressful effects. Another likely protective factor is religiosity; religion plays a central role in the lives of African Americans (Taylor et al., 2004), and a significant body of research has found that both subjective and organizational religious involvement exerts a protective effect on health and mental health.

## Method

### *Study Design and Sample*

Data for this study are from the Detroit Center for Research on Oral Health Disparities, one of five centers funded by the National Institute of Dental and Craniofacial Research to reduce oral health disparities across the country (NIDCR U-54 DE 14261). The Center's research program focuses on understanding the social, familial, biological, and neighborhood context of oral health in a large, randomly selected, community-based sample of low-income African American families residing in the 39 poorest census tracts in Detroit. A rich array of data on social and environmental factors potentially associated with health outcomes was collected by the Center in the first phase of its longitudinal survey of African American caregivers of young children. The resulting dataset provides a unique opportunity to examine how these factors relate to maternal depression in this population.

A multistage area probability sample design was used to select the population-based study sample of African American families. Families were eligible if they had at least one child less than 6 years of age and a household income below 250% of the federal poverty level, based on 2000 Census data. Screening questions were administered at the doorstep. Of the 12,655 randomly selected housing units, 10,695 were occupied (84.5% occupancy rate). Of those occupied, 9,781 were successfully contacted, and an adult living in the unit responded to the project staff (91.5% contact rate). Of the 9,781 contacted housing units, 1,386 (14.2%) had an eligible African American child less than 6 years of age. Of the 1,386 families with eligible children, 1,021 completed the study (73.7%); thus, the final population-based study cohort included 1,021 children and their primary caregivers. Trained staff conducted face-to-face interviews with participants during fall 2002 through spring 2003 at the Dental Assessment Center in Detroit.

The present study was limited to biological mothers aged 18 and over ( $N = 863$ ). We focused on biological mothers because the fathers, grandparents, and other relative and nonrelative caregivers in the sample ( $N = 139$ ) likely had experiences and personal characteristics that differed considerably from those of mothers, and our study's focus was on maternal depression. These caregivers' mental health is important and understudied, however, and they should be the focus of future research. We also excluded the small number of mothers under age 18 ( $N = 19$ ) because the social context of young adolescent mothers differs considerably from that of mothers 18 and older, and the small number of cases precluded detailed analyses. We were limited by the inclusion criteria to studying mothers of children under six years of age, but this is an important group, because depression rates are high among mothers of preschool children and the developmental consequences are profound, making the identification of modifiable risk and protective factors a major priority (To et al., 2004).

### *Measures*

The dependent variable, probable depression, was assessed using the Center for Epidemiological Studies Depression Scale (CES-D) (Husaini, Neff, Harrington, Hughes, & Stone, 1980; Radloff, 1977). The CES-D is a reliable and well-validated 20-item scale, with standard scoring that is widely used in research to

assess depressive symptoms in community and population-based studies (Radloff, 1977). A recent confirmatory factor analysis of the factor structure of the CES-D in low socioeconomic status African Americans found that the four-factor structure previously found in the general population was supported (Nguyen, Kitner-Triolo, Evans, & Zonderman, 2004). Because African Americans are more likely to incorporate somatic complaints in response to questions designed to assess affective symptoms (Brown, Schulberg, & Madonia, 1996 cited in Nguyen et al., 2004), an alternative model combining the factors somatic complaints and depressive affect was also tested, but the fit was significantly poorer compared with the four-factor model (Nguyen et al., 2004).

Recognizing that the CES-D scale measures depressive symptoms, for expedience, we use the terms "depression" and "depressed" to refer to mothers scoring 23 or more. The more commonly used cutoff score is 16, but the more stringent cutoff point of 23 has been used with populations with known high rates of depression to reduce the number of false-positive classifications and has been referred to as "probable depression" (Cook et al., 2002; Golub et al., 2004; Husaini et al., 1980; McLennan et al., 2001; Perdue, Hagan, Thiede, & Valleroy, 2003). A dummy variable was created and coded "1" for mothers scoring 23 or more on the CES-D to indicate probable depression. The Cronbach's alpha for the CES-D in our sample was 0.89.

The independent variables in our study included four sets of specific, modifiable risk and protective factors associated with poverty and racial/ethnic minority status. Our hypothesized poverty-related risk factors included insufficient food for the household, living in poorly maintained housing, and not being employed. Household food insufficiency was defined narrowly as restricted household food stores or too little food intake among members of the household (Scott & Wehler, 1998) and was measured with the question, "Which of these statements best describes the food your household has to eat—we always have enough to eat and the kinds of things we want, we have enough to eat but not always the kinds of food we want, sometimes we don't have enough to eat, or often we don't have enough to eat?" This single-item measure or a similar form is used in several national surveys, including the National Health and Nutrition Examination Survey, the U.S. Department of Agriculture's Continuing Survey of Food Intakes by Individuals, and the Current Population Survey and is widely accepted as a valid measure of food insufficiency (Alaimo, Briefel, Frongillo, & Olson, 1998; Rose, 1999). Following the convention that has been adopted in related research (Alaimo et al., 1998; Christofar & Basiotis, 1992; Rose & Oliveira, 1997), a dummy variable indicating food insufficiency was created if the mother responded that her household "sometimes or often" does not have enough to eat.

Poorly maintained housing was operationalized using an item from a screener for exposure to lead: "Do you have any cracks on the wall or any paint in the home that is peeling off walls or pipes?" In a population-based cohort study documenting the housing conditions of low-income Latina mothers, the presence of peeling paint, which was determined by direct observation, was independently associated with cockroach and rodent infestations. It was also associated with other housing disrepair indicators, leading the authors to conclude that it is a likely indicator of neglected building conditions (Bradman et al., 2005). Respondents were

coded as not employed if they responded negatively to the question "Are you employed?"

Our hypothesized racial/ethnic minority status-related risk factor was chronic, routine experiences of discrimination, which was operationalized using the Everyday Discrimination scale. This scale is based on the qualitative research of Essed (1990, 1991, cited in Lewis, Everson-Rose, Powell, Matthews, Brown, Karavolos, et al., 2006), who used the term "everyday discrimination" to describe the minor, routine insults described by Black women in the United States and the Netherlands as a result of their marginalized status (Kessler et al., 1999; Lewis et al., 2006; Schulz et al., 2000; Schulz et al., 2006; Williams et al., 1997). Representative items are as follows: "I was treated with less courtesy than other people," "I was treated with less respect than others," "I received poorer service than other people," and "I was called names or insulted." The response options were: (1) *almost every day*, (2) *at least once a week*, (3) *a few times a month*, (4) *a few times a year*, (5) *less than once a year*, and (6) *never*. In addition to showing high levels of internal consistency (Lewis et al., 2006; Williams et al., 1997), the Everyday Discrimination scale has demonstrated construct validity in African Americans (Taylor, Kamarck, & Shiffman, 2004b, cited in Lewis et al., 2006). Because previous research suggests that the mental health impact of discrimination results from the generic perception of unfair treatment rather than the perceived reason for such treatment, we did not ask respondents to attribute a reason for the experiences they reported (Kessler et al., 1999; Lewis et al., 2006; Mossakowski, 2003; Williams et al., 1997). The nine items in the scale were averaged to reflect the frequency of respondents' reported experiences of chronic unfair treatment. The Cronbach's alpha in our sample was 0.85.

Our hypothesized protective factors included the respondent's assessment of the general availability of two kinds of support: instrumental or practical support and emotional support (House, 1986; McLoyd, Jayaratne, Ceballo, & Borquez, 1994; Jackson, Brooks-Gunn, Huang, & Glassman, 2000). Instrumental support was operationalized by asking respondents about the availability of a loan in a crisis, help with childcare, help with transportation, or help with errands. Emotional support was assessed by asking whether there is someone the respondent can count on to provide encouragement and reassurance if needed. Dummy variables for each of these specific types of support were created. In addition, we assessed self-reported religiosity. Respondents were asked to rate themselves as "Very religious, fairly religious, not too religious, or not religious at all." We also controlled for sociodemographic characteristics known to be associated with maternal depression, including age, education level, annual income, household size, and number of children under 18 regularly cared for.

### Data Analysis

Most of the few missing items (less than 4% for any individual item) were imputed with Imputation and Variance Estimation software (IVEware). Imputation was done for individual items before calculating scores for the CES-D and Everyday Discrimination scales, allowing for a more consistent sample size to be used in analyses. Missing demographic data (household size, education, income, and employment) were not imputed, and these cases were excluded from analyses. The final analyses were adjusted with

sample weights created to account for the complex survey sample design features of the study. Specifically, the weight adjusts for the unequal probability of selection, participant nonresponse, and a poststratification control to make the sample representative of the population of children in Detroit in terms of race, gender, and age.

In keeping with our study's conceptual framework and hypotheses, we estimated five nested logistic regression models to examine the effects of (1) sociodemographic factors traditionally associated with depression; (2) our hypothesized poverty-related risk factors; (3) our hypothesized poverty-related protective factors; (4) our hypothesized race-related risk factor; and (5) our hypothesized race-related protective factors on maternal depression. The models, and variables within the models, are ordered in the manner presented to permit the examination of the association of depression, with poverty-related and race-related factors risk and protective factors separately.

In Model 1, the sociodemographic variables were included. Three categorical age variables were used to reflect being 25 to 34 or 35 to 49 years old. Mothers between 18 and 24 years old were the omitted reference group. Three categorical educational attainment variables were created. Education was coded to reflect whether or not high school was completed or a GED was attained, or if the woman had at least some college. Less than a high school education was the omitted reference group. Annual household income was divided into four \$10,000 intervals, with income less than \$10,000 as the reference category. These variables were defined with the lowest age, income, and education groups as the reference categories because the poorest and least educated constituted the largest subgroups in the income and education categories, thus providing more stable estimates. Because the meaning of a given level of income is related to the size of the household, household size was included to offset the income variable. Additionally, a dummy variable coded 1 to reflect if the mother regularly cared for more than three children was included in the model.

Models 2 and 3 examined our hypothesized poverty-related risk and protective factors respectively. In Model 2, the poverty-related risk factors described above, including employment status, food insufficiency, and poorly maintained housing, were added to the base model. Model 3 added the hypothesized poverty-related protective factors, the four instrumental support items (availability of help with money, childcare, transportation, and errands). Models 4 and 5 examined the hypothesized race-related risk and protective factors respectively. Model 4 added the Everyday Discrimination scale, and Model 5 added the hypothesized protective factors emotional support and religiosity, and considered the effects of all of these factors together on maternal depression.

All analyses were conducted with SAS version 8 (2000) and SAS-callable SUDAAN version 8 (2001) statistical software to account for the complex sample design and produce robust variance estimations. SUDAAN uses generalized estimating equation methodology to produce the parameter estimates and the Taylor series linearization technique to produce variance estimations for all of the regression models (Research Triangle Institute, 2001). Odds ratios and 95% confidence intervals were computed.

### Results

Mothers' background characteristics and the distribution of hypothesized risk and protective factors by depression status are

presented in Table 1. A total of 824 cases had no missing items and were used in these analyses. The mothers' average age was 28, with 87% of the sample below age 35. Nearly half (47%) of the mothers had less than a high school education, and almost half (45%) lived in households with annual incomes below \$10,000. The average household size was four, and 55% of the mothers cared for more than three children under age 18 regularly.

Thirty-four percent of the mothers scored 16 or more on the CES-D—the standard cutoff point for possible depression—and almost 19% scored 23 or above on the CES-D, indicating probable clinical depression. Mothers with probable depression were more likely than nondepressed mothers to report the presence of many of the risk factors. Significantly more depressed than nondepressed mothers reported household food insufficiency (14.5% vs. 6.0%) and poorly maintained housing (45.1% vs. 34.0%). Depressed mothers reported more frequent experiences of unfair treatment, reflected in their higher average scores on the six-point Everyday Discrimination scale (3.51 vs. 2.65). All social support items were significantly more prevalent among the nondepressed than the

depressed mothers. As anticipated, nondepressed mothers were likely to be more educated and to have had at least some college.

Table 2 summarizes the results from the nested logistic regression models. In Model 1, mothers who had more than a high school education were about half as likely to be depressed. In Model 2, in spite of adjustment for income and education, household food insufficiency and poorly maintained housing significantly increased the odds of maternal depression by 2.5 times and 1.5 times, respectively. However, higher education continued to reduce the likelihood of being depressed.

The poverty-related risk factor associated with housing was no longer a significant predictor of depression after accounting for the availability of instrumental support in Model 3, and the effects of education and food insufficiency were modestly reduced. Instrumental support was also strongly related to a reduced risk of depression. Mothers who reported the availability of someone who could loan them money in a crisis and the availability of help with childcare were much less likely to be depressed. Availability of help with transportation was also protective.

Table 1

*Distribution of African American Mothers' Background Characteristics, Risk Factors, and Protective Factors by Probable Depression Status (CES-D  $\geq$  23), N = 824, Mothers (age 18–49) of Children Age 5 and Under*

Variable	Overall prevalence in sample Weighted % (N)	Among depressed (N = 160) Weighted % (N)	Among not depressed (N = 664) Weighted % (N)
<b>Background characteristics</b>			
<b>Age</b>			
18–24 (reference)	36.77 (302)	40.97 (62)	35.80 (240)
25–34	50.02 (401)	47.10 (76)	50.70 (325)
35–54	13.21 (121)	11.90 (22)	13.50 (99)
<b>Education—highest level completed</b>			
Less than high school (reference)	47.00 (386)	51.61 (84)	45.94 (302)
High school or GED	32.57 (271)	35.30 (58)	31.90 (213)
Some college or more	20.43 (167)	13.10 (18)	22.12 (149)*
<b>Poverty status (annual household income)</b>			
< \$10,000 (reference)	44.87 (367)	48.72 (83)	43.98 (284)
\$10,000–19,999	27.74 (231)	20.90 (35)	29.30 (196)
\$20,000–29,999	15.78 (134)	17.00 (24)	15.50 (110)
\$30,000+	11.61 (92)	13.30 (18)	11.20 (74)
Household size (M, SE) range 2–14	4.12 (0.08)	4.01 (0.15)	4.14 (0.10)
3 or more children regularly cared for	54.97 (384)	54.70 (75)	55.00 (309)
<b>Poverty-related risk factors</b>			
Food insufficiency—sometimes/often not enough	7.56 (66)	14.50 (24)	6.00 (42)**
Poorly maintained housing	36.11 (291)	45.10 (68)	34.00 (223)*
Not employed at time of survey	62.70 (502)	66.30 (109)	61.90 (393)
<b>Poverty-related protective factors</b>			
Money in a crisis (1 = yes)	81.08 (670)	57.50 (99)	86.50 (571)**
Childcare (1 = yes)	89.72 (742)	72.20 (123)	93.80 (619)**
Transportation (1 = yes)	82.61 (683)	63.20 (105)	87.10 (578)**
Help with errands (1 = yes)	79.54 (648)	61.50 (101)	83.70 (547)**
<b>Race-related risk factor</b>			
Everyday discrimination (M, SE) Range 1–6	2.81 (0.05)	3.51 (0.09)	2.65 (0.05)**
<b>Race-related protective factors</b>			
Encouragement	91.16 (750)	74.60 (123)	95.00 (627)**
<b>Religiosity</b>			
Not at all religious (reference)	11.18 (96)	12.41 (20)	17.52 (120)
Not too religious	17.68 (144)	53.11 (84)	54.92 (360)
Fairly religious	54.58 (444)	19.87 (32)	17.17 (112)
Very religious	16.56 (140)	14.61 (24)	10.38 (72)

*Note.* The prevalence of probable depression (CES-D  $\geq$  23) in this sample is 18.76% (weighted estimate, N = 160). The prevalence of probable depression at the lower, common cutoff (CES-D  $\geq$  16) is 34.22% (N = 282). CES-D = Center for Epidemiological Studies Depression Scale.

\* Difference between depressed and not depressed is significant at the  $p < .05$  level.

\*\* Difference between depressed and not depressed is significant at the  $p < .01$  level.

Table 2

Odds Ratios (ORs) and 95% Confidence Intervals (CIs) for Predictors of Maternal Depression (CES-D  $\geq$  23), N = 824

	Model 1		Model 2		Model 3		Model 4		Model 5	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Background characteristics										
Age 25-34 y	0.83	0.52-1.33	0.82	0.50-1.33	0.67	0.41-1.10	0.69	0.38-1.24	0.72	0.42-1.23
Age 35-54 y	0.83	0.46-1.53	0.80	0.43-1.50	0.72	0.40-1.31	0.72	0.43-1.21	0.71	0.42-1.21
High school	0.97	0.64-1.48	1.02	0.68-1.53	1.08	0.72-1.61	1.27	0.85-1.90	1.33	0.87-2.03
College or more	0.52**	0.32-0.83	0.58**	0.36-0.92	0.62*	0.37-1.04	0.81	0.49-1.33	0.93	0.59-1.48
\$10,000-\$19,999	0.71	0.43-1.15	0.73	0.44-1.21	0.81	0.48-1.37	0.75	0.44-1.27	0.75	0.45-1.21
\$20,000-\$29,999	1.14	0.64-2.03	1.21	0.64-2.27	1.26	0.64-2.46	1.17	0.62-2.20	1.24	0.65-2.37
\$30,000+	1.35	0.50-3.61	1.46	0.52-4.14	2.07	0.74-5.78	1.98	0.73-5.35	2.04	0.77-5.42
Household size	0.94	0.79-1.12	0.94	0.79-1.13	0.94	0.78-1.14	0.98	0.80-1.20	0.97	0.80-1.18
3+ children	1.13	0.68-1.88	1.11	0.66-1.85	1.06	0.58-1.93	0.90	0.48-1.67	0.89	0.46-1.71
Poverty-related risk factors										
Food insufficiency			2.50**	1.25-4.98	2.05*	0.87-4.82	1.65	0.67-4.06	1.55	0.62-3.88
Cracked walls/peeling paint			1.54**	1.00-2.38	1.32	0.78-2.23	1.20	0.64-2.27	1.17	0.64-2.14
Not employed at time of survey			1.14	0.70-1.87	1.13	0.64-1.98	1.19	0.66-2.16	1.25	0.66-2.37
Poverty-related protective factors										
Money in a crisis					0.41***	0.23-0.72	0.49**	0.29-0.83	0.59*	0.32-1.00
Childcare					0.35***	0.17-0.72	0.37**	0.17-0.78	0.40**	0.18-0.89
Transportation					0.60*	0.35-1.01	0.69	0.38-1.25	0.73	0.40-1.35
Help with errands					0.79	0.37-1.66	0.76	0.38-1.51	0.79	0.41-1.53
Race-related risk factor										
Everyday discrimination							2.67***	2.21-3.22	2.70***	2.26-3.23
Race-related protective factors										
Encouragement/reassurance									0.32*	0.09-1.16
Very religious									0.87	0.40-1.88
Fairly religious									1.14	0.60-2.18
Not too religious									1.45	0.62-3.38
Cox & Snell R <sup>2</sup>	0.016366		0.035347		0.123215		0.198532		0.211644	
-2 log likelihood	781.87		765.81		687.11		613.10		599.51	
df	9		12		16		17		21	

Note. The prevalence of probable depression (CES-D  $\geq$  23) in this sample is 18.76% (N = 160). CES-D = Center for Epidemiological Studies Depression Scale.

\*  $p < .10$ . \*\*  $p < .05$ . \*\*\*  $p < .01$ .

In Model 4, none of the sociodemographic characteristics and poverty-related risk factors remained significantly associated with maternal depression after the addition of our race-related risk factor, the Everyday Discrimination scale. Availability of help with childcare and a loan were still protective against depression, but everyday discrimination greatly increased the likelihood of maternal depression. For each one-unit increase on the six-point Everyday Discrimination scale, which indicates more frequent experiences of unfair treatment, the odds of being depressed nearly tripled.

In the final model, the Everyday Discrimination scale continued to be a significant risk factor for depression. In fact, the odds ratio increased slightly from Model 4 with the addition of emotional support. However, the odds ratio estimate was only slightly higher in Model 5 compared with Model 4 and was not significantly different, because the confidence intervals overlap. Although religiosity was not a significant protective factor, the availability of someone to rely on for emotional support reduced the likelihood of depression. The availability of help with childcare continued to significantly lower mothers' odds of scoring 23 or more on the CES-D, as did the availability of a source of a loan in a crisis.

A correlation matrix was created to examine how the independent variables correlated with one another. The independent variables did covary to some extent as expected, but multicollinearity was not an issue in the multivariate models. The largest correlation was 0.572, between the household size variable and number of children. Many of the social support variables were modestly correlated with one another, with the highest correlation being 0.397, between having help with money and running errands. All of the other significant correlations were much smaller in magnitude.

## Discussion

The very high prevalence of depressive symptoms among the low-income African American mothers in this study is a major concern, particularly given the serious consequences of maternal depression for children's health and development. One third of the mothers reported a level of symptoms indicating possible depression, and 18.8% reported symptoms indicating probable clinical depression. To place these findings in perspective, a study using the population-based 1988 National Maternal and Infant Health

Survey and its 1991 Longitudinal Follow-up, the most recently available nationally representative sample of mothers with young children in the United States, reported the prevalence of depressive symptoms measured by the CES-D among mothers who gave birth in 1988 (McLennan et al., 2001). Twenty-four percent of the mothers at Time 1 and 17% of mothers at Time 2 scored 16 or above, indicating possible depression, while the rate of probable depression (23 or above) was 12.1% at Time 1 and 7.8% at Time 2. We do not have information about whether the mothers in our survey had ever been screened or treated for depression. However, the finding of such a high prevalence of elevated depressive symptoms suggests a substantial unmet need for mental health services.

Like Heneghan and colleagues (1998), we found that in a relatively homogeneous sample of poor urban mothers, in which traditional sociodemographic risk factors for depression are nearly universal, such factors for the most part failed to discriminate mothers with probable depression. However, we also found that specific risk factors related to living in poverty—household food insufficiency and deteriorated housing conditions—significantly predicted probable maternal depression. Household food insufficiency more than doubled the odds of depression in this sample, a finding consistent with the growing body of evidence for its adverse effects on mental health (Heflin et al., 2005; Siefert et al., 2000, 2004). Household food insufficiency has been shown to be associated with the risk of health-compromising diets and lower serum concentrations of several critical nutrients (Christofar & Basiotis, 1992; Dixon, Winkleby, & Radimer, 2001; Kendall, Olson, & Frongillo, 1996; Rose & Oliveira, 1997). Research has also shown that even relatively minor nutritional deficiencies can adversely affect mental health (Alpert, Mischoulon, Nierenberg, & Fava, 2000; Hesecker, Kubler, Pudell, & Westenhoffer, 1992; Tiemeier et al., 2001). Of importance, low-income mothers have been shown to compromise their own diets to feed their children (McIntyre et al., 2003). Not having enough food for one's family is likely to be experienced as stressful by mothers, and the known depressogenic effects of stressful life events and conditions is another potential pathway to depression among women in food-insufficient households (Heflin et al., 2005; McEwen, 1998; Siefert et al., 2004).

Although the limitation of using a single-item indicator as a measure of housing disrepair must be kept in mind, our finding of a significant association between residing in a home with cracked walls and peeling paint and probable maternal depression suggests that the physical condition of housing, which is well documented to influence residents' physical health, may also have an influence on mental health. As is the case with household food insufficiency, such an effect could be direct or indirect. Poorly maintained housing has been associated with a variety of physical health problems, such as asthma and other respiratory conditions (Moloughney, 2004). The stress engendered by housing-related illnesses such as childhood asthma could adversely affect maternal mental health. And, as Moloughney (2004) observes, housing also has a psychosocial dimension, which includes the concepts of security, control, permanence, and continuity. It is where people typically spend most of their time and is the place where they interact with the most important members of their social network.

As anticipated, access to tangible supports—a source of a loan in a financial crisis, availability of help with childcare, and access

to help with transportation—significantly reduced the effects of the poverty-related risk factors and the odds of maternal depression. This is consistent with previous research on the general importance of material support for mental health; as Belle (1990) observes, the timely provision of instrumental aid may prevent the escalation of a crisis into catastrophe and may keep a stressful event from becoming a chronically stressful condition. It is also important to note that lack of access to such supports is associated not only with a greater likelihood of depression but can pose a significant barrier to obtaining mental health treatment (Miranda et al., 2003; Silver, Heneghan, Bauman, & Stein, 2006).

We hypothesized that self-reports of more frequent experiences of everyday discrimination would adversely affect maternal mental health. However, the magnitude of the impact of mothers' self-reports of chronic, routine experiences of discrimination on probable depression suggests that perceived discrimination plays a strong role in the mental health of this community sample of impoverished African American mothers. Although emotional support and some aspects of instrumental support remained protective, when the protective factors were taken into account, the effect of discrimination became slightly stronger, suggesting that the protective factors did nothing to reduce the negative effect of discrimination on depression and possibly even exacerbated it, although given the size of the effect we are reluctant to speculate about this. None of the sociodemographic characteristics or poverty-related risk factors remained significant with the addition of the Everyday Discrimination scale, and adding the scale greatly increased the likelihood of maternal depression.

It is not clear what is driving this; it is possible that mothers' mental distress influenced their perceptions of unfair treatment. However, a national longitudinal study of African Americans found no relationship between baseline measures of depression and subsequent reports of discrimination (Brown et al., 2000), and another recent longitudinal study of African American women found that a change over time in everyday discrimination was significantly associated with a change over time in depressive symptoms, supporting the hypothesis of a causal role for discrimination (Schulz et al., 2006). Nevertheless, these findings do not rule out the possibility that perceived discrimination is influenced by previous mental health status (Schulz et al., 2006).

An alternative explanation is that being unable to meet basic human needs—not having enough food to feed one's family and living in deteriorated housing—captures mothers' appraisal of their global quality of life as impoverished women in a potentially racialized setting. The Everyday Discrimination scale measures chronic unfair treatment, not necessarily because of race/ethnicity (Mossakowski, 2003; Schulz, Williams, Israel, Becker, Parker, James, et al., 2000; Schulz, Gravlee, Williams, Israel, Mentz, & Rowe, 2006; Williams et al., 1997). We did not ask mothers to attribute a reason for their experiences of unfair treatment; thus, we can make no conclusions about the reasons for the discrimination they perceived. However, the profound racial/ethnic disparities that exist in almost every indicator of well-being in the United States might well be perceived as unfair, as might be the discrimination to which many women are exposed by virtue of their gender (Belle & Doucet, 2003; Klonoff, Landrine, & Campbell, 2000). The questions about everyday discrimination may capture chronic exposure to everyday insults that reflect profound social rejection. Such routine exposure to indignities that one can never

really prepare for may build over time and have enduring mental health consequences. Such an interpretation is consistent with Brown's findings on the role of humiliation and entrapment in the etiology of depression (Brown, 2002; Brown & Moran, 1997). As Brown observes in his recent review, "it is also possible to consider the role of entrapment in terms of forms of society" (2002, p. 217).

The finding that religiosity did not confer protection against depression in our sample is inconsistent with other research that has found religious involvement to be a protective factor for African Americans (Taylor et al., 2004). Although African Americans have higher rates than Whites of most physical health conditions, they tend to have equivalent or lower rates of major depression (Kessler et al., 1994; Siefert et al., 2001; Somervell, Leaf, Weissman, Blazer, & Bruce, 1989; Williams, 1997). This difference has been thought to relate to higher levels of religious involvement and social support, as a number of studies of African Americans have documented the protective effect of religiosity for depression (Taylor et al., 2004a; Williams, 1997). Our failure to find such an effect may be because of our limited measure of religiosity. Our single item measured only self-rated religiosity, not religious affiliation or religious participation, which would be more likely to capture the social support dimension of religious involvement. Alternatively and plausibly, religiosity may not be a sufficient remedy for the deleterious effects of discrimination on mental health. Some research on religiosity and depression has shown the absence of a stress-buffering effect, particularly among women (Taylor et al., 2004a).

#### *Study Limitations and Implications for Research*

This study provides new insights into the pathways whereby poverty and discrimination might operate to influence maternal depression among low-income African American mothers, a particularly vulnerable group. However, our findings must also be considered within the context of a number of limitations. Our cross-sectional design precludes causal influence. It is plausible that everyday discrimination may act as a mediator of some of the poverty-related risk factors on maternal depressive symptoms. For example, such factors as food insufficiency and poor housing may exacerbate perceptions of everyday discrimination, which in turn elevate depressive symptoms. Clearly, longitudinal studies are needed to better understand the complex relationships between poverty, discrimination, and maternal mental health. In addition, the limitations of our measures must be considered; future studies should include a diagnostic measure of depression, as well as better measures of housing conditions and religiosity. More comprehensive and detailed measures of discrimination are needed. Future research should incorporate multiple measures, including those that focus specifically on discrimination because of race/ethnicity, gender, and socioeconomic status (see, e.g., Landrine et al., 2006), as well as measures of lifetime and recent exposure to acute discriminatory events.

As is the case with other studies of perceived discrimination, we are dependent on self-report and are unable to confirm the objectivity of respondents' self-reports of discrimination; mothers may have overestimated or underestimated their actual experiences (Gee et al., 2006). Of importance, individual measures of discrimination do not examine institutional discrimination and other forms

of societal oppression (Gee et al., 2006). This is a critical area for future research. The generalizability of our findings is limited by the characteristics of our sample; future research should investigate specific and modifiable risk and protective factors for depression in other vulnerable groups. Finally, studies are needed to better understand the resilience of impoverished African American mothers who do not become depressed despite their stressful circumstances (Belle, 1990).

#### *Implications for Mental Health Services Delivery*

Despite these limitations, our findings have implications for reducing the burden of depression in low-income African American mothers. As noted, the high prevalence of probable depression in our study implies a substantial unmet need for mental health services. Many low-income minority women have no health insurance or regular source of health care, and even when care is available, depression may remain undetected, untreated, or inadequately treated (Miranda et al., 2003). For those who do have access to care, the responsibilities of motherhood, especially in concert with the burdens of poverty, can make depression difficult to treat (Grote & Frank, 2003). Engagement in treatment can be especially challenging, because poor mothers typically devote their limited financial resources and emotional energy to their families and may feel guilty about taking time to attend to their own mental health needs (Grote & Frank, 2003). Moreover, clinician bias and stereotyping, conscious or unconscious, contributes to the poor quality of mental health care received by racial/ethnic minorities (Schraufnagel, Wagner, Miranda, & Roy-Byrne, 2006).

Alleviating the poverty- and race-related risk factors for maternal depression identified by our study could potentially improve mental health treatment outcomes for impoverished African American mothers. A recent randomized, controlled trial of treatment of depression in predominantly Black or Latina low-income women found that providing child care (reimbursement of \$10 per hour of treatment so that participants could pay someone they knew or get care at the treatment site if no one was available); transportation (taxi vouchers, a prepaid hired van, or reimbursement of subway or bus costs); and encouragement to adhere to prescribed evidence-based treatment (medication or psychotherapy) resulted not only in lower levels of depressive symptoms but higher levels of social and instrumental role functioning compared with the control group, which received the standard referral to community mental health services. Of importance, treatment was tailored for each ethnic population and included the use of professionals sensitive to low-income and minority populations (Miranda et al., 2003).

#### *Implications for Prevention, Intervention, and Public Policy*

If confirmed by additional research, our findings also have important implications for interventions to prevent the onset, maintenance, or recurrence of depression in low-income African American mothers. We found that household food insufficiency and poorly maintained housing significantly increased the likelihood of maternal depression. Both are conditions that are relatively amenable to change compared with more traditional and global risk factors for depression. Although the limitations of the current political climate must be acknowledged, there are nonetheless actions that can be taken. As two



recent position statements of the American Dietetic Association (2002, 2006) note, food insecurity and hunger in the United States can be alleviated through a variety of immediate as well as long-range interventions. Long-range interventions include advocating for the provision of adequate funding for food and nutrition assistance programs; this can be done by educating professionals, legislators, policymakers, and community members about the effects of household food insufficiency on mental health and by serving as advocates for the nutritionally vulnerable. More immediately, because federal and other food assistance programs are underutilized by those eligible, mental health and other professionals serving low-income mothers can inform them about such programs and facilitate their access to them (American Dietetic Association, 2002, 2006). Other interventions that have proven helpful include food buying cooperatives, food recovery programs, and community gardens for residents of public housing, (American Dietetic Association, 2002, 2006).

Similarly, mental health and other professionals serving low-income women and their families can advocate for policies that assure decent and affordable housing and promote community-based initiatives to improve housing quality (Hood, 2005). There are many immediate actions that can be taken to improve housing quality and safety, such as organizing and supporting tenants rights groups and working with public health and legal aid agencies to intervene in health-threatening conditions such as those posed by peeling paint, mold, moisture, dust mites, and rodents (Hood, 2005).

In addition to advocating for social policies that provide a decent standard of living, to maximize the availability of protective resources, public and private agencies can pool resources with churches and other community organizations to provide brief emergency relief funds and make emergency transportation and childcare available (Ennis et al., 2000). However, what our findings highlight are the limitations of protective resources in the face of chronic exposure to indignities that seem to represent profound and ultimately humiliating societal rejection. Although there are as yet few examples of effective interventions to prevent or combat everyday discrimination, the growing evidence for its adverse effects on physical and mental health indicates an urgent need to develop and implement such interventions widely. Training in cultural competence and performance monitoring for adherence to basic guidelines, for example, need not be limited to health care professionals (Barr & Wanat, 2005).

The risk and protective factors for depression in low-income African American mothers we have identified here can potentially be changed, but we recognize the challenges that are created by their political and social context. Ultimately, modification of these factors requires not only their recognition as determinants of mental health, but also the political will and commitment needed to change them. This will require interventions that operate within and across levels to reduce both individual and collective mental health risks (Wells, Miranda, Bruce, Alegria, & Wallerstein, 2004). As Link and Phelan (1995) point out, individually focused efforts are unlikely to succeed unless the fundamental social causes of disease are also addressed. Mental health professionals can play a critical role in this important effort.

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