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CHAPTER 3

Social Network Typology and Cognitive Status Among African Americans

Findings From the Health and Retirement Study

Karen D. Lincoln and Ann W. Nguyen

ABSTRACT

Social network diversity has been linked to cognitive status in older adults. While social network diversity is often operationalized by the proportion of social roles represented within one's network, the additive effect of social roles is often unrecognized. Moreover, very few studies examine social relationships and cognitive status among African American older adults—a population with a high risk of cognitive impairment. The current study examined the relationship between social network diversity and cognitive status in a nationally representative sample of middle-aged and older African Americans. Data from the Health and Retirement Study ($N = 2,308$) and latent class analysis were used to identify a social network typology using children, extended family members, and friends as social network indicators. Multinomial logistic regression was used to determine the association between social network types and cognitive status. Three social network types were identified—friend-focused, diverse, and restricted network types. African Americans with higher cognitive status were more likely to be assigned to the friend-focused social network type rather than the diverse

or restricted network types. Neither the diverse nor restricted social network types were associated with cognitive status. A social network typology accounted for heterogeneity within the social networks of African American middle-aged and older adults and identified a unique social network type that appears to be protective for their cognitive health. Findings have implications for the measurement and operationalization of social networks and cognitive status and the role of social networks in maintaining cognitive functioning in African Americans.

Keywords: African Americans; social networks; social support; network diversity; cognitive function; cognitive impairment

INTRODUCTION

Cognitive impairment and dementia are considered a major public health concern because of high prevalence rates, high burden to those affected and their caregivers, high health care costs and social burden (Alzheimer's Disease International and World Health Organization, 2012; Langa et al., 2001). About eight of every 10 people with mild cognitive impairment (MCI), especially MCI involving memory problems, will go on to develop Alzheimer's or other dementias within 7 years compared to people without MCI (Ward et al., 2013). A disproportionate number of these people will be African American. Approximately 5.8 million people in the United States have a diagnosis of Alzheimer's disease (AD), comprising 60% to 80% of dementia cases (Alzheimer Association, 2019). However, the likelihood of an AD diagnosis is two to three times higher for African Americans than for Whites (Mayeda et al., 2016). AD ranks as the fourth leading cause of death among African Americans overall (Wang et al., 2017). According to U.S. Census Bureau and National Center for Health Statistics data, AD deaths increased by 55% among all Americans between 1999 and 2014, but doubled for African Americans from 11% to 22% (Taylor et al., 2017). African Americans also present with an earlier age of onset than Whites (Chen & Panegyres, 2016), exhibit greater severity of symptoms (Apostolova et al., 2014; Sink et al., 2004), and are more likely to be diagnosed at later disease stages (Hurd et al., 2013), resulting in fewer treatment and planning options and a greater burden on caregivers. Complicating this is a paucity of research that addresses this racial health disparity and potential social ecological factors that are associated with it. Uncovering potentially modifiable risk and protective factors for cognitive decline is key to preventing or managing clinical outcomes such as dementia and MCI, and for managing normal, age-related declines in cognition. It is particularly important for addressing AD disparities that result in excessive burden and death for many African Americans.

Research demonstrates that older adults who are more socially embedded show less decline in cognitive functioning and decreased risk of dementia than those who are less socially embedded (Cacioppo & Hawkley, 2009; Ellwardt et al., 2013). Conversely, there is evidence that social isolation and poor social connections are associated with cognitive decline (Kuiper et al., 2016). Although the mechanisms linking social relationships to cognitive function are unclear, one argument is that integration in diverse social networks stimulates cognition and enhances neural plasticity in aging, which in turn preserves cognitive abilities (Hultsch et al., 1999; Katzman, 1995). The use-it-or-lose-it hypothesis (Hultsch et al., 1999) suggests that the brain can be seen as a muscle and that engagement in intellectual and social activities stimulates the brain. Decreases in engagement in everyday activities may result in disuse of the brain which, in turn, may result in declines in cognitive functions. In a similar vein, social working memory—the ability to actively maintain and manipulate social information—is essential for developing and maintaining social relationships (Krol et al., 2018). Social working memory relies on distinct brain systems that are activated when processing a great deal of social information to ensure smooth social interactions. The cognitive demand required to process, navigate, and maintain social information during social interactions within diverse social networks, can increase the likelihood of being stimulated, and thus preserve cognitive functioning (Hultsch et al., 1999). Based on these hypotheses, improved cognitive functioning is achieved through a greater number of social relationships (i.e., network size). However, improvements in cognitive functioning are primarily achieved through the complexity (i.e., networks diversity) and cognitive demand associated with social relationships.

Although the link between social relationships and cognitive status is well documented, very few studies focus on African Americans despite some evidence that social network characteristics and cognitive aging may be more strongly related among African Americans than other groups (Sharifian et al., 2019). Consequently, we know little about how social relationships are associated with cognitive functioning in this population. There is evidence that the size of social networks is linked to cognitive status in the general population. Small social networks are associated with MCI, incident dementia, poor global cognitive status, and AD pathology (Bennett et al., 2006; Kuiper et al., 2015). Conversely, older adults with large social networks have better cognitive status across a wide range of cognitive measures (Kuiper et al., 2016). Some studies indicate that older African Americans have smaller social networks than older Whites (Ajrouch et al., 2001; Barnes et al., 2004), which has implications for cognitive status in this high-risk population.

Research demonstrates that having diverse social networks—that is, networks comprising people with diverse roles such as family members, friends, neighbors, coworkers, and so on—is beneficial for cognitive health among older adults regardless of network size (Ali et al., 2018). The reason is that older adults who are embedded in a broad range of network relationships are likely to be exposed to a wider range of social activities and more complex stimuli than older adults embedded in a homogeneous network that comprising similar relationship types (e.g., primarily family, primarily friends). Empirical studies that characterize the social networks of African Americans indicate that they have a higher proportion of family members in their networks compared to Whites (Ajrouch et al., 2001; Nguyen, 2017), which based on the literature, could explain their increased risk for cognitive impairment.

Studies of social networks and cognitive functioning in diverse populations are sparse. However, findings from available studies indicate that both network size and network diversity have implications for cognitive status, both independently and interactively. For example, one study that used data from the Chicago Health and Aging Project, a longitudinal, population-based study of 6,497 adults aged 65 years and older (65% African American) examined the relationship between social network diversity and cognitive function (Ali et al., 2018). Findings indicated that greater network diversity was associated with reduced decline in cognitive function in older adults independent of network size. Another study that examined the association between social network size and diversity in a sample of racially and ethnically diverse older adults found that those respondents who had a greater proportion of friends in their network relative to family members had better global cognition than those who had a greater proportion of family members in their networks (Sharifian et al., 2019). Moreover, among African Americans whose networks comprised a greater proportion of friends, a larger network size was associated with better global cognition. However, for African Americans whose networks comprised a greater proportion of family, social network size was not associated with global cognition.

FOCUS OF THE PRESENT STUDY

Findings from studies of social network composition and cognitive status suggest that African Americans may have a greater risk for cognitive decline than other racial or ethnic groups. However, the lack of studies on African American older adults limits the ability to draw conclusions about the link between social relationships and cognitive status in this population. Furthermore, studies that suggest that African Americans might have a higher risk of cognitive impairment because of their smaller, less diverse social networks compared to Whites

warrant further investigation especially in light of AD disparities and excessive burden experienced by African Americans and their families. To our knowledge, this is the first study to examine social network diversity and cognitive status in a nationally representative sample of African American middle-aged and older adults. The purpose of the current study was twofold. First, we wanted to empirically define a social network typology that included a diverse range of social roles—children, extended family members, and friends. Second, we wanted to examine the extent to which social network diversity was related to cognitive status in middle-aged and older African Americans.

METHODS

Sample

Data for this study were derived from the Health and Retirement Study (HRS), a national, longitudinal panel survey of adults aged 51 and older in the United States. Launched in 1992, the HRS now contains over 30,000 respondents who entered the study as five birth cohorts. Reinterviews were conducted biennially, and the sample is replenished every 6 years. The initial cohort response rates ranged from 70% to slightly over 80%; reinterview rates for all cohorts at each subsequent wave have been between 92% and 95% (Sonnega et al., 2014). The HRS oversamples Black households and households in Florida. Beginning in 2006, a random one-half sample of HRS households were selected for enhanced face-to-face interviews, which included the collection of psychosocial data. Self-administered psychosocial questionnaires (Leave Behind Questionnaire; LBQ) were left with respondents upon completion of the in-person core interview and mailed back to the HRS. This analysis used concatenated data from the 2014 and 2016 waves of the HRS core interview and LBQ. The analytic sample consisted of 2,308 African American respondents.

Measures

Social Network Diversity Indicators

Indicators of social support from children, extended family, and friends were assessed with the following questions for each relationship category: (a) “How much do they really understand the way you feel about things?” (b) “How much can you rely on them if you have a serious problem?” (c) “How much can you open up to them if you need to talk about your worries?” These questions represented a total of nine social support indicators across the three relationship categories—children, extended family, and friends. Response categories ranged from *not at all* (1) to *a lot* (4). As required by latent class analysis (LCA), all indicators were dichotomized using median split.

Cognitive Status

Immediate and delayed word list recall tasks were used to assess episodic memory, which is commonly used to measure cognitive status (Brandt et al., 1988; Crimmins et al., 2011). For the immediate recall task, the interviewer read one of four possible lists of 10 nouns to the respondent at a rate of 2 seconds per noun. Once the interviewer completed reading the word list to the respondent, the respondent was then asked to repeat back as many words as they could recall from the list in any order. After about 5 minutes of answering other survey questions (i.e., interference tasks), the respondent was again asked to recall as many words as they could from the immediate word recall list in any order. This represented the delayed word recall task. Possible scores for both immediate and delayed word recall reflected the number of words correctly recalled and ranged from 0 to 10. A total word recall score was computed by adding together the immediate and delayed word recall scores; the total word recall score ranged from zero to 20. Following previous studies, we defined impairment as a cognitive score of 1.5 standard deviations below the mean or lower (Kasper et al., 2013; Morris, 2012). For the current study, we defined impairment as a cognitive score of ≤ 4.04 .

Covariates

The multivariate analysis accounted for gender, age, education, household income, and marital status. Age, education, and household income were measured continuously. Age and education were measured in years, and household income was assessed in dollars. The log of household income was used in multivariate analysis due to the skewed distribution of this variable. The income variable was imputed to account for missing values. Gender was dummy coded (men = 1 and women = 2). Marital status was coded to differentiate between respondents who were married or cohabiting (reference category), separated, divorced, or widowed, and never married.

Analysis Strategy

LCA was used to identify social network types. LCA uses a person-centered approach to classify respondents into subgroups (i.e., latent classes or types) based on common characteristics and their patterns of response across a set of dichotomous class indicators. Individuals within the same class or type have similar social network profiles. Because it is difficult to interpret interactions with more than three variables, and because traditional analytic methods are at the level of the variable, not the person, LCA is a preferred technique for making inferences about individuals. This method summarizes complicated relationships among variables. The nine measures of social support from children,

extended family members, and friends represent nine individual class indicators. The latent classes identified from this procedure represent social network types. Latent class multinomial logistic regression analysis was used to determine the association between cognitive status and social network type membership. This analysis was conducted using the three-step LCA approach in order to avoid the inclusion of covariates in the class extraction process (Asparouhov & Muthén, 2014). All analyses used analytic weights and were conducted using Mplus Version 8. Statistical analyses accounted for the complex multistage clustered design of the HRS sample, unequal probabilities of selection, nonresponse, and poststratification to calculate weighted, nationally representative population estimates and standard errors.

RESULTS

Table 3.1 presents the characteristics of the sample and the distribution of study variables. The mean age of respondents was 65 years, and women comprised slightly more than half of the sample (58%). The mean level of educational

TABLE 3.1
Bivariate Relationships Between Social Network Types and Study Variables Among African Americans

	Total Sample (<i>N</i> = 2,293)	Friend- Focused Network Type (<i>n</i> = 385)	Diverse Network Type (<i>n</i> = 659)	Restricted Network Type (<i>n</i> = 1,249)	Test
Gender					$\chi^2 = 22.25^{***}$
Men	805 (41.77)	91 (27.12)	190 (34.35)	524 (49.71)	
Women	1,488 (58.23)	294 (72.88)	469 (65.65)	725 (50.29)	
Age	65.08 (9.21)	63.69 (8.57)	66.64 (9.70)	64.67 (9.03)	$F = 15.28^{***}$
Education	12.67 (2.68)	13.32 (2.60)	12.23 (2.56)	12.71 (2.72)	$F = 20.34^{***}$
Household Income	\$45,103.50 (\$49,894.59)	\$48,937.19 (\$53,050.34)	\$38,384.09 (\$39,241.44)	\$47,451.38 (\$53,466.53)	$F = 8.43^{***}$
Marital Status					$\chi^2 = 2.80^*$
Married/ Cohabiting	1,029 (42.39)	146 (36.66)	265 (37.38)	618 (46.49)	

(Continued)

TABLE 3.1
Bivariate Relationships Between Social Network Types and Study Variables Among African Americans (Continued)

	Total Sample (<i>N</i> = 2,293)	Friend- Focused Network Type (<i>n</i> = 385)	Diverse Network Type (<i>n</i> = 659)	Restricted Network Type (<i>n</i> = 1,249)	Test
Separated/ Divorced/ Widowed	977 (39.61)	181 (44.98)	317 (43.67)	479 (36.07)	
Never Married	285 (18.00)	57 (18.35)	77 (18.95)	151 (17.44)	
Cognitive Status	8.69 (3.09)	9.16 (3.05)	8.52 (3.18)	8.63 (3.05)	<i>F</i> = 5.61**

Note: Percentages, presented within parentheses, and *N* are presented for categorical variables. Means and Standard Deviations, presented within parentheses, are presented for continuous variables. Percentages are weighted and frequencies are unweighted.

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

attainment was 12.7 years (slightly more than high school/general education diploma or GED), and the average household income of respondents was \$45,104. Regarding marital status, equal proportions of respondents were either married or cohabiting or separated, divorced, or widowed (approximately 40% each). Close to one in five respondents reported having never married. The mean total word recall score was 8.7 and the range was 0 to 20.

A series of LCAs indicated that the best-fitting model featured three classes (i.e., social network types). Goodness-of-fit was determined using the Akaike Information Criteria (AIC) and sample-size-adjusted Bayesian Information Criteria (BIC). The three identified social network types were: friend-focused, diverse, and restricted (Figure 3.1). The friend-focused type was characterized by higher endorsement rates of friendship support indicators and fairly moderate endorsement rates of children and extended family support indicators. So, while respondents in this type reported receiving more social support from their friends, they also reported receiving some support from their children and extended family members but to a lesser degree. Respondents in the diverse social network type had high endorsement rates of all children and extended family support indicators and moderate endorsement rates of friendship support

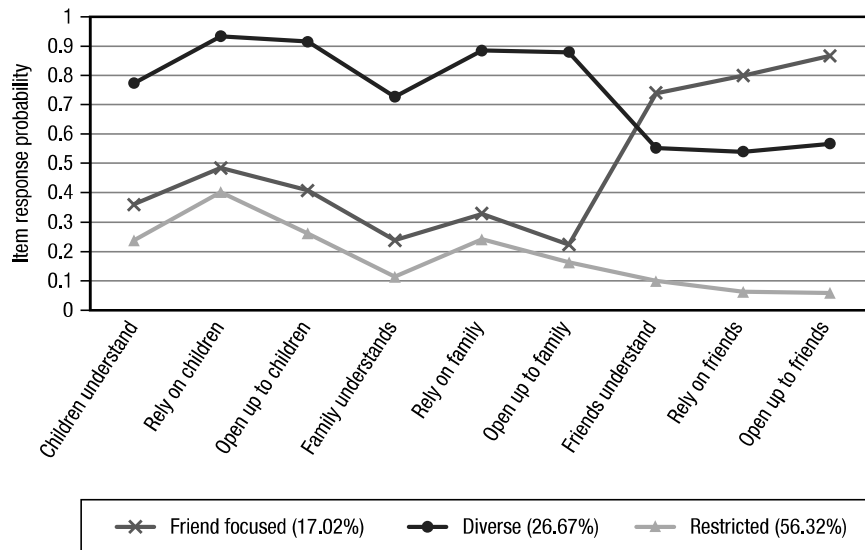


FIGURE 3.1 Conditional item probability profile for social network typology.

indicators. Although respondents in this type reported receiving social support from family members at a higher level than they received support from friends, the level of friendship support was still high enough to be considered substantial and nearly comparable to the support received from children and extended family members. The restricted social network type, which comprised the majority of the sample (56%), was characterized by relatively low endorsement rates across all nine support indicators; however, there was some noticeable variation. While respondents assigned to this type reported very low levels of social support from friends, they reported slightly higher levels of support from their children.

Bivariate analyses (Table 3.1) indicated that the three social network types differed on all study variables. With respect to gender, the friend-focused type had the largest proportion of female respondents, with women comprising close to three quarters of respondents in the friend-focused type. This is followed by the diverse type, which women comprised two-thirds of respondents in this social network type. Men and women were equally distributed within the restricted type. The diverse type had the highest mean age, and the friend-focused type had the lowest mean age. Respondents in the friend-focused type also reported the highest levels of educational attainment and income of all three social network types. Turning to marital status, the restricted type had the greatest proportion of married or cohabiting respondents (47%) and the smallest

proportion of respondents who were either separated, divorced, widowed (36%), or never married (17%). In contrast, respondents who were separated, divorced, or widowed comprised the largest proportion of both the friend-focused (45%) and diverse (44%) types. Lastly, respondents in the friend-focused type had the highest level of cognitive status.

For the latent class multinomial logistic regression, the restricted social network type was set as the reference category for the outcome variable. This analysis indicated that cognitive status was positively associated with membership in the friend-focused type (Table 3.2). That is, African Americans with better cognitive status were more likely to be assigned to the friend-focused social network type than to the restricted social network type. Cognitive status was not significantly associated with membership in the diverse social network type, relative to the restricted social network type.

TABLE 3.2

Latent Class Multinomial Logistic Regression Analysis of Cognitive Status and Social Network Types Among African Americans (N = 2,246)

	Friend-Focused Type vs. Restricted Type	Diverse Type vs. Restricted Type
	Logit (SE)	Logit (SE)
Gender		
Men ^a	0	0
Women	1.13 (.18)***	0.71 (.18)***
Age	-0.02 (0.01)	0.02 (0.01)
Education	0.11 (0.06)	-0.10 (0.03)**
Household Income	-0.05 (0.11)	0.13 (0.08)
Marital Status		
Married/Cohabiting ^a	0	0
Separated/Divorced/ Widowed	0.50 (0.21)*	0.28 (0.17)
Never Married	0.22 (0.28)	0.38 (0.28)
Cognitive Status	0.06 (0.03)*	0.00 (0.03)
Intercept	-3.15 (1.40)	-3.25 (1.32)

Note: SE = standard error.

^aReference category.

* $p < .05$. ** $p < .01$. *** $p < .001$.

DISCUSSION

Social networks are particularly important for older adults as they face the greatest threats to health and depend on network relationships, more than younger individuals, to meet their needs. We empirically defined a social network typology and examined its relationship with cognitive status in a nationally representative sample of middle-aged and older African Americans. In our investigation, African Americans with better cognitive status were assigned to the friend-focused social network type. In contrast to findings from previous studies (Ali et al., 2018; Fratiglioni et al., 2000), neither the restricted social network type nor the diverse social network type were associated with cognitive status. Our finding for the link between the friendship-focused type and cognitive status is supported by findings from other studies that examine social network characteristics and cognitive status among older adults (Giles et al., 2012). Although very few studies examine friendship networks and cognitive function, findings from a study of a racially and ethnically diverse sample reported that older adults generally and older African Americans specifically who had a higher proportion of friends in their network had better cognitive status than those who had a higher proportion of family in their networks (Sharifian et al., 2019). Another study of Chinese older adults reported similar findings (Li et al., 2019).

Friendship ties are vital relationships in older age, as the likelihood of making new friends is greater than the possibility of enlarging the kinship network. Moreover, friendships are often evaluated by older adults as more reciprocal than family ties, in keeping with the more optional and voluntary nature of friendship (Crohan & Antonucci, 1989). It is also theorized that older adults increase high-quality relationships with friends through adaptive social pruning of suboptimal, less meaningful, or otherwise problematic social ties (English & Carstensen, 2014) in order to limit negative interactions (Lincoln, 2000; Lincoln & Chae, 2012) and maximize well-being in later life.

Our findings, in part, support hypotheses and theories regarding the role of social relationships in maintaining and preserving cognitive function. Specifically, the argument that integration in diverse social networks stimulates cognition and enhances neural plasticity in aging, which, in turn, preserves cognitive abilities (Hultsch et al., 1999; Katzman, 1995) is partially supported by our findings for the friend-focused type. Similarly, our findings show support for the use-it-or-lose-it hypothesis (Hultsch et al., 1999), which suggests that engagement in social activities stimulates the brain and protects against cognitive decline. Although engagement is assumed by our measures of social relationships, our findings do demonstrate that having more friends relative to family members is positively associated with cognitive status in African Americans. Our findings also show

some support for the idea of social working memory because according to the literature, friendships require more communication, more cognitive demand, and more active engagement in informal activities to sustain emotional closeness (Roberts & Dunbar, 2011a), all of which are beneficial for cognitive functioning.

Our findings potentially shed light on the idea that having more friends in one's social networks is especially beneficial to cognitive health among older adults. Specifically, our findings suggest that homophily—the social phenomenon in which people tend to cluster or have more frequent contact with those who are similar to them (McPherson et al., 2001)—may be an important and potentially overlooked indicator of cognitive status. Homophily has been found to occur among those with similar backgrounds, occupational statuses, gender, race, ethnicity, and beliefs and values. Unlike family relations which are more or less predetermined, friendship relations are formed on a voluntary basis and with peers who share characteristics, cohort experiences, and lifestyles (Chen & Fu, 2008). Probably because of this voluntary nature, relationships with friends require more maintenance effort than with family relations (Roberts & Dunbar, 2011b). In regard to older adults, it has been suggested that their relationships tend to be highly homogeneous, especially in terms of sex, age, and socioeconomic status (SES; Crohan & Antonucci, 1989; Rook & Schuster, 1996).

New evidence suggests that individuals who have similar amygdala volumes are likely to gather together (Lee et al., 2017). Amygdala is the primary structure of the brain responsible for the fight or flight response and is arguably one of the most important brain regions for social interaction (Zec, 2010). Recent evidence shows that older adults with higher amygdala volume, which is an indicator of better cognitive function (Zanchi et al., 2017), are more likely to have social networks comprising individuals who also have higher amygdala volume. Although few studies examine homophily and brain structure of older adults, findings from this line of research have significant implications for understanding the seemingly protective effect of friendship-focused social networks on cognitive functioning in African Americans.

Although our finding that the friendship-focused type was associated with cognitive status is supported by previous research, our study is unique in that the friendship-focused type also included support from children and extended family members that could be observed across different social support indicators (e.g., understand, rely, open up to). Research shows that social interactions with kin and nonkin can have additive effects that, collectively, impact health and well-being outcomes in African Americans (Chatters et al., 2015; Nguyen et al., 2016; Taylor et al., 2015). By allowing for heterogeneity within each social role, we were able to observe the diversity of sources from which African Americans received social support. So, although respondents who were assigned to the

friendship-focused type received support primarily from their friends, they also received a considerable amount of support from their children and extended family members which likely had additive effects on their cognitive status.

Unfortunately, there is very little research that explores the nature of friendships among African American adults or older adults so that explanations for our findings are speculative at best. Nonetheless, our explanations are informed by research on the personal networks of the general population of older adults, from studies that compare the friendship networks of African Americans to those of non-Hispanic White populations (Griffin et al., 2006; Taylor et al., 2013; Waite & Harrison, 1992), and on studies that examine the demographic profile of friendship networks of older adults.

A review of the demographic profile for the friendship-focused social network type provides additional insight into why African Americans who have better cognitive status were assigned to the friend-focused network type. First, compared to the diverse and restricted social network types, the friend-focused type had more women than men. Evidence from previous studies show that compared to men, women's friendships are closer, more cooperative, involve more frequent contact, and are more supportive (Pearce et al., 2021). Relational closeness and social support are also important for maintaining cognitive functioning in old age (Béland et al., 2005). Although very few studies examine the association between friendship and cognitive functioning, a longitudinal study by Béland and colleagues (Béland et al., 2005) showed that having friends was associated with slower cognitive decline in women but not men over the course of 7 years. Béland and colleagues argued that this finding might be due to women's gender-based social roles that necessitated greater social integration over the years.

African Americans assigned to the friendship-focused type also had higher SES than respondents in the other social network types. Studies show that individuals with higher SES are able to maintain larger networks of friends, engage in more varied social activities with friends, and maintain long distance friendships (Walker, 1995). Higher educational attainment is also associated with better problem-solving abilities (Ross & Mirowsky, 2013), which are crucial for managing tensions in friendships (Rook et al., 2007). In addition, previous studies have shown that higher SES in both childhood (Lyu & Burr, 2016) and in adulthood is associated with lower risk of dementia and higher level of cognitive performance (Lee et al., 2003).

African Americans in the friend-focused social network type were younger and less likely to be married than respondents in the other social network types. Findings from previous studies indicate that younger and middle-aged adults have more contact with their friends than older adults, are more likely to engage in informal social activities, and are more likely to have a confiding friend

(Huxhold et al., 2014; Nicolaisen & Thorsen, 2017). Most research suggests that single adults have more friends on average (Gillespie et al., 2015) and are more likely to socialize (Ha, 2008; Sarkisian & Gerstel, 2016) and exchange help (Liebler & Sandefur, 2002; Sarkisian & Gerstel, 2016) than their married counterparts. So, by nature of their age and marital status, African Americans with friend-focused social networks might have a cognitive advantage.

In contrast to findings from previous studies that report an association between diverse social networks and restricted social networks and cognitive status (Ali et al., 2018; Sharifian et al., 2019), our study found no association between these network types and cognitive status among African Americans. Several explanations for these null findings are possible. First, very few studies of social networks and cognitive impairment focus on African Americans. Typically, studies examining the relationship between social network characteristics and cognitive status focus on highly educated, non-Hispanic White populations. As such, findings from these studies have limited generalizability to African Americans and other racially and ethnically diverse groups. In addition, the few available studies that examine social networks and cognition among African Americans typically involve comparative analyses with Whites or other racial/ethnic groups, which obscures heterogeneity within the African American population. Although we know from previous studies that there are race differences in the size and composition of social networks, less is known about how these differences are related to cognitive aging in a heterogeneous sample of African Americans.

Second, the null findings for diverse and restricted social network types and cognitive status might be attributed to how we operationalized social networks. A social network typology is defined by mutually exclusive social network types. More specifically, each individual in the sample is assigned to one type based on their specific pattern of social network characteristics. Unlike previous studies that typically aggregate social roles into categories (e.g., variable-based), our operationalization of social networks defined types at the level of the individual respondent which reflects the diversity within each respondent's social network. Thus, it is possible that the null findings are due to variation within each network type that has not been previously considered in studies of this kind.

Third, we operationalized social networks with measures of functional support which assess whether the perceived availability of social resources from children, extended family members, and friends fulfill certain functions in times of need (e.g., provide emotional, appraisal, and affective support). Functional aspects of support like emotional support have been linked to incident MCI, cognitive decline, incident cognitive impairment, and incident dementia (Kuiper et al., 2015, 2016). However, these studies are limited to the extent that they

include African Americans. Moreover, findings are inconclusive with some studies reporting a positive association between functional aspects of social support and others reporting no association (Kelly et al., 2017; Kuiper et al., 2016).

Further, because African Americans are less likely to be married than other racial and ethnic groups, we excluded spouses from our social network typologies in order to maximize the sample size. Approximately 42% of African Americans in our sample were married. So, it is likely that a fair number of married respondents relied more heavily on their spouse for support than on their children and/or extended family members. For example, the restricted social network type had the highest proportion of married respondents than the other types. Thus, it is likely that many of the respondents assigned to this type received more support from their spouse given that ties with friends and extended family members are generally weaker than ties to a spouse (Sarkisian & Gerstel, 2016).

Finally, our null findings might be explained by our measure of cognitive status. One limitation of studies of social networks and cognitive status, which we tried to address with our study, is that the specific aspects of social relationships that improve cognitive function are unclear. More specifically, the heterogeneity in definitions and measures of social relationships (e.g., social activity, social engagement, functional and structural aspects of social networks, social integration) are not often specified in studies. This precludes any meaningful comment on their distinct contributions toward cognitive aging (Kelly et al., 2017), which is also measured in a variety of different ways across studies (e.g., global cognitive status, working memory, episodic memory, executive function, verbal fluency, processing speed). To better clarify how social ties contribute toward cognitive aging in African Americans, we specified episodic memory as measured by immediate and delayed word recall as our outcome and functional social support as our measure of social relationships. It is likely that our findings would have been different if we used different aspects or measures of social relationships and cognitive function. However, what our findings show is that functional aspects of social relationships with children, extended family members, and friends are differentially associated with a specific cognitive domain among African Americans.

CONCLUSION

Findings from our study should be considered within the context of their strengths and limitations. First, the current study was cross-sectional and therefore the direction of the association is undetermined. Our finding that the friendship-focused type was positively associated with cognitive status could indicate that African Americans who have better cognitive status are able to maintain friendships, which does require more cognitive demand than maintaining relationships with

family members. Previous longitudinal studies have shown that social networks are associated with subsequent cognitive status (Kuiper et al., 2015). One longitudinal study that examined the effect of social network diversity on cognitive status of older adults (Ellwardt et al., 2015) found that older adults reporting greater number of relationship types in their network had higher cognitive capacities than their counterparts reporting fewer types. Moreover, a decline in network diversity was related to a decline in cognitive functioning. However, we cannot draw conclusions about temporal order in the current study. Future longitudinal studies with representative samples of African Americans are needed to address this limitation.

Second, more information is needed about the characteristics of social networks to clarify the association between social network diversity and cognitive status in African Americans. Using a social network typology does contribute to the research in this area. However, previous studies using social network typologies in relation to other types of health and mental health outcomes use a wider range of variables including social network size, frequency of contact, social support, network composition, and positive and negative social exchanges (Fiori et al., 2006; Nguyen, 2017). Future studies are needed that assess the comprehensive nature of social networks among African Americans. We hope that our study provides a foundation upon which other researchers can build.

A third limitation of our study is that we did not assess the quality of social relationships. Not all social ties are positive and beneficial. Studies show that African Americans report experiencing negative interactions with members of their social network and that these interactions have a more deleterious impact on their health and well-being compared to Whites (Lincoln et al., 2003, 2019; Lincoln & Nguyen, 2021). There is also some evidence that both negative and positive social exchanges with friends, family, and spouses have implications for cognitive functioning in older adults (Windsor et al., 2014). Future studies are needed to account for the quality of social relationships to determine how social ties lead to either increases or decreases in cognition.

Despite these limitations, we believe that the strengths of our study outweigh the limitations. The current study provided insight on the relationship between social network characteristics and cognitive functioning in African Americans in mid- to late life. Specifically, we found that African American middle-aged and older adults with better cognitive status were more likely to have friend-focused social networks than diverse or restricted social networks. However, it is important to note that social support from children and extended family members were also important for this subpopulation of African Americans. Future studies—both cross-sectional and longitudinal—are needed to examine a wider range of social network domains and cognitive measures to clarify the role of social networks in preserving and maintaining cognitive functioning in African Americans.

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