

RESEARCH ARTICLE

Material hardship is associated with posttraumatic stress disorder symptoms among low-income Black women

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Abstract

The link between socioeconomic status and posttraumatic stress disorder (PTSD) symptoms is well established. Given that Black women are disproportionately burdened by both poverty and PTSD symptoms, research focusing on these constructs among this population is needed. The current study assessed the association between material hardship (i.e., difficulty meeting basic needs) and PTSD symptoms among 227 low-income Black women in the United States. We explored several potential explanations for the association between poverty and PTSD symptoms (e.g., individuals living in poverty may experience higher levels of trauma exposure; individuals living in poverty may have less access to relevant protective resources, like social support; poverty itself may represent a traumatic stressor). Using robust negative binomial regression, a positive association between material hardship and PTSD symptoms emerged, $B = 0.10$, $p = .009$, $SMD = 0.08$. When trauma exposure was added to the model, it was positively associated with PTSD symptoms, $B = 0.18$, $p < .001$, $SMD = 0.16$, and material hardship remained positively associated with PTSD symptoms, $B = 0.10$, $p = .019$, $SMD = 0.08$. When social support indicators were added to the model, they were not associated with PTSD symptoms; however, material hardship remained significantly associated, $B = 0.10$, $p = .021$, $SMD = 0.08$. In the model with material hardship and trauma exposure, a significant interaction between material hardship and trauma exposure on PTSD symptoms emerged, $B = -0.04$, $p = .027$. These results demonstrate the importance of including material hardship in trauma research, assessment, and treatment.

There is a well-established association between poverty and mental health (e.g., Rai et al., 2013; Sturm & Gresenz, 2002). Poverty is associated with higher levels of stress, anxiety, depression, and the stress hormone cortisol (see Haushofer & Fehr, 2014, for a review), and the risk of meet-

ing the criteria for a psychiatric disorder is higher among individuals of lower socioeconomic status in the United States (Martins et al., 2012). A subset of this literature has focused on symptoms of posttraumatic stress disorder (PTSD). The findings from several systematic reviews

and meta-analyses have demonstrated a reliable association between low socioeconomic status and PTSD symptoms (Brewin et al., 2000; Tang et al., 2017; Visser et al., 2017).

There has been a call for researchers and mental health professionals to focus on PTSD symptoms among low-income Black women given their unique experience at the intersection of multiple marginalized identities (Bryant-Davis et al., 2010). In the United States, women are 36% more likely to live in poverty than men, with an estimated 12% of U.S. women living in poverty (Fins, 2019); the rate of poverty is particularly high among Black women (i.e., 20%; Fins, 2019). Women are also disproportionately burdened by PTSD (American Psychiatric Association [APA], 2013; Brewin et al., 2000; Visser et al., 2017). There is some evidence to suggest that Black women may be more likely to develop PTSD than women of other races (Erving et al., 2018; Seng et al., 2009), although previous literature has been somewhat mixed with regard to relative risk. A potential explanation for these mixed findings is the presence of an interaction effect of race and socioeconomic status whereby racial differences in mental health outcomes may only exist for the lowest socioeconomic groups (see Ghafoori et al., 2013, for a review). Specifically, the relative risk for PTSD symptoms among Black women living in poverty may be higher due to higher levels of trauma exposure; less access to resources, such as social support; or the potentially traumatic experience of poverty itself (Bryant-Davis et al., 2010; Hodgetts et al., 2007; Holmes et al., 2020; Lacey et al., 2015; Quine et al., 2004).

Although it is understudied relative to research in other populations, the association between poverty and PTSD symptoms has been replicated among samples composed entirely or predominantly of Black women. For example, Bryant-Davis et al. (2010) found that Black women's income was inversely associated with PTSD symptoms. In addition, food insecurity has been positively associated with women's likelihood of screening positive for PTSD as well as more severe PTSD symptoms in samples composed predominantly of Black women (Golin et al., 2016; Whittle et al., 2019). Research is needed to (a) more specifically assess the role of difficulty meeting basic needs (i.e., material hardship) and (b) ascertain mechanisms that explain the association between poverty and PTSD symptoms.

Material hardship refers to a difficulty meeting basic needs, and previous scholars have called for additional research focused on material hardship given the limitations of using income levels to assess poverty. Measures of income fail to account for debt; cost of living; access to credit and other resources such as food stamps (Streeten, 1998; U.S. Department of Health and Human Services, 2004); and, in samples wherein all participants report

low levels of income, there may be a restricted range in income. Further, research has demonstrated divergence between measures of income and material hardship (Short, 2005). Although less research has been conducted on material hardship, it has been linked more strongly to mental health difficulties (Kiely et al., 2015; McCarthy et al., 2018) than income (Butterworth et al., 2012). Measures of material hardship are particularly important for understanding women's experiences of poverty. Women are more likely than men to assume the role of caretaker for children and aging relatives (Eagly & Wood, 2016) and, thus, may bear the primary responsibility for feeding, clothing, and diapering children. Women's disproportionate participation in these roles may render them particularly vulnerable to material hardship (e.g., Smith et al., 2013), thus necessitating a focus on material hardship to accurately capture women's experiences of poverty.

In addition to focusing on material hardship, research is needed to ascertain the mechanisms that explain the association between poverty and PTSD symptoms. Several potential explanations have been posited (see Bryant-Davis et al., 2010). First, as suggested by a large base of literature, women living in poverty may experience higher levels of exposure to traumatic events that carry a high conditional risk for PTSD symptom development (e.g., intimate partner violence, sexual violence; Breiding et al., 2017; Byrne et al., 1999). Additionally, research has demonstrated that Black women living in poverty in the United States are exposed to more potentially traumatic events than their majority counterparts and are confronted with the cumulative stress of their intersecting marginalized identities (i.e., race-, class-, and gender-based oppression; Bryant-Davis et al., 2010; Lacey et al., 2015). Experiencing multiple traumatic events has been shown to increase an individual's risk for experiencing adverse outcomes, including PTSD symptoms (Edwards et al., 2003; see Gill & Page, 2006, for a review). Relatedly, poverty and trauma exposure may also exhibit a combined effect wherein the burden of living in poverty may render women more vulnerable to developing PTSD symptoms when they are exposed to traumatic events.

A second potential explanation for the association between poverty and PTSD symptoms is that individuals living in poverty may have access to fewer resources that could serve as protective factors against the development of PTSD symptoms (Bryant-Davis et al., 2010). One resource that may be particularly important to examine in the context of low-income Black women is social support. Black women may be disinclined to seek formal or institutional support due to a cultural mistrust informed by a long, enduring history of medical exploitation of the Black community (Washington, 2006). For low-income Black women, specifically, there may be additional financial and

logistical barriers to accessing formal institutional support. By comparison, social support may be viewed as a safer and more comfortable resource on which to rely as it also aligns with the cultural values of collectivism and interdependence (Sue & Sue, 2008). Social support has been found to be negatively associated with PTSD symptoms in samples of Black women trauma survivors in the United States (Bryant-Davis et al., 2011, 2015). Previous research has also demonstrated that social support is protective for women living in poverty (Radey, 2018; Viseu et al., 2018); however, social support has also been shown to be comparatively low in this population (e.g., Goodman et al., 2009; Holmes et al., 2020). Although women living in poverty may have extended social networks, the strength of these networks may be weaker due to the inadequacy of the resources (e.g., finances, time) needed to maintain the health of the network (Goodman et al., 2009). Taken together, poverty may act as a barrier to the creation and utility of social support, and low levels of social support may leave women vulnerable to PTSD symptoms. This phenomenon may be particularly concerning for low-income Black women given that social support may be a culturally relevant source of resilience.

Finally, women's experiences of poverty may be potentially traumatic in and of themselves. Research has pointed to the potentially injurious and life-threatening impact of material hardship in particular. For example, homelessness involves exposure to the elements and has been linked to potentially life-threatening illnesses (e.g., Hodgetts et al., 2007; Quine et al., 2004). Substandard housing, another component of material hardship, poses a risk for serious health concerns and death via chronic exposure to toxins such as lead and mold, (e.g., Rauh et al., 2004; Weiss, 2000). Further, food insecurity may lead to malnutrition and starvation and has been demonstrated in the literature to be related to more acute and chronic health conditions as well as overall poorer health (e.g., Gregory & Coleman-Jensen, 2017; Yoo et al., 2009). Conceptualizing material hardship as potentially traumatic is consistent with previous research demonstrating that other forms of oppression can be experienced as traumatic and ultimately contribute to PTSD symptoms (Holmes et al., 2016; Kira et al., 2019; Williams et al., 2021) as well as evidence that poverty and trauma exposure have similar effects on brain development (Blair & Raver, 2016).

The current study sought to elucidate the association between material hardship and PTSD symptoms among a treatment-seeking sample of low-income Black female primary caregivers with depressive symptoms, selected for their disproportionate risk for both material hardship (Fins, 2019) and PTSD symptoms (Erving et al., 2018; Seng et al., 2009). We examined the role of material hardship, specifically, given its aforementioned strengths relative

to measuring income (Streeten, 1998; U.S. Department of Health and Human Services, 2004) as well as its relevance to understanding women's experiences of poverty and its utility in distinguishing among degrees of poverty among a sample in which all participants report low levels of income.

We hypothesized that material hardship and PTSD symptoms would be positively associated. Further, we predicted that trauma exposure would be associated with PTSD symptoms in the presence of material hardship. We next hypothesized that social support would be uniquely negatively associated with PTSD symptoms in the presence of material hardship and trauma exposure. Additionally, we predicted that material hardship would remain uniquely positively associated with PTSD symptoms even in the presence of other predictors. Finally, we hypothesized that there would be a significant interaction effect whereby the positive association between trauma exposure and PTSD symptoms would be stronger at higher levels of material hardship.

METHOD

Participants and procedure

Cognitive behavioral therapy (CBT) in public housing

The analyses presented in this paper use data combined from two studies. In the first study, the Mental Health Outreach for MotherS (MOMS) Partnership provided a group CBT intervention tailored to pregnant and parenting women in public housing complexes in the United States through a cluster randomized controlled trial that took place from October 2012 to June 2017. Public housing complexes were randomized to accommodate delivery of the intervention by a clinician only or co-delivered by a clinician and a community health worker. To be eligible to participate, women had to (a) be at least 18 years old; (b) live in a public housing complex or receive housing subsidies (c) be the parent, primary caregiver, or legal guardian to a child 18 years old or younger; and (d) have a score of 16 or higher on the Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977).

CBT in community locations

The second study, the Superstorm Sandy Mental Health Intervention Study, was conducted between March 2015 and September 2017. Superstorm Sandy was a massive storm in October 2012 that impacted the Mid-Atlantic and Northeast regions of the United States. The storm caused

more than \$70,000,000,000 in damage nationally and was among the costliest natural disasters in U.S. history. The MOMS Partnership provided CBT in community sites, such as schools, afterschool programs for young children, grocery stores, and community office spaces. The eligibility criteria for this study were the same as the previously described study except that instead of living in public housing or receiving housing subsidies, women had to be impacted by Superstorm Sandy, live in New Haven County of Connecticut during Superstorm Sandy, be a U.S. citizen or noncitizen national, and report an income of less than 325% of the Federal Poverty Level (i.e., less than \$77,512 [USD] per year for a family of four at the time of study enrollment).

Both CBT studies were approved by the Yale Institutional Review Board. Participants in both studies provided informed consent, were compensated \$10 for completing the screening questionnaire, and completed a baseline assessment comprising self-report measures. Participants enrolled in the CBT study in public housing were compensated \$40 for their baseline assessment, and participants enrolled in the CBT study in community locations were compensated with basic needs (e.g., soap, paper towels, detergent, toothpaste). The current study was a secondary analysis of data collected from the screening questionnaire and baseline assessment from both CBT studies and was limited to participants who self-identified as Black or African American, which comprised most women enrolled in these CBT studies. The final analytic sample included 227 participants ($n = 134$ from the CBT in public housing study, $n = 93$ from the Superstorm Sandy Mental Health Intervention study). Most women identified as non-Hispanic (92.1%). The mean participant age was 39.19 years ($SD = 10.79$) and, among women who reported information on education ($n = 208$), participants had, on average, a high school education.

Measures

Material hardship

A screening questionnaire included six questions related to participants' difficulties in accessing basic needs, including utilities; sufficient food and access to healthy foods; and supplies such as clothes, food, and cleaning or hygiene supplies. Two questions regarding sufficient food were adapted from the U.S. Household Food Security Survey Module (United States Department of Agriculture, 2012). Because response options varied by item, participant responses were dichotomized such that any endorsement

of a type of material hardship was scored as 1, and denial of a type of material hardship was scored as 0 (see Table 1). Responses were summed, with scores ranging from 0 to 6. Scoring the items in this manner allowed us to create a count variable similar to the measure of trauma exposure utilized in the current study.

Trauma exposure

Participants were asked whether they experienced 12 specific traumatic events, with items taken from the National Comorbidity Survey (Kessler et al., 1995) and adapted based on clinical and community input on questions that were acceptable to ask in a community setting. For example, one item was dropped from the list ("You were seriously neglected as a child"), as there were concerns that this could be potentially "retraumatizing" to ask in a community setting, and "experiencing torture or terrorism" was added as this was deemed applicable to former refugees that may participate. The remaining 11 items were included, with the wording of one item adjusted to be more appropriate for community interaction. Most items assessed traumatic events the respondent personally experienced; however, one item asked about witnessing someone being badly injured or killed, and participants were also asked whether they had experienced a great shock because one of the events they were asked about had happened to someone close to them. Trauma exposure was defined as the number of types of traumatic events the participant endorsed, with scores ranging from 0 to 12.

Social support

Social support was assessed using the 27-question Modified Kendler Social Support Interview (Spoozak et al., 2009), which is used to evaluate the respondent's quality of social support and frequency of contact within certain relationships, including support in the community. The present study examined both emotional support (i.e., being listened to and understood by important others) and instrumental support (i.e., receiving help from important others as needed). Response options related to emotional and instrumental support ranged from 1 (*not at all*) to 5 (*a great deal*). Scores for the Instrumental Support and Emotional Support subscales were calculated by averaging responses; scores ranged from 1 to 5. In the present sample, Cronbach's alpha for internal consistency reliability was .51 for the Instrumental Support subscale and .76 for the Emotional Support subscale.

TABLE 1 Questions used to assess material hardship

Question and response	Material hardship scoring	% missing
Does your family ever worry about not having heat or utilities?		3.1
Yes	1	
No	0	
Does your family ever run out of food before the end of the month?		4.9
Yes	1	
No	0	
In the past year, I couldn't afford to eat healthy meals ^a .		1.8
Often true	1	
Sometimes true	1	
Never true	0	
In the past year, I couldn't feed my child/ children healthy food because I couldn't afford that ^a .		4.0
Often true	1	
Sometimes true	1	
Never true	0	
How much trouble did you have paying for supplies like formula, food, clothes, and shoes?		33.5
Lots of trouble	1	
Some trouble	1	
No trouble at all	0	
How much trouble did you have paying for other cleaning/hygiene supplies such as shampoo, toothpaste, pads, and tampons?		23.4
Lots of trouble	1	
Some trouble	1	
No trouble at all	0	

^aAdapted from the U.S. Household Food Security Survey Module (United States Department of Agriculture, 2012).

PTSD symptoms

The Modified PTSD Symptom Scale (MPSS; Falsetti et al., 1993) is used to assess the frequency and distress associated with 17 PTSD symptoms that correspond to the symptom criteria given in the fourth edition of the *Diagnostic and Statistical Manual of Mental Disorders (DSM-IV)*. Participants were instructed to respond to symptom items using their worst traumatic experience, among the 12 assessed, as a reference point for their ratings. Response options for frequency ranged from 0 (*not at all*) to 3 (*5 or more times per week*), and response options for distress ranged from 0 (*not at all distressing*) to 4 (*extremely distressing*). Scores were summed, with total scores ranging from 0 to 119. The MPSS has demonstrated strong convergent and concurrent validity and its clinical cutoff (i.e., a score of 29 or higher) has demonstrated 89% sensitivity and 77% specificity (Ruglass et al., 2014). Internal consistency reliability for PTSD symptoms was .96 in the current study.

Data Analysis

Missing data and preliminary analyses

The results of Little's test (1988) indicated data were not missing completely at random. To fulfill the assumption of missing at random, variables significantly associated with the presence of missingness were included in the multiple imputation model. Over half (59.5%) of the sample responded to all six material hardship questions; 35.2% of respondents were missing between one and two questions, and 5.3% were missing between three and six questions. Missingness for each material hardship question is described in Table 1. Three participants were missing responses to between 16.7% and 100.0% of the items on the social support subscales. No data were missing on either the trauma exposure items or the MPSS. To address missingness, we conducted multiple imputation using the fully conditional method (Eekhout

et al., 2014), with 10 imputations performed (von Hippel, 2020). Individual responses were imputed, and scored values were calculated from the imputed data. Participant demographic and clinical characteristics are reported on raw, not imputed, data, with mean values and standard deviations given. Bivariate correlations were calculated among study variables using the imputed datasets.

Primary analyses

Due to the skewness of PTSD symptoms, Shapiro-Wilk's $W = .86$, $p < .001$, robust negative binomial regression was used to examine the association between predictor variables and PTSD symptoms (Zou, 2004). Although Poisson regression was initially considered, the deviance statistic indicated that the Poisson model did not provide a good fit for the data. Robust negative binomial regression displayed an improved fit by accounting for the overdispersion present, and the sandwich estimator of the standard error of the estimated model coefficients accounted for the effect of outliers. Bivariate associations between PTSD symptoms and predictor variables were assessed. Variance inflation factors did not indicate that multicollinearity was a concern. Models to investigate the established hypotheses were run by including main effect terms first. Any predictor variables that were not significantly associated with the PTSD symptoms in the model were dropped before the interaction term was added. One a priori hypothesized interaction (i.e., Material Hardship \times Trauma Exposure) was of interest in this study. We used the PROC MIANALYZE function in SAS (Version 9.4; SAS Institute Inc., Cary, NC) to combine the results from the multiple imputation robust negative binomial regression models. The *combchi* macro in SAS was used to combine Type 3 chi-square statistics (Allison, 2007). Rate ratios and standardized mean differences are presented for the negative binomial models (Coxe, 2018). Statistical analyses were conducted with SAS (Version 9.4) and R (Version 4.0.3).

We tested whether demographic variables (i.e., maternal age, education, Hispanic ethnicity) were associated with PTSD symptoms; however, we found no statistically significant associations. Thus, these variables were not included as covariates in the robust negative binomial regression model. We did, however, rerun our model including demographic covariates, and the statistical conclusions and estimates did not change after adjustment. To address our first hypothesis, that there would be a positive association between material hardship and PTSD symptoms, our initial model (Block 1) included material hardship alone. In Block 2, we added trauma exposure as a predictor to test our hypothesis that trauma exposure would be associated with PTSD symptoms in the presence of material hardship.

In Block 3, we added emotional and instrumental support to test (a) whether social support would be uniquely negatively associated with PTSD symptoms in the presence of material hardship and trauma exposure and (b) whether material hardship would remain uniquely positively associated with PTSD symptoms even in the presence of the other predictors. Finally, in Block 4, we added the interaction of material hardship and trauma exposure to examine whether a positive association between trauma exposure and PTSD symptoms would be stronger at higher levels of material hardship, as expected.

RESULTS

Descriptive statistics

Of the 135 participants with complete material hardship data, most participants (92.6%) indicated having experienced at least one material hardship, and 88.1% of the sample endorsed two or more material hardships; participants endorsed an average of 4.09 ($SD = 1.86$) material hardships. The most commonly endorsed material hardship was trouble paying for supplies such as baby formula, food, clothes, and shoes (80.0%). Most participants (90.8%) endorsed experiencing at least one trauma type and 77.8% endorsed two or more trauma types, with an average of 3.65 ($SD = 2.61$) trauma types endorsed. The most commonly endorsed trauma was "been hit, kicked, slapped" (57.3%). Participant scores on the Emotional and Instrumental Support subscales both fell below the scale's midpoint, indicating that, on average, participants experienced social support between *a little* and *sometimes*. The mean PTSD symptom score was 24.04 ($SD = 24.70$), with 82.8% of participants endorsing some degree of PTSD symptoms (i.e., scored above 0) and 33.0% scoring at or above the suggested clinical cutoff of 29 points (Ruglass et al., 2014). There were no statistically significant differences in demographic or primary variables between participants from the two studies. Descriptive statistics and bivariate correlations among the primary variables are displayed in Table 2. All predictor variables except emotional support were individually significantly associated with PTSD symptoms (Table 2).

Primary Analyses

In Block 1, material hardship was positively associated with PTSD symptoms, exhibiting a small effect (Table 3). When trauma exposure was added to the model (Block 2), it was positively associated with PTSD symptoms and material hardship remained positively associated with PTSD symptoms, with both exhibiting small effects. Nei-

TABLE 2 Correlations, means, and standard deviations among primary variables

Variable	Imputation model results					Initial dataset				
	2	3	4	5	<i>n</i>	<i>M</i>	<i>SD</i>	Minimum	Maximum	<i>p</i> ^a
1. Material hardship	.12	-.10	-.15*	.15*	135	4.09	1.86	0	6	<.001
2. Trauma exposure	–	-.13	-.19**	.44***	227	3.65	2.61	0	11	<.001
3. Emotional support		–	.91***	-.11	226	2.38	0.74	1	4.3	.009
4. Instrumental support			–	-.13*	226	2.32	0.78	1	4.3	.001
5. PTSD symptoms				–	227	24.03	24.70	0	117	<.001

Note: PTSD = posttraumatic stress disorder.

^aShapiro-Wilk *p* value indicating skewness of the variable.

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

ther emotional nor instrumental support was associated with PTSD symptoms when included in a model with material hardship and trauma exposure (Block 3); as a result, both were removed from the final model. However, material hardship remained significantly positively associated with PTSD symptoms in the presence of trauma exposure, emotional support, and instrumental support, exhibiting a small effect. When the interaction of material hardship and trauma exposure was included (Block 4), it was significantly associated with PTSD symptoms (Table 3, Figure 1). Specifically, at higher levels of material hardship, the association between trauma exposure and PTSD symptoms was weaker. For example, the average PTSD symptom score increased by 29.3% for each 1-unit increase in trauma exposure when material hardship equaled 2.22 (i.e., 1 standard deviation below the mean), but the average PTSD symptom score increased by only 11.6% for each 1-unit increase in trauma exposure when material hardship equaled 5.95 (i.e., 1 standard deviation above the mean).

DISCUSSION

The current results demonstrate the considerable resilience of low-income Black female primary caregivers with depressive symptoms in the United States. Most participants experienced material hardship (92.6%) and trauma exposure (90.8%); however, only 33.0% endorsed PTSD symptoms above the clinical threshold. The current results corroborate the findings of previous studies demonstrating that poverty is associated with PTSD symptoms (e.g., Bryant-Davis et al., 2010; Whittle et al., 2019). This is important given that most previous studies have focused on constructs like income, which are not equivalent to material hardship (Short, 2005), and material hardship may be particularly relevant to understanding poverty among women (Smith et al., 2013).

Trauma exposure emerged as an important construct in understanding PTSD symptoms in low-income Black women. Exposure to a higher number of traumatic events

was associated with a higher degree of PTSD symptoms. Contrary to our hypothesis, the positive association between trauma exposure and PTSD symptoms was weaker, not stronger, at higher levels of material hardship. This unexpected finding may be better understood in the context of the “Strong Black Woman” ideology. Historically, Black women have been posited to be stronger than White women as a means of attempting to justify slavery (see Harrington et al., 2010, for a review). The message was later reappropriated among Black women in response to degrading images of Black women, thus centering strength and resilience as core components of Black women’s racial identities (see Harrington et al., 2010, pp. 469–470). It may therefore be that Black women who are most burdened by material hardship adapt in ways that lend them strength in the face of other adversity (i.e., trauma exposure). Although the Strong Black Woman ideology may serve as a positive and affirming image for Black women, it may also create pressure to maintain an image of strength (Williams et al., 2014). Thus, Black women experiencing the highest levels of both material hardship and trauma exposure may choose not to disclose the extent of the PTSD symptoms they are experiencing if they perceive this to be at odds with the cultural values of strength and resilience. Future research is needed, however, to explore these possibilities and elucidate this finding.

The current results highlight the importance of trauma exposure in understanding PTSD symptoms; however, they do not support the possibility that disproportionate trauma exposure accounts for the positive association between material hardship and PTSD symptoms. Contrary to previous research on poverty (e.g., Breiding et al., 2017; Byrne et al., 1999), higher levels of material hardship were not associated with higher levels of trauma exposure in the current sample, and the association between material hardship and PTSD symptoms remained when trauma exposure was examined concurrently. Similarly, neither emotional nor instrumental support accounted for the association between material hardship and PTSD symptoms. It may be that the unique association between

TABLE 3 Multiple imputation robust negative binomial regression models of posttraumatic stress disorder (PTSD) symptoms

Model	B	95% CI	p	Rate ratio ^a	95% CI	SMD	95% CI
Block 1							
Material hardship	0.10	[0.02, 0.17]	.009	1.10	[1.02, 1.19]	0.08	[0.01, 0.15]
Block 2							
Material hardship	0.10	[0.02, 0.17]	.019	1.10	[1.02, 1.19]	0.08	[0.01, 0.15]
Trauma exposure	0.18	[0.13, 0.23]	<.001	1.20	[1.14, 1.26]	0.16	[0.12, 0.21]
Block 3							
Material hardship	0.10	[0.02, 0.20]	.021	1.10	[1.01, 1.19]	0.08	[0.01, 0.15]
Trauma exposure	0.18	[0.14, 0.22]	<.001	1.20	[0.15, 1.25]	0.16	[0.12, 0.21]
Emotional support	-0.01	[-0.49, 0.47]	.889	0.99	[0.61, 1.63]	-0.01	[-0.31, 0.51]
Instrumental support	0.03	[-0.41, 0.46]	.840	1.03	[0.64, 1.59]	0.02	[-0.29, 0.48]
Block 4							
Material hardship	0.24	[0.09, 0.39]	.019	—	—	—	—
Trauma exposure	0.34	[0.23, 0.46]	.002	—	—	—	—
Material Hardship x Trauma Exposure	-0.04	[-0.06, -0.01]	.027	—	—	—	—

Note: The quaslikelihood under the independence model criterion (QICu) statistics were -42,728.97 for Block 1, -33,311.46 for Block 2, -33,014.62 for Block 3, and -32,750.23 for Block 4. The null model QICu was -44,730.75. SMD = standardized mean difference.

^aexp(B).

material hardship and PTSD symptoms is a direct effect in which material hardship is potentially traumatic in and of itself. This would be consistent with previous research demonstrating that material hardship (e.g., homelessness, substandard housing, food insecurity) has the potential to be injurious and life-threatening (Gregory & Coleman-Jenson, 2017; Hodgetts et al., 2007; Rauh et al., 2004), other forms of oppression can be experienced as traumatic (Holmes et al., 2016; Kira et al., 2019; Williams et al., 2021), and trauma and poverty result in similar effects on brain development (Blair & Raver, 2016).

That said, the current results are insufficient to conclude that material hardship directly produces PTSD symptoms. Alternatively, the association between material hardship and PTSD symptoms may be better explained by constructs not examined in the current study. For example, we did not assess experiences of racism or sexism, both of which have previously been linked to PTSD symptoms (Holmes et al., 2016; Williams et al., 2021). As previously described, another potential explanation for higher levels of PTSD symptoms among low-income Black women is that they may lack crucial protective resources (Bryant-Davis et al., 2010). Although the current results did not support the explanatory role of social support, there are other resources this population may lack that still need to be examined, such as insurance coverage and access to high-quality treatment. Finally, the impact of material hardship on PTSD symptoms may occur indirectly by increasing one's vulnerability for PTSD symptoms through a number of other relevant constructs, such as coping strategies or hypothalamus-pituitary-adrenal axis activation

(Goodman et al., 2009; Mehta & Binder, 2012). Future research should test these potential explanations to further clarify the nature of the association between material hardship and PTSD symptoms.

Regardless of the precise mechanism, the current results provide preliminary evidence of the relevance of material hardship to low-income Black women's experience of PTSD symptoms. However, material hardship is not routinely included in current gold-standard trauma assessment tools. For example, in the first session of prolonged exposure therapy (Foa et al., 1991), an empirically supported treatment for PTSD, the clinician administers a trauma interview that assesses not only the client's index trauma but also important contextual factors (e.g., social support, suicide risk assessment, previous help-seeking behavior; Foa et al., 2019). This trauma interview does not currently include any assessment of material hardship; however, the current results suggest that this may be an important contextual factor worthy of inclusion in the trauma interview as well as in other instruments used in the assessment and treatment of trauma exposure and PTSD.

Although the current study exhibited considerable strengths (e.g., relevant sample, specific focus on material hardship), it is also important to acknowledge its limitations. The data are cross-sectional, which precludes conclusions regarding causality, and the observed effects were small in magnitude. Although it is possible that material hardship produces PTSD symptoms, it is also possible that living with a high burden of PTSD symptoms could have deleterious effects on socioeconomic sta-

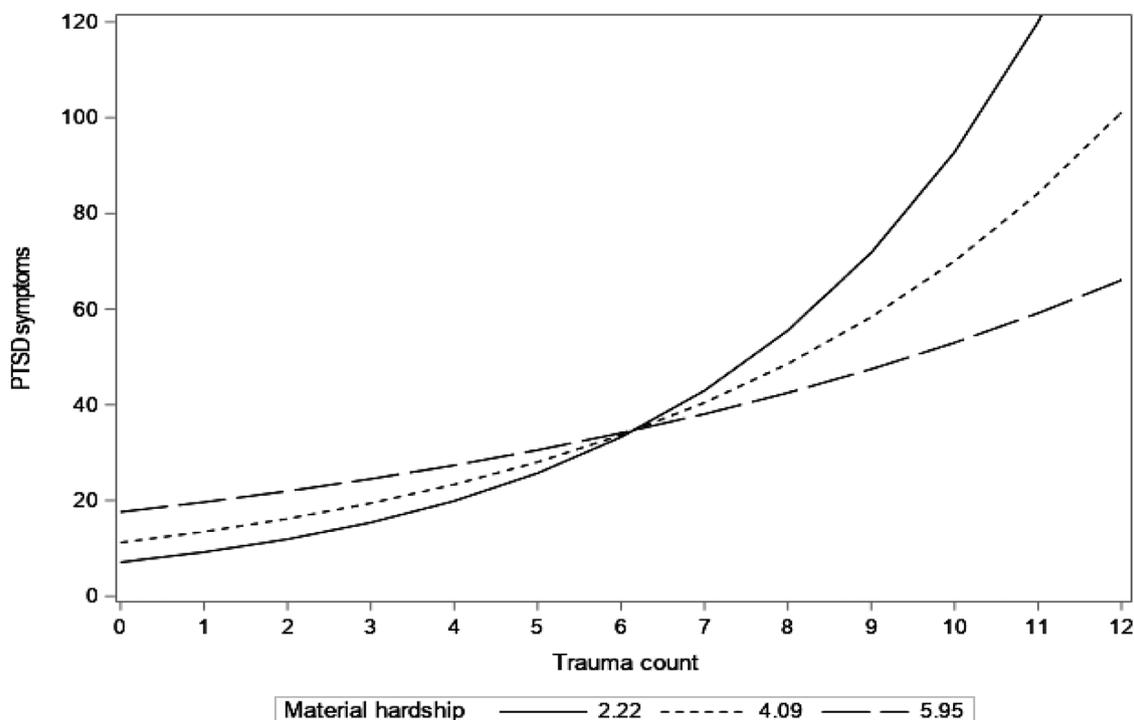


FIGURE 1 Moderating role of material hardship in the association between trauma exposure and posttraumatic stress disorder (PTSD) symptoms

tus. Future research should explore each of these temporal possibilities. There were also measurement limitations. For example, there was low internal consistency reliability for the measure of instrumental support, which may have attenuated effects, increasing the likelihood of a Type II error. Most notably, the items that comprised our assessment of material hardship were not taken from a single validated measure, and they had different response options (see Table 1). There was also a high degree of missing data on the material hardship items (see Table 1). As such, the present findings should be interpreted as preliminary. The current results, as well as the results of previous studies highlighting the importance of assessing material hardship (e.g., Butterworth et al., 2012; Kiely et al., 2015; McCarthy et al., 2018), demonstrate the importance of developing and validating a measure of material hardship to enable rigorous research on the construct.

Because the current study represents a secondary data analysis, the measurement of PTSD symptoms was also limited. Participants were instructed to respond to items measuring PTSD symptoms, using their self-identified worst traumatic experience as a reference point for their ratings. Thus, even if material hardship was itself potentially traumatic, the way PTSD symptoms were assessed may have precluded that phenomenon from being fully captured, thus potentially underestimating the association between material hardship and PTSD symptoms. Fur-

ther, PTSD symptoms were assessed using a self-report measure of *DSM-IV* diagnostic criteria. Some PTSD symptoms overlap with symptoms of other psychiatric disorders that may develop in response to trauma exposure (i.e., anxiety and depressive disorders). Thus, it would be important for future researchers to assess whether material hardship is associated with symptoms that are unique to PTSD, such as intrusions (i.e., unwanted upsetting memories, nightmares, flashbacks, emotional distress, and/or physical reactivity in response to traumatic reminders; APA, 2013). Future research should also attempt to replicate the current findings using a diagnostic interview based on the PTSD criteria in the fifth edition of the *DSM* and anchoring PTSD symptoms to material hardship.

The present sample, which comprised all low-income Black women, was a significant study strength given this population's disproportionate burden of poverty (Fins, 2019) and PTSD symptoms (Erving et al., 2018; Seng et al., 2009). However, we did not directly assess other relevant forms of adversity, such as racism and sexism. Future researchers should examine the potential impact of multiple forms of oppression as well as other aforementioned constructs (e.g., the Strong Black Woman ideology, access to high-quality treatment), that may be relevant to understanding experiences of PTSD symptoms among low-income Black women in the United States.

OPEN PRACTICES STATEMENT

Neither of the studies reported in this article was formally preregistered. Neither the data nor the materials have been made available on a permanent third-party archive; the data are available upon request (samantha.holmes@csi.cuny.edu).

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