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Neighborhood cohesion and daily well-being: Results from a diary study

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Abstract

Neighborly cohesiveness has documented benefits for health. Furthermore, high perceived neighborhood cohesion offsets the adverse health effects of neighborhood socioeconomic adversity. One potential way neighborhood cohesion influences health is through daily stress processes. The current study uses participants (n = 2022, age 30–84 years) from The Midlife in the United States II and the National Study of Daily Experiences II, collected between 2004–2006, to examine this hypothesis using a within-person, daily diary design. We predicted that people who perceive high neighborhood cohesion are exposed to fewer daily stressors, such as interpersonal arguments, lower daily physical symptoms and negative affect, and higher daily positive affect. We also hypothesized that perceptions of neighborhood cohesion buffer declines in affective and physical well-being on days when daily stressors *do* occur. Results indicate that higher perceived neighborhood cohesion predicts fewer self-reported daily stressors, higher positive affect, lower negative affect, and fewer physical health symptoms. High perceived neighborhood cohesion also buffers the effects of daily stressors on negative affect, even after adjusting for other sources of social support. Results from the present study suggest interventions focusing on neighborhood cohesion may result in improved well-being and may minimize the adverse effect of daily stressors.

Keywords

United States; positive affect; negative affect; physical symptoms; daily stressors; neighborhood cohesion; multi-level models

People are strongly influenced by their environment. Environments marked by chronic stress are related to poorer health outcomes (for review see Diez Roux & Mair, 2010). Conversely, positive aspects of the neighborhood provide health benefits. Social cohesion, considered a group characteristic, refers to resources (e.g., trust) among members of a group (Kawachi, Subramanian, & Kim, 2008). Neighborhood cohesion is related to better self-rated health and lower depressive symptoms (for a review see Murayama, Fujiwara, & Kawachi, 2012). In addition to a direct association, neighborhood cohesion also buffers the effects of

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neighborhood impoverishment on health (van der Linden, Drukker, Gunther, Feron, & van Os, 2003). The current study examined how an individual's perception of neighborhood cohesion relates to mental and physical health directly as well as indirectly by buffering the effects of daily stressors. We hypothesized that perceived neighborhood cohesion would be related to fewer self-reported daily stressors and physical symptoms, and lower daily negative and higher daily positive affect. We further hypothesized that perceived neighborhood cohesion would buffer the effects of daily stressors on positive and negative affect and physical symptoms.

Neighborhood Cohesion and Health

Several large studies have found associations between neighborhood cohesion and both physical and mental health. Among US adults, individuals' perceptions of neighborhood cohesion and safety are positively associated with self-rated physical and mental health, even after adjusting for sociodemographics and perceived social support (Bures, 2003). In England, older adults living in a deprived neighborhood were individually asked to rate cohesion in their neighborhoods. Among these respondents, people were more likely to report poorer physical and emotional health *if* they perceive their neighborhoods as unsafe. However, safety concerns are significantly lower among individuals who report higher perceptions of neighborhood cohesion (Greene, Gilbertson, & Grimsley, 2002). In Wales, individuals' greater perceived neighborhood cohesion is directly related to better mental health and buffers the effect of deprivation on health (Fone, Dunstan, Lloyd, Williams, Watkins, & Palmer, 2007). Similarly, neighborhood deprivation is associated with higher rates of mental health service use, but aggregate ratings of neighborhood cohesion as reported by the residents buffers these effects among the Dutch (van der Linden et al., 2003). Another study in the U.S. has found that high aggregate ratings of neighborhood trust is related to low mortality rates, but only after adjusting for neighborhood sociodemographics (Hutchinson, Putt, Dean, Long, Montagnet, & Armstrong, 2009).

Daily Stressors and Health

Although researchers have documented the benefits of neighborhood cohesion, the mechanism underlying this association is unclear. Neighborhood cohesion may lead to better health outcomes by both reducing exposure to daily stressors and by buffering the effects of stressors on health outcomes. Daily stressors people encounter in a routine week such as a work deadline are relatively minor, yet these stressors influence our affective well-being (Almeida, 2005). Positive affect is lower, and negative affect and self-reported physical symptoms are higher, on days when people experience a stressor. Associations between daily stressors and daily positive and negative affect persist even after adjusting for potential confounding characteristics (e.g., neuroticism; Piazza, Charles, Sliwinski, Mogel, & Almeida, 2012). Moreover, the effects of minor stressors accumulate over time and have the potential to create more serious affective disturbances (e.g., anxiety, and depression; Charles, Piazza, Mogel, Sliwinski, & Almeida, 2013) and poorer physical health (Piazza et al., 2012).

Both individual and neighborhood characteristics are related to the frequency with which one experiences stressors (stressor exposure) as well as one's response to those stressors (stressor reactivity). For example, stressor exposure is higher among more educated individuals than those with a high school education, yet higher levels of education are related to less reactivity; on days when a stressor is experienced, negative affect and physical symptoms increase less among more highly educated individuals than their less educated peers (Grzywacz, Almeida, Neupert, & Ettner, 2004). Moreover, older adults report fewer daily stressors than younger adults (Neupert, Almeida, & Charles, 2007). Age

shares a more complicated association with reactivity. Older adults are less affectively reactive to some stressors, such as potential arguments that are avoided (Charles, Piazza, Luong, & Almeida, 2009), but are equally reactive to others, such as unavoidable issues relevant to older age (e.g., death; Kunzmann & Gruhn, 2005). In a study assessing a broad range of daily stressors, affective reactivity increased with age (Sliwinski, Almeida, Smyth, & Stawski, 2009).

Neighborhood characteristics may also influence stressor exposure and reactivity. One study found that individuals reporting low neighborhood trust exhibited heightened affective reactivity to daily stressors (Caspi, Bolger, & Echenrode, 1987). This prior study assessed women from low income backgrounds living in Boston. The current study builds on these findings by using a large sample of men and women from across the United States, a more comprehensive assessment of positive and negative affect, and comparing across diverse neighborhoods and people who vary in education level.

Social Support and Stress

One concern with studies examining neighborhood cohesion and health is that findings reflect benefits of social support in general, not social features specific to the neighborhood. A large literature attests to the protective effects of perceived social support from one's family and friends (for a review see Cohen & McKay, 1984). Psychologists posit that social networks function in many ways, including provision of emotional or instrumental support, companionship, and behavioral control. Although each of these functions has the potential to produce conflict (e.g., when the support provision is poorly timed), social networks often enhance our well-being through psychological, physiological, and behavioral pathways (Rook, August, & Sorkin, 2011).

Our current analyses are situated within the framework suggested by Kawachi et al. (2008), where neighborhood cohesion represents a unique aspect of social support garnered from neighborhoods. Others have similarly defined neighborhood cohesion as exchanges, perceived or received, that occur among members of a neighborhood community (Carpiano, 2006) and considered a 'true' neighborhood social feature (Subramanian, Lochner, & Kawachi, 2003), distinct from other forms of support. The present study examines this neighborhood feature's association with daily stress processes after adjusting for individuals' perceived social support from friends, family, and spouses to identify the unique effects of neighborhood cohesion.

Neighborhood Socioeconomic Status and Health

Neighborhood socioeconomic status (SES), defined as average income, unemployment, or some composite measure, has been implicated in several indices of health. Although studies yield mixed results, lower neighborhood SES is usually related to poorer health (Diez Roux & Mair, 2010) and lower neighborhood cohesion (Murayama et al., 2012). Furthermore, the health benefits of neighborhood cohesion are often enhanced in lower SES neighborhoods (van der Linden et al., 2003). The current study includes neighborhood SES, defined as the average income of a participant's census tract (CT), as a covariate so we may explore unique contributions of neighborhood cohesion. Additionally, we will explore whether the effects of neighborhood cohesion on daily stress processes persist across the full range of CT income.

The Current Study

The current study uses diary data to explore associations between perceived neighborhood cohesion and daily stress processes. The decision to examine these stressors was based on literature suggesting stressors of an interpersonal nature are reported significantly more

often than other types of stressors (Almeida, 2005). Benefits of diary data include analyses of within-person fluctuations in daily well-being and relations between stressor exposure and reactivity in a natural setting. Additionally, diary designs minimize the effects of memory biases on key outcomes because participants report the events the day they occur (Bolger, Davis, & Rafaeli, 2003). In the current study, we hypothesize that perceived neighborhood cohesion is related to both reduced exposure and reactivity to daily stressors in people's personal lives. Consistent with previous research (Bures, 2003; Murayama et al., 2012), we expect that higher perceived neighborhood cohesion will predict fewer daily stressors, lower daily levels of negative affect and physical symptoms, and higher levels of positive affect. We also predict neighborhood cohesion will buffer the effects of daily stressors on these outcomes. In sum, we hypothesize that perceptions of the neighborhood social environment will carry over into people's personal lives, reducing both exposure and reactivity to daily stressors, such as those arising from interpersonal , work, and family-related issues. Data from Midlife in the United States II Survey (MIDUS II) and National Study of Daily Experiences II (NSDE II) are used to test these questions. These data sets provide a unique opportunity to explore these associations among a sample of adults living throughout the U.S. who span fifty years of adulthood.

The present study builds on prior research in three ways. First, the sample's age range will allow for examination of perceived neighborhood cohesion – stressor relationships across most of the adult life span. Considering age differences in stressor exposure (Neupert et al., 2007) and reactivity (e.g., Charles et al., 2009), it is important to examine whether any neighborhood influences vary with age. Second, low SES neighborhoods have significantly lower collective efficacy, a construct including cohesion, than higher SES neighborhoods (Cagney, Browning, & Wen, 2005; Sampson, Raudenbush, & Earls, 1997). Moreover, neighborhood cohesion is lower in more disadvantaged neighborhoods (Murayama et al., 2012). In the present study, we will also explore whether the buffering effect of perceived neighborhood cohesion varies by neighborhood SES. Finally, current analyses include reports of general social support received from friends, family members, and spouses to determine whether our findings remain after adjusting for other aspects of social support.

Method

Sample and Procedures

The Midlife in the United States (MIDUS II) study included a telephone and questionnaire survey of a large sample of U.S. adults. A subset of MIDUS II participants (N = 2621) were successfully contacted by phone and asked to complete the National Study of Daily Experiences II (NSDE II), which consisted of short daily telephone interviews across eight days. Of those invited, 2022 (or 77.15%) agreed to participate. The majority (92%) of the sample was white. Five percent of the sample had less than a high school education, 25% had a high school education, 30% had some college education, 21% had a college degree, and 20% had more than college education. Of the 2022 NSDE II participants, 794 had participated in a first wave of data collection (in 1994). An additional 1048 were added to the second wave of data collection. Across the 2022 participants, 578 representing 266 families were members of sibling (siblings or twin) pairs. For this reason, we adjusted for any dependency in the analyses (described in the results section). The current study only included people with complete data for questions about neighborhood cohesion in the analyses (N = 1762), ranging from 33 to 84 years-old (M 57 years, SD 12 years, 56% females). The study was completed using ethical guidelines with the approval of The Pennsylvania State University (data collection) and The University of Wisconsin's (data storing) Institutional Boards of Review.

Measures

Neighborhood cohesion—The MIDUS II survey's self-administered questionnaire included two questions about neighborhood cohesion: I could call on a neighbor for help if I needed it; People in my neighborhood trust each other. Participants in this study answered these questions in the larger MIDUS survey, prior to the NSDE II study. Responses were given using a Likert-type scale ranging from 1–4, with higher scores representing less neighborhood cohesion (Keyes, 1998). Items were reversed coded so higher mean scores reflect higher neighborhood cohesion. Cronbach's alpha for this scale was .67.

Neighborhood SES—Median household income at the census tract (CT) from the 2000 US Census was used as a proxy for neighborhood SES. Despite concern that administrative boundaries such as the CT do not always reflect individuals' representation of 'neighborhood' (Basta, Richmond, & Wiebe, 2010), researchers have found similar patterns of results when comparing CTs and smaller 'natural' neighborhoods (Ross, Tremblay, & Graham, 2004). Median household income was mean centered (M = $48,498, SE = $20,371). MIDUS II and NSDE II were conducted between 2004–2006, making the time points for these datasets and US Census decennial data an imperfect match, yet the closest match possible.

Stressors—The NSDE II used the Daily Inventory of Stressful Experiences (DISE), administered via telephone interviews, to assess daily stressors across eight days (Almeida, Wethington, & Kessler, 2002). All participants completed the larger MIDUS II survey before completing the dairy study. Participants reported each day whether they had experienced any of seven types of stressors: argument, avoided argument, stressor at work or school, stressor at home, discrimination, a stressor among a member of one's network (i.e., a stressful experience that a person in your social network is experiencing that is stressful to you, e.g., hearing that your daughter is going through a divorce), and any other not mentioned above. Objective raters coded the descriptions to ensure no overlapping content (e.g., an argument with a friend at work was not reported both under an argument and a work stressor), and that an actual event occurred as opposed to an emotional experience (e.g., I felt sad today). Total stressors across categories were then averaged over the eight-day diary period. This averaged score was used as the stressor exposure variable, and as a covariate in analyses of stressor reactivity to adjust for stressor exposure. A dichotomous variable was also created for each day to indicate whether any stressor (one or more) had occurred (yes/no).

Positive and negative affect—NSDE II participants reported in each of the eight telephone interviews how much time (since the last interview) they had felt the following negative (restless, nervous, worthless, so sad nothing could cheer you up, everything was an effort, lonely, afraid, hopeless, jittery, irritable, ashamed, upset, angry, frustrated) and positive emotions (in good spirits, cheerful, extremely happy, calm and peaceful, satisfied, full of life, close to others, like you belong, enthusiastic, attentive, proud, active, confident; Almeida & Kessler, 1998; Mroczek & Kolarz, 1998; Watson, Clark, & Tellegen, 1988). Responses ranged from 0 (None of the Time) to 4 (All of the Time). Items were averaged with higher values representing higher positive or negative affect. Reliability for the negative and positive affect scales ranged from α=0.83–0.85 and α= 0.92–0.95, respectively, across each of the eight study days.

Physical symptoms—Participants were asked via the eight telephone interviews whether or not (yes, no) they had experienced any of 28 physical symptoms such as headache, nausea, fatigue or muscle weakness, cough, sore throat, chest pain, dizziness, and shortness

of breath (Larsen & Kasimatis, 1991). Items were summed so that higher numbers (from 0–20 in this sample) reflect a greater number of physical symptoms.

Perceived general social support—Social support from friends, family not including the spouse, and spouse were each assessed once in the self-administered questionnaire with four nearly identical questions (Grzywacz & Marks, 1999; Schuster, Kessler, & Aseltine, 1990; Whalen & Lachman, 2000). For friend support, participants endorsed items asking, "How much do your friends really care about you? How much do they understand the way you feel about things? How much can you rely on them for help if you have a serious problem? How much can you open up to them if you need to talk about your worries?" using a response scale ranging from 1 (A lot) to 4 (Not at all). Scores were reverse coded so higher scores reflected more perceived support, and an overall mean was created across the 4 items (alpha = .88). The same questions were asked for family support (alpha = .85) and spouse support (alpha = .91), with these relational terms substituted for friends.

Analytic Strategy

Multiple linear regressions were used to examine whether neighborhood cohesion predicted stressor exposure using proc reg in SAS 9.3. Variance inflation factors (VIF) were examined to ensure that multicollinearity was not confounding the results (VIF ranged from 1.05 to 1.50 for all variables in the final model). To examine whether neighborhood cohesion was related to daily well-being, we used a three-level multi-level model (MLM; proc mixed) where Level 1 represented different diary days nested within each participant (Level 2), which in turn were nested in families (Level 3). A priori hypotheses were tested using the traditional $\alpha = .05$ criterion, and the two exploratory tests used the more conservative $\alpha = .01$.

Results

Few people reported very low cohesion within their neighborhoods, with only 8.73% of participants reporting they only agree 'a little' or 'not at all' to either of the two questions. Also, 36.7% of the participants reported the highest rating (a lot) for both items. To adjust for this skewness, neighborhood cohesion was divided into roughly equal tertiles representing those who endorsed the highest rating for both items (1), those who endorsed the two highest (1 and 2) ratings for each question, and those who gave low ratings (3 or a 4) for at least one of the questions (37%, 27%, and 36%, respectively). To dummy code this variable for the multiple linear regression model predicting stressor exposure, three indicator variables were created representing low, moderate, and high neighborhood cohesion (with high cohesion used as the reference group). See Table 1 for associations between neighborhood cohesion and all other variables in the key statistical models. A chi square test indicated there was a significant gender difference in neighborhood cohesion [x^2 (2) = 12.10, $p < .002$]; men were more likely than women to report the lowest neighborhood cohesion (men = 41%, women 34%), slightly less likely to report moderate cohesion (men = 23%, women = 29%) and equally likely to report the highest neighborhood cohesion (men = 36%, women = 37%).

Participants reported between 0 to 3.25 stressors on each of the daily interview days ($M = .48$). Older age was associated with fewer stressors ($r = -.21$, $p < .0001$). Both individual education ($r = .24$, $p < .0001$) and CT income ($r = .09$, $p < .0001$) were related to more stressors. Women reported significantly more stressors than men [$t(13969) = 4.41$, $p < .0001$]. People with higher levels of support from friends ($r = -.05$, $p < .048$), family ($r = -.09$, $p < .001$), and spouse ($r = -.16$, $p < .0001$) reported significantly fewer stressors. As a

result, age, gender, CT income, and individual education level were included as covariates in all models predicting key outcomes.

Stressor Exposure

Model 1 adjusted for age, gender, individual education, and CT income. Results of this model confirmed the hypothesis that higher neighborhood cohesion was related to significantly fewer stressors when compared to low neighborhood cohesion. There was a slight trend for higher CT income individuals to report more stressors. In addition, individuals with more education, women, and younger adults reported significantly greater stressor exposure. To assess whether dependency was influencing the results, a second model was run with only one member from each set of siblings included. The pattern of results remained the same, so only the results of the full model are reported here. See columns 1 and 2 in Table 2. The baseline model explained 11% of the variance in self-reported stressors.

We examined whether the effect of neighborhood cohesion remained after adjusting for other types of perceived social support. In Model 2, the social support measures (i.e., from friends, family, and spouse) were entered. As can be seen in columns 3 and 4 in Table 2, only spouse support was a significant predictor when all support variables were entered in one model, with individuals reporting more spousal support also reporting fewer stressors. Notably, stressors were reported significantly more often among those with low neighborhood cohesion, relative to high cohesion, when friend ($\beta = 0.07$, SE = 0.03, $p = .04$), family ($\beta = 0.07$, SE = 0.03, $p = .02$), or spouse support ($\beta = 0.06$, SE = 0.03, $p = .04$) were entered in the model separately. Not until all three support measures were entered into the model simultaneously did neighborhood cohesion become a non-significant predictor.

Daily Well-Being

Negative affect—As hypothesized, negative affect was significantly higher among individuals with low and moderate neighborhood cohesion compared with those with high neighborhood cohesion (column 1 of Table 3). Negative affect was also higher on stressor days relative to non-stressor days. Older age, higher education levels, and less stressor exposure were also related to less negative affect. A Pseudo *R*-square statistic (Singer and Willett, 2003) was calculated for negative affect which determined that the model explained 53% of the variance in negative affect. A fully unconditional model revealed that 45% of the variability was explained by between-person, 49% by within-person variance, and 6% by variance within families.

In Model 2, we examined whether this effect remained after adjusting for perceived social support. Results from this model suggest that low, but not moderate, levels of neighborhood cohesion (compared to high cohesion) were associated with higher levels of negative affect after adjusting for the support measures. Increased family and spouse, but not friend, support were also related to decreased negative affect. See column 2 of Table 3.

Positive affect—A fully unconditional model revealed that between-person, within-person, and within family variability explained 74%, 24%, and 2% of the variability in positive affect, respectively. Our initial hypothesis that higher neighborhood cohesion would be associated with higher positive affect was confirmed (Table 3, Model 1); individuals reporting both low and moderate neighborhood cohesion had lower positive affect than those reporting high neighborhood cohesion (column 3). Older age was significantly associated with higher positive affect. Increased self-reported stressors were significantly related to lower positive affect, and positive affect was significantly higher on non-stressor

days relative to stressor days. The Pseudo *R*-square statistics for positive affect suggested that the model explained 26% of the variance in positive affect.

Model 2 (column 4) indicated that, after inclusion of other social support variables, positive affect was still significantly highest among those with the highest neighborhood cohesion.

Physical symptoms—In Model 1 (Table 3), individuals with the highest neighborhood cohesion reported significantly fewer symptoms than those with low and moderate neighborhood cohesion. Older age, increased stressor exposure, and female sex were all associated with significantly more physical symptoms. Higher individual education level and higher CT income were significantly associated with fewer symptoms. Significantly more symptoms were reported on stressor days relative to non-stressor days. The Pseudo *R*-square statistic indicated that the model explained 36% of the variance in physical symptoms. See column 5 of Table 3 for these results.

In model 2, high levels of neighborhood cohesion were significantly related with fewer physical symptoms, and none of the other perceived social support measures was significantly associated with physical symptoms (column 6 in Table 3).

Stressor Reactivity

We had further predicted that neighborhood cohesion would buffer the effects of any stressors on both positive and negative affect and physical symptoms. To this end we included interaction terms of any stressor x cohesion in Model 3. This hypothesis was confirmed only for negative affect; those with the lowest neighborhood cohesion exhibited greater negative affect reactivity (as evidenced by a significant, positive slope) compared to moderate or high levels of neighborhood cohesion (columns 1 and 2 of Table 4). Neighborhood cohesion did not buffer the effects of any stressors on positive affect ($\Gamma = -.02$, SE = .02, $p = .29$ for low cohesion; $\Gamma = .00$, SE = .02, $p = .83$ for moderate cohesion) or physical symptoms [$\Gamma = .10$, SE = .07, $p = .15$ for low cohesion; $\Gamma = -.08$, SE = .08, $p = .29$ for moderate cohesion].

To examine whether neighborhood cohesion is a unique aspect of social support that buffers the effects of stressors on negative affect, we adjusted for the other perceived social support measures (Model 4). Neighborhood cohesion remained significantly associated with affect reactivity (columns 3 and 4 in Table 4). See Figure 1 for an illustration of this interaction effect. [Table 4, Figure 1]

Neighborhood Cohesion in Context

Neighborhood cohesion buffered the effects of any stressor on negative affect. We explored whether this buffering effect on negative affect differed by CT income or age. Because these tests were exploratory, we used a more stringent level of significance for these two three-way interactions (i.e., $\alpha_{bpc} = .01$). The any stressor x neighborhood cohesion x CT income interaction was not significant, but the any stressor x neighborhood cohesion x age interaction was [$F(2) = 4.95$, $p = .007$]. Participants were grouped into age tertiles to further inspect this interaction. Among younger adults, those with low neighborhood cohesion were more reactive to stressors, as measured by negative affect, than were those with high neighborhood cohesion [$t(8573) = -1.99$, $p = .047$]. The middle and oldest age groups did not differ in stressor reactivity regardless of neighborhood cohesion.

Discussion

A growing body of research suggests that features of a neighborhood have health implications, with a large proportion of that literature pointing to the harmful effects of neighborhood deprivation (Diez Roux & Mair, 2010). Results from this study, however, suggest that resources within neighborhoods, namely cohesion, can have protective roles. Neighborhood cohesion predicted fewer daily stressors, lower negative affect, higher positive affect, and fewer physical symptoms over an eight-day period. Furthermore, people living in more cohesive neighborhoods exhibited less negative affect reactivity to daily stressors. Benefits of neighborhood cohesion are particularly important in light of research indicating the health-compromising effects of daily negative affect and reactivity to stressors (Charles et al., in press; Piazza et al., 2012).

Stressor Exposure

Daily stressors were reported less often among those with higher neighborhood cohesion. This association may have important health implications, given that stressors of an interpersonal nature, such as those reported in the current study, are the most frequently reported stressors among most adults (Almeida, 2005). Even when each individual measure of social support was taken into account, neighborhood cohesion predicted fewer daily stressors. However, after introducing all three support measures to the model, this relationship was no longer significant. Support from one's spouse had the strongest association with stressors, with fewer stressors reported among individuals with more spousal support. This finding is consistent with a large body of research on marriage and health (Kiecolt-Glaser & Newton, 2001).

A marginal trend pointed to higher CT income relating to a greater number of self-reported stressors. It is possible this trend can be explained by similar arguments people have used to explain the same findings for individual SES; individuals with more education generally report more stressors given the role demands of their higher paying jobs. Results of the current study replicate others (Grzywacz et al., 2004; Almeida, Neupert, Banks, & Serido, 2005), where education and stressors were positively associated.

Negative Affect: Daily Levels and Reactivity

Greater perceived neighborhood cohesion was associated with lower levels of negative affect, even after adjusting for social support and other sociodemographics. Furthermore, perceiving the neighborhood as more cohesive buffered the effect of daily stressors on negative affect. The buffering effect persisted after taking into account the protective roles of other forms of social support. This finding underscores the unique role of neighborhood cohesion within our social support systems that contributes independently to well-being.

Positive Affect and Physical Symptoms

Findings from this study also suggest important relationships between neighborhood cohesion and both positive affect and physical symptoms. Higher neighborhood cohesion was associated with more positive affect even after adjusting for other forms of perceived social support. This association is important, given the health-enhancing role of positive emotions (e.g., Pressman & Cohen, 2012). Physical symptoms were reported significantly less frequently among those with higher levels of neighborhood cohesion as well. This finding further suggests the importance of this neighborhood social feature for quality of life. Although neighborhood cohesion buffered the effects of any stressors on negative affect, the same was not true for positive affect or physical symptoms. One explanation for this finding may be that stressors result in a greater change (increase) in negative affect than either positive affect (decrease) or physical symptoms (increase). As can be seen in Table 1,

there is a stronger correlation between stressors and negative affect than positive affect or physical symptoms in this sample. Other studies have yielded similar results (Almeida et al., 2002).

Census Tract Income and its Role in Neighborhood Cohesion

Prior research suggests that neighborhood cohesion is more beneficial to the health of individuals living in deprived, relative to affluent, areas (Veenstra, Luginaah, Wakefield, Birch, Eyles, & Elliot, 2005). In the current study however, neighborhood SES had no effect on the protective role of neighborhood cohesion for daily stressors. The buffering effect of neighborhood cohesion on negative affect was evident across the full sampled range of CT income.

The stress process is one hypothesized pathway linking neighborhood cohesion to health outcomes. Attempts to increase this neighborhood resource may have health benefits in areas across a large range of SES. Some evidence indicates that interventions aimed at increasing mobilization, or the ability of members of a neighborhood to act together, may help to reduce health-compromising behaviors among youth (Cheadle et al., 2001) as well as to minimize traffic, drug-use, and crime within neighborhood areas (Donnelly & Kimble, 2006).

Age and its Role in Neighborhood Cohesion

Findings from this study also indicated an important role of age in terms of neighborhood cohesion and stressors. Although neighborhood cohesion buffered negative affect from daily stressors among younger adults, the same effect was not found among the middle-aged and oldest adults. One possible explanation for this finding can be drawn from research investigating the social networks of older adults. Social networks – both their size and quality – change over the life span (Luong, Charles, & Fingerman, 2011). Peripheral social partners are pruned from older adults' network, with increasing time spent with one's close network members (e.g., family). The simple correlations between age and our social support measures indicated that older age was related to lower ratings of perceived support from friends, which is also consistent with prior literature (Carstensen, 1992). These findings suggest that older adults may rely less on peripheral network members for support, including from neighbors, than do younger adults.

Context or Composition? Contributions of Neighborhood and Individual SES

One concern regarding studies of neighborhoods and health is that outcomes are driven not by neighborhood features (i.e., context) per se, but rather the characteristics of the people living in the neighborhood (i.e., composition; Subramanian et al., 2003). In the present analyses, individual education, chosen as a proxy for individual SES given its value in predicting later occupational status and income and its relative stability over time (Grzywacz et al., 2004), was included in all analyses. Although increased education was significantly associated with lower negative affect and fewer physical symptoms, CT income was not. This finding suggests that, at least for daily well-being, neighborhood SES adds little to our understanding above individual effects.

Limitations—Findings from the current study contribute knowledge regarding the protective role of neighborhood cohesion for daily well-being. Future studies need to address whether this neighborhood feature reduces risk of more serious health outcomes, such as depression and anxiety. One limitation of the current study was the cross-sectional design. Examining the moderating effect of neighborhood cohesion on the stressor-affect relationship using measurement burst designs, a longitudinal design taking into account both

longer- and shorter- term periods, would provide a more stringent test of neighborhood cohesion and its ability to buffer heath.

Another limitation is the reliance on subjective ratings of perceived neighborhood cohesion, and a cohesion measure that included only two items. The self-reported nature of the outcome variables raises further concern about potential response bias. However, the findings reported here - that perceived neighborhood cohesion predicts daily outcomes even after adjusting for other forms of social support – reduced concern that these self-report measures reflect an overarching report bias. In fact, the current study adjusted for several of the important individual-level factors (i.e., age, sex, and education) that have been proposed to confound self-reports of neighborhood cohesion (Subramanian et al., 2003). Nonetheless, future research should attempt to replicate the current findings using a more comprehensive and objective assessment of neighborhood cohesion and health indicators ascertained from objective indicators.

Third, few individuals in the current sample reported extremely low neighborhood cohesion. Additional research is needed to assess whether the benefits of neighborhood cohesion extend to other areas where cohesion is extremely low, and in situations where neighborhood-related stressors are common. Lastly, the sample in the current study is predominantly white. Several previous studies provide evidence to suggest that race may influence the findings presented in the current study. For example, some researchers have found that living in ethnically homogenous areas is health-enhancing for some minorities (e.g., Latino background) because of the social resources afforded to them (Bond Huie, Hummer, & Rogers, 2002). Conversely, other research demonstrates that, for African Americans, living in primarily black neighborhoods is actually worse for health outcomes (LeClere, Rogers, & Peters, 1997). Additional research will help to shed light on whether neighborhood cohesion is beneficial with ethnically diverse samples.

Conclusion—Neighborhood cohesion is good for our health (Murayama et al., 2012). The current study suggests that daily stress processes represent one potential pathway connecting perceptions of neighborhood cohesion and health outcomes. Stressors and physical symptoms are reported less frequently, negative affect is lower and positive affect is higher, and people are less reactive to stressors when they perceive higher neighborhood cohesion.

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Highlights

- Neighborhood cohesion is positively associated with daily positive affect
- Neighborhood cohesion is inversely associated with negative affect and symptoms
- Neighborhood cohesion is negatively associated with daily stressors
- Neighborhood cohesion buffers the effects of stressors on negative affect

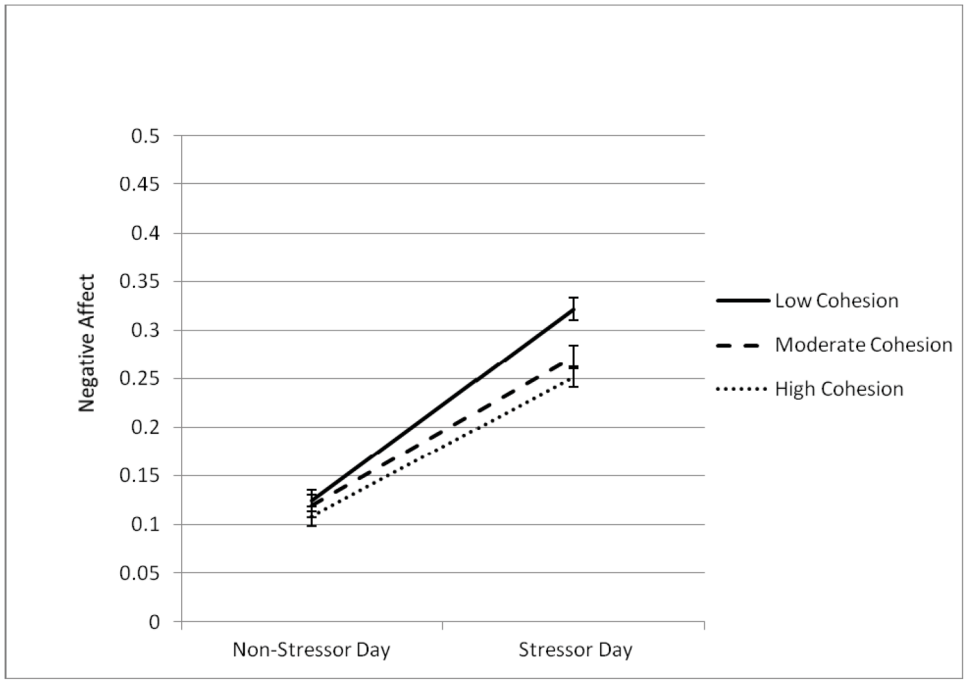

Figure 1.
Negative affect by neighborhood cohesion and the experience of stressors.
Note: The pattern of neighborhood cohesion and stressors on negative affect did not change as a function of neighborhood SES, indicated by a null three-way interaction.

Table 1

Correlations Among All Variables

Mean (sd)	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
1. Age *M* = 57 years (12 years)	-											
2. Gender 1 = Male (Ref), 2 = female	−0.03	-										
3. Individual Education *M* = 2.25 (1.17)	−0.12***	−0.10***	-									
4. Neighborhood SES *M* = $48,498 ($20,371)	−0.01	0.02	0.23***	-								
5. Neighborhood cohesion 1=Low, 2=Moderate, 3=High	0.14†	0.07†	0.09†	0.06†	-							
6. Friend Support *M* = 3.30 (0.65)	0.01	0.21***	0.07†	0.05	0.42†	-						
7. Family Support *M* = 3.56 (0.56)	0.11***	0.11***	0.05	−0.01	0.37†	0.43***	-					
8. Spouse Support *M* = 3.62 (0.52)	0.10***	−0.14***	0.02	−0.01	0.29†	0.21***	0.29***	-				
9. Negative Affect *M* = 0.18 (0.30)	−0.16***	0.07†	0.01	−0.02	−0.22*	−0.11***	−0.21***	−0.22***	-			
10. Positive Affect *M* = 2.74 (0.78)	0.19***	−0.00	−0.06*	0.02	0.27*	0.25***	0.26***	0.23***	−0.51***	-		
11. Physical Symptoms *M* = 1.81 (2.13)	0.02	0.14***	−0.11***	−0.06*	−0.09*	−0.07*	−0.10***	−0.12***	0.47***	−0.35***	-	
12. Mean Stressors *M* = 0.48 (0.40)	−0.21***	0.10***	0.23***	0.09***	−0.08*	−0.05†	−0.09**	−0.16***	0.36***	−0.27***	0.22***	-

Note. Relationships with neighborhood cohesion reflect polychoric correlations. Confirmatory factor analyses were conducted using MPLUS and demonstrated that all stressor, emotion, and support-related variables represented distinct constructs. The overall CFA model and fit statistics are available upon request to the first author.

† $p < .05$;

* $p < .01$;

** $p < .001$;

*** $p<.0001$

Table 2

Multiple Linear Regressions Predicting Stressor Exposure

	Model 1 (*N* = 1838)		Model 2 (*N* = 1331)	
Variable	***β***	***SE***	***β***	***SE***
Age	−0.18***	0.00	−0.15***	0.00
Gender[a]	0.12***	0.02	0.11***	0.02
Individual Education	0.22***	0.01	0.22***	0.01
Neighborhood SES	0.04†	0.01	−0.00	0.01
Low neighborhood cohesion[b]	0.08**	0.02	0.04	0.03
Moderate neighborhood cohesion[b]	0.04	0.02	0.02	0.03
Friend Support			−0.04	0.02
Family Support			−0.04	0.02
Spouse Support			−0.11**	0.02

[a] 1 = Male (reference), 2 = Female.

[b] Relative to high neighborhood cohesion.

† $p < .05$;

* $p < .01$;

** $p<.001$,

*** $p <.0001$

Table 3

Multi-Level Models Predicting Daily Well-Being

	Negative Affect		Positive Affect		Physical Symptoms	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Variable	***Γ (SE)***	***Γ (SE)***	***Γ (SE)***	***Γ (SE)***	***Γ (SE)***	***Γ (SE)***
Intercept	0.14 (0.03)	0.45 (0.06)	2.79 (0.09)	1.21 (0.19)	1.07 (0.25)	2.22 (0.52)
Age	−0.00* (0.00)	−0.00† (0.00)	0.01*** (0.00)	0.01*** (0.00)	0.01** (0.00)	0.01** (0.00)
Gender[a]	−0.02 (0.01)	−0.01 (0.01)	−0.03 (0.03)	0.01 (0.04)	−0.38*** (0.08)	−0.36** (0.10)
Individual Education	−0.01** (0.00)	−0.02** (0.01)	−0.00 (0.01)	−0.00 (0.02)	−0.22*** (0.04)	−0.23*** (0.04)
Neighborhood SES	−0.01 (0.01)	0.00 (0.01)	0.02 (0.02)	0.01 (0.02)	−0.10† (0.04)	−0.06 (0.05)
Mean Stressors	0.14*** (0.01)	0.13*** (0.02)	−0.35*** (0.04)	−0.24*** (0.04)	1.01*** (0.11)	0.93*** (0.13)
Any Stressor[b]	0.16*** (0.00)	0.17*** (0.00)	−0.14*** (0.01)	−0.14*** (0.01)	0.32*** (0.03)	0.30*** (0.03)
Low cohesion[c]	0.06*** (0.01)	0.04* (0.01)	−0.33*** (0.04)	−0.17*** (0.04)	0.31** (0.10)	0.24† (0.12)
Moderate cohesion[c]	0.04* (0.01)	0.01 (0.01)	−0.19*** (0.04)	−0.15** (0.04)	0.35** (0.11)	0.26† (0.12)
Friend Support		0.00 (0.01)		0.14*** (0.03)		−0.06 (0.08)
Family Support		−0.05*** (0.01)		0.14*** (0.03)		−0.16 (0.10)
Spouse Support		−0.04** (0.01)		0.12** (0.03)		−0.08 (0.09)
Model Fit −2 Log Likelihood	−660.6	−848.1	17086.3	12491.0	47850.8	35972.1
	N = 1762	*N* = 1328	*N* = 1762	*N* = 1328	*N* = 1762	*N* = 1328

Note. Level 1: study days, Level 2: participant, and Level 3: family

[a] Relative to males.

[b] Relative to non-stressor day.

[c] Relative to high neighborhood cohesion.

† $p < .05$;

* $p < .01$;

** $p < .001$;

*** $p<.0001$

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Table 4

Multi-Level Models Predicting Negative Affect Stressor Reactivity

	Model 3		Model 4		Model 5	
Variable	***Γ***	***(SE)***	***Γ***	***(SE)***	***Γ***	***(SE)***
Intercept	0.45	0.06	0.37	0.07	0.33	0.08
Age	−0.00†	0.00	−0.00†	0.00	−0.00	0.00
Gender[a]	−0.01	0.01	−0.01	0.01	−0.01	0.01
Individual Education	−0.02*	0.01	−0.02	0.01	−0.02*	0.01
Neighborhood SES	0.00	0.01	0.00	0.01	0.00	0.01
Mean Stressors	0.13***	0.01	0.13***	0.02	0.12***	0.02
Any Stressor[b]	0.14***	0.01	0.32***	0.05	0.38***	0.06
Low Cohesionc	0.01	0.02	0.02	0.02	0.06	0.07
Moderate Cohesionc	0.01	0.01	0.01	0.01	−0.03	0.07
Friend Support	0.00	0.01	−0.00	0.01	−0.00	0.01
Family Support	−0.05***	0.01	−0.04**	0.01	−0.04**	0.01
Spouse Support	−0.03*	0.01	−0.02	0.01	−0.02	0.01
Stressor x Low cohesion[d]	0.07***	0.01	0.05***	0.01	0.15*	0.05
Stressor x Moderate cohesion[d]	0.02	0.01	0.01	0.01	−0.07	0.06
Stressor x Friend Support			0.01	0.01	0.01	0.01
Stressor x Family Support			−0.02*	0.01	−0.02†	0.01
Stressor x Spouse Support			−0.03**	0.01	−0.03**	0.01
Stressor x Low cohesion x Age					−0.00†	0.00
Stressor x Moderate Cohesion x Age					0.00	0.00
Model Fit −2 Log Likelihood	−873.0		−871.3		−839.7	
	N = 1328		*N* = 1328		*N* = 1328	

Note. Level 1: study days, Level 2: participant, and Level 3: family

[a]Relative to males.

[b]Raelative to non-stressor day. [c] Relative to high neighborhood cohesion.

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† $p < .05$;

* $p < .01$;

** $p < .001$;

*** $p < .0001$

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