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# Changes in Neighborhood Quality Relate to Changes in Well-Being

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## ABSTRACT

**The Problem:** Although most middle-aged and older adults prefer to remain in their own homes as they age (Spencer, Patrick & Steele, 2009), little is known about the consequences of those decisions. It is often thought that staying in one's home can challenge the well-being of residents as they deal with changes that occur within the neighborhood. To assess how changes in neighborhood relate to well-being over time, longitudinal research must be conducted. Thus, few studies have examined these relations.

**The Resolution:** Using the Midlife Development in the United States (MIDUS) data, our analysis shows that adults reported declines in neighborhood quality over the 17-year study. These declines were associated with greater declines in self-acceptance, purpose in life, and personal growth.

**Tips for Success:** Such longitudinal studies may help providers to identify adults most at-risk for poor outcomes in the community. An important public health need may be addressed by monitoring perceived neighborhood change, which may assist service providers in identifying at-risk seniors before negative effects to their well-being accrue.

**Keywords:** Perceived neighborhood quality, well-being, MIDUS

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## INTRODUCTION

### Assessing Neighborhood Quality

Neighborhoods represent a broad level of the environment which influence a range of outcomes, including physical and emotional well-being (Miller & Valenti, 2014; Moorman, Stokes, & Morelock, 2016; Robinette, Charles, Almeida, & Gruenwald, 2016; Robinette, Charles, Mogle, & Almeida, 2013; Wen, Hawkey, & Cacioppo, 2006). Among the most important aspects of neighborhood quality are those indices that are easily measured and somewhat “objective,” such as age integration, income, unemployment rate, and distance from grocery stores (Robinette et al., 2016; Weden, Carpiano, & Robert, 2008). Subjective aspects of neighborhood, such as perceptions of cohesiveness and safety, are also important (Kawachi & Berkman, 2003; Keyes, 1998; Robinette et al., 2013). In terms of satisfaction with one’s neighborhood, some research suggests that the subjective aspects of neighborhood may be more important than objective measures (Forgeard, Jayawickreme, Kern, & Seligman, 2011; Oswald, Jopp, Rott, & Wahl, 2011).

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For example, the subjective measure of fear of crime in a neighborhood is a better indicator of a person’s activity level than objective measures of actual crime rates (Kawachi & Berkman, 2003). Subjective measures also more closely reflect an individual’s feelings and appraisals of their neighborhood (Ross & Mirowsky, 2001). The positive subjective evaluations of one’s neighborhood is critical because it may impact a person’s well-being (Hill, Shepherd, Welch, Dirks, & McBride, 2012). However, both the perception of neighborhood quality and well-being can and do change over time. The meaning of a place becomes less stable as more changes happen within that place and this may change the way people feel about their neighborhood (Gustafson, 2001). Thus, the goal of the current study was to examine how changes in perceived neighborhood quality relate to changes in psychological well-being. This is an important question to examine for

several areas of investigation. For clinicians and family members, understanding the changes in psychological well-being can better prepare them to support middle-aged and older adults as they continue to stay in their homes. For policy-makers, a keen understanding of the dynamics of such changes over time may assist in better planning as people transition into middle-age and later life. For the seniors housing and service industries, such an understanding can support their efforts to help adults achieve an optimal person-environment fit.

### Linking Neighborhood Quality to Well-being

That the environment effects health is not a new idea, and there is good evidence of environmental effects on development across the lifespan (Miller & Valenti, 2014). In fact, much of the current research examining the effects of neighborhood and neighborhood satisfaction focuses on physical health outcomes. Using data from the Midlife Development in the United States (MIDUS) study, it is clear that the subjective aspects of neighborhood quality, such as cohesion, buffer the effects of daily hassles on physical health (Robinette, Charles, Mogle, & Almeida, 2013). In fact, it has been found that people reporting low neighborhood cohesion reported more physical health symptoms (Moorman et al., 2016). As this area of research has expanded, investigators are working to identify the specific pathways that link objective and subjective indicators of neighborhood quality with physical health outcomes.

Studies using the MIDUS data (Robinette et al., 2016) have begun to examine how neighborhood quality leads to different health outcomes. These analyses demonstrate clear associations between income and health-related physical stresses. However, when specific health behaviors are included in the analyses, the effect of neighborhood income on physical health is reduced. That is, the relations between low neighborhood economic status and health-related stress is partly attributed to different health behaviors in the neighborhoods. In a large sample of middle-aged and older adults in New Jersey, Wilson-Genderson and Pruchno (2015) reported links between the presence of more fast-food restaurants and taverns and higher functional disabilities in middle-aged and older adults. Thus, the links between health outcomes and objective aspects of neighborhoods, including economic

status, may be more sophisticated than previous research has suggested. The exciting aspect of this, however, is that specific areas for public health interventions have been uncovered.

Although researchers are making progress in identifying the mechanisms through which neighborhood quality influences physical health, our understanding of the joint relations between neighborhood quality and psychological well-being is less understood. A recent exception is the study by Robinette and colleagues (Robinette et al., 2013). In addition to examining the buffering effects of neighborhood cohesion on physical health symptoms, the authors also examined its effects on positive and negative affect. Adults in the MIDUS study who reported low neighborhood cohesion reported higher levels of negative affect. Laudable for beginning to examine the mechanisms linking neighborhood to psychological well-being, this study relied on only a single aspect of well-being, affect.

Psychological well-being should be investigated as a broader multidimensional construct that includes levels of life satisfaction, more positive than negative affective experiences, and a sense of meaning and contentment (Diener, 2012; Diener, Suh, Lucas, & Smith, 1999; Seligman, 2012). Seligman (2012) has taken a broader view of psychological well-being, highlighting differences among a pleasant life, an engaged life, and a meaningful life. Because of its multidimensional nature, there is some debate regarding how best to measure psychological well-being. In her seminal work, Ryff (1989) focused on six aspects, including: self-acceptance, positive relations with others, autonomy, environmental mastery, purpose in life, and personal growth. Self-acceptance of one's past and present life includes elements of self-esteem. It is viewed as a key component of self-actualization and optimal functioning. Positive relations with others concerns the ability to form and maintain close personal relationships. It includes aspects of empathy and affection for others. Autonomy is a key feature of most conceptualizations of well-being, self-actualization, and self-determination. It includes a sense of independence and an internal locus of control. Environmental mastery is one's ability to shape and manipulate the environment in such a way as to make the environment more supportive or comfortable. Purpose in life, like Seligman's (2012) meaningful life, focuses on

one's sense of direction and goals in life. Finally, personal growth relates to one's continued sense of development and pursuit of new opportunities and experiences (Ryff, 1989). See **Table 1** for a summary of definitions of the six aspects of psychology well-being.

**Table 1. Summary of Ryff's (1989) Psychology Well-being Subscales**

Well-being Dimension	Definition
Positive Relations with Others	Being able to have feelings of empathy and affection for others. Being able to form an intimate bond with another person.
Self-Acceptance	Having a positive evaluation of self and acceptance of one's past. Having a positive attitude about oneself.
Autonomy	Being able to regulate one's own behavior, as well as being independent. Being able to look inward for one's self-evaluation.
Personal Growth	Being able to realize one's potential and continue to grow and expand that potential. Being able to take on new challenges.
Environmental Mastery	Being able to create or choose an environment that has optimal fit.
Purpose in Life	Belief that one has found meaning in life.

*Note:* Definitions adapted from Ryff (1989).

Springer, Pudrovskaya, and Hauser (2011) examined changes in Ryff's six factors using two waves of data, spanning 10 years. They included two data sets: the national MIDUS sample and the regional Wisconsin Longitudinal Study (WLS). They found evidence for change among most of the factors across the transition from early adulthood to early midlife, early to later midlife, and later midlife to older adulthood. In both the MIDUS and the WLS studies, environmental mastery increased with age, at least from the early 30s through age 75 years. Similarly, positive relations with others increased across adulthood, although in the WLS, there was stability from ages 56 to 75 years. Personal growth, on the other hand, showed decreases across midlife. The results for autonomy, purpose in life, and self-acceptance were equivocal across the two studies. For example, in the WLS,

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autonomy showed steady declines across midlife, but increased in the MIDUS sample. Purpose in life showed steady declines in the WLS, although declines were not evident until after age 60 years in the MIDUS sample. Finally, although self-acceptance showed steady declines across midlife for the people in the WLS, there was a small increase for adults in their 50s in the MIDUS sample. That these six factors might exhibit different trajectories of change across adulthood is not surprising. However, more than two types of measurement are necessary in order to examine true change over time. What is unclear is how these aspects of psychological well-being relate to the changes or stabilities in one's immediate environment, such as a person's neighborhood.

### **Longitudinal links between Neighborhood Quality and Well-being**

Because individuals spend the majority of their time in their homes and neighborhoods, researchers are increasingly interested in how these environments influence well-being (Hill et al., 2012). In general, researchers recognize the mutual and bidirectional effects of neighborhood environments and psychological well-being (Wiles, Leibing, Guberman, Reeve, & Allen, 2011). For example, a person may choose a neighborhood because it has the best fit for themselves (environmental mastery) but they then may work hard to keep the neighborhood an optimal environment for themselves and their neighbors. Early research assessing neighborhood quality and health focused on objective measures of quality and ignored the subjective measures or "social environments" (Sampson, 2003). To date, however, much of what we know about the effects of neighborhood on well-being is derived from cross-sectional studies, when individuals are only assessed at one time (Oswald et al., 2011). Lower rates of violence are found among neighborhoods in which residents have a greater collective efficacy and stronger neighborhood cohesion and engagement (Sampson, 2003). People who perceive a higher quality in their surroundings report higher levels of well-being (Wahl & Oswald, 2010). In addition, people who rate their neighborhoods as more cohesive report fewer daily stressors, higher positive affect, and lower negative affect. (Robinette et al., 2013). Higher neighborhood cohesion has also been shown to be a protective factor against depression (Mair, Diez-Roux, & Galea, 2008). Additionally, people who have

higher ratings of neighborhood problems report lower psychological, social, and environmental quality of life (Hill et al., 2012).

The social cohesiveness of a neighborhood may buffer the effects of perceived neighborhood safety (Choi & Matz-Costa, 2017). Social cohesion served to assuage some of the negative effects of low neighborhood safety on people with physical impairments. In a sample of more than 2500 Montreal residents who had lived in their current home for at least one year, Bassett and Moore (2013) showed that although many neighborhood characteristics were associated with well-being, only cohesiveness played a role in whether neighborhood disadvantage predicted depression. That is, just as the effect of neighborhood economic status predicted a person's health behaviors and that plays a role in a person's physical health (Robinette et al., 2016), the effects of objective neighborhood disadvantage on psychological well-being is partly attributable to one's sense of neighborhood cohesion. Two issues limit the generalizability of these results. First, the effect emerged only for women. Second, the data were collected at one point in time, so it is unclear whether cohesiveness is a causal mechanism influencing well-being or merely a correlation at a single point in time. To disentangle those effects, longitudinal studies are needed.

In contrast to the emerging literature that examines specific pathways through which neighborhood quality influences physical health (e.g., Robinette et al., 2016), relatively little research has long-term associations, longitudinal pathways, between neighborhood quality and psychological well-being. Among the few existing studies, the results have been mixed. Using data from the longitudinal Health and Retirement Study, Glymour, Mujahid, Wu, White, and Tschetgen (2010) found no relation between neighborhood characteristics and increased risk of depression over time. In contrast, a recent study of older adults in the Netherlands (Cramm & Nieboer, 2015) showed that decreases in neighborhood cohesiveness and belongingness over the relatively short period of two years, resulted in decreases in psychological well-being. Thus, although the evidence for neighborhood changes effecting physical health is strong, the effects of neighborhood change on psychological well-being are less clear.

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## The Current Study

The current study utilized three waves of data, spanning 17 years, from the MIDUS study. Our primary goal was to disentangle the associations among perceived neighborhood quality and psychological well-being over time. Our study advances the field of seniors housing in three ways. First, we use a large national sample, which may generalize to many community-dwelling adults. Second, we used longitudinal data that included three points of measurement spanning a period of 17 years, thus allowing an examination of perceived neighborhood change over time. Finally, we use sophisticated statistical procedures that allow us to examine whether changes in perceived neighborhood quality are associated with changes in psychological well-being.

## METHOD

### Sample

The MIDUS study is a national longitudinal study assessing health and well-being throughout midlife. The study consists of three waves of data collection: MIDUS 1 (M1) 1995-1996, MIDUS 2 (M2) was completed in 2009, and MIDUS 3 (M3) was completed in 2013. For inclusion in the current study, continuous residence in the same household from wave 1 (M1) through Wave 3 (M3) was required. After the data were screened for length of residence and cleaned for missing data on key variables, we analyzed data from 966 adults. These adults ranged in age from 25 to 74 years at Wave 1, with a mean age of 48.8 (SD = 10.2) years. A total of 523 women (54.1%) and 443 men provided data for these analyses. Participants had resided in their household for an average of 19.42 years by MIDUS 3.

### Measures

**Well-being.** We used Ryff's (1989) psychological well-being scale, which includes 18 items. Each item is scored on a seven-point Likert-type scale, with 1 equalling agree strongly to 7 equalling disagree strongly. Positive items were reverse-coded, such that higher scores represent higher levels of the underlying constructs. Ryff's measure is comprised of six three-item subscales, including: positive relations with others (e.g., "maintaining close

relationships has been difficult and frustrating for me"), self-acceptance (e.g., "in many ways I feel disappointed about my achievements in life"), autonomy (e.g., "I have confidence in my opinions, even if they are contrary to the general consensus"), personal growth (e.g., "I gave up trying to make big improvements or change in my life a long time ago"), environmental mastery (e.g., "in general, I feel I am in charge of the situation in which I live"), and purpose in life (e.g., "I live life one day at a time and don't really think about the future"). Means, standard deviations, and scale reliability for each of the three time periods are shown in **Table 2**.

**Perceived Neighborhood Quality.** We used the same 4-item scale (Keyes, 1998) used by Robinette et al. (2016) to examine perceived neighborhood quality. Thus, neighborhood quality included two items assessing perceived neighborhood safety (i.e., I feel safe being out alone in my neighborhood during the daytime; I feel safe being out alone in my neighborhood at night) and two items assessing neighborhood cohesion (i.e., I could call on a neighbor for help if I needed it; People in my neighborhood trust each other) (Keyes, 1998). A higher score on this scale suggests higher perceived neighborhood quality. Means, standard deviations, and scale reliability for each of the three time periods are shown in **Table 2**.

### Results

#### Staying in one's home vs. Relocation

Although our goal was to examine how perceived changes in neighborhood quality relate to changes in well-being among adults who have had long-term residency, we are aware that both neighborhood quality and well-being might be associated with who chooses to remain in their neighborhood. Thus, we compared the long-term residents ( $n = 966$ ), whose data we further analyze, with the data of adults who did not reside in the same location across the MIDUS timeframe ( $n = 1293$ ). See **Figure 1** for a graphical representation of how the sample was determined.

When comparing adults who had remained in the same home across all three MIDUS waves with those who moved after the first time of measurement, few differences were initially present at the first wave. There were no significant

**Table 2. Means, Standard Deviations, and Alphas for the Study Variables**

	MIDUS 1 (1996)			MIDUS 2 (2009)			MIDUS 3 (2013)		
	M	SD	$\alpha$	M	SD	$\alpha$	M	SD	$\alpha$
Positive Relations with Others	16.56	4.00	.61	17.27	3.68	.66	17.11	3.61	.63
Self-Acceptance	16.92	3.38	.62	16.63	3.64	.66	16.61	3.68	.67
Autonomy	16.43	3.16	.48	16.65	2.99	.40	16.41	3.02	.43
Personal Growth	17.71	3.06	.56	17.36	3.37	.64	17.43	3.20	.62
Environmental Mastery	16.34	3.48	.56	17.03	3.19	.54	17.14	3.17	.60
Purpose in Life	17.07	3.35	.37	16.70	3.18	.22	16.14	3.26	.27
Neighborhood Quality	14.25	1.74	.58	14.23	1.82	.60	14.09	1.98	.65

differences in physical or mental health when comparing those who stayed in their homes vs. those who moved. A small but significant difference was observed for personal growth with those who remained in their homes for the entire 17 years, expressing lower levels of personal growth than those who moved after the first wave of data collection. There was also a significant difference in age of those who stayed in their homes ( $M = 48.77$ ,  $SD = 11.15$ ) compared to those who moved ( $M = 43.76$ ,  $SD = 11.34$ ).

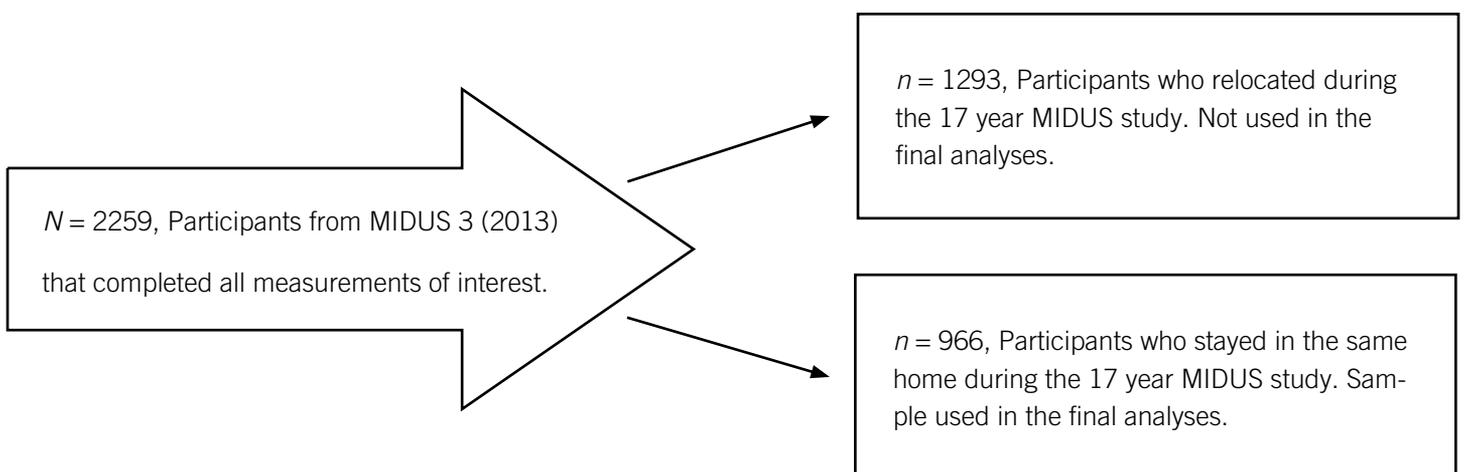
In contrast, as the years unfolded, several differences in well-being were observed between the adults who remained in their homes and those who moved. At waves 2 and 3, the differences in personal growth remained significant, with the lower scores among those who remained in the same home. In addition, those who remained in their homes expressed higher self-acceptance at waves 2 and 3. Moreover, those who remained in their home for the

entire 17 years also reported better positive relations with others at both wave 2 and 3, compared to the people who had moved.

### Average Changes over Time

Further analyses were conducted on those respondents who stayed in their homes over all three waves of data collection ( $n = 966$ ). Based on the correlations, measures of each scale were significantly associated with each other at all three time periods. In addition, each aspect of psychological well-being was significantly associated with each other. However, some correlations are quite small ( $r = .11$ ), whereas others are substantial ( $r = .69$ ). Similarly, although each measure of well-being was associated with neighborhood quality, there was a range of magnitude represented among the correlation coefficients.

**Figure 1. Graphical Representation of Sample Used in the Current Study.**

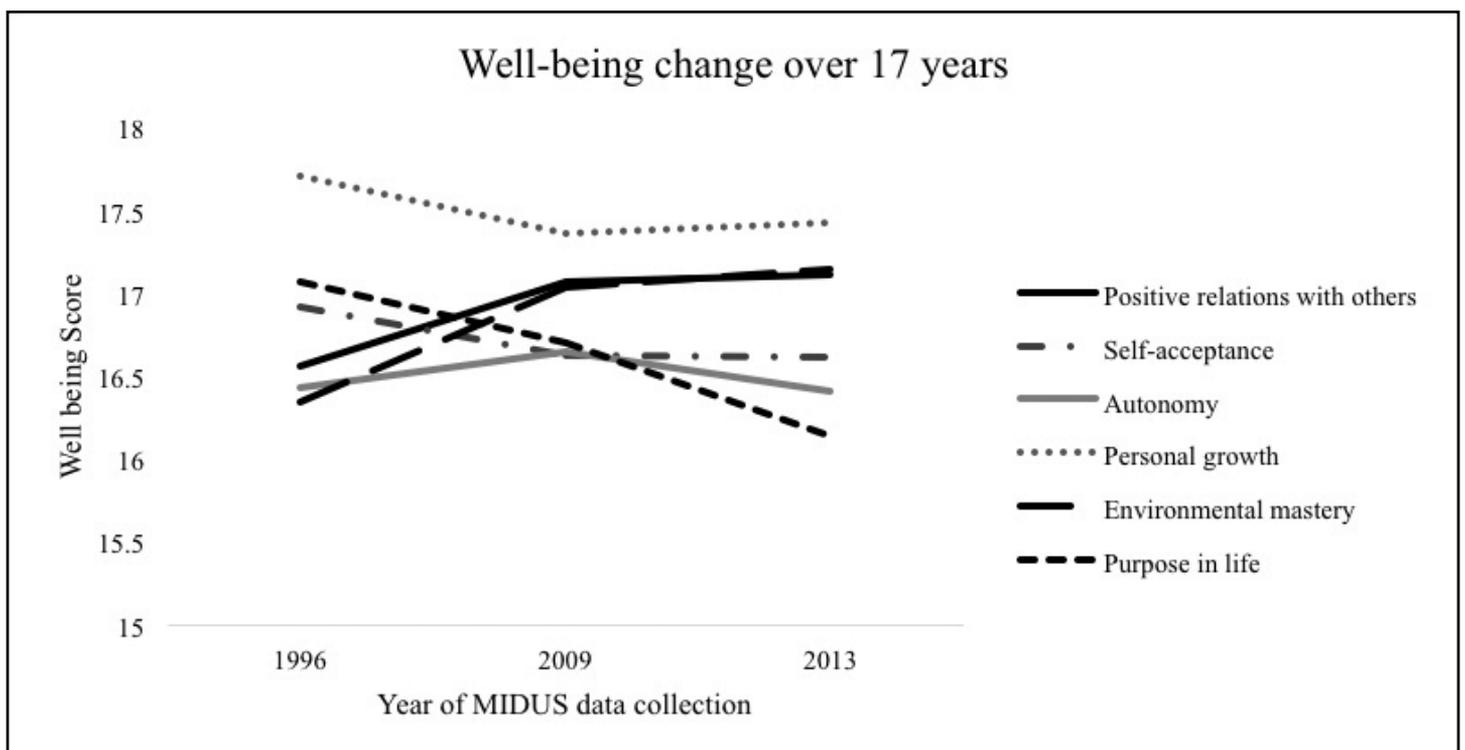


We examined changes over time in perceptions of neighborhood quality and the six aspects of well-being. Perceptions of neighborhood quality decreased in a linear fashion over the three time periods. The decrease over time was linear, but of very small magnitude.

Changes in well-being were observed across the three times of measurement, as shown in **Figure 2**. A small but significant effect emerged for positive relations with others. People reported increases from time 1 to time 2, but small decreases from time 2 to time 3 in their positive relations with others. In contrast, small linear decreases in self-acceptance were observed over time. Like the trend with positive relations with others, autonomy exhibited a significant increase from time 1 to time 2 and then decreased at time 3. Personal growth exhibited a similar pattern of change, although decreases from time 1 to time 2 were followed by a small uptick at time 3. Environmental mastery showed large increases between time 1 and time 2, with smaller increases observed at time 3. Finally, purpose in life exhibited significant linear declines across time.

### Relating Perceived Neighborhood Changes to Changes in Well-Being

**Figure 2. Changes in the Six Factors of Well-Being over 17 Years**



The previous tests are informative to examine whether the variables changed over long periods of time, as in our three time periods. That analysis is also helpful to examine whether the pattern of change is consistent from time 1 to time 2 versus from time 2 to time 3. However, we also wanted to estimate change in a more fine-grained way. Thus, we used hierarchical linear model (HLM) analyses to examine the associations between changes in neighborhood quality and changes in well-being. This analysis also allows us to detect whether the rate of change between two variables is different over time. For example, it might be that people show large increases on a measure for many years, but then a more modest increase thereafter. See Technical appendix for full statistical results.

We first examined whether and to what degree neighborhood quality changed over time. Results of our hierarchical linear model showed that people reported very small, significant, decreases in perceived neighborhood quality each year, with less than one-quarter of a point decrease across the 17 years.

Next, we examined whether each of the six facets of well-being changed over time. Positive relations with others

**Table 3. Summary of Results Assessing the Associations between Perceived Neighborhood Quality and Well-Being**

	<b>Perceived Neighborhood Quality (NQ)</b>
<b>Positive Relations with Others (PR)</b>	As people have a greater decline in NQ over the 17 years of the study, their PR improves at a slower rate compared to those who have a slower decline in NQ.
<b>Self-Acceptance (SA)</b>	As people have a greater decline in NQ over the 17 years of the study, they also have a greater decline in SA.
<b>Autonomy (A)</b>	A person's NQ and A show no significant association over the 17 years of the study.
<b>Personal Growth (PG)</b>	As people have a greater decline in NQ over the 17 years of the study, they also have a greater decline in PG.
<b>Environmental Mastery (EM)</b>	As people have a greater decline in NQ over the 17 years of the study, their EM improves at a slower rate compared to those who have a slower decline in NQ.
<b>Purpose in Life (PL)</b>	As people have a greater decline in NQ over the 17 years of the study, they also have a greater decline in PL.

showed small, significant, increases over time, self-acceptance showed small, significant decreases over time, autonomy showed no significant changes over time, personal growth showed small, significant decreases over time, environmental mastery showed small, significant increases over time, and purpose in life showed small, significant decreases over time.

Our next set of analyses examined whether changes in well-being were related to decreases in neighborhood quality (see **Table 3** for summary of results). There was a significant association between declines in neighborhood quality and improvements in positive relations with others. Thus, although people showed increases in positive relations with others, when adults reported greater declines in neighborhood quality, smaller improvements in positive relations with others were reported.

Changes in personal growth were associated with declines in neighborhood quality. However, the association was very small. Adults who noted greater declines in neighborhood quality reported greater declines in personal growth.

The changes in environmental mastery were significantly associated with changes in neighborhood quality. As neighborhood quality showed greater declines, gains in environmental mastery were less pronounced.

Finally, changes in purpose in life were significantly associated with declines in neighborhood quality. Greater decreases in neighborhood quality were associated with faster declines in one's sense of purpose in life.

## **DISCUSSION**

Few would argue that the influence of neighborhood quality on physical and emotional well-being is trivial. In fact, most American adults value the privacy and autonomy that residing in their own home provides (Spencer et al., 2009; Wahl & Oswald, 2010). However, researchers and service providers have little actionable information about the consequences of remaining in one's home as both the individual and the neighborhood experience changes over time. Our goal was to examine such joint changes in neighborhood quality and psychological well-being over the 17 years of the MIDUS longitudinal study.

Although there are many aspects of one's environment that may contribute to both physical (e.g., Wilson-Genderson & Pruchno, 2015) and psychological well-

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*Adults who noted greater declines in neighborhood quality reported greater declines in personal growth.*

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Our examination showed that decreases in self-acceptance were related to declines in neighborhood quality. As neighborhood quality showed greater declines, greater declines in self-acceptance were observed.

Although the ANOVAs suggested that autonomy exhibited some change across the three time periods, its change at the annual level was not significant. Thus, our analyses could not detect an association with declines in neighborhood quality.

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being, we focused on the more subjective aspects of neighborhood quality. Neighborhood quality, as we defined it, includes perceptions of safety and of community with one's neighbors. From prior work with the MIDUS data, neighborhood quality may protect an individual from the negative emotional and physical health effects of daily hassles (Robinette et al., 2013; Robinette et al., 2016). The present analyses extend the work of Robinette and her colleagues by using a third wave of MIDUS data and by examining how changes in neighborhood quality relate to changes in well-being. We divide our discussion into several sections, including an overview of the divergence over time between those who remained in place and those who relocated; a discussion of the how neighborhood quality and psychological well-being changed over the 17-year period; and relations between changes in neighborhood quality and changes in well-being. Finally, we discuss limitations to the MIDUS data and how practitioners can use these results to assist adults making decisions about where to reside.

### **Who Stays and Who Relocates?**

Our results highlight that differences in well-being unfold over time between those who had continuous residence in the same home and those who relocated. For example, using the responses from wave 1 in 1996, we were able to examine whether there were differences from the outset between those who would remain in place and those who would relocate in subsequent waves of MIDUS. The only difference that could be detected before any relocations had occurred was for the personal growth aspect of well-being. Adults who remained in the same home throughout the 17 years of the study reported lower scores on personal growth than those who subsequently relocated. It was also found that in 2009, at wave 2, adults who remained in their homes reported higher levels of self-acceptance and more positive relations with others. These differences continued into wave 3, at which time those who remained in their homes also reported higher environmental mastery.

We are struck by the relative strengths of those who remained in the same homes over the 17-year period. Much of the literature has focused on the potential negative effects of staying in one's home or the inability to relocate (Gulledge, Cohron, & Wylde, 2016). The data,

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*The adults who relocated reported lower environmental mastery, lower positive relations with others, and lower self-acceptance than those who stayed in their homes over the 17-year period.*

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however, suggest that more attention might be directed toward adults who are relocating. Although the current analyses do not address the reasons that adults moved to different homes over the study period, our analyses do demonstrate that those who are relocating may need assistance. To wit, the adults who relocated reported lower environmental mastery, lower positive relations with others, and lower self-acceptance than those who stayed in their homes over the 17-year period.

### **Environments and People Change over Time**

Perceptions of neighborhood quality declined over time among adults who stayed in the same home over a 17-year period. It is important to note, however, that these changes were small in magnitude. In addition, our analyses of the average changes over time do not capture the entirety of the rich context of "neighborhood." Perhaps what is more important than average declines over time is the consideration that neighborhood quality does not change in a vacuum—many other changes are also co-occurring. For example, individuals' health, wealth, and social environments are likely to change over time as well.

We did capture time-related changes in psychological well-being. As shown with only two waves of the MIDUS data (Springer et al., 2011), many aspects of psychological well-being are dynamic, especially over the long periods between MIDUS waves. A third wave allowed us to more carefully examine the trajectory of that change via the HLM analyses to examine incremental changes at an annual level. Thus, although positive relations over the three time periods showed some fluctuations, the HLM analyses suggest a net increase over time. Self-acceptance showed consistent linear declines over both the longer waves of time, as well as at the annual level. In contrast, although autonomy appeared to show some fluctuations across long periods of time, those changes were small enough to appear as net stability at an annual level. Personal growth, on the other hand, showed a

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pattern of decreases and then rebound over the longer time frame, but could be characterized as a net increase at the annual level. Environmental mastery showed a consistent increase over both the long and annual frame. Similarly, purpose in life showed a consistent pattern of decline across time.

### **Interactions between Neighborhood Quality and Well-Being**

Recognizing that both people and neighborhoods change over time is an important consideration. However, it is also important to examine whether these changes are related to each other. Emerging literature suggests that these two constructs, neighborhood quality and well-being, are indeed interconnected (Bassett & Moore, 2013; Wilson-Genderson & Pruchno, 2015; Robinette et al., 2013). Fewer studies have examined these relations in a long-term design. Such longitudinal examinations are an important step in determining causal relations. Our data is clear: changes in neighborhood quality are associated with changes in well-being. In fact, these two constructs are so closely connected, that adults who perceive a faster decline in their neighborhood quality are those who report the greatest effects on their well-being.

It was found that even though neighborhood quality declined over the 17-year period, environmental mastery and personal relations with others increased over the 17-year period. The associations between these concepts show that as people have a faster decline in neighborhood quality, their positive relations with others and environmental mastery increases at a slower rate. The results can also be interpreted as positive relations with others and environmental mastery increases at a faster rate than neighborhood quality decreases at a slower rate. This means that people who have greater increases in positive relations and environmental mastery may be protected from faster declines in how a person perceives their neighborhood quality. People who have a faster increase in positive relations may develop those relations in their neighborhood, and that may be one of the reasons for the slower decline in neighborhood quality. Also, environmental mastery may be a part of place attachment and may show the bonding with a person's surroundings (Low & Altman, 1992). This could be the reason that environmental mastery is oppositely affected

by neighborhood quality. Place attachment is a bond that a person has with a specific place be it their home, community, or city (Lewicka, 2008). The environmental mastery aspect of well-being deals with feeling like a person's environment is a good fit, and by creating this good fit between person-neighborhood, that person is also creating a bond with the neighborhood. This may also help to enhance the idea of place attachment because the meaning of places become more personal over time as a person bonds with their neighborhood (Gustafson, 2001), and this may explain the relationship between neighborhood quality and the environmental mastery aspect of well-being.

Along with neighborhood quality decreasing over time, so do self-acceptance, personal growth, and purpose in life. For the three aspects of well-being that decrease over time, it has been determined that people who have a faster decreasing neighborhood quality also have faster decreasing rates of self-acceptance, personal growth, and purpose in life. This means that as people have a faster decline in neighborhood quality, their self-acceptance, personal growth, and purpose in life decreases at a faster rate. Because our neighborhood surroundings play a role in our identities (Wahl & Oswald, 2010), it may be asserted that as people have a perceived loss in their neighborhood quality they may feel like they are losing a part of themselves. This can be because in the current study, participants have a greater loss in self-acceptance when they have a greater loss in perceived neighborhood quality. This may have implications as people continue to live in their homes and how their well-being may change over time. Having losses in perceived neighborhood quality also means greater losses in aspects of well-being. These results may occur because people who stay in the same neighborhood may feel like they have fewer challenges because they are used to their surroundings. This may then lead to lower personal growth and the purpose a person feels. Helping to create challenges and find meaning for people who stay in their homes may help to reduce the declines a person feels.

### **Limitations**

Although true cause-and-effect associations are not possible with these analyses, due to the range of important factors that influence perceived neighborhood quality,

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psychological well-being, and the relation between the two, our analyses are able still to yield important insights. Use of the MIDUS data is a strength for the present analyses. However, the MIDUS study is not without its own limitations. Most of the participants are White and of middle-class economic status. Both well-being and

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*Because our neighborhood surroundings play a role in our identities, it may be asserted that as people have a perceived loss in their neighborhood quality they may feel like they are losing a part of themselves.*

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neighborhood quality may differ for those who are members of racial and ethnic minority groups and those for whom financial resources are limited (Gulledge et al., 2016). However, if we detected these associations between well-being and neighborhood quality among those adults most able to relocate, it is reasonable to expect the same or stronger results among more vulnerable adults.

## CONCLUSION

Few studies have tapped into the meaning of perceived changes in neighborhood quality and how those relate to psychological well-being. For some people, where they live is an important part of their identities. For those who perceive their neighborhood quality is decreasing, they may also feel as if they are losing certain aspects of themselves. Neighborhood quality and well-being are important aspects to study in conjunction because a person's well-being can help them to adapt to the ever-changing environment. For example, when adults reported greater declines in perceived neighborhood quality, smaller improvements in positive relations, and environmental mastery were observed. Also, greater declines in perceived neighborhood quality was associated with greater declines in purpose in life, self-acceptance, and personal growth. This has clear implications for adults who want to stay in their homes and for those adults who are considering a relocation. Identifying adults most at-risk for poor outcomes in the community is an important public health need and is of importance to the senior living industry. Thus, diligence in monitoring perceived neighborhood change may assist service providers in identifying at-risk seniors before negative effects to their well-being accrue.

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## TECHNICAL APPENDIX

### Statistical Results

A series of multilevel latent growth models was conducted to examine the associations between perceived neighborhood quality and the six well-being subscales. It was established that the data met the underlying assumptions of the General Linear Model (GLM) prior to conducting the analyses. Through structural equation modeling (SEM), the growth models were assessed.

### Neighborhood Quality

First, by assessing neighborhood quality, the intercept = 14.27 was significant ( $p < .01$ ), meaning that the average starting point is different than 0. The slope =  $-.01$  was significantly ( $p < .01$ ) different for ratings of neighborhood quality. On average, people rate their neighborhood as  $-.01$  less per year. For the covariance of intercept and slope for neighborhood quality there was no significant covariance (estimate =  $.01$ ,  $p = .33$ ). Lastly, there was a significant variance of the intercept =  $1.74$  ( $p < .01$ ), and slope =  $.002$  ( $p < .01$ ), meaning that the intercept and slope of the neighborhood quality rating significantly vary from one another.

### Positive Relations with Others

By assessing a person's rating of personal relations with others, the intercept =  $16.73$  was significant ( $p < .01$ ), meaning that the average starting point was different than 0. The slope =  $.03$  was significantly ( $p < .01$ ) different for personal relations with others. On average, as people get older, their personal relations with others increases at a  $.03$  rate per year. For the covariance of intercept and slope for personal relations with others there was a significant covariance (estimate =  $-.37$ ,  $p < .01$ ). Lastly,

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there is a significant variance of the intercept = 15.40 ( $p < .01$ ), and slope = .03 ( $p < .01$ ), meaning that the intercept and slope of the personal relations with others significantly vary from one another.

### **Neighborhood Quality and Positive Relations with Others**

There was a significant covariance between the intercept of neighborhood quality and personal relations with others (estimate = 1.81,  $p < .01$ ). The starting point of neighborhood quality significantly predicts the starting point of personal relations with others, and vice versa. The slopes of neighborhood quality and personal relations with others was significant (estimate = .002,  $p < .01$ ). The intercept for neighborhood quality was not significantly associated with the slope of personal relations with others (estimate = -.02,  $p = .11$ ), nor was the intercept for personal relations with others significantly associated with the slope of neighborhood quality (estimate = -.004,  $p = .77$ ).

### **Self-Acceptance**

By assessing a person's rating of self-acceptance, the intercept = 16.88 was significant ( $p < .01$ ), meaning that the average starting point is different than 0. The slope = -.02 was significantly ( $p < .01$ ) different for self-acceptance. On average, as people get older, their self-acceptance decreases at a -.02 rate per year. For the covariance of intercept and slope for self-acceptance there was a significant covariance (estimate = -.16,  $p < .01$ ). Lastly, there was a significant variance of the intercept = 10.98 ( $p < .01$ ), and slope = .03 ( $p < .01$ ), meaning that the intercept and slope of self-acceptance significantly vary from one another.

### **Neighborhood Quality and Self-Acceptance**

There was a significant covariance between the intercept of neighborhood quality and self-acceptance (estimate = 1.77,  $p < .01$ ). The starting point of neighborhood quality significantly predicts the starting point of self-acceptance, and vice versa. The slopes of neighborhood quality and self-acceptance was significant (estimate = .002,  $p < .01$ ). The intercept for neighborhood quality was not significantly associated with the slope of self-acceptance (estimate = .004,  $p = .74$ ), nor was the intercept for self-

acceptance significantly associated with the slope of neighborhood quality (estimate = -.01,  $p = .35$ ).

### **Autonomy**

By assessing a person's rating of autonomy, the intercept = 16.52 was significant ( $p < .01$ ), which means that the average starting point was different than 0. The slope = .00 was not significant ( $p = .95$ ). For the covariance of intercept and slope for autonomy there was a significant covariance (estimate = -.23,  $p < .01$ ). Lastly, there was a significant variance of the intercept = 9.08 ( $p < .01$ ) and slope = .02 ( $p < .01$ ), meaning that the intercept and slope of autonomy significantly vary from one another.

### **Neighborhood Quality and Autonomy**

There was a significant covariance between the intercept of neighborhood quality and autonomy (estimate = .69,  $p < .01$ ). The starting point of neighborhood quality significantly predicts the starting point of autonomy, and vice versa. The slopes of neighborhood quality and autonomy are not significant, (Estimate = .001,  $p = .30$ ). The intercept for neighborhood quality was not significantly associated with the slope of autonomy (estimate = .003,  $p = .78$ ) nor was the intercept for autonomy significantly associated with the slope of neighborhood quality (estimate = .01,  $p = .27$ ).

### **Personal Growth**

By assessing a person's rating of personal growth, the intercept = 17.64 was significant ( $p < .01$ ), which means that the average starting point is different than 0. The slope = -.02 was significant ( $p < .01$ ). On average, as people get older their personal growth decreases at a -.02 rate per year. For the covariance of intercept and slope for personal growth, there was a significant covariance (estimate = -.20,  $p < .01$ ). Lastly, there was a significant variance of the intercept = 9.23 ( $p < .01$ ), and slope = .03 ( $p < .01$ ), meaning that the intercept and slope of personal growth significantly vary from one another.

### **Neighborhood Quality and Personal Growth**

There was a significant covariance between the intercept of neighborhood quality and personal growth (estimate =

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1.21,  $p < .01$ ). The starting point of neighborhood quality significantly predicts the starting point of personal growth, and vice versa. The slopes of neighborhood quality and personal growth are significantly related (estimate = .001,  $p < .05$ ). The intercept for neighborhood quality is not significantly associated with the slope of personal growth (estimate = .01,  $p = .37$ ), nor is the intercept for personal growth significantly associated with the slope of neighborhood quality (estimate = .01,  $p = .48$ ).

### **Environmental Mastery**

By assessing a person's rating of environmental mastery, the intercept = 16.44 was significant ( $p < .01$ ), which means that the average starting point is different than 0. The slope = .05 was significant ( $p < .01$ ). On average, as people get older, their environmental mastery increases at .05 rate per year. For the covariance of intercept and slope for environmental mastery there was a significant covariance (estimate = -.35,  $p < .01$ ). Lastly, there was a significant variance of the intercept = 11.53 ( $p < .01$ ) and slope = .03 ( $p < .01$ ), meaning that the intercept and slope of environmental mastery significantly vary from one another.

### **Neighborhood Quality and Environmental Mastery**

There was a significant covariance between the intercept of neighborhood quality and environmental mastery (estimate = 1.75,  $p < .01$ ). This means that the starting point of neighborhood quality significantly predicts the starting point of environmental mastery, and vice versa. The slopes of neighborhood quality and environmental mastery are significantly related (estimate = .004,  $p < .05$ ). The intercept for neighborhood quality was significantly associated with the slope of environmental mastery (estimate = -.03,  $p < .01$ ) and the intercept for environmental mastery was significantly associated with the slope of neighborhood quality (estimate = -.04,  $p < .01$ ).

### **Purpose in Life**

By assessing a person's rating of purpose in life, the intercept = 17.13 was significant ( $p < .01$ ), which means that the average starting point was different than 0. The slope = -.05 was significant ( $p < .01$ ). On average, as

people get older, their purpose in life decreases at -.05 rate per year. For the covariance of intercept and slope for purpose in life, there was a significant covariance (estimate = -.28,  $p < .01$ ). Lastly, there was a significant variance of the intercept = 10.51 ( $p < .01$ ) and slope = .03 ( $p < .01$ ), meaning that the intercept and slope of environmental mastery significantly vary from one another.

### **Neighborhood Quality and Purpose in Life**

There was a significant covariance between the intercept of neighborhood quality and purpose in life (estimate = 1.19,  $p < .01$ ). The starting point of neighborhood quality significantly predicts the starting point of purpose in life, and vice versa. The slopes of neighborhood quality and purpose in life are significantly related (estimate = .002,  $p < .05$ ). The intercept for neighborhood quality was significantly associated with the slope of purpose in life (estimate = -.03,  $p < .01$ ), but the intercept for purpose in life was not significantly associated with the slope of neighborhood quality (estimate = .002,  $p = .83$ ).

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