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## Effects of Social Integration on Health: A Prospective Study of Community Engagement among African American Women

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### Abstract

Research indicates that engagement in community organizations is positively associated with health, particularly among aging populations, yet few studies have examined in detail the influence of community engagement (CE) on later health among African Americans. This study provides a longitudinal assessment of the effects of CE over a 22-year period on physical and mental health among a population of urban African American women.

Data were from the Woodlawn Study, a prospective study of children and their families from an African American community in Chicago. Mothers who were assessed in 1975 and in 1997 reported involvement in religious and secular organizations. These reports were combined to create a five-category construct: no CE, early CE only, late CE only, persistent CE (either type at both assessments), and diverse and persistent CE (both types at both assessments). Multivariate regression analyses with multiple imputation (for  $N=680$ ) estimated the impact of CE on four measures of physical and mental health: SF-36 physical functioning, self-rated health, anxious mood, and depressed mood.

Women with late-only, persistent, and diverse and persistent CE reported significantly better health compared to non-involved women. Persistently engaged women were less likely to report anxious or depressed mood than those with early CE only. Persistent and diverse CE was more highly associated with better physical functioning than was persistent CE. Results highlight the strong positive link between health and concurrent, persistent, and diverse CE among African American women.

### Keywords

USA; social integration; community engagement; physical health; mental health; African American; aging; longitudinal; women; ethnicity

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Social integration refers to one's attachment to society through informal ties to family and friends and formal links to community institutions. This attachment has long been recognized as a mechanism that reduces deviant behaviors and maintains social norms (Durkheim, 1951; Hirschi, 1969; Mirowsky & Ross, 1986; Seeman, 1959; Sieber, 1974). Over recent years, there has been increased interest in the role of social integration in protecting physical and mental health. Resulting studies have examined different aspects of social integration, such as social support, social networks, and community involvement (see reviews by Berkman & Glass, 2000; Cohen, 2004) along with social capital, often indicated by a community's degree of social trust and civic and political engagement (e.g., Helliwell & Putnam, 2004; Kim, Subramanian, & Kawachi, 2006). Regardless of the constructs used, many studies have found that social integration is protective for health.

This study focuses on the effects on health of community engagement (CE), or "formal" social integration, which we define as engagement in secular and religious organizations, as reported by adult African American women followed for over 20 years. These so-called "weak ties" to community groups and institutions are considered critical for obtaining information, resources, and links to opportunities, such as education and employment (Granovetter, 1973; Ensminger, Juon, Lee, & Lo, 2009). Wilson (1987) contends that weak ties are particularly important for inner city populations who are typically isolated and have few contacts with individuals and institutions that represent mainstream society.

Although a number of studies have examined the importance of church involvement for African Americans' health (e.g., Chatters, Bullard, Taylor, Woodward, Neighbors, & Jackson, 2008; Krause, 2004), few have documented African Americans' broader engagement in community organizations over time and how this relates to successful aging. This is an important area of study because African Americans are more likely than are Whites to experience physical and psychological problems as they age (George & Lynch, 2003; Kington & Smith, 1997). African American women in particular are at higher risk for many chronic diseases and psychological distress compared to Whites (Centers for Disease Control and Prevention, 2004; National Center for Health Statistics, 1999), and differential social integration may help mediate this disparity.

## Theoretical Background

According to Durkheim (1951), ties to institutions provide social role norms and obligations, which reduce alienation from society. Those who do not have strong social ties are less likely to abide by prescribed norms and more likely to engage in deviant behavior (Mirowsky & Ross, 1986; Seeman, 1959; Sieber, 1974). The importance of institutional ties has been emphasized by social capital theorists. For example, Portes' (1998) definition of social capital emphasized the significance of membership in broader social structures for increasing capacity to obtain scarce resources. Putnam's seminal work (2000) highlighted the importance of being involved in community organizations and the implications of the recent decline of such involvement in the U.S. These theorists discuss how purposeful networks and organizations produce *bridging social capital*, ties across diverse groups that may increase one's economic or political well being, resulting in improvements in one's social environment, health behaviors, and other determinants of health (Kim et al., 2006). This concept is based on Granovetter's (1973) influential work on "weak ties" which concluded that ties to community institutions beyond one's inner circle provide exposure to important information and resources that one cannot get from usual contacts.

Involvement in community organizations also provides individuals with important social roles. Interactional role theory (Stryker & Statham, 1985) explains that social positions in society become behaviorally prescribed roles, providing role identities that form one's self

(Burke & Tulley, 1977). Having multiple roles (role enhancement) is considered beneficial (Sieber, 1974), with many studies finding a positive effect on physical and mental health (e.g., Lum & Lightfoot, 2005; Moen, Dempster-McClain, & Williams, 1992), while others find that too many roles become a strain (Goode, 1966), thereby negatively influencing health (Musick & Wilson, 2003, Van Willigen, 2000).

In general, involvement in community organizations is thought to benefit physical and mental health through its provision of social support, enhanced opportunities for interactions, expanded social networks, distractions from troubles, and positive perceptions of relationships (House et al, 1988; Musick & Wilson, 2003). It may also provide a sense of purpose and meaning in life (Thoits, 1983; Wethington, Moen, Glasgow, & Pillemer, 2000) as well as power and prestige (Lum & Lightfoot, 2005; Moen et al, 1992). Volunteering in particular may improve health because it is intrinsically rewarding and provides a way to meet a civic obligation to give back to the community and to help others (Musick & Wilson, 2003, Thoits & Hewitt, 2001). Church involvement may uniquely protect health through its provision of a belief structure that enhances coping skills, provides meaning, improves coping, and emphasizes caring for community members (Ellison, Boardman, Williams, & Jackson, 2001; Krause, 2006).

CE may have different meaning and impact depending on when it occurs. The Life Course Social Field Framework emphasizes the developmental nature of individual social roles within important social contexts across the life course (Kellam, Branch, Agrawal, & Ensminger, 1975). For example, in childhood, family and school are key social fields, and later, peers and intimate partners become more important. In adulthood, key social fields become work, family, and community (Ensminger et al, 2009). Participation in community organizations may be particularly important later in the life course, as this is a key social field in adulthood. According to Social Disengagement Theory, people as they age gradually lose key social roles (e.g., employee, spouse, parent), and as a result, become more isolated with fewer social bonds (Cumming & Henry, 1961; Pillemer & Glasgow, 2000). A key component of Rowe and Kahn's (1998) "successful aging" is integration in the community through volunteering and other such acts of engagement. By involving oneself in a productive role, an older person reduces the likelihood of becoming isolated and takes on new purpose in life, leading to better physical and mental health (Su & Ferraro, 1997; Wethington et al., 2000). In addition, CE may directly convey health benefits for aging populations since it requires increased activity and mobility (Fried, Carlson, Freedman, Frick, Glass, Hill, et al., 2004; Tan, Rebok, Yu, Frangakis, Carlson, Wang et al., 2009).

## Involvement in Secular Organizations and Health

Studies of involvement in secular organizations have found positive associations with both physical and mental health, but their cross sectional designs (e.g., Cornwell & Waite, 2009; Hyypä & Maki, 2003), make unclear whether the association with health is explained primarily by social selection (good health increases involvement in the community) or social causation (involvement in the community enhances health). Controlling for early health, longitudinal examinations of volunteering have provided evidence for both social causation (e.g., Thoits & Hewitt, 2001; Van Willigen, 2000) and social selection (Li & Ferraro; Morrow-Howell, Hinterlong, Rozario, & Tang, 2003; Thoits & Hewitt, 2001). Specifically, volunteering has been associated with later physical health, including self-rated health (e.g., Piliavin & Siegl, 2007); lower levels of functional dependence (e.g., Moen et al, 1992), and decreased mortality (Oman, Thoresen, & McMahon, 1999). It has also been related to various indicators of later mental health: well-being (e.g., Piliavin & Siegl, 2007), increased life satisfaction (Van Willigen, 2000), decreased depressive symptomatology (Morrow-Howell et al., 2003), and depression (e.g., Lum & Lightfoot, 2005). A few studies suggest

these effects are stronger among older age groups (Van Willigen, 2000), with consistency of involvement over time (Musick & Wilson, 2003), and with involvement in diverse types of organizations (Piliavin & Siegl, 2007). Studies have also found simultaneous selection. For example, Thoits & Hewitt (2001) found that while volunteering increased later well-being, those with higher well-being volunteered more time. Similarly, Li & Ferraro (2005) found that although those who volunteered were less likely to report later depression, those with functional health problems were less likely to report later volunteering.

Little research has focused on involvement in secular organizations among African Americans specifically (e.g., Tan et al., 2009), and few studies have assessed the health impact of involvement in secular groups other than volunteer organizations (e.g., social and civic organizations) or used multiple measures of engagement at one time. One exception is the early two-wave panel study of women by Moen and colleagues (1992) which found that involvement in clubs and organizations related to functional ability and self-rated health 30 years later. No similar longitudinal study of organization involvement has been conducted with an African American population.

## Church Involvement and Health

There are numerous studies of participation in religious organizations (measured in a variety of ways) and health in late adulthood, although most of these works are limited by use of a cross-sectional design. Overall, self-reported church (or “religious”) attendance relates to both physical and emotional health (Chatters, 2000). For African Americans in particular, church involvement strongly relates to health and well-being. Krause (2004, 2006) has attributed the church-health relationship to the history of African American churches and their central role in the African American community. Because of the long history of slavery and discrimination in the U.S., churches served as the social center of the African American community and were the source of social, economic, and spiritual support (Billingsley, 1999; DuBois, 2000; Krause, 2003). Development of broader community institutions (e.g., education, civic, health) serving African Americans was greatly aided by the churches (Taylor, Chatters, & Levin, 2004).

African American churches have a history of addressing and ameliorating adverse life conditions and improving the social, emotional, psychological, and spiritual well-being of their congregations (Taylor et al., 2004). The church likely affects health among African Americans through both psychosocial and behavioral mechanisms. For example, in addition to enhancing family cohesion and social networks, the church provides a sense of meaning, promotes health behaviors, and provides many types of social support, which can directly affect health or indirectly buffer the negative impact of adverse events and conditions, such as poverty and discrimination (Bierman, 2006; Ellison & Levin, 1998; Krause, 2002). However, not all African Americans are involved with a church. For example, there is some evidence that church involvement is associated with higher socioeconomic status among African Americans (Goode, 1966; Taylor, Chatters, & Jackson, 2007).

Few prospective studies have examined the relationship between church and health among older African American adults. A couple of rare longitudinal studies have found that church attendance is related to fewer functional limitations (Benjamins, 2004; Idler & Kasl, 1997). Additional longitudinal research is needed to assess the effects of church attendance over time, taking into account early health.

## Current Study

In sum, studies of CE among African Americans have focused mainly on church involvement to the exclusion of other forms of CE. Furthermore, most of these studies are

cross sectional, limiting the ability to control for selection effects. Research on involvement in secular organizations has used longitudinal data, but these studies have not focused on African Americans specifically. Therefore, much has yet to be learned about the importance of CE among African Americans.

The goal of this study is to build upon current literature by longitudinally assessing the effects of CE on both physical and mental health among an older population of African American women. Specifically, it examines the relationship between timing and persistence of involvement in religious and secular organizations and four health outcomes, taking into account age, early health, poverty, and education. We hypothesize that women involved with either religious or secular organizations at one time point will have better physical and mental health than those never tied to these institutions. We also hypothesize that women integrated with either church or other community-based organizations at two time points will have better health than those integrated at only one time or not at all. Finally, we expect that women involved with both religious and secular organizations over time will have more health benefits than those involved with only one type or none at all.

## Methods

### Study Sample

Data for this study are derived from mothers of a cohort of first graders from Woodlawn, a largely African American community on the south side of Chicago and the fifth poorest of the city's communities at the time the study began (deVise, 1967). However, there was social and economic diversity among the study participants due in large part to racial segregation. All but 13 families in the cohort entering first grade in one of the community's nine public or three parochial schools in 1966 participated. Mothers were assessed three times over 30 years: in 1966, when their children were in first grade (T1,  $N=1140$ ), in 1975, when the children were adolescents (T2,  $n=867$ ), and in 1997, when the children were adults (T3,  $n=680$ ). This study uses data from the 556 mothers interviewed at both T2 and T3. (See Astone, Ensminger, & Juon, 2002, and Kasper, Ensminger, Green, Fothergill, Juon, Robertson, et al., 2008, for more details on study design and previous results.) Ethics approval was provided by Johns Hopkins University Institutional Review Board.

Of the 273 mothers who were not reassessed at T2, 3 had died, 69 refused, 126 could not be found, and 75 had moved from the Chicago area. At T3, 256 of the original 1140 mothers had died. Of the surviving 884 women, we interviewed 77%, 48 refused, 23 were too incapacitated, and 128 could not be located. To evaluate attrition bias we compared women interviewed at T3 ( $n=680$ ) with those not ( $n=406$ ) on early physical and psychological health and family background, including poverty, mobility, family structure, teenage motherhood, and educational attainment. Results suggest that those interviewed did not differ from those who were not with one exception--interviewees were significantly less likely to be high school dropouts and to report living in poverty in 1966, potentially resulting in underestimation of the impact of poverty and education. Full details of these analyses have been described previously (Ensminger & Juon, 2001).

### Measures

**Community Engagement (CE)**—To define CE, we used reports of regular church attendance (once per week or more) and participation in any secular organizations (e.g., parent-teacher associations, social clubs, civic organizations) at T2 and 3 (See Table 1 for full list and frequency distributions). Specific clubs and organizations were those deemed important to the participants by our community advisory board and were listed on the survey at both T2 and 3 (at T3 Masonic, school council, and "other" were listed separately). We

then created two persistence constructs using the following categories for each of these types of activity (church or “clubs”): no participation at T2 or 3; participation at T2 only; participation at T3 only, and participation at both T2 and 3. Then, as an overall measure of CE, we combined the persistence constructs for church and club activity into: neither at T2 or 3 (no CE), either or both activities at T2 only (early CE only), either or both activities at T3 only (late CE only), either activity at both T2 and 3 (persistent CE), and both activities at T2 and 3 (diverse and persistent CE).

**Health Outcomes**—Four T3 health outcomes were selected to test the association of CE with well-being: the Physical Functioning scale of the SF-36 (Ware & Sherbourne, 1992), self-rated health, anxious mood, and depressed mood.

The SF-36 is widely used with strong reliability and validity in U.S. general and disadvantaged populations (Ware, 2000). The *physical functioning* scale comprises 10 items to assess how much health might currently limit the following day-to-day activities: vigorous activities, *such as running, lifting heavy objects, participating in strenuous sports* and moderate activities, *such as moving a table, pushing a vacuum cleaner, bowling or playing golf, lifting or carrying groceries, climbing several flights of stairs, climbing one flight of stairs, bending, kneeling or stooping, walking more than a mile, walking several blocks, walking one block and bathing or dressing yourself*. Responses were 1=*a lot*, 2=*a little*, or 3=*not at all*. Standardized scores range from 0–100, with higher scores indicating better functioning ( $M=66.8$ ,  $SD=29.9$ ).

For *self-rated health*, the women were asked to describe, in general, the status of their health: 5=*excellent*, 4=*very good*, 3=*good*, 2=*fair*, or 1=*poor*. For the analyses, we dichotomized these responses into 1=*good to excellent* (59.2%) versus 0=*fair or poor* (40.8%).

The *anxious mood* construct was derived from three self ratings assessing how often the women experienced distress over the past 12 months: *worried a lot about little things, felt anxious, tense or nervous, and felt restless or fidgety*. Responses were: 1=*never*, 2=*almost never*, 3=*sometimes*, 4=*fairly often*, and 5=*often* ( $M=2.2$ ,  $SD=0.9$ ,  $\alpha=.85$ ), so that higher values indicated more frequent anxiety. This measure was developed for the Woodlawn Study and validated with the Woodlawn population by comparison to a multiple-item scale of anxiety assessed at the same time (Brown, Adams, & Kellam, 1981).

The *depressed mood* scale was developed by Mirowsky and Ross (1989) who used items from the Langner (1962) index and the Center for Epidemiologic Studies Depression Scale (CES-D) (Radloff, 1977). Reliability and validity have been confirmed with women (Ross & Mirowsky, 1984) and African Americans (Roberts, 1980). Mothers were asked how often in the past 12 months they: *felt sad, felt lonely, felt they couldn't shake the blues, felt depressed, been bothered by things that don't usually bother you, wondered if anything was worthwhile anymore, felt that nothing turned out for you the way you wanted it to, felt completely hopeless about everything, felt worthless, and thought about taking your own life*. Response options were: 1=*never*, 2=*almost never*, 3=*sometimes*, 4=*fairly often*, and 5=*often*. The depressed mood score was the mean of the responses, with higher values indicating more frequent depressed mood ( $M=1.8$ ,  $SD=0.7$ ,  $\alpha=.89$ ).

**Controls**—Recognizing the strong relationship between age and health and given the wide range of ages in our sample (51–80 years old at T3), we included a continuous measure of age in all multivariate analyses ( $M=62.2$ ,  $SD=5.5$ ). Controls were also included for early health to reduce the possibility of selection effects and to take into account the relationship between early and later health. To hold constant the effects of early physical health, we

adjusted for self-reported fair or poor health at T2 (19.5%), using the same item that we used as an outcome at T3. For anxious and depressed mood outcomes, we created a T2 control by combining two items: *how often do you have days when you are nervous, tense, on edge* and *days when you are sad and blue* (4=*very often*, 3=*fairly often*, 2=*occasionally*, 1=*hardly ever*). Either item reported as occurring fairly or very often indicated psychological distress (23.6%). Two indicators of socioeconomic status were also included in our regression models: years of education (continuous,  $M=11.5$ ,  $SD=2.4$ ) and poverty at T2 as established from Federal guidelines (45.9% were 100% or more below the poverty level). Welfare participation served as a substitute for poverty for 29 women (5.2%) who did not report income at T2.

## Analyses

Following initial descriptive analyses and examination of bivariate relationships (Table 2), we designed regression models to estimate the degree of association between CE and health while controlling for confounders and accounting for missing data through multiple imputation. About 19.4 percent of cases had some missing variables, mainly from non-participation at T2. To estimate information from participants with missing data, we used the STATA ICE (imputation by chained equations) module (Royston, 2005), creating 10 imputed datasets, each with  $n=680$  – the T3 sample size. All variables within our conceptual framework were included in the imputation procedure. This technique provided pooled regression estimates calculated from the estimates for each of the ten imputed data sets. Models predicting each health outcome comprised the 5-level construct of combined persistent church attendance and organization activity, and the following control variables: age, years of education, and T2 physical health, mental health, and poverty. For the dichotomous outcome – good to excellent self-reported health, we used multivariate logistic regression and report odds ratios. For the continuous health outcomes (SF-36 Physical Functioning, Anxious Mood, and Depressed Mood), we built multivariate linear regression equations and report unstandardized coefficients.

## Results

CE characteristics of the women at both assessments are shown in Table 1. In 1975, 40% reported going to church at least once a week, and more than 60% of the women participated in secular organizations. In 1997, 56% reported attending church at least once a week, and just under 40% participated in secular organizations. About 30% reported attending church once a week or more at both time points, and 30% reported involvement in secular organizations at both time points.

Looking at religious and secular organizations together at both time points, we found that 12% never participated in either type of activity at either time point (no CE), 19% participated in at least one of the two types of activity at T2 (early CE), 12% participated in at least one at T3 (late CE), 44% participated in at least one of the two types of organizations at both time points (persistent CE), and 12% participated in both types at both time points (diverse and persistent CE).

We ran oneway ANOVA and chi-square tests to assess the bivariate relationships among the CE and health variables. As shown in Table 2, CE was significantly related to all four health outcomes. For virtually all outcomes, those with diverse and persistent CE had the best health, followed by those with persistent, late only, and early only CE, with those having no engagement having the worst health.

Table 3 shows the regression results for physical health and mental health for models comparing all types of CE to the reference group “no CE” using multiply imputed data. All models controlled for age, education, and early poor health and poverty.

### Physical Functioning

Those who were engaged in *both* secular and non-secular organizations at both T2 and 3 (diverse and persistent CE) were significantly more likely than those who were never engaged to report better physical functioning at T3 ( $B=15.22, p=.002$ ).

### Good to Excellent Self-Rated Health

Compared to women with no CE, those engaged in either church or club activity at T3 only (late CE) were three times more likely to report better health ( $OR=3.08, p=.002$ ). Women participating in church or clubs at both T2 and 3 (persistent CE) were twice as likely to report better health ( $OR=2.00, p=.028$ ). Those who were engaged in both church and clubs at both time periods (diverse and persistent CE) were nearly three times more likely to report better health ( $OR=2.89, p=.006$ ).

### Anxious Mood

Women engaged in either church or clubs at T3 only (late CE) ( $B= -0.40, p=.011$ ), or at both T2 and 3 (persistent CE) ( $B= -0.44, p=.001$ ), and those who were engaged in both church and clubs at both time periods (diverse and persistent CE) ( $B= -0.56, p<.001$ ) were significantly less likely to report anxious mood compared to those who were never engaged.

### Depressed Mood

Women who were engaged in either church or clubs at T3 only (late CE) ( $B= -0.35, p=.002$ ), or at both T2 and 3 (persistent CE) ( $B= -0.36, p<.001$ ), and those engaged in both activities at both time periods (diverse and persistent CE) ( $B= -0.36, p=.002$ ) were significantly less likely to report depressed mood.

We then examined the importance of persistent engagement by comparing women who were persistently engaged in either religious or secular organizations at both time points with those who were engaged at one time point only (Table 4). Women engaged at T2 only were significantly more likely to report anxious mood ( $B=.23, p=.035$ ) and depressed mood ( $B=.17, p=.023$ ). There were no significant differences between those who were engaged in either church or secular organizations at T3 only and those who were persistently engaged. Finally, compared with women with persistent CE, those with diverse and persistent CE were significantly more likely to report better physical functioning ( $B=10.23, p=.005$ ). Relationships with other outcomes did not differ. TABLE 4

## Discussion

Few studies have examined the role of formal social integration, defined here as engagement in community institutions (religious and secular), among African Americans. This study examined the impact of the timing and persistence of involvement in church and secular organizations on four different physical and mental health outcomes in a cohort of African American women followed at 1975 and 1997.

### Does short-term CE affect health, and does timing of CE over the life course matter?

We first examined the health effects of CE at single points in time (T2=1975 and T3=1997). Women engaged only later in life in either religious or secular organizations reported better physical and mental health at that time than those who were never involved. These findings



correspond with much of the cross-sectional research that has found positive, concurrent relationships between community involvement and health, particularly among older adults (e.g., Chatters et al., 2008; Cornwell & Waite, 2009). While cross-sectional studies are often weakened by potential selection effects, we were able to minimize this problem by controlling for age and early health and socioeconomic position. Among the African American mothers in our study, early-only CE did not have a significant impact on later health compared no CE, which differs from Moen and colleagues' (1992) finding that club involvement in early adulthood relates to health 30 years later. This may reflect differences in study populations, as Moen and colleagues primarily studied White women. Thus, the long-term effects of early community engagement may diminish over time in African American populations. Finding an effect of later CE, but not early-only CE could also relate to the increasing importance of formal social ties in the later adult years when earlier social roles (e.g., parent, employee) have diminished (Moen et al., 1992; Verbrugge, 1983).

### **Does persistent CE have a greater impact than short-term CE?**

We next examined the relationship between persistent CE (any engagement at both time points) and health and found that, compared to those with no involvement, women with persistent CE were significantly more likely to report better self-rated health, less frequent anxious mood, and less frequent depressed mood. To determine if this finding reflected the importance of merely being involved at any time or of being involved at more than one time, we tested whether the relationships between persistent CE and health were significantly stronger than the effects of engagement at one time point. We found that persistently engaged women were significantly less likely than those engaged only early on to report more frequent anxious mood and depressed mood. This corresponds with the finding by Piliavin & Siegl (2007) that the effect of volunteering at two time periods is greater than the effect at one point. However, contrary to our hypothesis, persistent CE did not have a stronger influence on health than did later only engagement, and may reflect the importance of proximal association of social integration in the later years for African American women. It could also be a limitation of our measure of persistent CE, which captured engagement at only two time points. To better measure persistence would require more frequent assessments, which we did not have and is an area for future research.

### **Does diverse and persistent CE have a bigger impact than persistent CE?**

We also explored the diversity of CE by looking at the effects of being involved in *both* religious and secular organizations at both time periods. Findings demonstrate that diverse and persistent CE over time is associated with reduced risk of both physical and mental health problems compared to no involvement. To assess whether engagement in both religious and secular organizations over time has a stronger effect on health than engagement in just one type of activity, we compared the influence of “diverse and persistent” CE with that of “persistent” CE (either type, but not both, at both time points). We found that women with diverse and persistent CE were significantly more likely to report good physical functioning than those with persistent CE, suggesting that there may be added value—either in quantity or quality-- to being involved with both religious and secular organizations over time. Future research should examine this in detail.

While the findings reinforce the importance of long-term and diverse CE on health, there are a few study limitations to consider. First, we examined a community population of African American females from Chicago; therefore, generalizability is unclear until the findings are replicated with other populations. That said, the findings should be informative for those interested in aging among urban African Americans. A separate issue to note is that all of the women in this study were mothers. It may be that CE has even greater significance for the health of women who do not have the role of mother. Another consideration is how well

we were able to control for selection. Although we controlled for early health problems, we did not control specifically for physical limitations, and we cannot be sure our early assessment of self-rated health captured all of those with physical limitations. In addition, our control for psychological distress was not as expansive as our outcome measures of depression and anxiety and may have under-measured early depressed and anxious mood. However, there is evidence that single-item indicators such as the ones we used are robust in measuring mental health (Patrician, 2004; Pignone, Gaynes, Rushton, Burchell, Orleans, Mulrow, et al., 2002). Further, although we controlled for early health and socioeconomic status to reduce selection effects, other unidentified characteristics may affect both health and CE. Finally, because our assessment of CE and health at T3 are concurrent, we cannot determine the direction of these relationships.

Overall, the study demonstrates that CE is important for health among African American mothers not only contemporaneously, but also when it is persistent and diverse over time, although the effects differ by health outcome. Furthermore, the largest effects were for the concurrent association between social integration and health, suggesting that for this population of African American women, contemporaneous involvement in community organizations may be most important for protecting health. Future studies should investigate the mechanisms through which CE relates to health. These mechanisms might relate to CE being a “weak tie” and therefore increasing one’s access to information and resources that affect health and aging.

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**Table 1**

Community Engagement Among African American Women from the Woodlawn Study (n=556)

	<u>1975 (T2)</u>	<u>1997 (T3)</u>
COMMUNITY ENGAGEMENT:		
<u>Church attendance, n (%):</u>		
no/doesn't belong	114 (20.6%)	9 (1.6%)
once per month or less	152 (27.4%)	179 (32.2%)
every two weeks	68 (12.3%)	57 (10.2%)
once per week	148 (26.7%)	201 (36.2%)
several times per week	72 (13.0%)	110 (19.8%)
Persistence: <u>once/week or more, n (%):</u>		
Neither 1975 nor 1997	190 (34.3%)	
1975 only	53 (9.6%)	
1997 only	144 (26.0%)	
Both 1975 and 1997	167 (30.1%)	
<u>Organization membership/participation (any), n (%):</u>		
Sororities/Fraternities/Lodges (e.g., Masons, Elks)	12 (2.2%)	21 (3.8%)
Social Clubs	81 (14.6%)	57 (10.3%)
Neighborhood/Block Clubs	132 (23.7%)	134 (24.1%)
Women's Rights	7 (1.3%)	8 (1.4%)
Welfare Rights	15 (2.7%)	5 (0.9%)
Civil Rights	30 (5.4%)	15 (2.7%)
Labor Union/Professional Group	91 (16.4%)	30 (5.4%)
Veterans	6 (1.1%)	-
Parent/School	218 (39.2%)	62 (11.2%)
Senior Citizens	-	52 (9.4%)
Other	-	5 (0.9%)
Persistence: <u>any participation, n (%)</u>		
Neither 1975 nor 1997	166 (29.9%)	
1975 only	169 (30.4%)	
1997 only	54 (9.7%)	
Both 1975 and 1997	167 (30.0%)	
<u>Combined Church Attendance and/or Club Activity, n (%):</u>		
Neither 1975 nor 1997 (never)	67 (12.1%)	
Either/both at 1975 only (early only)	106 (19.1%)	
Either/both at 1997 only (late only)	68 (12.3%)	
Either at 1975 and 1997 (persistent)	246 (44.4%)	
Both at 1975 and 1997 (diverse and persistent)	67 (12.1%)	

**Table 2**  
 Bivariate Relationships between Community Engagement and Physical and Mental Health (n=556)

<u>Community Engagement</u>	Never n=67 (12.1%)	Early Only n=106 (19.1%)	Late Only n=68 (12.3%)	Persistent n=246 (44.4%)	Diverse & Persistent n=67 (12.1%)	Results from One-way ANOVA or Chi-Square
<u>Health Outcomes</u>						
SF-36 Physical Functioning <sup>a</sup>	58.4, 33.5	60.3, 31.1	67.3, 28.4	68.1, 28.7	81.0, 23.7	F(4, 552) = 6.8****
Good to Excellent Health	27 (40.3%)	52 (49.1%)	44 (64.7%)	155 (63.3%)	49 (74.2%)	$\chi^2(4, 552) = 23.2****$
Anxious Mood <sup>b</sup>	2.6, 1.0	2.3, 1.0	2.2, 1.1	2.1, 0.9	1.9, 0.8	F(4, 553) = 5.9****
Depressed Mood <sup>b</sup>	2.2, 0.8	1.9, 0.8	1.8, 0.8	1.7, 0.6	1.7, 0.5	F(4, 550) = 7.6****

\*\*\*\* p < .001.

<sup>a</sup> Higher values=better functioning.

<sup>b</sup> Higher values=more frequent anxious or depressed mood.

**Table 3**

Community Engagement over Time and Health in African American Mothers Compared to Those with No Involvement – Multivariate Linear and Logistic Regression Estimates from Multiply Imputed Data<sup>a</sup> (N=680)

Church Attendance and/or Club Activity <sup>b</sup>	SF-36 Physical Functioning <sup>c</sup>		Good to Excellent Self-Rated Health <sup>d</sup>		Anxious Mood <sup>e</sup>		Depressed Mood <sup>f</sup>	
	B	95% CI	OR	95% CI	B	95% CI	B	95% CI
Neither at T2 nor T3	Reference		Reference		Reference		Reference	
T2 only ( <i>Early</i> )	-0.47	-9.18, 8.25	1.23	0.65, 2.32	-0.21	-0.51, 0.09	-0.19	-0.39, 0.01
T3 only ( <i>Late</i> )	8.88	-0.41, 18.16	3.08**	1.52, 6.24	-0.40*	-0.71, -0.09	-0.35**	-0.56, -0.13
Either at T2 & T3 ( <i>Persistent</i> )	4.99	-2.43, 12.40	2.00*	1.08, 3.73	-0.44**	-0.69, -0.19	-0.36***	-0.55, -0.17
Both at T2 & T3 ( <i>Diverse &amp; persistent</i> )	15.22**	5.81, 24.62	2.89**	1.36, 6.11	-0.56***	-0.86, -0.25	-0.36**	-0.59, -0.13
<b>Controls:</b>								
Age	-0.88***	-1.27, -0.50	0.99	0.96, 1.02	-0.01	-0.02, 0.00	-0.02***	-0.02, -0.01
Fair/poor Health T2	-19.74***	-26.04, -13.43	0.27***	0.17, 0.43	0.15	-0.05, 0.35	0.16*	0.02, 0.29
Fairly/very often sad or anxious T2	-1.39	-6.95, 4.17	0.71	0.46, 1.08	0.41***	0.13, 0.59	0.26***	0.14, 0.38
Years of Education	0.82	-0.13, 1.76	1.08*	1.00, 1.17	-0.03	-0.06, 0.00	-0.03*	-0.05, -0.00
Poverty at T2	-5.54*	-10.13, -0.95	0.76	0.53, 1.09	-0.08	-0.23, 0.08	0.04	-0.07, 0.15
Constant	113.69		--	--	3.46		3.25	

\*  $p < .05$ .

\*\*  $p < .01$ .

\*\*\*  $p < .001$ .

<sup>a</sup> Imputation by chained equations (ICE) method was used in concert with STATA to impute 10 data sets; analysis from each data set are pooled to generate the final analysis output for N=680 women.

<sup>b</sup> Church attendance once per week or more and/or any current club activity.

<sup>c</sup> Higher values=better functioning in regression.

<sup>d</sup> Good, very good, or excellent health=1, fair or poor health=0.

<sup>e</sup> Higher values=more frequent anxious mood in regression.

<sup>f</sup> Higher values=more frequent depressed mood in regression.



Table 4

Community Engagement over Time and Health in African American Mothers Compared to Those with Persistent Involvement – Multivariate Linear and Logistic Regression Estimates from Multiply-Imputed Data<sup>a</sup> (N=680)

Church Attendance and/or Club Activity <sup>b</sup>	SF-36 Physical Functioning <sup>c</sup>		Good to Excellent Self-Reported Health <sup>d</sup>		Anxious Mood <sup>e</sup>		Depressed Mood <sup>f</sup>	
	B	95% CI	OR	95% CI	B	95% CI	B	95% CI
Neither at T2 nor T3	-4.99	-12.40, 2.43	0.50*	0.27, 0.93	0.44	0.19, 0.69	0.36***	0.17, 0.55
T2 only (Early)	-5.45	-11.69, 0.78	0.61	0.37, 1.03	0.23*	0.02, 0.44	0.17*	0.02, 0.31
T3 only (Late)	3.89	-3.91, 11.69	1.53	0.83, 2.84	0.04	-0.21, 0.28	0.01	-0.16, 0.18
Either at T2 & T3 (Persistent)	Reference		Reference		Reference		Reference	
Both at T2 & T3 (Diverse & persistent)	10.23**	3.08, 17.37	1.44	0.75, 2.78	-0.12	-0.35, 0.11	0.00	-0.16, 0.17
Controls:								
Age	-0.88***	-1.27, -0.50	0.99	0.96, 1.02	-0.01	-0.02, 0.00	-0.02***	-0.02, -0.01
Fair/poor Health T2	-19.74***	-26.04, -13.43	0.27***	0.17, 0.43	0.15	-0.05, 0.35	0.16*	0.02, 0.29
Fairly/very often sad or anxious T2	-1.39	-6.95, 4.17	0.71	0.46, 1.08	0.41***	0.23, 0.59	0.26***	0.14, 0.38
Years of Education	0.82	-0.13, 1.76	1.08*	1.00, 1.17	-0.03	-0.06, 0.00	-0.03*	-0.05, -0.00
Poverty at T2	-5.54*	-10.13, -0.95	0.76	0.53, 1.09	-0.08	-0.23, 0.08	0.04	-0.07, 0.15
Constant	118.67		--	--	3.02		2.89	

\*  $p < .05$ .

\*\*  $p < .01$ .

\*\*\*  $p < .001$ .

<sup>a</sup>Imputation by chained equations (ICE) method was used in concert with STATA to impute 10 data sets; analysis from each data set are pooled to generate the final analysis output for N=680 women.

<sup>b</sup>Church attendance once per week or more and/or any current club activity.

<sup>c</sup>Higher values=better functioning in regression.

<sup>d</sup>Good, very good, or excellent health=1, fair or poor health=0.

<sup>e</sup>Higher values=more frequent anxious mood in regression.

<sup>f</sup>Higher values indicate more frequent depressed mood in regression.