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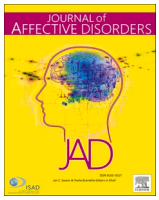

Research paper

# Social connectedness dimensions are associated with lower psychological distress among middle-aged Black Americans

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ABSTRACT

*Purpose:* We examined how multiple dimensions of social connectedness are associated with psychological distress among Black American adults in Milwaukee, WI, USA.
*Methods:* The sample included 897 Black adults from (MIDUS 3, 2016–2017: $n = 389$; and MIDUS Refresher, 2012–2013: $n = 508$). Social connectedness measures included neighborhood cohesion, family/friend support and strain, contribution to community, social contribution (beliefs about one's value to society), and social integration (sense of belonging). Psychological distress was measured using the Kessler-6 Scale (range 0–24) as a continuous outcome. Three serial multiple linear regression models tested associations: Model 1 (unadjusted; included only social connectedness measures), Model 2 (adjusted for demographics and health), and Model 3 (fully adjusted for demographics, health, socioeconomic factors, and spirituality).
*Results:* After adjusting for all covariates in the fully adjusted model, three dimensions of social connectedness were significantly associated with lower psychological distress scores: neighborhood social cohesion ($\beta = -0.74$, 95% CI = -1.09 to − 0.39, $p < 0.001$), support from family ($\beta = -0.62$, 95% CI = -1.17 to − 0.07, $p = 0.028$), and social contribution ($\beta = -0.68$, 95% CI = -1.23 to − 0.12, $p = 0.018$). These associations remained significant across all three progressive models. Other social connectedness dimensions were not significantly associated with psychological distress.
*Conclusions:* Neighborhood social cohesion, family support, and beliefs about contributing meaningfully to society were associated with lower psychological distress among Black adults in Milwaukee. These findings highlight the multifaceted nature of social connectedness and suggest that interventions targeting these specific dimensions may help reduce psychological distress in this population.

## 1. Introduction

Social connections with others are foundational for the well-being of the population (Office of the U.S. Surgeon General, 2023). Social connectedness is an umbrella term that encompasses both perceived and actual relationships with others, along with various elements of group or network membership (Holt-Lunstad, 2020). Social connectedness is a multidimensional construct comprising structural elements (network size, roles), functional elements (support, strain), and qualitative elements (satisfaction, integration). Those dimensions may have distinct and sometimes opposite effects on health outcomes (Holt-Lunstad, 2022). At its core, social connectedness and a sense of belonging are considered fundamental human needs (O'Rourke et al., 2018), reflecting meaningful bonds with physical, relational, symbolic, or even imagined communities that are essential for individual survival and community well-being (Ahn and Davis, 2020).

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Research consistently highlights the significant health benefits of strong social connectedness. Individuals with robust social connections report better sleep quality (Yu et al., 2018), reduced depressive symptoms (Holt-Lunstad et al., 2010), and improved cardiovascular health (Haslam et al., 2015). Conversely, the absence of meaningful and quality social connections is associated with health consequences, including disrupted sleep patterns (Griffin et al., 2020) and elevated depressive symptoms (Chen et al., 2023). The cumulative impacts of various measures of social disconnectedness rival those of well-recognized risk factors such as obesity, binge drinking, and smoking over 15 cigarettes per day (Holt-Lunstad et al., 2017). Moreover, studies have demonstrated that individuals with fewer or lower-quality social ties face significantly elevated mortality risks across diverse causes of death (House et al., 1988). While social connectedness is generally associated with better health and well-being, some negative impacts related to the "dark side" of social connectedness merit attention. Interpersonal relationships, particularly within families, can sometimes be a source of both strain and support (Shin and Gyeong, 2023). Strained family relationships and stress from caregiver burden can negatively impact physical and mental health (Woods et al., 2020). Similarly, the quality of social connections matters significantly—social relationships characterized by negative interactions, criticism, or unrealistic expectations can increase psychological distress even while providing some forms of support (Lincoln, 2000). Evidence from longitudinal research using the MIDUS study demonstrates that greater family relationship strain was associated with a greater number of chronic conditions and a worse health appraisal 10 years later (Woods et al., 2020). High family strain was associated with a 57% increased risk of major depressive episodes across the entire sample (Matthews et al., 2021).

Various aspects of social connectedness, such as engagement with family and friends, time spent with others, have significantly declined over recent decades. In 2003, American adults spent an average of 5.5 h per week socializing, which dropped to 4.5 h by 2019 and further declined to 4 h in 2021 during the height of the COVID-19 pandemic (Sharkey, 2024). In addition, fewer Americans participate in community organizations, religious institutions, and neighborhood activities (Kannan and Veazie, 2023; Putnam, 2015). According to 2024 data from the American Psychiatric Association's Healthy Minds Monthly Poll, 30% of American adults experience weekly loneliness (American Psychiatric Association, 2024). This downward trend of social connectedness was accelerated during the COVID-19 pandemic, as the average time people spent socially isolated daily increased from 309 min to 333 min per day, which was 7.8% increase (Kannan and Veazie, 2023).

Social connectedness might be especially vital for racial minorities such as Black Americans, given their exposure to high and systematic stress levels and structural oppression (Lamblin et al., 2017; Wickramaratne et al., 2022). For Black Americans in the United States, social connectedness can serve as an essential social coping resource due to the negative effects of systemic racism, hyper-incarceration, employment divestment (Wilson, 2019a, 2019b), residential segregation (Darden et al., 2010; Do et al., 2019; Williams and Collins, 2001), and healthcare disparities (Bailey et al., 2017; Rios et al., 2012; Wang et al., 2018). Because of systemic and structural policies and practices of oppression in the U.S., Black individuals experience higher rates of early death among friends and relatives throughout their lives. Black children are three times more likely to lose their mother by age 10, Black adults are twice as likely to lose a child by age 30, and a spouse by age 60 (Umberson, 2017). Social isolation among Black communities may be worsened by projections showing that by 2050, 15% of Black women and 12.6% of Black men will face "kinlessness"—having no immediate family members (Verdery and Margolis, 2017). Physical environments also create barriers to connection, as Black Americans often live in neighborhoods with limited social opportunities and infrastructure that restrict movement (Schindler, 2014; Travieso, 2020).

Despite extensive research on social connectedness, few studies, particularly those examining this topic among Black Americans, have assessed multiple dimensions of social connectedness as they relate to health (Ransome et al., 2023). This gap is particularly problematic from both theoretical and practical perspectives. Theoretically, Holt-Lunstad's framework suggests that structural, functional, and qualitative dimensions may operate through different pathways and have varying protective effects (Holt-Lunstad, 2022). Practically, without understanding which specific dimensions are most protective, we have limited evidence for developing targeted, resource-efficient interventions. For instance, while social connections often provide health benefits through support mechanisms (functional elements), they may simultaneously generate negative consequences through interpersonal strain, conflict, and demands, highlighting the importance of examining both positive and negative relational aspects within a comprehensive framework.

We aim to examine how different dimensions of Holt-Lunstad's social connectedness framework, including structural (neighborhood cohesion), functional (family and friend support and strain), and qualitative (social integration and contribution) elements, are associated with psychological distress in Black Americans at midlife from Milwaukee, Wisconsin. Guided by social support theory (Walen and Lachman, 2000), social well-being theory (Keyes, 1998), and Community Social Organization Theory (Sampson et al., 1997), we hypothesize that positive dimensions of social connectedness will be associated with lower psychological distress, while strain-related dimensions will correlate with increased psychological distress. Our results are expected to contribute to a more theoretically grounded and nuanced understanding of how various social dimensions influence mental health outcomes in Black Americans.

## 2. Materials and methods

### 2.1. Participants

The present study focuses on Black American participants at midlife from the MIDUS (Midlife in the United States) study, combining data from MIDUS 3 (2013–2016; $n = 389$) and the Refresher cohort (2011–2014; $n = 508$). We pooled the two samples to create a cross-sectional dataset, an approach commonly used in MIDUS research to increase statistical power while maintaining sample homogeneity (Hobbs and Ong, 2023; Hughes et al., 2018; Jenkins et al., 2024). The Black American sample was obtained through targeted recruitment in Milwaukee, Wisconsin, using a stratified area probability sampling design that focused on census tracts where at least 40% of the residents were Black or African American; census tracts below this threshold were not included in the Milwaukee sampling frame. Half the selected tracts had median household incomes below $40,000, ensuring representation of lower-income communities (Radler, 2014; Ryff et al., 2015). Milwaukee provides a compelling setting for this investigation as one of the five most racially segregated metropolitan areas in the United States (Cheng, 2022; Kent and Frohlich, 2019), exemplifying the persistent impact of structural racism on neighborhood conditions and health outcomes (Beyer et al., 2016; Downs, 2015; Osypuk and Acevedo-Garcia, 2010). As of the 2020 Census, the city's population of 569,330 includes a substantial Black community (39.8%), with 25% of residents living in poverty and a median household income of $43,125 (United States Census Bureau, 2021).

The MIDUS dataset and detailed documentation of recruitment methods and data collection procedures are accessible through the Inter-university Consortium for Political and Social Research (ICPSR) and related publications (Barry, 2014; Institute on Aging and University of Wisconsin-Madison, 2022; Radler and Ryff, 2010). All participants provided informed consent for their data to be used in statistical analyses. The Institutional Review Board reviewed this study protocol and determined that it did not constitute human subjects research as defined by 45 CFR 46.102(e)(1), exempting it from further IRB oversight.

### 2.2. Mental health outcome – psychological distress

Psychological distress was measured using the 6-item Kessler Screening Scale for Psychological Distress (K6)(Kessler et al., 2002). The K6 scale asks respondents how often they experienced specific negative emotions during the past 30 days: feeling "so sad nothing could cheer you up," "nervous," "restless or fidgety," "hopeless," "that everything was an effort," and "worthless." Each item is rated on a 5-point scale (0 = none of the time, 4 = all of the time), yielding a total score range of 0–24. Higher scores indicate greater psychological distress. The K6 has demonstrated good internal consistency across the MIDUS subsamples (Cronbach's α ranging from 0.83 to 0.85) (Tomitaka et al., 2017). In our Milwaukee datasets, the Cronbach's α for the MIDUS 3 and Refresher are 0.88, and 0.85, respectively, showing good internal consistency. We analyzed psychological distress as a continuous K6 score (range 0–24).

### 2.3. Exposure of interest – social connectedness

Drawing from Holt-Lunstad's (2020) multidimensional framework of social connectedness, we examined eight distinct dimensions of social relationships and community engagement using established and validated measures from the MIDUS dataset. We analyzed each dimension separately through factor analysis with full information maximum likelihood estimation to derive standardized factor scores for the eight latent domains of social connectedness (Boker et al., 2011). We verified the distributions of the latent variables for all measures to ensure their appropriateness for subsequent analyses. We reverse-coded some items to create scales where a higher score indicates a higher level of social connectedness.

We assessed **Neighborhood Social Cohesion (NHSC)** using eight items that captured neighborhood safety (e.g., "Safe alone in the neighborhood at day"), trust (e.g., "Neighbors trust each other"), and quality (e.g., "Buildings and streets kept in good repair") (Keyes, 1998). Items were rated on a 4-point scale (1 = not at all to 4 = a lot) (Cronbach's alpha = 0.80).

**Social Integration (SOCIALINT)** was calculated from three items measuring sense of belonging and community connection (e.g., "Feel close to others in community," "Community is source of comfort") on a 7-point scale (1 = strongly agree to 7 = strongly disagree) (Cronbach's α = 0.54).

**Social Contribution (SOCIALCON)** was calculated from three items measuring beliefs about one's value and contributions to society (e.g., "Have something valuable to give world," "Daily activities not worthwhile for community," "Have nothing important for society") on a 7-point scale (1 = strongly agree to 7 = strongly disagree) (Cronbach's α = 0.54).

**Contribution to Community (CONTCOM)** was derived from six reverse-coded items (e.g., "Many people come to you for advice," "Feel other people need you") measuring perceived societal contributions on a 4-point scale (1 = not at all to 4 = a lot) (Cronbach's α = 0.81). Notably, Social Contribution and Contribution to Community represent distinct dimensions: the former captures beliefs about one's inherent value and potential, while the latter measures perceptions of actualized impact and being valued by others (see Supplementary Table 1 and 2 for factor analysis confirming their distinction).

**Support from Family (SUPPORTFAM)** was generated using four items (e.g., "Family members really care about you," "Family members understand the way you feel") assessing emotional support from family members on a 4-point scale (1 = not at all to 4 = a lot) (Walen and Lachman, 2000) (Cronbach's α = 0.84). Support from Friends factor score (SUPPORTFR) was created from four parallel items to the family support scale on the same scale (Walen and Lachman, 2000) (Cronbach's α = 0.88).

**Strain from Family (STRAINFAM)** was generated using four items (e.g., "Family members make too many demands on you," "Family members criticize you") assessing negative interactions with family members on a 4-point scale (1 = not at all to 4 = a lot) (Walen and Lachman, 2000) (Cronbach's α = 0.80). Strain from Friends factor score (STRAINFR) was created from four parallel items to the family strain scale (Walen and Lachman, 2000) (Cronbach's α =0.81).

### 2.4. Covariates

We selected covariates based on the literature (Friedman et al., 2024; Fujiwara and Kawachi, 2008), including age, sex (male, female), and education level (categorized as less than high school, completed high school, some college, or college graduate). Employment status was classified into four groups: full-time working (including employed and self-employed), retired, unemployed (including those unemployed and temporarily laid off), and other (including homemaker, student, on leave, and disabled). Marital status was categorized as married, previously married (including separated, divorced, or widowed), or never married. Self-rated physical health was a score ranging from 1 to 5, with higher scores indicating better health. Spirituality was assessed using eight items measuring spiritual beliefs and experiences. We generated a latent variable where higher scores reflect greater spirituality (Cronbach's α = 0.89). Religious engagement was measured through self-reported frequency of attendance at religious or spiritual services. Responses were coded in three categories: (1) never or less than once a month, (2) weekly attendance, and (3) few times a week (Chen and VanderWeele, 2018).

### 2.5. Statistical analyses

We conducted descriptive analyses of all study variables. For continuous measures, we calculated means and standard deviations. For categorical variables (sex, education level, marital status, employment status, homeownership status, frequency of attending religious services, and physical health), we computed proportions. In addition, we calculated means and standard deviations for the social connectedness measures in their crude measures.

We calculated Pearson correlation coefficients to explore the relationships among the eight social connectedness measures and spirituality. This approach had several aims: (1) to investigate the empirical links between different dimensions of social connectedness based on theory, (2) to determine which aspects tend to cluster together versus function independently, and (3) to help interpret our multivariable regression results by understanding how much the measures overlap. This analysis evaluated whether the various dimensions we studied represented unique aspects of social connectedness or were redundant measures of similar concepts.

We constructed three serial linear regression models to examine the associations between social connectedness measures and psychological distress scores. This progressive modeling approach allowed us to assess how the strength and significance of associations changed with the addition of potential confounders. Model 1 examined associations between social connectedness measures and psychological distress scores across all social connectedness dimensions, spirituality, and religious service attendance, while adjusting for no demographic, health, or socioeconomic covariates. Model 2 incorporated demographics and health status (age, sex, marital status, physical health, and years lived in the current neighborhood), and Model 3 was fully adjusted with all demographic and socioeconomic variables: age, sex, education level, marital status, employment status, physical health, income, years lived in the current neighborhood, homeownership status, and frequency of attending religious services.

To assess multicollinearity among the independent variables, we conducted a variance inflation factor (VIF) analysis after fitting our regression model with all predictor variables. We chose the threshold of VIF > 10, which indicates problematic multicollinearity that may require remedial measures such as variable exclusion or transformation (Belsley, 1991; Dormann et al., 2013).

There were 90 individuals in the original dataset ($n$ = 897) with missingness in the baseline sociodemographic covariates (see Table 1). Therefore, we employed multiple imputations with 10 datasets to address potential bias from missing data. Each imputed dataset was analyzed separately, and parameters were averaged across all datasets. We conducted a complete-case analysis, excluding the 90 participants with missing sociodemographic data, to compare it with our multiple imputation results. In addition, we compared the sociodemographics between the 90 participants with missingness versus the complete cases. All analyses were performed using SAS 9.4 software (Cary, NC), with statistical significance set at $p < 0.05$ (two-tailed).

## 3. Results

Table 1 presents the sample characteristics of 897 Black adults at midlife from Milwaukee participating in the MIDUS 3 and MIDUS Refresher surveys. The sample had a mean age of 50.8 years (SD = 14.1) and was predominantly female (60.5%). Educational levels were diverse, with 17.7% having less than high school education and 14.6% having college degrees or above. Most participants had never been married (43.0%) and rented their homes (65.1%), with a mean household income of $42.4 k (SD = 46.6).

**Table 1**
Demographic characteristics and socioeconomic status of Black adults from Milwaukee in the MIDUS 3 and MIDUS refresher surveys by mental health status ($n$ = 897).

| | N (%) / mean (SD) |
|---|---|
| **Age** | |
| Mean (SD) | 50.84 (14.1) |
| **Sex** | |
| Female | 543 (60.5%) |
| Male | 354 (39.5%) |
| **Education** | |
| Less than high school | 159 (17.7%) |
| High school graduate/GED | 258 (28.8%) |
| Some college | 348 (38.8%) |
| College and above | 131 (14.6%) |
| Missing | 1 (0.1%) |
| **Marital status** | |
| Married | 203 (22.6%) |
| Widowed/divorced/separated | 308 (34.4%) |
| Never married | 386 (43.0%) |
| **Respondent's income (in thousands)** | |
| Mean (SD) | 42.39 (46.6) |
| Missing | 11 (1.2%) |
| **Employment status** | |
| Employed | 470 (52.4%) |
| Retired | 104 (11.6%) |
| Unemployed | 162 (18.0%) |
| Other | 103 (11.5%) |
| Missing | 58 (6.5%) |
| **Years lived in current neighborhood** | |
| Mean (SD) | 9.37 (10.2) |
| **Home own status** | |
| Rent | 584 (65.1%) |
| Own home/mortgage | 294 (32.8%) |
| Missing | 19 (2.1%) |
| **Frequency of attending services at religious organizations** | |
| Never | 149 (16.6%) |
| Sometimes | 216 (24.1%) |
| Weekly | 241 (26.9%) |
| Unknown | 291 (32.4%) |
| **Neighborhood social cohesion score (range 0 to 40)** | 24.6 (4.7) |
| **Support from family score (range 0 to 15)** | 9.5 (2.5) |
| **Support from friends score (range 0 to 15)** | 9.3 (2.4) |
| **Social integration score (range 0 to 21)** | 13.3 (3.8) |
| **Social contribution score (range 0 to 21)** | 15.0 (3.8) |
| **Contribution to community score (range 0 to 30)** | 19.2 (3.5) |
| **Spirituality score (range 0 to 40)** | 26.5 (5.0) |
| **Strain from family score (range 0 to 20)** | 10.8 (3.0) |
| **Strain from friends score (range 0 to 20)** | 12.0 (2.9) |
| **Physical health self-evaluated (range 1 to 5)** | 3.1 (1.1) |

Note: Abbreviation: MIDUS, Midlife in the United States.

Regarding social connectedness, participants reported moderate to high levels across most domains. Mean scores were: neighborhood social cohesion 24.6 (SD = 4.7), family support 9.5 (SD = 2.5), friend support 9.3 (SD = 2.4), social integration 13.3 (SD = 3.8), and social contribution 15.0 (SD = 3.8). Family strain averaged 10.8 (SD = 3.0) and friend strain 12.0 (SD = 2.9). Most participants (52.5%) reported good to very good physical health.

Table 2 presents the correlation matrix of social connectedness variables and spirituality. Most variables demonstrated statistically significant positive associations with one another. The strongest correlation observed was between strain from family and strain from friends ($r$ = 0.715, $p < 0.001$).

Table 3 presents linear regression analyses examining associations between social connectedness dimensions and continuous psychological distress scores across three progressive models. In Model 1 (unadjusted for potential confounding factors), neighborhood social cohesion (β = −1.15, 95% CI = -1.53 to −0.78, p < 0.001), family support (β = −0.76, 95% CI = -1.41 to −0.11, $p$ = 0.022), and social contribution (β = −1.19, 95% CI = -1.79 to −0.58, p < 0.001) were significantly associated with lower psychological distress scores. After adjusting for demographics and health status in Model 2, all three variables remained significant: neighborhood social cohesion (β = −0.80, 95% CI = -1.16 to −0.44, p < 0.001), family support (β = −0.68, 95% CI = -1.27 to −0.09, $p$ = 0.024), and social contribution (β = −1.00, 95% CI = -1.57 to −0.43, $p$ = 0.001). In the fully adjusted model (Model 3), these three social connectedness dimensions maintained their protective associations: neighborhood social cohesion (β = −0.74, 95% CI = -1.09 to −0.39, p < 0.001), family support (β = −0.62, 95% CI = -1.17 to −0.07, $p$ = 0.028), and social contribution (β = −0.68, 95% CI = -1.23 to −0.12, $p$ = 0.018). Other social connectedness dimensions showed non-significant associations across all models.

Multicollinearity assessment using variance inflation factors revealed that most variables demonstrated acceptable VIF values below 5, suggesting that multicollinearity was acceptable (Supplementary Table 3).

Supplementary Table 4 compared sociodemographic and social connectedness measures between complete cases ($n$ = 807) and those with missing data ($n$ = 90). Participants with missing data were significantly younger (47.68 vs. 51.19 years, $p$ = 0.025), had lower incomes ($22,540 vs. $44,330, p < 0.001), lower employment rates (11.25% vs. 57.00%, p < 0.001), and poorer self-rated health (55.06% vs. 35.69% reporting poor/fair health, p < 0.001). Those with missing data also reported lower levels of family support (p = 0.022), friend support ($p$ = 0.007), social integration (p = 0.025), and friend strain ($p$ = 0.034). Supplementary Table 5 presents the complete case analysis (n = 807) examining associations between social connectedness dimensions and psychological distress scores, which demonstrated largely consistent findings with the multiple imputation analysis. In the fully adjusted model (Model 3), neighborhood social cohesion (β = −0.54, 95% CI = -0.95 to −0.12, $p$ = 0.011) and social contribution (β = −0.74, 95% CI = -1.26 to −0.23, $p$ = 0.005) remained significantly protective. However, support from family lost statistical significance in the complete case analysis (β = −0.35, 95% CI = -1.06 to 0.35, $p$ = 0.320), likely due to reduced statistical power from the smaller sample size and potential selection bias from excluding participants with missing data.

## 4. Discussion

Social disconnection and poor mental health among Black Americans continue to be public health challenges in the U.S. Our study is among the first to comprehensively evaluate multiple aspects of social connectedness and their links to psychological distress in this population, especially middle-aged Black Americans. We found that neighborhood social cohesion, support from family, and social contribution were significantly protective against psychological distress after

**Table 2**
Pearson correlation matrix of social connectedness variables among Black adults from Milwaukee in the MIDUS 3 and MIDUS refresher surveys.

| | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|
| 1. Neighborhood social cohesion (NHSC) | 0.21*** | 0.24*** | 0.42*** | 0.16** | 0.21*** | 0.20*** | 0.20*** | 0.19*** |
| 2. Support from family (SUPPORTFAM) | | 0.52*** | 0.45*** | 0.23*** | 0.24*** | 0.32*** | 0.54*** | 0.21*** |
| 3. Support from friends (SUPPORTFRI) | | | 0.39*** | 0.29*** | 0.37*** | 0.32*** | 0.24*** | 0.20*** |
| 4. Social integration (SOCIALINT) | | | | 0.21** | 0.23*** | 0.34*** | 0.27*** | 0.04 |
| 5. Social contribution (SOCIALCON) | | | | | 0.41*** | 0.37*** | 0.24*** | 0.21*** |
| 6. Contribution to community (CONTCOM) | | | | | | 0.34*** | −0.04 | −0.01 |
| 7. Spirituality (SPIRIT) | | | | | | | 0.15** | 0.11* |
| 8. Strain from family (STRAINFAM) | | | | | | | | 0.72*** |
| 9. Strain from friends (STRAINFRI) | | | | | | | | 1.00 |

*** $p < 0.001$.
** $p < 0.01$.
* $p < 0.05$.

**Table 3**
Association between social connectedness and psychological distress scores among Black adults from Milwaukee (Multiple Imputation Analysis, n = 897).

| | Model 1 | | Model 2 | | Model 3 | |
|---|---|---|---|---|---|---|
| Variable | β (95% CI) | *p*-Value | β (95% CI) | p-Value | β (95% CI) | p-Value |
| **Intercept** | 5.17 (4.59, 5.74) | <0.001 | 12.52 (10.92, 14.12) | <0.001 | 11.22 (9.33, 13.11) | <0.001 |
| **Social Connectedness Measures** | | | | | | |
| Neighborhood social cohesion | **−1.15 (−1.53, −0.78)** | **<0.001** | **−0.80 (−1.16, −0.44)** | **<0.001** | **−0.74 (−1.09, −0.39)** | **<0.001** |
| Support from family | **−0.76 (−1.41, −0.11)** | **0.022** | **−0.68 (−1.27, −0.09)** | **0.024** | **−0.62 (−1.17, −0.07)** | **0.028** |
| Support from friends | −0.24 (−0.77, 0.30) | 0.380 | −0.23 (−0.76, 0.30) | 0.388 | −0.24 (−0.74, 0.27) | 0.360 |
| Social integration | 0.16 (−0.45, 0.76) | 0.603 | 0.26 (−0.33, 0.85) | 0.388 | 0.16 (−0.44, 0.76) | 0.591 |
| Social contribution | **−1.19 (−1.79, −0.58)** | **<0.001** | **−1.00 (−1.57, −0.43)** | **0.001** | **−0.68 (−1.23, −0.12)** | **0.018** |
| Contribution to community | 0.26 (−0.26, 0.78) | 0.330 | 0.32 (−0.17, 0.80) | 0.197 | 0.31 (−0.16, 0.78) | 0.190 |
| Spirituality | −0.07 (−0.60, 0.46) | 0.798 | 0.05 (−0.49, 0.59) | 0.851 | −0.02 (−0.52, 0.48) | 0.925 |
| Strain from family | 0.01 (−0.77, 0.80) | 0.974 | −0.10 (−0.85, 0.66) | 0.796 | −0.06 (−0.72, 0.60) | 0.863 |
| Strain from friends | −0.16 (−0.80, 0.48) | 0.615 | −0.05 (−0.69, 0.59) | 0.877 | −0.14 (−0.71, 0.44) | 0.637 |
| **Religious Service Attendance** | | | | | | |
| Never | −0.06 (−1.05, 0.93) | 0.905 | 0.05 (−0.89, 0.98) | 0.922 | −0.10 (−1.01, 0.82) | 0.837 |
| Sometimes | 0.54 (−0.32, 1.40) | 0.220 | 0.57 (−0.24, 1.39) | 0.166 | 0.51 (−0.28, 1.31) | 0.203 |
| Weekly | −0.20 (−1.04, 0.65) | 0.648 | 0.07 (−0.74, 0.88) | 0.872 | −0.09 (−0.88, 0.69) | 0.816 |
| **Demographics and Health** | | | | | | |
| Age | | | **−0.66 (−0.96, −0.36)** | **<0.001** | **−0.56 (−0.84, −0.29)** | **<0.001** |
| **Male sex (Ref. female)** | | | 0.05 (−0.57, 0.67) | 0.880 | 0.13 (−0.50, 0.77) | 0.679 |
| **Marital Status (Ref. Never married)** | | | | | | |
| Married | | | 0.13 (−0.72, 0.97) | 0.770 | −0.41 (−1.24, 0.42) | 0.328 |
| Previously married | | | 0.19 (−0.57, 0.94) | 0.624 | −0.01 (−0.78, 0.77) | 0.983 |
| **Physical health (self-rated)** | | | **−1.23 (−1.51, −0.96)** | **<0.001** | **−1.51 (−1.79, −1.24)** | **<0.001** |
| **Years in current neighborhood** | | | 0.00 (−0.03, 0.04) | 0.898 | −0.01 (−0.04, 0.02) | 0.484 |
| **Socioeconomic Factors** | | | | | | |
| **Education Level** (Ref. College and above) | | | | | | |
| Less than high school | | | | | **1.26 (0.10, 2.42)** | **0.033** |
| High school graduate/GED | | | | | 0.45 (−0.57, 1.47) | 0.389 |
| Some college | | | | | −0.42 (−1.34, 0.50) | 0.370 |
| **Employment Status (Ref: Employed)** | | | | | | |
| Retired | | | | | 0.49 (−0.56, 1.54) | 0.362 |
| Unemployed | | | | | **2.11 (1.07, 3.14)** | **<0.001** |
| Other | | | | | **2.17 (1.29, 3.04)** | **<0.001** |
| **Income (thousands)** | | | | | 0.00 (−0.01, 0.01) | 0.961 |
| **Home ownership (Ref: Rent)** | | | | | −0.58 (−1.35, 0.20) | 0.144 |

adjusting for key potential confounders. Among these, social contribution showed the most consistent protective effect across all models. Our results confirm that social connectedness operates as a protective factor against psychological distress among middle-aged Black Americans, consistent with extensive literature showing that strong social ties serve as crucial buffers against the mental health impacts of systemic stressors and discrimination (Holt-Lunstad et al., 2010). However, our findings reveal that different dimensions of social connectedness vary significantly in their protective strength, with some showing robust associations while others demonstrate more limited or context-dependent effects.

The most important finding from our study was the protective link between social contribution and psychological distress. This suggests that seeing oneself as having something valuable to give to society creates a sense of purpose and personal strength that is especially protective for middle-aged Black Americans (Keyes, 1998). When people believe their daily actions matter to their community and that they have important contributions to offer, they develop a stronger sense of social value and confidence (Haim-Litevsky et al., 2023; Piliavin and Siegl, 2007). This improved feeling of societal worth, reflected in the belief that one has "something valuable to give to the world," can unlock important psychological resources that protect against distress (Brown et al., 2003; Hui et al., 2020) and life crises (Waters et al., 2022). Studies using national data have shown that beliefs about personal worth and meaningful contribution are especially protective for middle-aged Black Americans who face frequent marginalization, as these beliefs lead to greater empowerment and help buffer against systemic devaluation (Petersen and Roy, 1985; Yip, 2018).

Our analysis of family and friend support revealed patterns that align with established findings in cross-cultural research on social

connectedness (Levine et al., 2015). Family support demonstrated a consistent, significant protective effect across our models, while friend support showed no significant association with psychological distress. Notably, neither strain from family nor strain from friends showed significant associations with psychological distress, suggesting that the presence of positive support may be more important for mental health than the absence of interpersonal strain. This pattern strongly aligns with extensive cross-cultural research demonstrating differential effects by race and ethnicity. Studies examining family versus friend support across racial and ethnic groups consistently show that family support serves as a more critical protective factor for Black and Latino Americans compared to White adults (Nguyen et al., 2016). Friendship shows a significant association with mental health among White adults, sometimes even stronger than family ties, a pattern that is less pronounced in minority populations (Ng et al., 2023). Non-White adults tend to rely more heavily on extended family networks, with family proximity playing a larger role in Black/African American well-being compared to White adults, where the presence or absence of friends is more consistently linked to mental health (Schumacher et al., 2024). Our finding reflects these well-documented cultural variations, where family networks hold greater primacy in middle-aged Black American communities compared to individualistic friendship patterns more common in other populations.

Neighborhood social cohesion demonstrated significant protective effects against psychological distress across all our analytical models, aligning with research showing that safe, trusting neighborhood environments provide important stress-buffering resources for middle-aged Black Americans (Albrecht Soto and Santos-Lozada, 2025; Cho and Hamler, 2025). However, when viewed in the context of cross-cultural research, our finding is particularly noteworthy. Cross-cultural research consistently shows that while neighborhood cohesion benefits all racial and ethnic groups, effects are typically strongest for White or Asian populations, with less pronounced benefits observed among Black and Latino populations (Albrecht Soto and Santos-Lozada, 2025; Miller et al., 2022). The significance of neighborhood cohesion in our sample suggests that for Black Americans in Milwaukee, neighborhood-level social resources may be particularly crucial for mental health, possibly due to the historical and ongoing effects of residential segregation that make neighborhood quality especially consequential (Rios et al., 2012). These protective effects likely operate through multiple pathways, including informal social control that reduces violence exposure (Lanfear et al., 2020; Lyons et al., 2024), enhanced access to instrumental support through neighbor networks, and strengthened collective identity that buffers against discrimination (Ross et al., 2025).

Contrary to our hypothesis, neither “contribution to community” nor “social integration” significantly predicted psychological distress. Nevertheless, this finding is consistent with evidence that not all forms of social engagement or connectedness carry the same protective weight for middle-aged Black Americans. The distinct impact of “social contribution” compared with “contribution to community” warrants explanation. Although both relate to one's societal relationship, social contribution measures existential beliefs about inherent worth and meaningful potential (“I have something valuable to give to the world”), whereas contribution to community measures perceptions of actualized impact and being sought by others (“I have made contributions,” “People need me”). Our findings suggest that beliefs about one's inherent value may be more protective for mental health than perceptions of past accomplishments or being valued by others. Similarly, “social integration” captures a general sense of belonging within one's immediate community (e.g., “Feel close to others in community”). Prior research finds that while some forms of integration, such as school affiliation and family ties, are associated with better mental health among Black Americans (Rose et al., 2014), other types of community engagement or a generic sense of belonging may have limited or context-dependent relationships with well-being (Fothergill et al., 2011), sometimes mediated by coping strategies or individual meaning-making (Watts, 2021). The non-significance of both contribution to community and social integration, in contrast to the robust protective effect of social contribution, suggests an important distinction: simply feeling connected to one's local environment or being recognized for past contributions may be insufficient for psychological well-being among middle-aged Black Americans. Instead, beliefs in one's inherent worth and potential to make meaningful societal contributions, which represent a forward-looking purpose rather than retrospective validation or passive belonging, may serve as more consistent sources of psychological protection.

Our study has two primary strengths. First, we examined multiple dimensions of social connectedness, providing a nuanced understanding of their associations with psychological distress. This multidimensional approach and specificity provide targeted evidence for mental health interventions rather than treating social connectedness as a monolithic construct. Second, our focus on the middle-aged Black American population enriches the literature, which has historically underrepresented this demographic group in mental health research. This focus offers valuable insights into protective factors that may be culturally relevant for Black Americans, addressing a significant gap in existing knowledge. Together, these strengths enhance our understanding of the complex relationship between various dimensions of social connection and mental health in an understudied population.

Some limitations of this study include the following. First, the cross-sectional design limits our ability to establish causality or determine the direction of the observed relationship. Future longitudinal research would help clarify these temporal relationships and possible bidirectional effects. Second, social contribution and social integration had relatively low reliability coefficients (social contribution: $\alpha = 0.54$; social integration: $\alpha = 0.54$). This low reliability suggests these measures may not fully capture the concepts. For example, while two items in the social contribution scale focus directly on contribution, the third item asks about impact on the world (“I think I am important to society”), which may be conceptually different. Future studies should explore more reliable measures of social contribution, such as the Civic Engagement Scale, which has shown strong internal consistency with Cronbach's alpha ranging from 0.80 to 0.91 (Doolittle and Faul, 2013). Despite these limitations, it is important to note that this study is a secondary analysis of existing MIDUS data, using the available measures within the dataset. Although the reliability coefficients for social contribution and social integration were suboptimal in our sample, previous MIDUS studies have successfully used these variables to predict other health outcomes, indicating they retain some predictive validity despite psychometric shortcomings (Elliot et al., 2018; Nguyen et al., 2020). Third, the differential results for family support across our multiple imputation and complete case analyses underscore the challenge of missing data in observational studies. The loss of statistical significance for family support in the complete case analysis may reflect either reduced statistical power due to a smaller sample size or systematic differences between participants with and without missing data, suggesting caution in interpreting this association. Fourth, two sampling characteristics may limit the generalizability of our findings. The Milwaukee Black American sample was drawn exclusively from census tracts with relatively high proportions of Black residents ($\geq$40%), and participants were predominantly middle-aged and older adults (age range: 28–84 years; mean: 50.8, SD: 14.1). While these characteristics limit generalizability to Black Americans in racially mixed neighborhoods and younger age groups, they provide important insights into predominantly Black communities and midlife populations, which are contexts often underrepresented in research. The protective effects of neighborhood cohesion, family support, and social contribution may differ for Black Americans in racially integrated settings or at different life stages, as both neighborhood context and developmental period influence social connection patterns and mental health. Future research should examine whether these protective effects operate similarly across neighborhoods with varying racial compositions (Thomas Tobin et al.,

2023) and across the adult life span, from young adulthood through later life.

## 5. Conclusions and implications

We found significant protective associations between three dimensions of social connectedness and psychological distress among Black adults in Milwaukee: neighborhood social cohesion, family support, and social contribution. Rather than treating social connectedness as a unidimensional construct, our results highlight the importance of examining its specific dimensions, as different aspects may have varying relationships with mental health.

Our findings provide preliminary evidence for developing interventions targeting these three protective dimensions. Potential interventions may include community health worker programs that position Black adults as health advocates, simultaneously fostering social contribution and neighborhood connections (Boutin-Foster et al., 2008; Cherrington et al., 2010), family-centered interventions that enhance emotional support and communication, and intergenerational mentoring programs that provide multiple benefits, including social contribution and community cohesion (Raposa et al., 2019). Public health messaging that acknowledges Black contributions to society could support psychological well-being by reinforcing positive collective identity (Singh et al., 2023). Future research should replicate these findings in longitudinal studies to determine whether enhancing social contribution, family support, and neighborhood cohesion improves psychological well-being over time, and expand to other national samples of Black Americans to establish broader generalizability.

## CRediT authorship contribution statement

**Yu-Tien Hsu:** Writing – review & editing, Writing – original draft, Methodology, Investigation, Conceptualization. **Zhiqian Song:** Writing – review & editing, Validation, Methodology, Investigation, Data curation, Conceptualization. **Ester Villalogna-Olives:** Writing – review & editing, Writing – original draft. **Bridgette M. Rice:** Writing – review & editing, Writing – original draft. **Tamara Taggart:** Writing – review & editing, Writing – original draft. **David R. Williams:** Writing – review & editing, Writing – original draft. **Yusuf Ransome:** Writing – review & editing, Writing – original draft, Validation, Supervision, Methodology, Investigation, Data curation, Conceptualization.

## Ethical approval

This study was determined to be exempt from review by the Yale University School of Public Health Institutional Review Board (IRB exemption number: 2000035165).

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## Declaration of competing interest

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The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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## Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.jad.2026.121235.

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