Depressive Symptoms and Loneliness Among Black and White Older Adults: The Moderating Effects of Race

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Abstract

Background and Objectives: Loneliness is consistently linked to worse depression/depressive symptoms; however, there are few studies that have examined whether the relationship between loneliness and depressive symptoms varies by race. The purpose of this study was to determine whether race moderated the relationship between loneliness and depressive symptoms.

Research Design and Methods: Data come from the 2014 wave of the Health and Retirement Study (HRS) Core survey and Psychosocial Leave-Behind Questionnaire; only black and white older adults were included in the analysis (N = 6,469). Depressive symptoms were operationalized by the eight-item Center for Epidemiological Studies—Depression scale; however, the “felt lonely” item was removed given concerns with collinearity. Loneliness was operationalized using the Hughes 3-Item Loneliness Scale. Sociodemographic variables included gender, age, education, household income, employment status, marital status, and living alone or with others. Furthermore, social support and negative interactions from family members and friends, and religious service attendance were included in the analysis. Lastly, we created an interaction term between race and loneliness. All analyses used survey weights to account for the complex multistage sampling design of the HRS. Missing data were multiply imputed.

Results: In multivariable analysis, we found race significantly moderated the relationship between loneliness and depressive symptoms while controlling for sociodemographic covariates, social support and negative interaction variables, and religious service attendance.

Discussion and Implications: Our findings demonstrate a differential racial effect for loneliness and depressive symptoms. For both blacks and whites, greater loneliness affected depressive symptoms; however, the effect was stronger among whites than it was for blacks. Given this is one of the first studies to examine the differential effects of race on loneliness and depressive symptoms, more research is necessary to determine the consistency of these results.

Translational Significance: The results of this study demonstrate that even though black older adults have higher prevalence rates of loneliness and depressive symptoms compared to white older adults, the link between loneliness and depressive symptoms is stronger for white older adults in comparison to black older adults; therefore, loneliness may have greater importance for mitigating depressive symptoms among white older adults in comparison to black older adults. Nevertheless, the association between loneliness and depressive symptoms is still significant, and addressing loneliness can also mitigate depressive symptoms among black older adults.

Keywords: Mental health, Negative interactions, Social networks, Social support
Importance of Depression and Depressive Symptoms

Depression is one of the most common mental disorders affecting older adults in the United States and is associated with higher levels of disability and greater caregiving needs (Langa et al., 2004). Older adults who have depression require more hours of informal care per week than those without depression, and the cost of additional caregiving for older adults with depression amounts to $13.2 billion a year (Langa et al., 2004). Previous studies indicate that the prevalence of major depression among older adults is no greater than 5% (Fiske et al., 2009; Gallo & Lebowitz, 1999); however, it is estimated that 12%-20% of older adults have depressive symptoms. Depression and depressive symptoms among older adults are highly comorbid with numerous physical and mental health conditions, including cancer, diabetes, chronic pain, hypertension, anxiety, dysthymia, and substance use disorders (Beekman et al., 2000; Chou & Cheung, 2013; Gellis et al., 2012; McCarthy et al., 2009; Woodward et al., 2013). Lastly, depression and depressive symptoms are often associated with a lower quality of life (Gellis & Kenaley, 2016).

Loneliness, Depressive Symptoms, and Mental Health

The empirical literature has noted social resources are beneficial for decreasing depression and depressive symptoms among older adults (Jang et al., 2005; Mair, 2010); however, one frequently overlooked component to understanding racial differences in depression and depressive symptoms among older adults is the influence of loneliness. Loneliness is defined as “the individual’s dissatisfaction with the frequency and closeness of their social contacts or the discrepancy between the relationships they have and the relationships they would like to have” (Peplau & Perlman, 1982; Steptoe et al., 2013). Loneliness, therefore, is a highly subjective and perceived state. Estimates of loneliness among older adults range between 20% and 60% (Ong et al., 2016; Theeke, 2009). Additionally, it is important to note that loneliness and social isolation are not the same condition and are not mutually exclusive; individuals can be lonely while maintaining strong social ties and relationships and can also not feel lonely while being completely objectively socially isolated from their family members, friends, and broader society (Newall & Menec, 2019).

Loneliness has a strong and consistent relationship with depression, depressive symptoms, and mental health (Cornwell & Waite, 2009; Coyle & Dugan, 2012; Ge et al., 2017; Gonyea et al., 2018; Miyawaki, 2015); empirical evidence suggests that the relationship between loneliness and mental health is bidirectional and likely reciprocal. Some studies have noted the strong influence of depressive symptoms on loneliness (Taylor et al., 2018). Other studies have identified loneliness as the key factor in predicting depressive symptoms and worse mental health even while simultaneously accounting for objective factors which could be associated with these mental health outcomes. For example, Cornwell and Waite (2009) found that greater perceived isolation (i.e., loneliness) was associated with greater depressive symptoms while social disconnectedness (i.e., social isolation) had no association with depressive symptoms. Coyle and Dugan (2012) found greater loneliness was associated with a greater likelihood of having any lifetime diagnosis of a psychiatric disorder while also controlling for social isolation. Lastly, Ge et al. (2017) found loneliness was the key predictor for greater depressive symptoms even when accounting for social isolation indicators.

Given the strong overlap between loneliness and depressive symptoms, a common concern is determining if these constructs are truly unique (Courtin & Knapp, 2017; Hughes et al., 2004); however, prospective longitudinal studies have confirmed loneliness is a unique risk factor for greater depressive symptoms among older adults. In fact, loneliness and depressive symptoms are noted to reinforce each other over time, creating a vicious cycle such that greater loneliness leads to greater depressive symptoms over time and vice versa (Cacioppo, Hughes et al., 2006; Luo et al., 2012).

Race, Loneliness, Perceived/Subjective Isolation, and Mental Health

To date, the investigators have not identified any studies that focus on racial differences in loneliness and depressive symptoms or mental health. A study that comes close, however, was conducted by Miyawaki (2015). Using the National Social Life, Health, and Aging Project, Miyawaki (2015) found that older blacks had significantly higher rates of perceived isolation (a measure that combines both loneliness and social support items) and also had significantly higher rates of worse self-rated mental health in comparison to older whites; however, they did not find that race significantly moderates the relationship between perceived isolation and self-rated mental health.

Importance of Loneliness Among Black Older Adults

There are numerous factors that likely influence loneliness among older blacks and place them at increased risk for experiencing greater depressive symptoms. Previous research has demonstrated blacks and whites live in racially segregated communities (Williams & Collins, 2016), and the communities in which blacks reside are more likely to be unsafe, lack political, economic, and social resources, and are more likely to have greater physical degradation and other built environment hazards.
(Redwood et al., 2010; Ross & Mirowsky, 2001; Schulz et al., 2002). Crewe (2017) also found older adults of color are at heightened risk for experiencing gentrification, which in turn increases their risk of losing members of their social network and being socially isolated. Given gentrification increases the risk of social isolation, it follows that gentrification also increases the risk of experiencing loneliness through the loss of social network members.

Furthermore, black Americans frequently experience life situations that place them at greater risk for experiencing loneliness, including a greater likelihood of being impoverished, lower rates of marriage and higher rates of divorce, never being married, and being separated, having fewer years of formal education, and frequently having worse physical health in comparison to white older adults (Administration on Community Aging, n.d.). Lastly, a study by Verdery and Margolis (2017) found that older blacks are significantly more likely to be kinless in the coming years in comparison to older whites. These changing demographics are likely to place older blacks at greater risk of experiencing loneliness in comparison to older whites. Taken together, these studies suggest that the association between loneliness and mental health would vary by race, as blacks face a disproportionate risk for loneliness and social isolation. There are a few studies that have examined racial differences in loneliness among older adults, and the consensus among these studies is older blacks have higher rates of loneliness in comparison to older whites (Adams et al., 1989; Anderson & Thayer, 2018; Bialik, 2018; Hawkley et al., 2008; Miyawaki, 2015).

**Current Study**

To the investigators’ knowledge, there have been no studies that explicitly examine loneliness as a mechanism that could account for differences in depressive symptoms among black and white older adults. The purpose of this study, therefore, is to determine whether race moderates the relationship between loneliness and depressive symptoms using nationally representative survey data from the Health and Retirement Study (HRS). This study will inform clinical practice in helping to determine the relative importance of loneliness in depressive symptoms among both older blacks and whites. We hypothesize that:

1. Greater loneliness will be associated with greater depressive symptoms among older adults.
2. Race will significantly moderate the relationship between loneliness and depressive symptoms. The relationship between loneliness and depressive symptoms will be stronger for older blacks than for older whites.

We hypothesize that the relationship between loneliness and depressive symptoms will be stronger among black older adults compared to white older adults because empirical research indicates that older blacks are more likely to experience loneliness and depressive symptoms (Langa et al., 2004) and report more depressive symptoms than older whites (Jang et al., 2005). Evidence demonstrates that there is a very strong positive association between loneliness and depressive symptoms. For example, Cacioppo, Hughes et al. (2006) and Luo et al. (2012) both found loneliness and depressive symptoms have a synergistic effect, to the point where loneliness influenced the future occurrence of depressive symptoms and depressive symptoms influenced the future occurrence of loneliness among middle-aged and older adults. Given this synergistic relationship between loneliness and depressive symptoms and the greater likelihood of loneliness and depressive symptoms among older blacks, we anticipate that the association between loneliness and depressive symptoms would be stronger among older blacks than older whites.

**Method**

**Sample**

Data for the current study come from the 2014 wave of the HRS. The HRS is one of the largest and longest running longitudinal nationally representative panel studies of older adults in the United States. The HRS utilizes a multi-stage probability sampling design to select its respondents. Data for the HRS were initially collected in 1992 and have continued to be collected every 2 years through face-to-face interviews. Given the rates of attrition in the HRS, the sample for the HRS is replenished once every 6 years. Lastly, the HRS oversamples for black and Hispanic populations to allow for valid comparisons between these populations and older whites. For more information on the HRS sampling frame and parameters, please see the works of Heeringa and Conor (1995) and Fisher and Ryan (2018).

More specifically, data come from the HRS Psychosocial Leave-Behind Questionnaire (HRS LBQ). About half of the HRS sample is selected for the HRS LBQ. After respondents complete the HRS Core face-to-face interview, respondents are left with the HRS LBQ and are asked to complete the survey and mail their responses to the Institute of Social Research at the University of Michigan (where the HRS data are held). The HRS LBQ utilizes a rotational study design containing two equally sized samples that are surveyed once every 4 years; the first sample was surveyed in 2006, 2010, and 2014 while the second sample was surveyed in 2008, 2012, and 2016. The HRS LBQ contains additional variables not surveyed in the HRS Core including loneliness. For more information on the HRS LBQ, please see the work of Smith et al. (2013). Data for the current study come from the 2014 wave of the HRS LBQ; the response rate for the 2014 wave of the HRS LBQ was 78% for all eligible participants. Only participants who identified as black or white (N = 6,469) were included in the study.
Those who did not state their race or identified as other than black or white were not included in these analyses.

Variables
Depressive symptoms were measured by an abbreviated eight-item Center for Epidemiological Studies—Depression (CES-D scale; Turvey et al., 1999). These eight items assessed whether respondents felt (a) depressed, (b) everything they did was an effort, (c) sleep was restless, (d) happy, (e) lonely, (f) they enjoyed life, (g) sad, and (h) could not get going for much of the time the past week. Respondents answered Yes or No to each of these statements. To reduce the potential of confounding relationships between depressive symptoms and loneliness, the item assessing loneliness was removed from the CES-D scale as has been done in previous studies (Cacioppo, Hughes et al., 2006), making a total of seven items for the CES-D scale. The two positive items (felt happy and enjoyed life) were reverse-coded when scored. The scale items were summed together to produce the final score. Higher scores on the CES-D ML (minus loneliness) Scale represent greater depressive symptoms. Scores for the CES-D ML Scale ranged from 0 to 7. The Cronbach’s alpha for the CES-D scale was 0.79 for both older blacks and older whites, 0.78 solely for older blacks, and 0.79 solely for older whites, indicating good reliability.

Loneliness was measured by the Hughes three-item loneliness scale (Hughes et al., 2004) and is a continuous variable. This measure of loneliness was based on the UCLA Loneliness Scale and was developed to examine loneliness in large nationally representative social surveys. This measure is proven to be reliable and has demonstrated convergent and discriminant validity for older populations (Hughes et al., 2004). The items in the Hughes three-item loneliness scale are (a) How much of the time do you feel you lack companionship?; (b) How much of the time do you feel left out?; and (c) How much of the time do you feel isolated from others? These items were chosen from the Revised UCLA Loneliness Scale (Russell et al., 1980). Response options for all three items ranged from 1 (Often) to 3 (Hardly Ever or Never). The responses are reverse-coded and averaged. Higher loneliness scores are representative of greater loneliness. Scores from the loneliness scale ranged from 1 to 3. The Cronbach’s alpha for the Hughes’ three-item loneliness scale was 0.81 for both older black and older whites, 0.80 solely for older blacks, and 0.81 solely for older whites, indicating good reliability. Respondents are allowed to have one missing item from the Hughes three-item loneliness scale but are coded as missing if they have two or more items missing. For more information on the Hughes’ three-item loneliness scale, please see the work of Hughes et al. (2004).

The variable race was recoded into a dichotomous dummy variable. In particular, the reference group for the race variable was white (coded as 0), and black was the comparison group (coded as 1). To determine whether race moderated the relationship between loneliness and depressive symptoms, we created an interaction term with race (black vs. white) and loneliness. Additional covariates in the analysis include gender, age, years of education, total household income, employment status, marital status, living arrangements, religious attendance, social support from adult children, other family members, and friends, and negative interactions with adult children, other family members, and friends. These covariates were included because they are known to be associated with depression and depressive symptoms and or/loneliness (Jang et al., 2005; Mair, 2010). In addition, including these covariates will help determine the robustness of the relationship between loneliness and depressive symptoms.

Gender was operationalized dichotomously; participants identified as either male or female. Age was categorized into the following brackets: 54–64 years old (reference category), 65–74 years old, and 75 years old and older. Education was also categorized as less than high school (reference category), having a high school diploma or GED, some college, and having a college degree or higher. Total household income was measured by the sum of all sources of income in the household for both the HRS respondent and their spouse. This includes individual earnings, the household capital income, individual incomes from an employer pension or annuity, income from Social Security disability income or Supplemental Security disability income, individual incomes from unemployment or workers’ compensation, individual incomes from other government transfers, and all other forms of household income for the HRS respondent and their spouse. Total household income was further categorized into an ordinal variable with the following brackets: $24,999.99 and below; $25,000 to $49,999.99; $50,000 to $74,999.99; $75,000 to $99,999.99; and more than $100,000.

Employment status was recoded into two categories: working (those who were working full-time or part-time, or partly retired) and not working (those who were unemployed, retired, disabled, or not in the labor force). Marital status was recoded into two categories: married and not married (including divorced, separated, widowed, and never married). Living arrangements were dichotomized into two categories: live alone versus live with others. Religious service attendance was also dichotomized into two categories: participation in religious services versus no participation in religious services.

The current study also includes social support from and negative interactions with adult children, other family members, and friends to determine if these factors could explain racial differences in depressive symptoms among older adults. The three items of the social support scale include: How much do they really understand the way you feel about things?; How much can you rely on them if you have a serious problem?; and How much can you open up to them if you need to talk about your worries? Responses to these items ranged from 1 (a lot) to 4 (not
of these questions was assessed in relation to adult children, other family members, and friends. These three scale items were then reverse-coded and averaged together to develop social support scores for adult children, other family members, and friends. Social support scores range from 1 to 4, with higher scores indicating greater social support.

The four items of the negative interaction scale include:
- How often do they make too many demands on you? How much do they criticize you? How much do they let you down when you are counting on them?; and How much do they get on your nerves? Responses to these items ranged from 1 (a lot) to 4 (not at all). Similar to the social support scale, each of these items was assessed specifically for respondents’ adult children, other family members, and friends. These three items were reverse-coded and averaged together to develop negative interaction scores for adult children, other family members, and friends. Negative interaction scores range from 1 to 4. Higher scores are indicative of greater negative interactions.

### Analyses

All analyses took into account the complex survey design of the HRS. More specifically, we used the psychosocial leave-behind questionnaire survey weights provided in the HRS tracker file. Univariate statistical analyses were conducted to understand the distribution of the study variables. Categorical variables are presented with percentages and frequencies. Continuous variables are presented with their mean, median, standard deviation, and range. Depressive symptoms, which is a count variable, are also presented with their mean score, standard deviation, and range. Descriptive statistics are given in Table 1.

In determining which statistical modeling approaches are appropriate to use for our outcome variable depressive symptoms (which is a count variable), we conducted two diagnostic tests to determine the appropriateness of Poisson or negative binomial regression modeling. The first was a Pearson goodness-of-fit test. This statistic was highly significant ($p = .0000$), indicating the variable depressive symptoms was overdispersed. The second diagnostic test was conducted through negative binomial regression modeling. The negative binomial regression output in STATA also contains an alpha coefficient which indicates the degree of overdispersion and the appropriateness of using negative binomial regression modeling instead of Poisson regression modeling. More specifically, if the 95% confidence intervals of the alpha coefficient do not contain zero, then negative binomial regression models are considered appropriate and are not overdispersed. After examining the alpha coefficient for each of our bivariate and multivariable models, we found no models in which the 95% confidence intervals for alpha contained 0. This was true for both the pre- and postimputed data. Taken together, these findings illustrate our data are overdispersed and negative binomial regression modeling is more appropriate than Poisson regression modeling.

To examine bivariate relationships, we conducted unadjusted negative binomial regression models between the study variables and depressive symptoms. Incident ratio rates and 95% confidence intervals are reported for each model (Table 2). Furthermore, we estimated four multivariable negative binomial regression models, each reporting incident ratio rates and 95% confidence intervals. The first model only controlled for loneliness and sociodemographic differences (race, gender, age, years of education, total household income, and employment status). The second model controlled for loneliness, sociodemographic differences and social integration and support (marital status, living arrangements, religious isolation, social support from and negative interactions with adult children, other family members, and friends). The third model includes all variables from the previous models, as well as an interaction term between race and loneliness. These three negative binomial regression models are given in Table 3.

For the first multivariable models (in Table 3), approximately 5% of the sample had missing data and were therefore excluded from the analyses; however, for the second and third models, approximately 32% of the sample had missing data. Given the substantial amount of missing data, we decided to employ multiple imputation. Twenty imputed data sets were created using the fully conditional specification method (also known as multiple imputation with chained equations). This method allowed us to impute nominal, ordinal, count, and continuous variables. All variables from the negative binomial regression models were included in the imputation. The analyses are completed in each of the 20 imputed data sets, and the parameter estimates and standard errors are combined to determine statistical significance. Twenty imputations were conducted as recommended by Graham et al. (2007) for situations with 30% of missing data. We also compared the negative binomial regression model findings between the original data (which utilized listwise deletion) and the imputed data (with no missing data) and there were no differences in the significant relationships found. All data management and analyses were conducted in SAS v9.4 and STATA 16.

### Findings

#### Descriptive and Bivariate Findings

Descriptive statistics for the entire analytic sample are included in Table 1. Eighty-nine percent of the sample identified as white, while 11% identified as black. More than half of the sample consisted of women. Approximately 46% of the sample were adults aged 54–64, 31% were 65–74, and approximately 23% were 75 and older. Additionally, approximately 12% of the sample had less
than high school education, about one third were high school graduates or obtained their GED, 26% had some college, and 29% had obtained a college degree or higher. About one fourth of the sample made less than $25,000, 23% made between $25,000 and $49,999.99, 15% made between $50,000 and $74,999.99, 12% made between $75,000 and $99,999.99, and 25% made more than $100,000. The majority of respondents were not working, were not married, lived with others, and attended religious services. Additionally, the median for depressive symptoms was 0. More information on the descriptive statistics is given in Table 1.

The unadjusted models found depressive symptoms were significantly associated with each of the study variables (Table 2). Blacks, women, those who were not currently working, those who were unmarried, those who lived alone, and those who did not attend religious services had greater depressive symptoms compared to whites, men, those who were working, those who were married, those who lived with others, and those who

### Table 1. Descriptive Statistics (N = 6,469)

| Variable                          | Percentage | N     | Mean/median (SD) | Range |
|-----------------------------------|------------|-------|------------------|-------|
| Race                              |            |       |                  |       |
| White                             | 89.08%     | 5,290 |                  |       |
| Black                             | 10.91%     | 1,179 |                  |       |
| Gender                            |            |       |                  |       |
| Male                              | 45.78%     | 2,636 |                  |       |
| Female                            | 54.22%     | 3,833 |                  |       |
| Age (years)                       |            |       |                  |       |
| 54–64                             | 46.86%     | 2,384 |                  |       |
| 65–74                             | 30.62%     | 1,977 |                  |       |
| 75 and older                      | 22.52%     | 2,108 |                  |       |
| Education                         |            |       |                  |       |
| Less than high school             | 11.72%     | 922   |                  |       |
| GED or high school graduate       | 33.15%     | 2,285 |                  |       |
| Some college                      | 26.35%     | 1,654 |                  |       |
| College degree or higher          | 28.78%     | 1,607 |                  |       |
| Total household income            |            |       |                  |       |
| Less than $25,000                 | 24.70%     | 1,907 |                  |       |
| Between $25,000 and $49,999.99    | 23.07%     | 1,672 |                  |       |
| Between $50,000 and $74,999.99    | 15.50%     | 1,012 |                  |       |
| Between $75,000 and $99,999.99    | 11.67%     | 650   |                  |       |
| More than $100,000                | 25.05%     | 1,228 |                  |       |
| Employment status                 |            |       |                  |       |
| Working                           | 42.43%     | 2,166 |                  |       |
| Not working                       | 57.57%     | 4,303 |                  |       |
| Marital status                    |            |       |                  |       |
| Married                           | 61.31%     | 3,747 |                  |       |
| Unmarried                         | 38.69%     | 2,721 |                  |       |
| Living arrangements               |            |       |                  |       |
| Live with others                  | 76.05%     | 4,846 |                  |       |
| Live alone                        | 23.95%     | 1,623 |                  |       |
| Religious service attendance      |            |       |                  |       |
| Attends religious services        | 69.65%     | 4,707 |                  |       |
| Does not attend religious services| 30.35%     | 1,741 |                  |       |
| Loneliness                        |            |       |                  |       |
|                                  | 6,394      | 1.49 (0.01) | 1–3      |
| Child social support              |            |       |                  |       |
|                                  | 5,622      | 3.21 (0.01) | 1–4      |
| Child negative interactions       |            |       |                  |       |
|                                  | 5,627      | 1.71 (0.01) | 1–4      |
| Other family members social support|          |       |                  |       |
|                                  | 5,913      | 2.85 (0.01) | 1–4      |
| Other family members negative interactions |      |       |                  |       |
|                                  | 5,962      | 1.56 (0.01) | 1–4      |
| Friend social support             |            |       |                  |       |
|                                  | 5,764      | 3.05 (0.01) | 1–4      |
| Friend negative interactions      |            |       |                  |       |
|                                  | 5,783      | 1.40 (0.01) | 1–4      |
| Depressive symptoms               |            |       |                  |       |
|                                  | 6,320      | 0.03 (0.01) | 0–7      |

Note: Table presents percentages and n for categorical variables and n, mean/median, standard deviation (SD), and range for continuous variables.

*Means the median value for depressive symptoms is presented.
attended religious services, respectively. Furthermore, older adults who were between the ages of 65 and 74, older adults with greater years of education, and older adults with a greater total household income had significantly fewer depressive symptoms compared to older adults aged between 54 and 65, older adults with less education, and older adults with lower total household income. Older adults with lower adult child social support, greater adult child negative interactions, lower family social support, greater family negative interactions, lower friend social support, and greater friend negative interactions had greater symptoms of depression. More information is given in Table 2.

### Table 2. Unadjusted Incident Rate Ratios for CES-D (Minus Loneliness) Scale (N = 6,469)

| Variable                          | Unadjusted incident rate ratio | 95% Confidence intervals |
|----------------------------------|--------------------------------|--------------------------|
| **Race**                         |                                |                          |
| White                            | —                              | —                        |
| Black                            | 1.41                           | 1.27–1.55                |
| **Gender**                       |                                |                          |
| Male                             | —                              | —                        |
| Female                           | 1.29                           | 1.42–1.79                |
| **Age (years)**                  |                                |                          |
| 54–65                            | —                              | —                        |
| 65–74                            | 0.85                           | 0.74–0.97                |
| 75 and older*                    | 1.00                           | 0.88–1.14                |
| **Education**                    |                                |                          |
| Less than high school            | —                              | —                        |
| GED or high school graduate      | 0.65                           | 0.57–0.75                |
| Some college                     | 0.60                           | 0.52–0.69                |
| College degree or higher         | 0.39                           | 0.34–0.44                |
| **Total household income**       |                                |                          |
| Less than $25,000                | —                              | —                        |
| Between $25,000 and $49,999.99   | 0.62                           | 0.56–0.70                |
| Between $50,000 and $74,999.99   | 0.56                           | 0.48–0.66                |
| Between $75,000 and $99,999.99   | 0.43                           | 0.36–0.51                |
| More than $100,000               | 0.34                           | 0.29–0.38                |
| **Employment status**            |                                |                          |
| Working                          | 0.60                           | 0.53–0.67                |
| Not working                      | —                              | —                        |
| **Marital status**               |                                |                          |
| Married                          | 0.65                           | 0.59–0.72                |
| Unmarried                        | —                              | —                        |
| **Living arrangements**          |                                |                          |
| Live with others                 | —                              | —                        |
| Live alone                       | 1.38                           | 1.27–1.50                |
| **Religious service attendance** |                                |                          |
| Attends religious services       | —                              | —                        |
| Does not attend religious services| 1.28                          | 1.15–1.42                |
| **Loneliness**                   |                                |                          |
| Loneliness                       | 2.53                           | 2.37–2.70                |
| **Child social support**         |                                |                          |
| Child social support             | 0.74                           | 0.70–0.77                |
| **Child negative interactions**  |                                |                          |
| Child negative interactions      | 1.49                           | 1.41–1.58                |
| **Other family members social support** | 0.88 | 0.84–0.92         |
| Other family members negative interactions | 1.52 | 1.44–1.60         |
| **Friend social support**        |                                |                          |
| Friend social support            | 0.85                           | 0.80–0.91                |
| **Friend negative interactions** |                                |                          |
| Friend negative interactions     | 1.53                           | 1.40–1.68                |

**Notes:** CES-D = Center for Epidemiological Studies—Depression. Unadjusted negative binomial incident ratio rates are presented. The dependent variable for all of these unadjusted bivariate tests is depressive symptoms. With the exception of age (noted with an *), all bivariate relationships are statistically significant at the \( p < .001 \) level.

### Multivariable Findings

The multivariable findings are presented in Table 3. In Model 1, which adjusted for sociodemographic factors, there was a positive association between loneliness and depressive symptoms; for every unit increase in loneliness,
depressive symptoms increased by a factor 2.30. In Model 2, which adjusted for loneliness, sociodemographic, and social integration/support factors, the positive relationship between loneliness and depressive symptoms persisted. Depressive symptoms increased by a factor of 2.08 for every unit increase in loneliness. Lastly, in Model 3, there was a significant interaction between race and loneliness, indicating the relationship between loneliness and depressive symptoms varies by race. More specifically, this interaction revealed that while higher levels of loneliness were associated with greater depressive symptoms among both older blacks and whites, this association was stronger.
among older whites than older blacks (Figure 1). We conducted supplemental analyses with the race and loneliness interaction effect to determine whether it is consistently related to depressive symptoms. In particular, we ran two additional negative binomial regression models. The first model regressed depressive symptoms solely on race, loneliness, and the race and loneliness interaction term. The second model regressed depressive symptoms on loneliness, the sociodemographic variables, and the race and loneliness interaction term. In both models, the interaction effect remained statistically significant, indicating the association between loneliness and depressive symptoms varied among black and white older adults (additional analyses available upon request).

Discussion

This study investigated the influence of loneliness on depressive symptoms, and how race moderates this relationship. To the investigators’ knowledge, this is the first study to determine whether the association between loneliness and depressive symptoms varies among older blacks and older whites. The data also supported our first hypothesis, that greater loneliness among both black and white older adults was associated with greater depressive symptoms. This relationship remained statistically significant when accounting for sociodemographic differences and social integration and support factors. This indicates that although some sociodemographic and social integration/support factors may contribute to loneliness and depressive symptoms as previous studies have demonstrated (Courtin & Knapp, 2017; Mair, 2010), loneliness exerts an influence on depressive symptoms that are independent of the influence of these sociodemographic and social integration factors.

The current finding demonstrates the robustness of loneliness as a predictor of depressive symptoms and possibly, more broadly, poor mental health. This is consistent with prior research that has found a connection between loneliness and depression and depressive symptoms (Cornwell & Waite, 2009; Coyle & Dugan, 2012; Ge et al., 2017; Luo et al., 2012). Empirical evidence notes that social relationships, especially the social support that is derived from these relationships, are important stress-buffering and stress coping resources (Heaney & Israel, 2008). That is, our relationships with others can shape our appraisal of stressors. The perception that there are people available to us who can provide support and comfort can shape our appraisal of a stressor as a nonthreatening event. As a consequence, the psychological sequelae of stress are avoided (Hawkley & Cacioppo, 2003). Furthermore, social relationships and support are an important coping resource that can mitigate the impact of stressors on a person’s mental health. Overall, the finding that loneliness is associated with more depressive symptoms underscores the importance of perceptions of social connectedness for the mental health of older adults.

The findings partially confirmed our second hypothesis and demonstrated that race moderated the relationship between loneliness and depressive symptoms. Although greater loneliness was associated with more depressive symptoms for both race groups, the relationship was stronger among older whites in comparison to older blacks. This finding was contrary to our hypothesis, as we expected to find that the association between loneliness and depressive symptoms would be stronger for older blacks. Instead, we found that older blacks are more resilient to the effects of loneliness on depressive symptoms. This finding raises important questions regarding racial variations in the nature of causal relationships linking loneliness and depressive symptoms among older adults. The current literature on loneliness among older blacks is quite small and is not able to directly address this issue. However, one potential explanation for this finding is that the nature and experience of...
loneliness and depression may be qualitatively different between older blacks and whites; in particular, there may be different factors that influence loneliness and depression in older blacks in comparison to older whites. More research, and potentially qualitative studies assessing the nature of loneliness and depression among older blacks and whites, is necessary to determine the causal factors behind these results and to determine the consistency of these findings.

A second possible explanation for this finding may be that loneliness taps into dimensions of emotional connectedness to others and to some extent emotional support. While a person can feel emotionally disconnected and lack emotional support, they can also still be receiving instrumental support (i.e., tangible support such as transportation and financial aid) from their social network. Although emotional connectedness and support are important protective factors for mental illness, instrumental support may be an even more important protective factor for older adults who are economically disadvantaged, such as older blacks in this study, who reported an average household income that is less than half of that of their white counterparts (results not shown but available upon request). Instrumental support (e.g., monetary help with groceries, bills, and rent; transportation assistance for shopping and medical appointments) is more likely than emotional support to directly ameliorate the stresses of economic disadvantage and its negative impacts on mental health.

Maslow’s hierarchy of needs, which is a theory of human motivation, posits that human behavior is motivated by a set of five needs (Maslow, 1943) that are ranked in a hierarchy from the most basic needs to the higher-order needs. According to this theory, physiological needs are the most basic of human needs and are followed by safety, love and belonging, and esteem needs. At the top of the needs hierarchy is self-actualization. Maslow originally stated that lower-level needs must be fully met before moving on to higher levels of needs. For example, before safety needs can be met, physiological needs must first be met. However, more recent formulations of this theory suggest that there is some overlap in these levels of needs (Lambert, 2018). Although lower-level needs do not have to be fully met before moving on to higher-level needs, lower-level needs take precedence over higher-level needs.

Economically disadvantaged persons are likely to struggle to meet their lower-level needs—physiological (e.g., food and shelter) and security (e.g., freedom from neighborhood and community violence, financial security) needs. Given the large racial disparity in income in this study (results not shown but available upon request), it is likely that there are more older blacks than older whites who are struggling to meet some of Maslow’s lower-level needs. These lower-level needs are better fulfilled by instrumental support than by feelings of emotional connectedness and support. Although feelings of emotional connection and support are clearly important for emotional well-being, instrumental support may play a more immediate role for older black adults who are disadvantaged. Thus, the fact that loneliness had less of a detrimental impact on depressive symptoms among older blacks may suggest that loneliness is a less direct mental health predictor for economically disadvantaged persons, who may have greater needs for instrumental support. It is important to note that we do not suggest that loneliness is not detrimental to the mental health of older blacks or an unimportant public health problem for this population. The robust association between loneliness and depressive symptoms for the entire sample and the race and loneliness interaction effect indicates that although older blacks are less affected by loneliness than older whites, they, nevertheless, are harmed (psychologically) by loneliness.

Another reason for this racial patterning of the association between loneliness and depressive symptoms could be that older blacks may have developed strategies for effectively coping with feelings of loneliness. Given the fact that blacks are more likely to reside in areas with characteristics that contribute to loneliness (e.g., communities characterized as unsafe, lacking in economic and social resources, physically degraded built environment, and gentrifying; Redwood et al., 2010; Ross & Mirowsky, 2001; Schulz et al., 2002; Williams & Collins, 2016) and have a higher prevalence of loneliness (Adams et al., 1989; Henning-Smith et al., 2019; Miyawaki, 2015) than whites, older blacks may have had more experience in adjusting to loneliness compared to older whites. Moreover, they may have effectively adapted to these contextual factors and engage in behaviors and activities that would reduce the impact of loneliness on depressive symptoms.

A final potential explanation for why loneliness has a stronger association with depressive symptoms among older whites is selective mortality. Both loneliness and depression are noted to have a strong association with mortality (Holt-Lunstad et al., 2010, Holt-Lunstad et al., 2015; Schulz et al., 2000). Blacks who experienced greater loneliness and greater depression may have been most severely affected by these conditions and have died at earlier ages. This would additionally leave a more robust group of individuals who are better able to cope with feelings of loneliness and depressive symptoms.

Limitations

This study has limitations that should be considered. First, the current study is cross-sectional in nature and we were unable to determine causality between loneliness and depressive symptoms. Some individuals may have experienced greater depressive symptoms and then became lonely, while others may have experienced greater loneliness and then developed greater depressive symptoms as a result. As previously described, there are studies that have documented reciprocal associations between loneliness and depressive symptoms (Cacioppo, Hughes et al., 2006; Luo et al., 2012). Second, we only examined whether the relationship between loneliness and depressive symptoms
varied among older blacks and older whites. The association between loneliness and depressive symptoms could also be significantly different for other older racial and ethnic groups (e.g., Asian Americans, Native Americans, and Hispanic Americans) in comparison to older whites. Future studies should broaden the literature by examining loneliness and depressive symptoms in other racial/ethnic minority groups. Third, older blacks are not a monolithic ethnic group, and significant heterogeneity exists within this population (Jackson et al., 2004). However, the current analysis is unable to determine the specific ethnicity of older blacks in the HRS sample (e.g., African American and Black Caribbean) leaving open questions as to ethnic differences in the association between loneliness and depressive symptoms for older black adults.

Conclusions

Given the significant human costs and suffering associated with loneliness and depression in older adulthood, it is imperative that we investigate these problems and develop adequate interventions to improve the health of all older adults. Previous studies, however, have not examined racial differences in the association between loneliness and depressive symptoms. Our study is one of the first to document that the effect of loneliness on depressive symptoms was moderated by race among a nationally representative sample of older blacks and older whites. This study is an important first step in understanding how loneliness could differentially affect mental health among older blacks and older whites. Future studies should employ longitudinal methods to determine whether loneliness is a stable and steady trait across the life span of black and white adults or if a greater loneliness occurs closer to the end of life. In addition, future studies should determine if there are significant differences in the qualitative experiences of loneliness among black and white older adults. These findings will be important for creating racial and ethnically sensitive interventions to alleviate depression and depressive symptoms among black and white older adults.

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Conflict of Interest

None declared.

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