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Neighborhood Conditions and Gender Differences in Depressive Symptoms

A dissertation submitted in partial satisfaction of the

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by

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ABSTRACT OF THE DISSERTATION

Neighborhood Conditions and Gender Differences in Depressive Symptoms

by

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Depression is a major public health challenge affecting millions of people worldwide, particularly women. Intra-individual explanations of gender differences in depression include biology (e.g., neurotransmitters, genes, hormones) and psychological factors (e.g., self-concept and esteem, mastery). Social explanations focusing on exposure to stressors (e.g., low socioeconomic status) and social role occupancy (e.g., marital and employment status) also have been considered. The recognition that environmental factors may influence mental health has given rise to studies examining the relationship between neighborhood conditions and risk for depression and psychological distress, but gender differences in neighborhood effects have yet to receive the needed research attention.

This dissertation sought an understanding of: (a) gender differences in neighborhood effects on depressive symptoms, and (b) neighborhood influences on variation in depressive symptoms among women. The research is guided by the neighborhood stress process framework focusing on stressors and psychosocial resources as mediators and moderators of the relationships among neighborhood conditions and depressive symptoms. Individual-level cross-sectional data come from the Health and Retirement Survey (HRS: baseline, 2006/2008 interviews and psychosocial questionnaire supplement). The HRS is a U.S. national probability sample of adults over the age of 50. Analyses are performed within a multilevel framework and urban neighborhood data come from the 2000 U.S. Census.

Among eight indicators of neighborhood disadvantage, including neighborhood socioeconomic disadvantage (NSD), and five measures of neighborhood advantage examined for gender differences in their effects on depressive symptoms, two were statistically significant but not in the expected direction. Neighborhood proportion non-family households was associated with fewer depressive symptoms among women and it had no effect among men. Neighborhood proportion married-couple households was not significantly related to depressive symptoms among women, but among men, living in a neighborhood with more married-couple households with children was associated with fewer symptoms. Overall, the impact on depressive symptoms of neighborhood characteristics do not differ for men and women.

Gender differences in neighborhood effects on three individual-level stressors and three individual-level psychosocial resources also were examined. Nine interactions were statistically significant. Consistent with expectations, people who reside in neighborhoods with more vacant housing units perceived more disorder and less social cohesion in their neighborhoods, and the effects were larger for women than men. Relative to men, women's perceptions of neighborhood social cohesion and social support are more sensitive to neighborhood economic conditions. In general, with a few notable exceptions, neighborhood effects on stressors and psychosocial resources do not vary by gender.

In analyses that only included women, NSD was positive and significantly associated with depressive symptoms and neighborhood proportion adults aged 65 and older was negative and significantly associated with symptoms. Perceived neighborhood social cohesion fully mediated the effect of NSD- and partially mediated the effect of neighborhood proportion older adults- on depressive symptoms. The effect on depressive symptoms of neighborhood disadvantage did not vary significantly by levels of stressors and psychosocial resources except for three significant cross-level interactions. Living in a neighborhood with more vacant housing units was associated with more depressive symptoms, and the effect was greater among women who perceived high levels of disorder in the neighborhood than those who perceived less disorder. Also as hypothesized, NSD had the largest positive effect on depressive symptoms among women with less social support than women with more support. However, mastery did not function as a stress-buffer.

The effect on depressive symptoms of neighborhood advantage varied significantly by psychosocial factors. Living in a neighborhood with higher proportions of older adults was associated with fewer depressive symptoms more so for women who report low levels of perceived neighborhood physical disorder than women who report average levels of disorder. Also consistent with expectations, higher neighborhood proportion of affluent households and owner-occupied housing units were associated with fewer depressive symptoms, and the effects were larger for women with high levels of mastery than women with low mastery. However, these neighborhood characteristics were less beneficial to the mental health of women with high than low levels of social support.

The findings from this dissertation largely indicate that relationships among components of the neighborhood stress process model do not differ by gender or by levels of stressors and psychosocial resources. However, the significant results that emerged make a valuable contribution to the research literature by identifying urban neighborhood conditions that are consequential to the mental health of middle-aged and older adults and that should be the target of interventions.

The dissertation of Eliva Atieno Clinton is approved.

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DEDICATION

This dissertation is dedicated to my family, my mentors, my friends, and my colleagues whose love, care, and dedicated support has nurtured my growth and progress.

This is our joint achievement. Thank you.

To my:

Advisor: Dr. Carol Aneshensel – you have been a best part of this journey. Thank you for your love, your dedicated support, and your generous spirit. I hope to emulate your example of excellent mentoring. *Committee members*: Drs. Anne Pebley, Judith Siegel, Jennie Brand – I am grateful for all the ways in which you have supported me. *Mentor*: Dr. Richard Wight – thank you for being present and sharing generously of your time and expertise. To all who were involved in the Health and Retirement Study - this dissertation would not have been possible without your contribution, thank you.

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CHAPTER ONE:

NEIGHBORHOODS, GENDER, AND DEPRESSIVE SYMPTOMS

1.1 INTRODUCTION

Depression is a major global health challenge (World Health Organization [WHO], 2011). In the year 2000, the economic burden of depression in U.S. adults was estimated at $83.1 billion, of which workplace costs, direct medical costs, and suicide-related mortality costs respectively accounted for 62%, 31%, and 7% of the total cost respectively (Greenberg, Kessler, Birnbaum, Leong et al., 2003). Women are disproportionately affected by depression and psychological distress (Accortt, Freeman, & Allen, 2008; Boughton & Street, 2007). Results from the National Comorbidity Survey Replication (2001-2003), a U.S. psychiatric epidemiology survey, showed significantly higher prevalence estimates of 12 month (women: 8.6%, men: 4.9%) and lifetime prevalence of major depression among women compared to men (women: 20.2%, men: 13.2%) (Harvard School of Medicine, 2005).

Over the past several years, research has increasingly focused on the contextual determinants of depression and other health outcomes. The neighborhoods in which people reside constitute one such context, and many studies have looked at the impact of neighborhood disadvantage on health (Diez Roux & Mair, 2010). Neighborhood disadvantage represents unfavorable, inadequate, or negative physical conditions (e.g., lack of sidewalks and parks, presence of trash or abandoned homes), social attributes (e.g., low levels of social cohesion/connectedness among residents, crime), or sociodemographic characteristics (e.g., a large proportion of unemployed individuals, female-headed households) of a neighborhood (Diez Roux & Mair, 2010). Neighborhood advantage can be seen as representing a related but possibly distinct aspect of neighborhoods. In research, residential stability and affluence (e.g., high proportion of families with an annual income greater than or equal to $50,000 or $75,000) have been studied as indicators of neighborhood advantage (Hybels, Blazer, Pieper, Burchett et al., 2006; Aneshensel, Wight, Miller-Martinez, Botticello, Karlamangla, & Seeman, 2007; Hybels et al., 2006).

Neighborhood disadvantage has been associated with increased risk for a variety of poor health outcomes and behaviors including teen pregnancy (Harding, 2003), higher rates of obesity (Black & Macinko, 2008), sedentary lifestyle (Cubbin, Hadden, & Winkleby, 2001), drug use (Boardman, Finch, Ellison, Williams et al., 2001), coronary heart disease (Diez Roux et al., 2001), and death (Wight, Cummings, Karlamangla, & Aneshensel, 2010). Neighborhood disadvantage also is associated with increased risk for psychological distress, depressive symptoms, and major depression (Mair, Diez Roux, Galea, 2008; Kim, 2008); but fewer studies have investigated the effects of neighborhood advantage on health, specifically depression (Hybels et al., 2006; Aneshensel et al., 2007). Neighborhood effects are modest, but they exist above and beyond the influence of individual-level sociodemographic characteristics like gender, marital status, income, and education (Diez Roux & Mair, 2010).

A few studies have assessed gender differences in neighborhood effects on homicide (Bird & Rieker, 2008), life expectancy (Raleigh & Kiri, 1997), and violent crime (Zimmerman & Messner, 2010). To my knowledge, only one study (Matheson, Moineddin, Dunn, Creatore, Gozdyra, & Glazier, 2006), which I describe further in the background section below, has examined gender differences in neighborhood effects on depression. Considering that we know little about how and why neighborhood conditions might have a different impact on depression among women compared to men, this dissertation begins to fill this void, thereby contributing to the evidence base for interventions aimed at reducing disparities in depression.

This dissertation, which is based on secondary analysis of data from the Health and Retirement Study (HRS), utilizes the stress process theoretical framework (Pearlin, Menaghan, Lieberman, & Mullan, 1981) that has guided research on health disparities for over two decades. The model is particularly concerned with how social and economic status positions contribute to unequal exposure to stressors (e.g., financial strain, role strain) and access to psychosocial resources (e.g., social support, mastery). A large body of research has applied the stress process model to document the deleterious effects of stressors on health (Wheaton, 1999; Turner & Schieman, 2008), as well as the impact of stress-buffering psychosocial resources (Turner & Turner, 1999; Ross & Sastry, 1999; Pearlin, Nguyen, Schieman, & Milkie, 2007). The model has been used in studies investigating individual- and contextual- level determinants of psychological distress and depressive symptoms (Galvin, Schieman, & Reid, 2011; Menaghan, 2010; Wheaton, 2010; Aneshensel, 2010a). A foundation thus exists for applying this theoretical framework to this dissertation, which seeks an understanding of the neighborhood determinants of gender differences in depressive symptoms.

In this chapter, I first present the study's specific aims followed by a description of depression as a major global health challenge. Next, I briefly review the literature on intra-individual and social status explanations of gender differences in depression. Subsequently, I review the literature on neighborhood effects on depression and other health outcomes, including gender differences therein. In the last section of this chapter I describe theories of stress, neighborhood, and depression; and the conceptual model guiding this research.

1.2 SPECIFIC AIMS

1.2.1 AIM 1: To examine gender differences in the association between neighborhood characteristics and depressive symptoms.

Neighborhoods should be more consequential to women's than men's mental health because neighborhood disadvantage can lead to neighborhood disorder (e.g., violence, harassment), which threatens women's safety and that of their families. Such disorder also can restrict women's movement in the neighborhood, limiting their interactions with others and the social support they might otherwise derive from these networks (Bird & Rieker, 2008; Foster & Giles-Corti, 2008). The ensuing stress or worry can increase women's vulnerability to depression and psychological distress. Additionally, women tend to be more socially integrated in their communities. They interact with their neighbors more frequently than men and they know more of their neighbors by name (Kessler & McLeod, 1984; Campbell & Lee, 1991). Neighborhood advantage in the form of residential stability can facilitate the formation and maintenance of social networks that may be especially beneficial to women's mental health. The first aim of the dissertation examines gender differences in the effects of neighborhood conditions on depressive symptoms.

1.2.2 AIM 2: To examine the extent to which relationships among components of the neighborhood stress process model differ by gender.

Existing research shows that neighborhood socioeconomic disadvantage (NSD: e.g., poverty) is associated with components of the stress process model such as exposure to stress (e.g., perceived neighborhood physical disorder, financial strain) and access to psychosocial resources (e.g., social support); and their mental health outcomes. However, whether these neighborhood effects differ by gender has not been studied. Therefore, the second aim in this dissertation examines the relationships among these components of the neighborhood stress process model so as to identify the factors that influence gender differences in depressive symptoms.

1.2.3 AIM 3: To examine the extent to which the neighborhood stress process model explains variation in depressive symptoms among women.

A few studies have looked at neighborhood effects on women's health, and find that NSD is positively related to weight gain and obesity, coronary heart disease, and smoking (Coogan et al., 2010; Diez-Roux et al., 1997). However, few studies have investigated the relationship between neighborhood factors and depressive symptoms among women. The third aim of this study is to examine the effect of neighborhood advantage and disadvantage on depressive symptoms among women over the age of 50 given that women are disproportionately burdened with depressive symptoms.

1.3 BACKGROUND

1.3.1 Depression: A Major Health Challenge

In one of the most recent U.S. nationally representative psychiatric epidemiology surveys, the National Comorbidity Survey Replication (NCS-R: 2001-2003), the 12 month and lifetime prevalence estimates of major depression in the U.S. was 6.7% and 16.6% respectively (Kessler, Chiu, Demler, & Walters, 2005; Kessler, Berglund, Demler, Jin, Merikangas, & Walters, 2005). Depression is a serious and disabling mental illness that affects approximately 121 million people around the world (WHO, 2011). In the year 2000, it was the fourth leading cause of disease burden worldwide; and it is projected to be the second leading cause of disease burden for both men and women across age groups by the year 2020 (WHO, 2011).

The average duration of a major depressive episode in the general population is estimated to be six months, with an average of four episodes occurring in a person's lifetime among those who are ever diagnosed with it (Ustun & Kessler, 2002; Limosin, Mekaoui & Hautecouverture, 2007). In the U.S., NCS-R respondents who experienced a major depressive disorder within 12-

months of the survey reported an average of 35 days when their condition completely prevented them from working or engaging in normal activities in the preceding year (Kessler et al., 2005). The consequences of depression also are felt in other countries. For example, based on a 2001 report (Ustun et al., 2001), the costs associated with mental illness in the United Kingdom were approximately 80 million lost days of work or around 6 billion U.S. dollars. The burden of depression also has risen in Sweden with an estimated growth in costs from 1.7 billion Euros in 1997 to 3.5 billion Euros in 2005 (Sobocki, Lekander, Borgstrom, Strom, & Runeson, 2007). In addition to economic costs, depression also carries the risk of suicide (Blair-West, Cantor, Mellsop, & Eyeson-Annan, 1999).

Research has consistently shown that women are more likely to be diagnosed with major depression compared to men and have higher levels of depressive symptoms and psychological distress (Accortt et al., 2008; Boughton & Street, 2007; Nolen-Hoeksema, 2001). In the NCS-R, women had significantly higher 12-month (women 8.6%, men 4.9%) and lifetime (women 20.2%, men 13.2%) prevalence of major depression (Harvard School of Medicine, 2005). The higher female preponderance of depression also has been reported in other parts of the world and among different ethnic groups (Seedat et al., 2009; Weissman et al., 1996; Kuehner, 2003). This study's concern with neighborhood influences will therefore enhance our understanding of contextual determinants of gender differences in depression. Next, I provide a brief review of research examining the biological, psychological, and social explanations of the gender gap in depression and psychological distress.

1.3.2 Intra-Individual Explanations of Gender Differences in Depression

Intra-individual factors (e.g., biology, sense of mastery) have been studied as possible contributors to gender differences in depression. Among biological influences are neurotransmitters that regulate mood, hormonal changes during puberty and other points in the life course, and genes that may interact with environmental stressors to increase risk for depression. Psychosocial factors also have been considered, especially those that are common among women and that shape vulnerability to depression, such as poor self-concept, sense of mastery, and social support.

Biology:-Neurotransmitters: Serotonin (5-HT) is a brain neurotransmitter actively involved in regulating mood (Aslund, Leppert, Comasco, Nordquist, Oreland, & Nilsson, 2009). A study looking at serotonin functioning in humans reported lower binding of the serotonin transporter, 5-HTT, in women compared to men (Mann et al., 2000). Another study found that lower availability of 5-HTT among depressed patients compared to controls was accounted for by females (Staley et al., 2006). Reduced serotonin functioning may act as a biological risk factor contributing to the higher prevalence of depression in women (Brummett et al., 2008), but the evidence is not conclusive given the use of small clinical or convenient volunteer samples.

It has been hypothesized that increases in serotonin functioning is one of the mechanisms through which exercises improves mood (Post & Goodwin, 1973; Young, 2007). Low serotonin functioning may increase risk for depression among middle-age and older adults given their lower levels of exercise relative to younger persons (Centers for Disease Control and Prevention [CDC], 2007; Shaw, Liang, Krause, Gallant, & McGeever, 2010). Insufficient exercise and possible low serotonin functioning also may contribute to gender differences in depression among middle-age and older adults considering that women are generally less physically active than men across age-groups (see Trost, Owen, Bauman, Sallis, & Brown, 2002 for a review). Unsafe neighborhood conditions also are likely to contribute to lower levels of physical activity among women considering that they experience greater fear of victimization (Elliott, 2001; Hatch & Dohrenwend, 2007).

Genes: Genetic factors may interact with environmental conditions like stressful life events (e.g., serious illness, job loss, divorce) to influence the occurrence of depression. One study reported a significant association between two short 5-HTTLPR genotypes and depression among adolescent girls, but not boys, exposed to high levels of stressful life events (Eley et al., 2004). Aslund and colleagues (2009) found that when they stratified their community sample of adolescents by sex, maltreated girls with two short 5-HTTLPR alleles had a significantly higher risk of depression than girls who were not maltreated. Similar results were not found for boys.

Gene-environment interaction effects on depression have been reported among older adults (Kim et al., 2007; Lenze et al., 2005). However, studies are needed that investigate the joint influence of gender, genes, and environmental stressors on depression among middle-age and older adults considering that they are at a period in the life course characterized by stressors such as the emergence and persistence of chronic health problems (Paez, Zhao, & Hwang, 2009; U.S. National Center for Health Statistics [NCHS], 2001), new caregiver roles as parents age and face functional limitations or illness (Crespo & Mira, 2010; Johnson & Lo Sasso, 2000), widowhood, and the death of other network members among the elderly. Some of these events, such as the higher prevalence of widowhood among women relative to men (Kreider, 2006), may interact with genes to increase women's risk for depression.

Hormones: Gender differences in depression emerge during puberty, and hormones have been examined as possible influences (Hyde, Mezulis, & Abramson, 2008). One study found that testosterone and estrogen were associated with a higher risk of depression in a community sample of girls (Angold, Costello, Erkanli, & Worthman, 1999). Hormonal changes in the premenstrual period and during childbirth, specifically reduced levels of estrogen, also have been associated with postpartum depression and premenstrual dysphoric disorder (Hyde et al., 2008). Studies also find that menopause is linked to depression in women (Bromberger et al., 2010; Freeman, Sammel, Liu, Gracia, Nelson, & Hollander, 2004). Hormonal imbalances during multiple points in women's lives can alter the functioning of biological processes involved in regulating mood, thereby possibly increasing women's vulnerability to depression (Steiner, Dunn, & Born, 2003; Altemus, 2006). However, it has not been conclusively established that the effect of hormones on depression is significantly greater among women than men.

Cortisol is a hormone produced by the hypothalamic-pituary-adrenal (HPA) axis and is involved in stress response. High sustained levels of cortisol have been linked to depression (Deuschle et al., 1998; Steckler, Holsboer, & Reul, 1999). Research suggests that as people age, the HPA axis may undergo changes that can interfere with proper regulation of cortisol. Some studies found that age was associated with high sustained levels of cortisol (McEwen, 1988; Sapolsky, 1992) and higher than expected baseline cortisol levels (Nicolson, Storms, Ponds, & Sulon, 1997). However, others found no relationship between variations in baseline cortisol levels and age (Lupien et al., 1996). Although the evidence is mixed, aging may be characterized by cortisol dysregulation that may in turn increase risk for depression among middle-age and older adults relative to the young.

Stressor-specific gender differences in the manner in which the HPA axis responds to stress has been reported. Kiecolt-Glaser and colleagues found that cortisol levels were higher among women than men who recently experienced marital conflict (Kiecolt-Glaser, Glaser, Cacioppo, & Malarkey, 1998). In another study, men had significantly higher cortisol levels than women after being experimentally exposed to challenging academic tasks whereas higher cortisol levels were observed among women who participated in activities involving social rejection (Stroud, Salovey, & Epel, 2002). Studies examining gender differences in cortisol dysregulation among middle-age and older adults will contribute to an understanding of the influence of hormones such as cortisol in the higher prevalence of depression among women.

Psychological/Social Factors: Psychological vulnerability provides another perspective for understanding gender differences in depression. Psychological vulnerability describes internal or psychological characteristics in individuals, some of which are dependent on the social environmental, which can increase a person's vulnerability to depression and other poor health outcomes (Boughton & Street, 2007). Relative to boys, girls are more likely to struggle with poor self-concept and low self-esteem, all of which are related to depression (Siegel, Yancey, Aneshensel & Schuler, 1999; Beck, 1987; Boughton & Street, 2007). Siegel (2002) found that the effect of changes in body image from positive at baseline to more negative at 13-month follow-up was related to increased risk of psychological distress for adolescent girls compared to boys. Additionally, African American girls were the most affected relative to girls of other racial/ethnic backgrounds.

Research indicates that women's tendency to be dissatisfied with their bodies persists even among the elderly (Cash & Henry, 1995; Grogan, 1999; Tiggemann, 1992; Tiggemann & Lynch, 2001). In a study employing a community sample of women ages 30 to 74 years, Allah and colleagues found that for both the full sample and adults ages 65 and older, over half of the respondents were dissatisfied with their weight and the majority of those who wanted to lose weight were at normal weight (Allaz, Bernstein, Rouget, Archinard, & Morabia, 1998). Additionally, in the full sample and the group of adults aged 65 and older, 42% and 31% of women respectively had dieted in the past five years even though the majority of them (over 60% in both groups) were at normal weight.

Poor body image also can undermine mental health among adults, especially women. In a community sample of respondents aged 18 years and older, higher body mass index (BMI) was associated with greater risk for depression among women but not men; whereas among men, low BMI was detrimental to mental health (Carpenter, Hasin, Allison, & Faith, 2000). Findings from another study indicated that compared to men, obese women were significantly more likely to be depressed (Onyike, Crum, Lee, Lyketsos, & Eaton, 2003). Obesity also has been linked to depression among older adults (Roberts, Kaplan, Shema, & Strawbridge, 2000; Sachs-Ericsson et al., 2007); but gender differences were not found (Sachs-Ericsson et al., 2007). More studies are needed that assess the extent to which middle-age and older adults are dissatisfied with their weight, and whether the attendant mental health consequences are greater for women.

Mastery, social support, and self-esteem are important psychosocial resources that have been shown to protect against depression (e.g., Berkman, Glass, Brissette, & Seeman, 2000; Jang, Haley, Small, & Mortimer, 2002; Kling, Hyde, Showers, & Buswell, 1999; Orth, Robins, Trzesniewski, Maes, & Schmitt, 2009). Sense of mastery or control can be defined as "…the belief that you can and do master, control, and shape your own life" (Ross & Sastry, 1999, p. 369). Social support describes the giving and/or receipt of emotional care/concern, instrumental or tangible help, and information especially the type that is important for evaluating/assessing ones' self or circumstances (House, 1981). Self-esteem represents people's beliefs, feelings, and overall evaluations of their self-worth and competence (Bandura, 1986; Hewitt, 2009). Self-esteem is generally high through adulthood but declines in old age among both men and women (Kling et al., 1999; Robins, Trzesniewski, Tracy, Gosling, & Potter, 2002). Beginning in adolescence, boys have more self-esteem than girls and this gender gap continues through adulthood but shrinks in old age (Kling et al., 1999; Robins et al., 2002).

Mastery also is reported to be lower among older adults compared to younger persons, with declines observed during middle age and into old age (Ross & Mirowsky, 2002; Schieman & Campbell, 2001; Wolinsky, Wyrwich, Babu, Kroenke, & Tierney, 2003). Education is positively associated with mastery (Ross & Sastry, 1999; Schieman, 2001; Slagsvold & Sorensen, 2008), and the inverse relationship between age and mastery may reflect cohort effects whereby older cohorts of aging adults with low levels of education also have low sense of mastery (Mirowsky, 1995; Wolinsky & Stump, 1996; Slagsvold & Sorensen, 2008). Aging-related functional limitations also may threaten mastery (Aldwin, 1991; Rodin, 1986). Studies assessing gender differences in mastery indicate that women have low mastery than men (Rosenfield, 1999; Ross & Mirowsky, 2002; Slagsvold & Sorensen, 2008). Ross and Mirowsky (2002) also found that the gender gap in mastery widens with age, possibly due to cohort effects whereby women of older age-cohorts attained lower levels of education relative to men and were exposed to traditional gender roles that may have undermined their sense of control (Bird & Ross, 1993; Elder & Liker, 1982; Ross & Mirowsky, 1992).

As people age, their social networks contract (Van Tilburg, 1998) and their contact with network members also decline (Shaw, Krause, Liang, & Bennett, 2007). It is reported that older adults have between five and seven people in their networks, most of whom are family, whereas younger adults have larger networks of about 20 or more individuals (Bowling, 1994; Bowling, Farquhar, & Browne, 1991; Wenger, 1984). In a three-year longitudinal study, 42% of the elderly ages 85 and above indicated that the size of their network changed, with the majority reporting that it became smaller (Bowling, Grundy, Farquar, 1997). Wagner and colleagues

(1999) also found that the elderly (age 85+) were less likely to have at least one friend in their personal networks compared to those aged 70-84 years old (Wagner, Schütze, Lang, Baltes, & Mayer, 1999). In another study, the probability that individuals age 55 or 84 years at baseline would have friends in their social networks at four-year follow-up was 55% and 29% respectively; and women were more likely than men to have friends in their networks (Stevens & Van Tilburg, 2011).

Social networks provide opportunities for social engagement, the formation of social ties, and the giving and receipt of social support – all of which have been shown to protect against depression (Glass, Mendes De Leon, Bassuk, & Berkman, 2006; Gadalla, 2009; Paykel, 1994). Social networks may contract with age as members die or face health challenges that interfere with the maintenance of friendships and other social relations (Hadley & Webb, 1974; Hovaguimian, Grab, & Stuckelberger, 1988; Knipscheer & Dykstra, 1995; Wenger, 1986). Additionally, as adults age they exercise greater care in how and with whom they spend their time; focusing their energies on their closest relationships (Carstensen, 1992; Steven & Van Tilburg, 2011). Other changes such as retirement and the associated weakening of social connections with work colleagues (Stevens

& Van Tilburg, 2011) also can threaten social networks.

Compared to men, women may be especially adversely affected by disruptions in their social networks considering that they are more socially involved with their networks and they receive more social support than men from network members (Lepore, 1992; Schuster, Kessler, & Aseltine, 1990; Turner & Marino, 1994). On the other hand widowhood, which is more prevalent in old age, may have a greater impact on men's than women's mental health because men are less likely to have a confidant other than their spouse (Fisher & Phillips, 1982). They also are more reliant on their wives to cultivate social relationships and facilitate social participation (Umberson, Wortman, & Kessler, 1992; Wortman, Silver, & Kessler, 1993). However, a larger proportion of widowed men remarry relative to widowed women, thereby regaining spousal support (Clarke, 1995; Kreider & Fields, 2002). Social support, mastery, and self-esteem are important psychosocial resources that buffer stress, and the manner in which they are distributed among middle-age and older men and women may contribute to gender differences in depression.

Summary: Research on the influence of psychological, and in particular biological, factors on depression is ongoing. Psychological characteristics including poor self-concept and low levels of mastery appears to influence women's increased risk for depression in middle-age and older adulthood. The evidence on the effects of neurotransmitters, genes, and hormones on women's higher prevalence of depression is suggestive and/or inconclusive, but provides opportunity for future research that would be strengthen by the use of community samples, especially in the case of neurotransmitters.

1.3.3 Social Status Explanations of Gender Differences in Depression

Predominant social causation models identify the origins of social disparities in depression within people's social and economic statuses in society. These positions are characterized by unequal distribution of stressors and resources, thereby exposing some groups of people to disproportionate amounts of stress that can undermine mental health (Pearlin, 1999). Socioeconomic status (SES: i.e., education, income, occupation), race/ethnicity, employment and marital status are major positions that influence the distribution of stress. In this section, I provide a brief review of how these statuses contribute to gender differences in depression, paying attention to middle-age and older adults.

Socioeconomic Status: The life course perspective is a theoretical framework that guides the study of human lives as unfolding within long stretches of time and embedded within physical, social, and economic contexts (Elder, Johnson, & Crosnoe, 2003). I use the terms pre-retirement, young-old, and elderly adults to refer to individuals ages 50-64, 65-74, and 75 years and above respectively. Pre-retirement adults can be distinguished from young-old adults and the elderly by their generally higher levels of employment. The labor force experiences of many women and minority men are fragmented due to structural and social constraints such as family responsibilities that keep women in and out of the labor force (Bianchi, 2011), discriminatory practices in hiring and firing employees (Moen, 2003; Perrucci, Perrucci, & Targ, 1997), job restructuring that threaten the employment prospects of individuals with low levels of human capital (Smith, 2010), and occupational segregation that relegates women and minority men to less stable jobs (Dickens & Lang, 1985; Meyer & Mukerjee, 2007; Sakamoto & Chen, 1991) with stressful job conditions (Tausig, 1999). As a result, women and minority men derive limited rewards such as income, pension benefits, and occupational prestige and power from their time in the labor force (Moen, 2003). These benefits can protect against economic hardship and increases sense of mastery and esteem, all of which are consequential to mental health (Berkman et al., 2000; Kling et al., 1999; Yu & Williams, 1999).

Older adults who are not in the labor force are another group who may be vulnerable to economic difficulties, especially the elderly whose declining health often necessitates that they incur medical expenses (Hwang, Weller, Ireys, & Anderson, 2001; Paez et al., 2009). In 2009, median personal income for pre-retirement and older adults was lower among progressively older age groups (United States Census Bureau [USCB], 2012a). The median income for men in the age groups 55-64 and 65 and above was $41,296 and $25,877 respectively. A similar pattern of declining median income was observed for women across age groups. Additionally, women's income was lower than men's in both age-groups by a magnitude of at least $10,000 (USCB, 2012a). Women, especially unmarried women, may have greater exposure to financial strain that can increase risk for depression (Angel, Jimenez, & Angel, 2007; Aranda & Lincoln, 2011; Holden, & Smock, 1991; Smock, Manning, & Gupta, 1999).

Research generally shows that individuals of low SES are at greater risk of depression than their higher SES counterparts (Brand, Warren, Carayon & Hoonakker, 2007; Rautio et al., 2012; Yu & Williams, 1999). Some studies have examined gender differences in the effect of SES on depression. Lee and Brown (2007) found that compared to older men, older women experiencing financial strain including lower retirement wealth reported significantly more depressive symptoms (Lee & Brown, 2007). In another study, older women were exposed to more financial strain than older men, but the gender gap was partly attributed to women's lower likelihood of being married (Keith, 1993). Women's greater exposure to financial strain relative to men in turn weakened their sense of mastery, thereby increasing their risk for psychological distress relative to men. Social and structural circumstances that differentially affect the economic status of middle-aged and older adult men and women appears to contribute to the higher prevalence of depression among women.

Race/Ethnicity: Exposure to stressors and psychosocial resources consequential to mental health also varies by race/ethnicity. In the U.S., racial/ethnic minorities are more likely to be socioeconomically disadvantaged compared to whites due to longstanding systems of inequality in education, employment, and income (Williams, 1996a; Yu & Williams, 1999); and low SES has been linked to depression and psychological distress (see Lorant, Deliege, Eaton, Robert, Philippot, & Ansseau, 2003 for a review). Prevalence estimates of major depression in the U.S.

non-institutionalized population shows that American Indians have the highest lifetime prevalence of depression relative to Asians, blacks, Hispanics, and whites. Among Hispanics, Puerto Ricans and Cubans have the highest lifetime prevalence of major depression (Brown, Donato, Laske, & Duncan, in press). Most studies examining the focal relationship between race/ethnicity and depression net of demographic factors generally focus on whites, blacks, and Hispanics as an aggregate. American Indians, Asians, and other smaller groups are generally combined together due to lack of sufficient numbers. As a result, variation in depression across these populations is often hidden (Brown et al., in press).

The research evidence on the relationship between race/ethnicity and depression is mixed. Using data for pre-retirement adults in the HRS, Dunlop and colleagues found that Hispanics were similar to whites in their likelihood of experiencing a major depressive disorder whereas African Americans were less likely than whites to be depressed (Dunlop, Song, Lyons, Manheim, & Chang, 2003). In another study based on a community sample of individuals aged 15 to 40 years, major depression was more prevalent among whites compared to African Americans or Mexicans (Riolo, Nguyen, Greden, & King, 2005). Reese and colleagues found that African Americans were less likely to be depressed than whites, but the racial difference was attenuated by frequent religious participation among blacks (Reese, Thorpe, Bell, Bowie, & LaVeist, 2012). However, others have found that non-whites (Simon, 2002) and blacks (Skarupski, 2005) are more depressed than whites.

Although the evidence on the relationship between race/ethnicity and depression is inconsistent, findings generally point to lower levels of depression among minorities compared to whites net of demographic controls. Possible explanations for this observation includes: (a) minorities' higher exposure to stress buffering resources such as religious participation that also confers benefits in the form of social support and bolstered self-esteem (Krause, 2002; Krause 2003 a & b; Tabak & Mickelson, 2009; Reese et al., 2012); (b) possible underestimation of mental illness among racial/ethnic minorities, especially blacks, who are over-represented in the prison and homeless populations (Brennan, & Spohn, 2008; Harris, Steffensmeier, Ulmer, & Painter-Davis, 2009; Western, & Wildeman, 2009) who have much higher prevalence of mental illness compared to community dwellers (Diamond, Wang, Holzer, Thomas, & Cruser, 2001; Fichter & Quadflieg, 2001); (c) foreign-born minorities, especially recent immigrants (Perez, 2002), generally represent a healthier group due to health selection in migration (Kennedy, McDonald, Biddle, Social, & Population, 2006; Lee, 1966); and they also may be equipped with cultural/psychological resources (i.e., hardiness, solid cultural identity) that buffer the detrimental effects of stress on mental health (Ali, 2002; Escobar, Nervi, & Gara, 2000; Kuo &Tsai, 1986); (d) higher prevalence of depression among low SES whites relative to low SES minorities may contribute to the disparities because, as hypothesized by Williams and colleagues, being white and of low SES in a society where whites are the dominant and generally privileged group may be especially distressing (Williams, 1996b; Williams, Yu, Jackson, & Anderson, 1997).

Gender differences in the association between race/ethnicity and depression also have been found, but studies have primarily focused on blacks and whites. Compared to white men, white women are more likely to be depressed (Brown, Sellers, Brown, & Jackson, 1999; Rosenfield, Phillips, & White, 2006) whereas the gender gap among blacks is smaller (Brown et al., 1999; Rosenfield et al., 2006; Williams & Harris-Reid, 1999; Williams, Takeuchi, & Adair, 1992). In a study of depression and dysthymia, which is a milder form of major depression, Riolo and colleagues stratified analyses by race/ethnicity, gender, and education (Riolo et al., 2005). Although they did not test for significant gender differences in the effect of race/ethnicity on dysthymia, they found that black, white, and Latino women with at least a high school education had higher prevalence of dysthymia than black, white, and Latino men of similar levels of education. Another study of African American middle-aged and older adults found that in the face of increasing negative life events or decreasing contact with family and friends, women reported more depressive symptoms than men (Husaini et al., 1991). Gender differences in the relationship between race and depression should be expected because men and women of different racial and ethnic groups may be exposed to varying levels and types of stressors; and have access to different types and levels of psychosocial resources that can influence mental health outcomes.

Employment: Work is a central activity for most adults. It enables them to earn a living while also shaping their identity (Tausig, 1999), sense of mastery and self-esteem (Jahoda, 1997; Link, Lennon, & Dohrenwend, 1993), and encouraging social integration (James, 2000; Rawlins, 1992; Siggins, 1992); all of which have been shown to protect against the damaging effects of stress on mental health (Glass et al., 2006; Kling et al., 1999; Schieman & Meersman, 2004). . At the same time, the employee role can be characterized by stressors such as high job demands, low control, job insecurity, poor pay, limited social support, and few opportunities for advancement that can have a negative impact on mental health (Bartley, 1994; Brand & Burgard, 2008; Karasek, 1979; Paul & Moser, 2009; Simon, 2002; Tausig, 1999).

The relationship between employment and depression has been shown to vary by gender, but not always in a straightforward manner. High job demands and highly routine jobs were significantly associated with more psychological distress among women than men; but the gender gap was accounted for by marital status, possibly indicating that women's sensitivity to job demands reflects the conditions of their marital statuses (Roxburgh, 1996). Another study found that low control at home was associated with significantly higher depressive symptoms among women than men; but low decision latitude at work was more detrimental to men's mental health (Griffin, Fuhrer, Stansfeld, & Marmot, 2002). It appears that traditional gender role orientations still influences men and women's understanding of their primary roles as centered in the workplace and in the home respectively (Bianchi, Robinson & Milkie, 2006). It then follows that lack of control in these spheres, while generally negative for both men and women's mental health, does not affect them equally.

The life course principle of *life-span development* recognizes that humans develop and age within long spans of time, and these processes are influenced by the conditions that surrounds one's life (Elder et al., 2003). It thus follows that the extent to which mental well-being is affected by the characteristics of the employee and other social roles partly depend on one's tenure in the given role. Job-related rewards such as promotions, job autonomy, and higher pay are often based on merit, but they also are accorded to employees with long job tenure (Abraham & Farber, 1987; Luong & Hebert, 2009). Individuals with stable and extensive work experience also are more likely to report higher levels self-esteem/self-worth and mastery relative to unemployed and those outside the labor force (Bird & Ross, 1993; Link et al., 1993; Murphy & Athanasou, 1999).

On the other hand, long term incumbents of low paying, demanding, and inflexible jobs with few benefits and less autonomy are likely to experience more job-related stress that undermines mental health (Butterworth, Leach, Strazdins, Olesen, Rodgers, & Broom, 2011; Karasek, 1979). Research shows that women, whose labor force experiences are more fragmented and less economically rewarding, have low self-esteem and mastery relative to men

(Kling et al., 1999; Ross & Mirowsky, 2002; Slagsvold & Sorensen, 2008) and are more likely than men to experience financial strain (Hammer, & Pedersen, 2008; Wiepking & Maas, 2005). Deficits of these important resources can place women at greater risk for depression (Butterworth, Rodgers, & Windsor, 2009; Flammer, 1995; Gadalla, 2009; Levecque, Van Rossem, De Boyser, Van de Velde, & Bracke, 2011; Orth, Robins, & Roberts, 2008).

Exposure to the benefits and challenges associated with work also are largely concentrated among pre-retirement adults given their greater participation in the labor force. In 2005, over half of the U.S. civilian population aged 55-64 years versus 14.5% of adults ages 65 and above were employed (U.S. Bureau of Labor Statistics [USBLS], 2011). Although older workers are seen as possessing positive job-related qualities including being reliable, experienced, and having good team work skills (Bennington, 2004; Henkens, 2005; McGregor & Gray, 2002; Munnell, Sass, & Soto, 2006); they also are negatively perceived as more costly, less creative and inflexible, and less adaptable to new technology (Henkens, 2005; McGregor & Gray, 2002). Working older adults or those seeking re-employment may face challenges, especially prejudice and discrimination (Bendick, Brown, & Wall, 1999; United States Equal Employment Opportunity Commission, 2010); and age discrimination was found to increase risk for psychological distress (Yuan, 2007).

Retirement: Retirement is a major transition for many adults, but it does not take place at the same time for all. Individuals who hold high status/professional jobs are more likely to work past the traditional retirement age 65 (Hayward & Grady, 1990; Komp, van Tilburg, & van Groenou, 2010) whereas early retirement is more common among workers with demanding jobs or those in poor health (Elovainio, Forma, Kivimäki, Sinervo, Sutinen, & Laine, 2005; Mutchler, Massagli, & Pienta, 1999; Van den Berg, Elders, & Burdorf, 2010). The life course principle of *agency* views individuals as actively involved in shaping their lives through their decisions and actions (Elder et al., 2003); thereby demonstrating that they are not powerless in the face of social and structural forces that press on their lives, but instead operate within these constraints to achieve desired outcomes. Many retirement-age adults exercise *agency* in their retirement decisions, which they base on their assessment of the associated costs and benefits. Schellenberg, Turcotte, and Ram (2005) found that 38% of retirees in their sample returned to work for financial reasons and nearly one-fifth (19%) sought re-employment for other personal rewards.

When people retire, their social connections with working colleagues may get weaker (Stevens & Van Tilburg, 2011). Even so, retirees often exercise *agency* by staying socially engaged through leisure and other voluntary activities (Chiriboga & Pierce, 1993; Harvard School of Public Health, 2004; Nimrod, 2007). However, health challenges can interfere with social participation (Harwood, Pound, & Ebrahim, 2000; Wilkie, Peat, Thomas, & Croft, 2007). Chronic conditions, which begin to appear in middle-age (Paez et al., 2009; Pekkanen, Nissinen, Vartiainen, Salonen, Punsar, & Karvonen, 1994; Tate, Manfreda, & Cuddy, 1998; NCHS, 2001), become especially prevalent in old age. Paez and colleagues (2009) found that 45.3% of young-old adults (i.e., ages 65-74 years) versus 54.3% of the elderly (i.e., age 75 and above) reported multiple chronic illnesses. Risk factors for cardiovascular disease (e.g., hypertention, diabetes mellitus) were the most prevalent (Paez et al., 2009; CDC, 2007). Mobility and other forms of functional limitations (Sainio et al., 2006; Wilkie et al., 2007) and cognitive decline (Seeman, Miller-Martinez, Stein-Merkin, Lachman, Tun, & Karlamangla, 2010; Singh-Manoux et al., 2012) also become more prevalent with advancing age. Deteriorating health, which is especially common among the elderly, can in turn limit social participation and the formation of social ties that are beneficial to mental health (Harwood et al., 2000; Musick & Wilson, 2003; Wilkie et al., 2007).

Empirical findings on the relationship between retirement and depression is mixed. Dave and colleagues (2006) found that retirement and the associated loss of workplace social interactions increased risk for depression (Dave, Rashad, & Spasojevic, 2006). Others also have reported that retirement increases risk for depression (Richardson & Kilty, 1991; Szinovacz & Davey, 2004). On the other hand, Jokela and colleagues (2010) found that retirement was associated with good mental health for voluntary retirees and those exiting the labor force at the statutory retirement age (Jokela et al., 2010). Results from another study also indicated that relative to employed persons, retirement was associated with improved general mental health especially among individuals who held higher status jobs (Mein, Martikainen, Hemingway, Stansfeld, & Marmot, 2003). However, a few studies did not find significant associations between retirement and depression (Herzog, House, & Morgan, 1991; Lee & Smith, 2009; Ross & Drentea, 1998).

Variations in people's circumstances contribute to non-uniform effects of retirement on retirees' mental health. Consistent with the life course principle of *life-span development*, the influence of retirement on psychological well-being also depends on the duration of retirement. In a study that followed men from pre-retirement through six to seven years into retirement, well-being - encompassing key dimensions such as financial well-being, physical and psychological health, satisfaction with interpersonal relationships, and sense of control - increased within the first year of retirement (Gall, Evans, & Howard, 1997). Thereafter, well-being declined in all areas except personal control, which had increased through the follow-up period; and financial well-being, which was stable throughout. However, declines in well-being did not exceed pre-retirement levels. This study demonstrated that, overall, the benefits of retirement accrue in the short term; and at a minimum, retirement is comparable to employment in its effects on well-being. As noted by Gall and colleagues (1997) and consistent with Atchley's (1976) conceptualization of adjustment to retirement, retirees' well-being by the sixth to seventh year of retirement may represent a more stable status, one arrived at after a substantial period of adjusting to both expected and unexpected positive and less positive aspects of retirement.

Gender differences in the effects of retirement on mental health also have been reported. Szinovacz and Davey (2004) found that the presence of a spouse with more functional limitations increased risk for depression among women, but not men, who retired unexpectedly and who perceived the transition as forced or premature. Quick and Moen (1998) found that men were more satisfied in retirement than women, although the difference was small. Results from another study by Kim and Moen (2002) showed that being retired for more than two years was associated with more depressive symptoms among men but not women; and sense of mastery was beneficial to both men's and women's mental health.

Exiting the labor force and the loss of occupational status and identity (Parsons, 1942) may be more detrimental to men's than women's mental health considering that men have less fragmented employment experiences and are in turn more attached to the labor force (Richardson & Kitty, 1991; Barnes & Parry, 2004). At the same time, retirement and the loss of income, social integration in the work force, and the employee role may be more consequential to women's mental health, particularly unmarried or widowed women who lack the companionship of a spouse and whose finances may be more precarious (Barnes & Parry, 2004; Bernasek & Shwiff, 2001; Fernandez-Ballesteros, Zamarron, & Ruız, 2001; Slevin & Wingrove, 1995). The research evidence indicates that retirement experiences are not uniform and may be influence by a variety of factors including whether or not retirement is voluntary (Kasl & Jones, 2000; Swan, Dame, & Carmelli, 1991), the social and economic circumstances that surround people's lives (Mein et al., 2003; Reitzes, Mutran, Fernandez, 1996), psychosocial resources such as sense of mastery (Kim & Moen, 2002; Wells & Kendig, 1999), and health status (Kim & Moen, 2002; Gall et al., 1997).

Homemakers: Fulltime homemakers are adults who engage in unpaid work caring for their families. There were approximately 26.5 million female compared to 541,000 male homemakers in 1990 (USBLS, 1990). More women than men also temporarily exit the work force or switch to part-time employment to raise children or care for aging parents and other family members (Bianchi, 2011; Gordon & Rouse, 2011; Manning & Petrongolo, 2008). Homemakers generally have higher risk for depression than employed or retired persons (Umberson & Williams, 1999; Silver, 2010), risk that is partly attributed to their limited opportunities for social interaction, routine and less gratifying work, and few rewards and recognition for performing family/household duties (Bird & Ross, 1993; Silver, 2010). The higher prevalence of depression among women compared to men may be influenced by the presence of more female than male homemakers. This social role may deprive incumbents of important competencies and resources that the employee role encourages, such as sense of mastery, self-worth and esteem, and social ties (Anderson, Halter, & Gryzlak, 2004; Bird & Ross, 1993; London, Scott, Edin, & Hunter, 2004; Link et al., 1993; Cheng, Kawachi, Coakley, Schwartz, & Colditz, 2000). Homemakers may therefore have fewer psychosocial resources that that promote mental health (Burwell & Shirk, 2006; Orth et al., 2008; Pudrovska, Schieman, Pearlin, & Nguyen, 2005; Thoits, 2011).

Marriage: Having a partner through marriage or other types of relationships gives couples the opportunity to have a friend, confidant, and source of support; which reduce the negative impact of stress on mental health (Ross, 1995; Umberson & Williams, 1999). Marriage also can integrate couples into larger social networks of extended family and friends, thereby reducing social isolation that is a risk factor for depression (Umberson & Williams, 1999; Thoits, 1983). Marital status has been linked to depression and psychological distress, with research generally showing that compared to single, separated, or divorced persons, those who are married are less likely to be depressed (Ross, Mirowsky, & Goldsteen, 1990; Williams, 2003; Simon, 2002). At the same time, marital quality plays a key role in determining the extent to which marriage promotes psychological well-being (Proulx, Helms, & Buehler, 2007; Umberson, 1995). Studies have found that unsatisfactory marriages, including those characterized by marital conflict or strain, are associated with higher risk for depression (Beach, Katz, Kim, & Brody, 2003; Choi & Marks, 2008; Gove, Hughes & Styles, 1983; Whisman & Uebelacker, 2009).

Earlier research found that the psychological benefits of marriage were greater for men than women partly due to women's higher exposure to strains associated with various social roles (Bird, 1999; Gove & Tudor, 1973). Strazdins and Broom (2004) extended the conceptualization of role strain to include 'emotional work,' which they described as work that "…targets the feelings of family members and describes behaviors intended to build positive emotions and closeness or repair and regulate negative feelings and interpersonal conflict" (p. 357). Their results showed that women do a disproportionate amount of emotional work, and the strains emanating from the imbalance undermined marital quality, which was in turn associated with women's higher risk for depression.

However, more recent studies have not found significant gender differences in the effect of being married on depression (Williams, 2003; Sachs-Ericsson & Ciarlo, 2000). Such findings in more contemporary research may reflect changes in men and women's social roles. Men's greater involvement in the home, albeit substantially lower than women's, can reduce strains emanating from excess household demands borne by women. Additionally, women's increased participation in the workforce has expanded their roles beyond the confines of the home, and role theory posits that holding multiple roles promotes mental health by encouraging social integration and increasing one's influence or power, sense of satisfaction, sources of social support and recognition, and material resources like income (Barnett & Hyde, 2001). The presence of these beneficial qualities in one role also can reduce the negative impact on mental health of stress in other roles (Barnett & Hyde, 2001; Plaisier, Beekman, Bruijn, de Graaf et al., 2008). Research focusing on the quality of the multiple roles held by men and women and how the conditions in one role affects a person's experience in other roles will enhance our understanding of the relationship between marriage and women's higher risk for depression.

Widowhood: The life course principle of *linked lives* draws attention to the impact of interpersonal relationships on health and other outcomes. As previously noted, marriage can have a positive effect on mental health by giving couples the opportunity to have a close friend, companion, and confidant in the form of a spouse (Cutrona & Suhr, 1994; Dehle, Larsen, & Landers, 2001). However, when marriage is characterized by conflict and strains, it can undermine mental well-being (Proulx et al., 2007; Umberson, 1995). Widowhood is major negative life event (Bennett, Smith, & Hughes, 2005; Carr & Utz, 2001) that permanently disrupts marriage and deprives the surviving spouse of an important companion. Widowhood is related to negative outcomes including loneliness or social isolation (Antonucci et al., 2002;

Golden et al., 2009) and depression (Lee & DeMaris, 2007; Maciejewski, Zhang, Block, & Prigerson, 2007). However, when widowhood occurs in the context of care-giving stress associated with prolonged nursing of an ill partner, widowhood in some instances can result in improved mental well-being (Keene, & Prokos, 2008; Wells & Kendig, 1997).

In 2004, widowhood was least common among pre-retirement men (2.4%) and women (9.9%) and most prevalent among older adults aged 65 and above (men: 36%, women: 77.7%) (Kreider, 2006). Among young-old adults, 7.5% of men and 27.2% of women were widowed. These figures indicate that that widowhood is more common among older adults, especially women. The stark gender differences are partly due to men's shorter life expectancy (i.e., 75.4 years versus 80.4 years for women at birth in 2007) (NCHS, 2011), women's greater proclivity to marry older men (Lopata, 1996; Bozon, 1991), and higher levels of remarriage among older men relative to older women (Clarke, 1995; Kreider & Fields, 2002; Peters & Liefbroer, 1997).

Most longitudinal studies have not found gender differences in the effects of widowhood on depression and other indicators of psychological well-being (Carr, 2004; Carr, House, Kessler, Nesse, Sonnega, & Wortman, 2000; Liechtenstein, Gatz, Pedersen, Berg, & McClearn, 1996; Marks & Lambert 1998; Murrell & Himmelfarb, 1989; Simon, 2002; Wheaton, 1990). However, Chou and Chi (2000) reported that widowhood was slightly more detrimental to women's than men's mental health whereas Mendes de Leon and colleagues (1994) found that widowhood increased risk for depression among recently widowed men (i.e., widowed within a year) and elderly men aged 75 and above relative to women (Mendes de Leon, Rapp, & Kasl, 1994). Williams (2003) reported that widowhood was more depressing for men compared to women but it undermined sense of life satisfaction more so for women than men.

Longitudinal studies that find gender differences in the effects of widowhood (e.g., Mendes de Leon et al., 1994; Williams, 2003) appear to support cross-sectional studies that generally show that widowhood is more detrimental to men's than women's mental health (Lee, DeMaris, Bavin, & Sullivan, 2001; Sonnenberg, Beekman, Deeg, & Tilburg, 2000; Umberson et al., 1992). As summarized by Lee and DeMaris (2007), possible factors contributing to widowed men's higher risk for depression include: the difficulty men face adjusting to managing the household; men's smaller social networks and their greater reliance on their wives as their chief source of social support; widowhood's greater detrimental effect on men's than women's physical health. The negative effects of widowhood decrease over time (Harlow, Goldberg, & Comstock 1991; Lee & DeMaris, 2007; Lichtenstein et al., 1996; Mastekaasa, 1994; Peters & Liefbroer, 1997); and with a few exceptions (Lichtenstein et al., 1996; Umberson et al., 1992), men's recovery tends to be more protracted compared to women's (Lee, Willetts, & Seccombe, 1998; Van Grootheest, Beekman, Broese van Groenou, & Deeg, 1999). Widowhood may therefore attenuate gender differences in depression to the extent that it increases the prevalence of depression among men.

Summary: This section provided a brief review of the literature on social status (e.g., SES, marital status) explanations of gender differences in depression. SES contributes to women's higher preponderance of depression through women's greater exposure to financial strain. The influence of employment and marital status on depression also varies by gender. More recent studies show that marriage is equally beneficial to men's and women's mental health, although variations emerge when marital quality is examined. Women experience a higher risk of depression than men in the context of demanding and routine jobs, and homemaker responsibilities that confer limited psychosocial benefits. The impact of retirement on gender differences in depression is mixed; and depends on the social and material circumstances that characterize men's and women's lives during this period. Overall, the statuses occupied by men and women appear to be less favorable towards women with regard to the distribution of stressors and psychosocial resources consequential to mental health.

1.3.4 The Neighborhood Context of Depression

This dissertation is concerned with contextual determinants of depression, specifically neighborhood conditions. Neighborhoods can be considered advantaged or disadvantaged depending on the features of the neighborhood. Advantaged neighborhoods are characterized by social and physical order, including a clean and quiet neighborhood environment, courteous and respectful interactions between residents, little or no loitering, and well-maintained buildings (Ross & Jang, 2000). These neighborhoods generally have low proportions of poor residents, are safe, have good municipal services (e.g., police and fire response), green spaces, and other amenities such as good access to grocery stores and facilities for physical and other leisure activities (Ainsworth, 2002; Booth, Pinkston, & Poston, 2005; Ellaway & Macintyre, 1998; Massey, 1996; Powell, Slater, Chaloupka, & Harper, 2006; Powell, Slater, Mirtcheva, Bao, & Chaloupka, 2007).

Disadvantaged neighborhoods lack or have low-levels of many of the positive features present in advantaged neighborhoods (Altschuler, Somkin, & Adler, 2004; Anderson, 1992; Browning & Cagney, 2002; Jencks, 1992; Kirby & Kaneda, 2005; Macintyre, 2007; Ross, 2000; Wallace & Wallace, 1990). They are often comprised of high proportions of low income persons (Massey, 1996). Crime, vandalism, graffiti, drug and alcohol use, litter, noise, and vacant or dilapidated buildings are more common in disadvantaged neighborhoods (Aneshensel & Sucoff, 1996; Lewis & Salem, 1986; Ross & Jang, 2000). Residents of these neighborhoods may be particularly concerned about their safety and that of their families; and the safety of their belongings and property (Lewis & Salem, 1986; LaGrange, Ferraro, & Supancic, 1992; Ross & Jang, 2000; Taylor & Shumaker, 1990; Wyant, 2008). Disadvantaged neighborhoods are therefore more likely than advantaged neighborhoods to expose residents to stressors that can increase risk for depression and other health problems.

Several studies have synthesized findings on neighborhood influences on a variety of health outcomes including chronic diseases, health behavior, mental health, and mortality (Diez Roux & Mair, 2010; Pickett & Pearl, 2001; Riva, Gauvin, & Barnett, 2007). One study found that the positive relationship between NSD and drug use was particularly salient among low-income individuals and was partly mediated by social stressors and psychological distress (Boardman et al., 2002). Other investigators have examined neighborhood effects on mortality, reporting that living in low SES neighborhoods is associated with higher all cause mortality (Karpati, Bassett, & McCord, 2006; Wight et al., 2010). Brown, Ang, and Pebley (2007) found that having a chronic health condition was significantly associated with poor self-rated health for adults living in more socioeconomically disadvantaged neighborhoods but not for people living in less advantaged neighborhoods. Neighborhood poverty also was implicated in a study of teenagers' schooling and pregnancy outcomes, showing that teenagers living in highly impoverished neighborhoods face a greater risk of not completing high school and becoming pregnant compared to their counterparts in low-poverty neighborhoods (Harding, 2003).

Neighborhoods Disadvantage and Depression: Research on the impact of neighborhood conditions on depression is growing. Neighborhood socioeconomic disadvantage (NSD) is the most commonly examined contextual feature in neighborhood effects research (Mair et al., 2008; Julien, Richard, Gauvin, & Kestens, 2012). It is frequently measured as a composite of some or all of neighborhood proportion: unemployed or individuals without a high school diploma, people living in poverty, and households receiving public assistance income (Aneshensel et al., 2007; Cutrona, Russell, Brown, Clark, Hessling, & Gardner, 2005; Matheson et al., 2006; Wainwright & Surtees, 2004). Mathesson and colleagues (2006) found that NSD increased risk for depression. In another study using HRS data from late middle-aged U.S. adults, NSD was associated with more depressive symptoms; and symptoms were particularly pronounced among the least wealthy residents living in the most deprived neighborhoods (Wight, Ko, & Aneshensel, 2011).

Experimental studies also have been conducted that examine the relationship between neighborhood disadvantage and mental health. The Moving to Opportunity for Fair Housing Demonstration (MTO) and the Gautreaux program are two interventions in which low income families living in public housing in high poverty areas were relocated to more advantaged neighborhoods (Leventhal & Brooks-Gunn, 2003; Rosenbaum & DeLuca, 2008). The Gautreaux program was the result of a 1976 supreme court decision (Rosenbaum, 1995) and the MTO was initiated in 1994 by the U.S. Department of Housing and Urban Development (HUD) as an experimental study in five sites in the U.S.: Baltimore, Boston, Chicago, Los Angeles, and New York City. MTO participants were randomly assigned to one of three groups. The experimental group received section 8 housing vouchers and they could only move to low-poverty neighborhoods, that is census tracts with less than 10% poverty rate per the 1990 U.S. census. The comparison group received section 8 housing vouchers that they could use without geographic restrictions. The control group did not receive section 8 housing vouchers (Leventhal & Brooks-Gunn, 2003).

It was expected that moving to a low-poverty neighborhood would provide the experimental group with better education and employment opportunities. Leventhal and Brooks-Gunn (2003) also hypothesized that the experimental group would have better mental health outcomes considering that NSD has been associated with increased risk for depression and other poor health outcomes in non-experimental studies (Kim, 2008; Mair et al., 2008). To test their hypothesis, Leventhal and Brooks-Gunn (2003) conducted a study based on the New York City MTO program two years after the experiment was implemented. Results showed that both parents and children in the experimental group (i.e., those who moved to low-poverty neighborhoods) reported significantly fewer symptoms of psychological distress compared to their counterparts who stayed in their original neighborhoods (i.e., the control group).

In addition to NSD, high neighborhood proportion of vacant housing units also is considered an indicator of neighborhood disadvantage. Vacant housing units can create an unsafe and disordered neighborhood environment by attracting illicit activities such as drug dealing and prostitution; or by serving as gathering places where criminal activities are planned (Hannon & Cuddy, 2006; Spelman, 1993; Vigil, 1987). Brantingham and Brantingham (1981) found that people who commit crimes do so within the areas where they live, work, or socialize. Residents of neighborhoods with high proportions of vacant housing units that can encourage criminal and other illegal activities may face a higher risk of victimization. Additionally, residents concerned about their own and their families' exposure to negative influences may decide to spend more time indoors, which can lead to social isolation, weakened social ties, and reduced levels of trust among residents (Fullilove, Heon, Jimenez, Parsons, Green, & Fullilove, 1998; Krause, 1993; Ross & Jang, 2000; Sampson, 1990). Deficits in these psychosocial resources that buffer stress (Glass et al., 2006; Kawachi & Berkman, 2001) can leave room for larger negative effects of neighborhood disadvantage on mental health.

The presence of many female-headed households with children is another neighborhood characteristic that can generate disorder in the neighborhood. Single-parent households are commonly headed by women (Evenson & Simon, 2005; Haskey, 1993), and such households are often exposed to stress including financial strain (Hill, 2010; McLanahan, 1983) and role strain associated with single-parenthood (Devine, Farrell, Blake, Jastran, Wethington, & Bisogni, 2009; Lockwood-Rayermann, 2000; Cairney, Boyle, Offord, & Racine, 2003). Due to these chronic stressors, single parents may lack the time and energy needed to supervise their children and keep them away from negative influences and problem behaviors (Derzon, 2010; Dornbusch et al., 1985) that create disorder and insecurity that undermines mental health (Hill & Angel, 2005; Latkin & Curry, 2003; Ross, 2000).

High neighborhood proportions of non-family households (i.e., people living alone or with non-relatives: Simmons & O'Neill, 2001) also is conceptualized as an indicator of neighborhood disadvantage. Such neighborhoods may have many unmarried young adults whose earnings may not generate substantial tax revenue needed to maintain community facilities and services (Mosisa & Hipple, 2006). Young people also may introduce disorder in the neighborhood considering that they are more likely to offend. The presence of young people between ages 15-25 has been linked to higher crime rates (South & Messner, 1987; Steffensmeier & Allan 1996; Steffensmeier, Zhong, Ackerman, Schwartz, & Agha, 2006), which is a risk factor for depression (Curry, Latkin, & Davey-Rothwell, 2008; Clark, Ryan, Kawachi, Canner, Berkman, & Wright, 2008). Non-family households are likely to be comprised of tenants temporarily residing in the neighborhood. Large proportions of such households in the neighborhood can lead to high residential turnover that increases risk for depression (Matheson et al., 2006) by undermining the formation and maintenance of social ties and support networks that buffer stress (Echeverría, Diez-Roux, Shea, Borrell, & Jackson, 2008; Sampson, 1991; Warner & Rountree, 1997).

Neighborhood Disadvantage, Stressors, and Resources: Neighborhood disadvantage can influence risk for depression by proliferating stress in other dimensions of people's lives or eroding psychosocial resources that protect against the negative effect of stress on mental health (Pearlin, 1999). Physical characteristics of a neighborhood, such as the presence of graffiti, litter, and vacant or dilapidated housing serve as indicators of neighborhood physical disorder (Lutkin & Curry, 2003; Ross & Jang, 2000; Ross & Mirowsky, 1999; Sampson & Raudenbush, 1999). Perceived neighborhood physical disorder can act as a mechanism through which neighborhood disadvantage exerts its detrimental effect on mental health. Research shows that disadvantaged neighborhoods characterized by poor or low-income residents and female-headed households are positively associated with perceived neighborhood disorder (Franzini, Caughy, Spears, & Esquer, 2005; Ross, 2000). Additionally, perceived neighborhood disorder mediated the positive relationship between neighborhood disadvantage and depressive symptoms (Ross, 2000) and self-rated health (Franzini et al., 2005).

Neighborhood disadvantage also can stigmatize residents in a manner that constrains the opportunities available to them. A study by Kirschenman and Neckerman (1991) found that people identified to be from disadvantaged neighborhoods as indicated by their addresses were less likely to be hired by employers in the Chicago metropolitan area. In an experimental study, Betrand and Mullainathan (2003) similarly found that job applicants from disadvantaged neighborhoods (i.e., low income, less-educated, and more minority residents) were less likely to be invited for job interviews. In situations such as these, neighborhood disadvantage can generate secondary stress in the form of discrimination in the labor market. Limited employment opportunities in turn can create financial strain, which is positively associated with depression (Kahn & Pearlin, 2006; Lee & Brown, 2007; Pudrovska et al., 2005).

Perceived neighborhood social cohesion represents residents' feelings and sense that they are socially integrated in their community; and that they live in a neighborhood where people are helpful and there is mutual trust and respect (Berger-Schmitt, 2002; Sampson, Raudenbush, & Earls, 1997). Perceived neighborhood social cohesion (Fone, Dunstan, Lloyd, Williams, Watkins, & Palmer, 2007; Rios, Aiken, & Zautra, 2012), sense of mastery (Jang et al., 2002; Pudrovska et al., 2005), and social support (Gadalla, 2009; Paykel, 1994; Thoits, 2011) are psychosocial resources that protect against the detrimental effects of stress on mental health. Neighborhood disadvantage can erode these resources. Studies show that neighborhood disadvantage (i.e., crime, poverty) is negatively associated with social cohesion and collective efficacy (Furstenberg, 1993; Ross, Mirowsky, & Pribesh, 2001). Geis and Ross (1998) found that residents of poor neighborhoods perceived higher levels of disorder in their neighborhoods, which in turn compromised sense of mastery. In a study by Boardman and Robert (2000), neighborhood disadvantage measured as the neighborhood proportion of unemployed individuals or those receiving public assistance income was associated with low levels of perceived self-efficacy. Other studies also have found that neighborhood poverty undermines social support (Keene, Bader, & Ailshire, 2010; Turney & Harknett, 2010), which is an important psychosocial resource that buffers the deleterious effect of stress on mental health (Kim & Ross, 2009; Mullings & Wali, 1999).

Neighborhood Advantage and Depression: Studies of neighborhood effects on mental health generally focus on unfavorable neighborhood conditions, predominantly NSD. However, on the opposite end of the continuum are positive aspects of neighborhoods that can maintain or enhance mental well-being. Neighborhood affluence has been examined for its beneficial influence on health. It is often measured as the proportion of households with an annual income above a certain level (e.g., $\geq$ \$50,000). Studies show that neighborhood affluence is associated with better self-rated health (Browning & Cagney, 2003; Wen, Browning, & Cagney, 2003) and fewer chronic conditions (Robert, 1998). However, significant associations between affluence and depression have not been reported (Aneshensel et al., 2007; Hybels et al., 2006; Kubzansky, Subramanian, Kawachi, Fay, Soobader, & Berkman, 2005). The positive effects of neighborhood affluence on mental health may be transmitted through neighborhood amenities and social resources such as reciprocal exchange and collective efficacy; access to voluntary organizations, health services, and well maintained parks; and good emergency response (Altschuler et al., 2004; Browning & Cagney, 2003; Powell et al., 2006; Sampson et al., 1997; Sampson, Morenoff, & Earls, 1999; Wilson, 1996).

Residential stability also is conceptualized as an indicator of neighborhood advantage. Bures (2003) found that residential stability in childhood was related to good self-rated mental health in midlife for a community sample of U.S. adults. In another study, residential stability was associated with fewer depressive symptoms in socioeconomically advantaged neighborhoods but not in poor neighborhoods (Ross, Reynolds, & Geis, 2000). In poor neighborhoods, residential stability may represent disadvantage whereby residents feel isolated and powerless living in an environment with high exposure to various forms of disorder and hazards (Anderson, 1992; Jargowsky, 1997; South & Crowder, 1997; Ross et al., 2000; Unger, Wandersman, & Hallman, 1992; Warner & Pierce, 1993; Wilson, 1996).

Another indicator of neighborhood advantage that may be associated with reduced risk of depression is high proportions of married couple households with children. Raising children can motivate parents to actively participate in community organizations and activities aimed at promoting neighborhood safety and maintaining amenities such as parks and schools. Duncan and colleagues found that compared to single parent/guardian families, two-parent/guardian families were associated with higher perceptions of collective efficacy (Duncan, Duncan, Okut, Strycker, & Hix-Small, 2003). When parents and other residents come together and organize to achieve common goals, they can encourage psychosocial resources important for mental health, such as social connectedness, collective efficacy, and neighborhood social cohesion (Forrest & Kearns, 1999; Greenberg, Rohe, Williams, & Justice, 1985; Kang, 2011; Rios et al., 2012).

Neighborhood proportion owner-occupied housing is another neighborhood characteristic that can benefit mental health. Homeowners occupy their homes for a longer period than renters (Hansen, Formby, & Smith, 1998; Rohe & Stewart, 1996). They are more likely than renters to see their homes and neighborhoods as their permanent place of residence. As a result, they may be more committed to promoting the physical and social health of their neighborhood through activities such as taking care of their property (Saunders, 1990) and community organizing to increase safety in the neighborhood and maintain amenities. Research shows that compared to people who do not own their homes, homeowners have higher levels of life satisfaction and they are more likely to be involved in community organizations (Rohe & Basolo, 1997; Rossi & Weber, 1996). However, challenges related to home ownership, such as financial strain and the inability to relocate from undesirable neighborhoods can reduce the benefits associated with homeownership (Bentley, Baker, Mason, Subramanian, & Kavanagh, 2011; Strohschein, 2012). Even so, homeownership may protect mental health by reducing disorder and increasing sense of satisfaction, self-esteem, and neighborhood social cohesion (Rossi & Weber, 1996).

Neighborhood concentration of older adults is conceptualized as an indicator of neighborhood advantage. Although some studies have not reported significant results (Aneshensel et al., 2007; Hybels et al., 2006), Kubzansky and colleagues found that higher neighborhood proportions of older adults age 64 and above was associated with fewer depressive symptoms (Kubzansky et al., 2005). In another study, older adults living in neighborhoods with higher proportions of adults aged 65 and older perceived their neighborhoods to be more socially cohesive and reported more social ties (Almeida, Kawachi, Molnar, & Subramanian, 2009). Moore and colleagues also found that older adults living in neighborhoods with larger proportions of adults aged 65 and older were more likely to use their local parks (Moore et al., 2010), an environment that can promote mental health by encouraging physical activity and social interaction (Glass et al., 2006; Orsega-Smith, Mowen, Payne, & Godbey, 2004; Tinsley, Tinsley, & Croskeys, 2002).

Neighborhood Advantage, Stressors, and Resources: Favorable neighborhood conditions can positively influence mental health by promoting psychosocial resources and reducing exposure to stressors. Although residential stability is not always advantageous (Ross et al., 2000), Keene and colleagues found that it protected against the negative impact of NSD on social support (Keene et al., 2010). Other studies also report that residential stability is associated with higher levels of social support/ties and integration (Kasarda & Janowitz, 1974; McCulloch, 2003; Swaroop & Morenoff, 2006). Neighborhood concentration of older adults also is associated with more social ties (Almeida et al., 2009), active neighborhood watch programs, and more civic engagement among residents (Putnam, 2000). Wacquant and Wilson (1989) also reported that people living in socioeconomically disadvantaged neighborhoods have fewer social ties compared to residents of affluent neighborhoods.

A study by Sampson, Morenoff, and Earls (1999) found that, relative to the influence of neighborhood poverty, residential stability and neighborhood affluence were more strongly associated with reciprocal exchange and social control, which are markers of social cohesion. Higher proportions of older adults (i.e., age 65+) in the neighborhood also is positively associated with perceived neighborhood social cohesion (Almeida, 2009); and individual-level studies find that home ownership (Sampson et al., 1997) and two-parent/guardian families (Duncan et al., 2003) are associated with higher levels of collective efficacy. Consistent with these individual-level studies, this dissertation posits that neighborhood advantage including the proportion of owner-occupied housing units and married-couple families is positively associated with perceived neighborhood social cohesion within a multilevel framework.

Mastery is another psychosocial resource that buffers stress and that may be enhanced by favorable neighborhood conditions. Boardman and Robert (2000) found that at lower levels of NSD, respondents reported more self-efficacy. Affluent neighborhoods are generally safer, allowing residents to feel unconstrained in their movement within the neighborhood. The freedom to safely engage in desired activities (e.g., exercise) in the neighborhood can increase sense of mastery. Neighborhood advantage also promotes mental health by reducing exposure to damaging stressors. Neighborhood affluence (Loeber & Wikstrom, 1993; Stewart, Simons, & Conger, 2002) and residential stability (Schulz, Zenk, Israel, Mentz, Stokes, & Galea, 2008; Smith & Janjoura, 1988) were associated with less neighborhood disorder in the form of crime, violence, and delinquency.

Neighborhood advantage can have a positive effect on mental health by reducing exposure to stressors. For example, neighborhood affluence and married-couple households may reduce financial strain by exposing residents to network members who may be better equipped to provide financial and other forms of instrumental support (Casciano & Massey, 2008; Hadley, Mulder, & Fitzherbert, 2007). Additionally, in affluent neighborhoods where residents are well entrenched in the labor force, individuals in need of employment may have access to network members who can provide information about job opportunities (Granovetter, 1995; Montgomery, 1991; Pellizzari, 2010). The role of individual-level stressors (e.g., financial strain, discrimination) and psychosocial resources (e.g., mastery) as mediators and/or moderators of the relationship between neighborhood characteristics and depression has not received much research attention. This dissertation begins to fill this gap.

1.3.5 Neighborhoods Conditions and Gender Differences in Depression

This dissertation is particularly concerned with gender differences in neighborhood effects on depression. To my knowledge, one study by Matheson and colleagues (2006) examined this relationship. They used data from the 2001 Census of Canada and data from two waves (2000-2001 and 2003-2004) of the cross-sectional nationally representative Canadian Community Health Survey (CCHS). The large sample (N=56,428) was comprised of adults ages 18-74 years distributed across 3,619 urban census tracts (i.e., neighborhoods). Two composite measures of neighborhood conditions were considered. Residential instability was assessed as the neighborhood proportion of people: living alone, living in apartment buildings, not married, moving within the last five years among others. Material deprivation or NSD was measured as the neighborhood proportion of individuals: 20 years and older without a high school degree, 15 years and older who are unemployed, living below the low income cut off point; and the proportion of single parent families, families receiving government income assistance, and homes needing major repair (Matheson et al., 2006).

The study also controlled for: (a) *dependency*, assessed as neighborhood proportion of young (0-14 years old), old (above age 65), and working residents; and (4) *ethnic diversity*, measured as neighborhood proportion of: recent immigrants and racial/ethnic minorities. Major depression occurring within a year of the study was diagnosed using the Composite Diagnostic Interview Schedule Short Form for major depression (Kessler, Andrew, Mroczek, Ustun, & Wittchen, 1998). The gender composition of the sample was largely balanced. Slightly over half of the respondents were married, 84% completed high school, 22% were racial/ethnic minorities, and adults age 50 years and older comprised 31% of the sample (Matheson et al., 2006).

Results indicated significant variation in depression at the neighborhood level. Material deprivation and residential instability were significantly and independently associated with increased risk for depression net of controls (Matheson et al., 2006). Although women were more likely to be depressed than men, gender differences were not observed in the relationship between material deprivation or residential instability and depression. Lower crime rates in Canada (Gannon, 2001) likely result in less-threatening neighborhoods for men and women. The findings by Matheson and colleagues (2006) also may reflect the manner in which NSD is measured. It could be that the composite measure of NSD is less suitable for revealing gender differences in neighborhood effects on depression. Therefore, in this dissertation, I also examine gender differences in the impact of specific indicators of neighborhood disadvantage (e.g., neighborhood proportion of: unemployed persons, households receiving public assistance income) on depressive symptoms.

Fear of victimization can be a major concern for both male and female residents of disadvantaged neighborhoods perceived to be unsafe (Chavis & Wandersman, 1990; Ross & Jang, 2000). Research shows that men are more likely than women to witness or to be the victims of physical violence whereas women face a greater risk of sexual abuse/assault or domestic violence (Elliott, 2001; Hatch & Dohrenwend, 2007; Rosenfield & Mouzon, in press). The neighborhood is one context where men and women can be exposed to violence, and although both men and women are at risk, women express more fear/concern for their safety in the neighborhood than do men (Elliott, 2001; Hatch & Dohrenwend, 2007; Rosenfield & Mouzon, forthcoming). The elderly, the majority of whom are women, also are more fearful of being the victims of assault and other criminal acts (Smith & Torstensson, 1997; Warr, 1984). The greater fear of victimization that unfavorable neighborhood conditions engender in women relative to men can place women at increased risk of depression.

Women are socialized to care about others and they are more emotionally connected to others (Gilligan, 1982). Women can be emotionally affected by negative events experienced by members of their social network considering that they are more attentive and responsive to the needs of others (Miller, 1976). Compared to men, women are especially concerned about the welfare of their spouses, parents, and children (Brody, 1981; Campbell, Converse, & Rodgers, 1976; Menaghan, 1978; Strazdins & Broom, 2004). Kessler and McLeod (1984) also found that women were more likely than men to report that negative events occurred to members of their social networks. Additionally, women reported more psychological distress associated with negative life events occurring to members of their networks (e.g., family, friends, neighbors) (Dohrenwend, 1977; Kessler & McLeod, 1984). Neighborhood disadvantage can generate disorder that undermines safety in the neighborhood, thereby placing women at greater risk for depression when the safety and well-fare of their family and friends is threatened.

Residential turnover and social isolation propelled by perceptions of insecurity can interfere with social support networks and undermine social cohesion (McCulloch, 2003; Krause, 1991). McCulloch (2003) found that among women but not men, high residential turnover was associated with low social capital in the form of social ties and connectedness with one's neighbors. When neighborhood disadvantage threaten these psychosocial resources that protect against depression (Echeverría et al., 2008; Glass et al., 2006) and are especially sought after by women, women can be left more vulnerable to depression.

Neighborhoods are the primary physical and social space for the elderly and homemakers, the majority of whom are women (NCHS, 2011; USBLS, 1990). Although women's labor force participation has increased substantially over the past decades, their experience in the workforce is less stable compared to men's due to family responsibilities that are largely performed in the neighborhood (Bianchi, 2011; Gordon & Rouse, 2011; Manning & Petrongolo, 2008). The elderly also experience substantial exposure to the neighborhood because most of them have exited the labor force (USBLS, 2011). Additionally, compared to pre-retirement and young-old adults, the elderly experience more health challenges that limit their activities and increasingly confines their movement within the neighborhood (Paez et al., 2009; Ward, La Gory, & Sherman, 1988; Wenger, 1989). La Gory and Fitzpatrick (1992) found that dissatisfaction with one's home and neighborhood environment (e.g., noise levels, convenience for shopping and visiting) was associated with depressive symptoms among community dwelling older adults. Neighborhood disorder, insecurity, and other disadvantages associated with poor mental health can have a greater impact among women because they are more exposed to the neighborhood compared to men.

In Lawton's (1982) ecological model of aging, health outcomes depend on both the characteristics of people and the features of the environment. Neighborhood disadvantage, for example, acts as a stressor that puts pressure on people's resources such as their sense of mastery and social support networks. The elderly, the majority of whom are women, have smaller social networks (Bowling et al., 1997; Stevens & Tilburg, 2011) and fewer opportunities for social engagement outside the neighborhood due to health challenges that limit their movement (Paez et al., 2009; Ward et al., 1988). People with low levels of mastery (e.g., women, older adults) and social support/ties (e.g., the elderly), in particular, experience even larger resource deficits that can increase their vulnerability to depression in the face of threatening neighborhood conditions.

Women earn less than men overall (USCB, 2012b) and have less stable experiences in the labor force (Bianchi, 2011). Women's shorter time in the workforce relative to men, or lack of labor force experience in the case of permanent homemakers, also may mean that they have lower or no exposure to job-related activities that nurture skills, enhance sense of mastery and self-esteem/worth, and develop social ties (Bird & Ross, 1993; Link et al., 1993; Jahoda, 1997; Murphy & Athanasou, 1999). Neighborhood disadvantage can be expected to have a greater negative impact on women's than men's mental health because women are more likely to occupy positions that confer fewer benefits (e.g., financial, psychosocial resources) that reduce strain and buffer stress.

This dissertation also is concerned with gender differences in the effects of favorable neighborhood conditions on depressive symptoms. Neighborhoods are the main activity spaces for the elderly, the majority of whom are women (NCHS, 2011; Ward et al., 1988). Advantaged neighborhoods are more likely to have good service environments including conveniently located shopping and health facilities, access to transportation and well maintained parks, and the availability of appropriately designed and equipped homes (Altschuler et al., 2004; Balfour & Kaplan, 2002; Knipscheer, Broese Van Groenou, Leene, Beekman, & Deeg, 2000). These resources can enable the elderly to live independently and perform their daily activities with ease, thereby increasing their sense of satisfaction and mental well-being.

Compared to men, women express greater fear and concern about their safety in the neighborhood (Elliott, 2001; Rosenfield & Mouzon, in press). Therefore, favorable neighborhood conditions (e.g., affluence, residential stability, and owner-occupied housing) that increase social control, reduce disorder, and promote safety (Browning & Cagney, 2003; Schulz et al., 2000; Stewart et al., 2002) may be expected to have a greater positive impact on women's compared to men's mental health. Relative to men, women particularly seek out social ties, have larger social networks, and are more involved in their networks including providing and receiving social support (Lepore, 1992; Schuster et al., 1990; Turner & Marino, 1994). Therefore, neighborhood conditions (e.g., affluence, residential stability, higher proportions of older adults/two-parent families) that enhance social connectedness/control and increase reciprocal exchange (Almeida et al., 2009; Browning & Cagney, 2003; Duncan et al., 2003; Keene et al., 2010; McCulloch, 2003) may have a greater beneficial effect on women's compared to men's mental health (Almeida et al., 2009; Duncan et al., 2003; McCulloch, 2003).

Investigating the processes by which neighborhood conditions influence gender differences in depressive symptoms is an important aim of this dissertation. However, if most or all the neighborhood factors I examine are equally consequential to men's and women's mental health, the null findings would constitute a valuable contribution to the research literature.

1.3.6 Neighborhoods and Depression Among Women

Considering that women are disproportionately burdened by depression (Boughton & Street, 2007), it is important to understand the contribution of neighborhood disadvantage to variation in depressive symptoms among women. Several studies have examined the impact of neighborhood conditions (e.g., high crime, low SES, high unemployment) on women's health, including coronary heart disease (Mobley, Root, Finkelstein, Khavjou, Farris, & Will, 2006), incident obesity (Coogan et al., 2010), smoking (Diez-Roux et al., 1997), and partner perpetrated violence (O'Campo, Gielen, Faden, Xue, Kass, & Wang, 1995). Results showed that unfavorable neighborhood characteristics were related to increased risk of these poor health outcomes.

Two studies, to my knowledge, have looked at the impact of neighborhood disadvantage on depression among women. A study of African American female primary caregivers of children found a significant association between neighborhood disadvantage and increased risk of major depression in cross-sectional analyses (Cutrona et al., 2005). In longitudinal analyses, women who at baseline experienced more negative life events and lived in more disadvantaged neighborhoods had a higher risk of depression at two-year follow-up (Cutrona et al., 2005). Another study using data from the same survey of African American women did not find a significant association between NSD and psychological distress, but perceived neighborhood disorder aggregated at the neighborhood level was significantly associated with psychological distress (Cutrona, Russell, Hessling, Brown, & Murry, 2000). This dissertation applies the neighborhood stress process model to identify the determinants of depressive symptoms among a

U.S. nationally representative sample of women over the age of 50, thereby contributing to the research literature on neighborhoods and depression among this population.

1.4 THEORIES OF STRESS, NEIGHBORHOOD, AND DEPRESSION

1.4.1 The Stress Process Model

Stress can be defined as "…[an internal] state of arousal resulting either from the presence of socio-environmental demands that tax the ordinary adaptive capacity of the individual or from the absence of the means to attain sought-after ends" (Aneshensel, 1992, p. 16). Social stressors can be grouped into two general categories: life events (e.g., job loss, divorce, or the death of a family member) and chronic stressors in the form of challenging circumstances in a person's environment, relationships, or social roles (Wheaton, 1999). The term 'the stress process' was first used in 1981 to describe a conceptual framework for understanding the social determinants of health outcomes like depression (Pearlin et al., 1981). The model operates on the assumption that the factors associated with depression are interrelated and include people's social and economic positions in society, the daily and occasional events and circumstances that negatively bear on people's mental well-being (i.e., stressors), and the internal and external resources (e.g., social support, sense of mastery, and coping behaviors) that individuals draw on to deal with stressors (Pearlin, 1999).

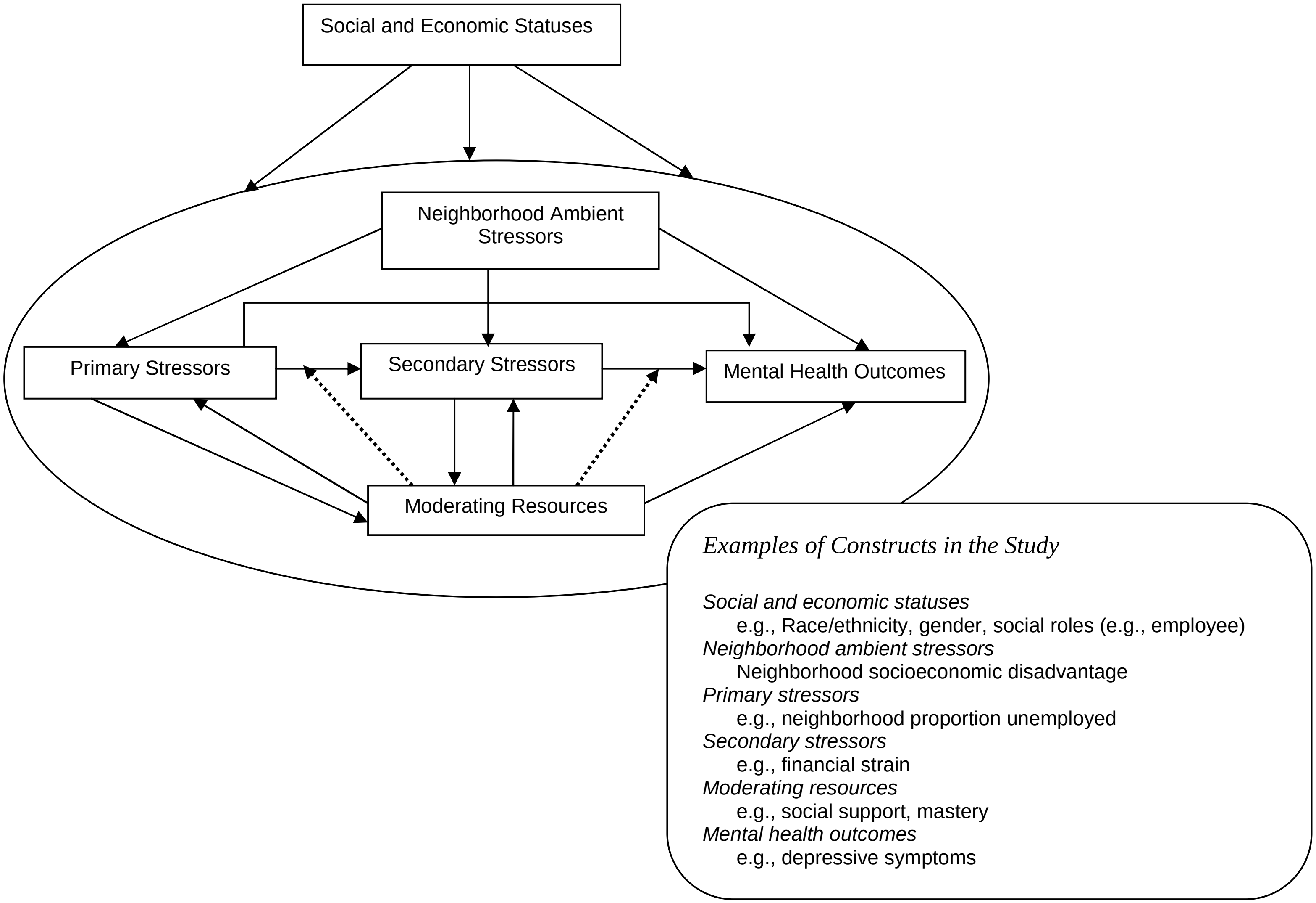
A second assumption of the stress process model recognizes that the social and economic structures in society, while functional for many people, create unfavorable conditions that impinge on the health of other groups of people (Aneshensel & Phelan, 1999). The social and economic positions occupied by individuals are important for understanding depression because these positions are often characterized by "…unequal possession of power, privilege, and prestige" – from which flows unequal distribution of stress, a known risk factor for depression

(Pearlin, 1999, p. 398). Figure 1.1 depicts some key concepts in the stress process model and how they relate to each other, as formulated by Pearlin (1999).

Social Status Characteristics and Inequality: In Figure 1.1 social and economic statuses encircle all the other concepts, indicating their far-reaching influence on the other dimensions in the model. Some important status positions include SES (e.g., being of low versus high income), gender, race or ethnicity, age, and social roles like being a spouse, parent, or an employee (Aneshensel & Phelan, 1999). These positions are consequential to health because they expose some of their occupants to limited opportunities (e.g., fewer women and minority men in positions of power: Jackson, 2001; Yap & Konrad, 2009) and more stressors (e.g., financial strain among women who are divorced, widowed, or single parents: Angel et al., 2007; Holden, & Smock, 1991) that can lead to distress that jeopardizes mental health. People's social and economic positions thus act as a constant force influencing the quality and nature of people's experience (Pearlin, 1999) and their risk for depression.

Neighborhood Stressors: Status positions like SES also can determine the neighborhoods people live in. Low SES individuals are more likely to live in disadvantaged neighborhoods characterized by disorder in the form of insecurity or crime and poor amenities such as well-maintained parks (Altschuler et al., 2004; Ross & Jang, 2000). These unfavorable neighborhood conditions have been linked to increased risk for depression (Diez Roux & Mair, 2010). Residents of poor neighborhoods also are more likely to have networks of family and friends who are equally disadvantaged and ill-equipped to provide support (e.g., financial aid) in times of need (Pearlin, 1999). SES thus determines, at least in part, the neighborhoods and neighborhood-related stressors that people are exposed to, as well as the amount and quality of health protective resources available to individuals.

Figure 1.1 The Stress Process Model



Adapted from Pearlin, Menaghan, Lieberman, and Mullan (1981)

Primary and Secondary Stressors: Primary and secondary stressors call attention to circumstances where one stressor leads to stress proliferation in the form of another stressor (see arrow from primary to secondary stress in Figure 1.1). Divorce, acting as a primary stressor for example, can be accompanied by the secondary stress of financial strain (Amato, 2000; Pearlin et al., 1981). Divorce (arrow from primary stressors to mental health outcomes) and the economic hardship (arrow from secondary stressors to mental health outcomes) it engenders can then increase risk for depression.

Psychosocial Resources: Social support and sense of mastery are two types of psychosocial resources that have been shown to reduce the negative impact of stressors on depression (Echeverria, Diez-Roux, Shea, Borrell, & Jackson, 2008; Schieman & Meersman, 2004). Women generally report higher levels of social support and lower levels of mastery compared to men (Rosenfield, 1999; Schuster et al., 1990; Slagsvold & Sorensen, 2008). Mastery functions as a moderator of the association between financial strain and depression, for example, when the impact of financial strain on depression is lower for people with higher levels of mastery than those with lower levels of mastery. The relationship between moderating resources and stressors is depicted in Figure 1.1 by the dotted arrows going from moderating resources to the arrow between primary and secondary stressors; and the arrow from secondary stressors to mental health outcomes.

Social support and mastery also are conceptualization as mediators, which acknowledges their potential to change over time in a manner that positions them as pathways through which the negative effects of stressors on depression are channeled (Pearlin, 1999). Psychosocial resources are depicted as stress mediators in Figure 1.1 by the solid arrows from primary and secondary stressors to mediating resources, followed by arrows from mediating resources to mental health outcomes. The stress process model continues to serve as an effective framework for examining the way in which social and economic status characteristics influence depression and other health outcomes by shaping exposure to stressors detrimental to health and access to stress-buffering psychosocial resources.

1.4.2 Ecological Models

Ecological models provide a framework for understanding the determinants of health. A central feature of these models is the recognition that individuals exist within a larger social and physical environment, and as such their health is influenced by their own individual-level characteristics (e.g., sense of mastery) and environmental factors (e.g., the quality of their neighborhoods). Bronfenbrenner (1974) first introduced the concept of an ecological model in the 1970s to the study of human development. He observed that the ecological environment is comprised of several subsystems. Within the microsystem, activities, social roles, and interpersonal interactions occur in the home, neighborhood, workplace, and other settings; and also between family members and colleagues to name a few (Bronfenbrenner, 1994). Mesosystems describe connections between multiple microsystems, for example one's home and workplace; whereas macrosystems refer to material resources (e.g., a nation's healthcare system), culture or belief systems, and opportunity structures (e.g., employment rate) among other attributes of the larger environment within which microsystems and mesosystems operate.

Ecological models also recognize that individual-level and environmental factors influence each other, and also can have an independent or joint impact on health and other outcomes. This dissertation examines neighborhoods as a microsystem or contextual-level factor that affects the occurrence of depressive symptoms. Neighborhoods are worth investigating because they include both physical (e.g., poor quality housing and limited access to parks, health services) and social elements (e.g., inadequate social support; low social cohesion) that are consequential to health (Pickett & Pearl, 2001; Diez Roux & Mair, 2010; Riva et al., 2007). Census tracts or blocks are often used to demarcate neighborhoods in the U.S. (Pickett & Pearl, 2001); and neighborhood-level measures are generally derived by aggregating individual-level data for each neighborhood (Diez Roux & Mair, 2010).

In multilevel analyses investigating the effects of neighborhood conditions on health, individuals are nested within neighborhoods and the impact of neighborhood conditions on health are assessed net of relevant sociodemographic characteristics like gender, age, race, marital status, education, income, and employment status (Pickett & Pearl, 2001). The most commonly examined neighborhood-level characteristic is NSD (Diez Roux & Mair, 2010; Kim, 2008; Pickett & Pearl, 2001), but neighborhood advantage in the form of affluence and residential stability also have been examined (Hybels et al., 2006; Aneshensel et al., 2007; Larson, Story, & Nelson, 2009). This dissertation is guided by the neighborhood stress process model in an effort to understand how stressors and psychosocial resources influence the relationship between neighborhood conditions and depressive symptoms.

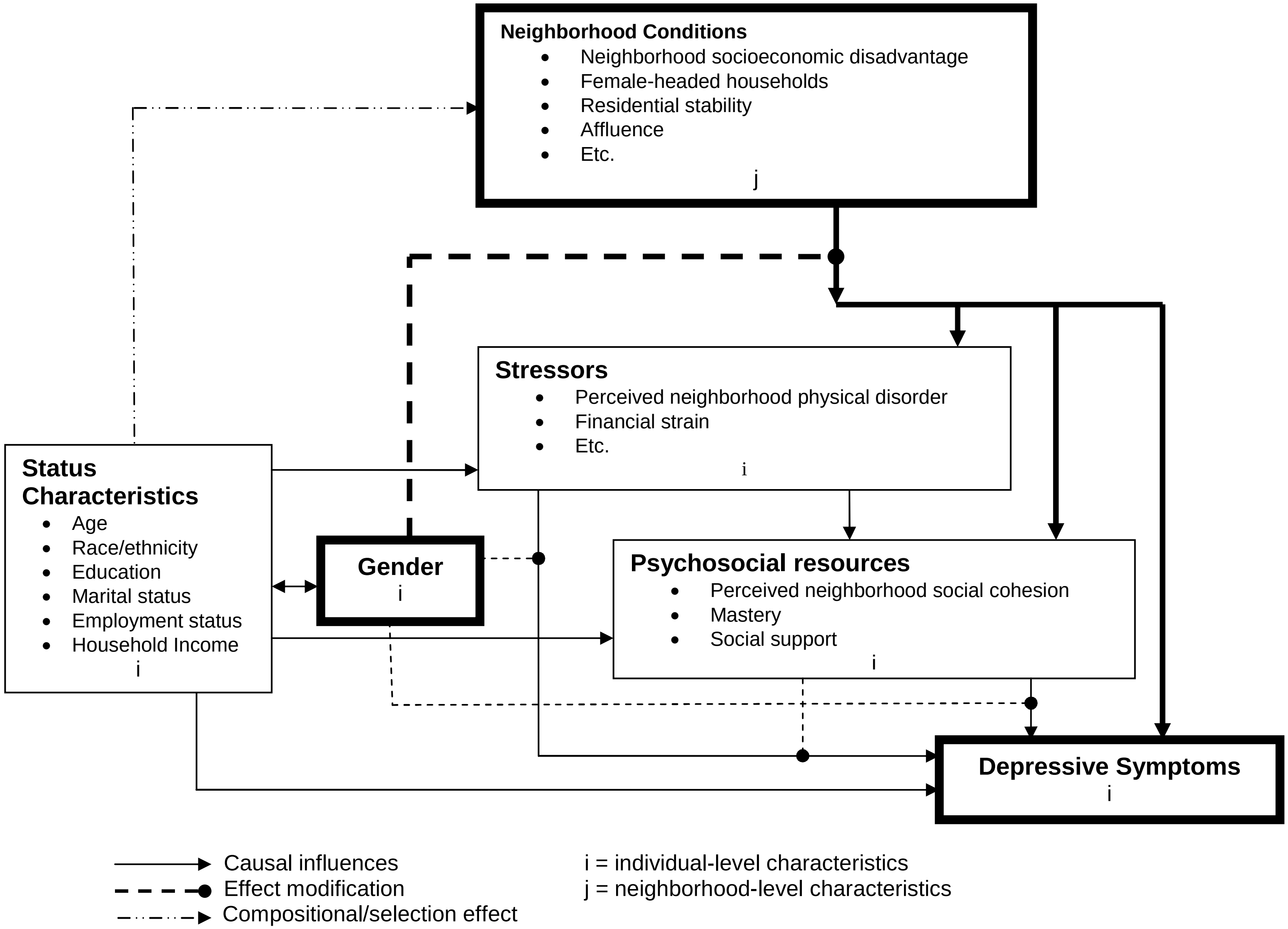
1.4.3 The Neighborhood Stress Process Conceptual Model

Figure 1.2 depicts the neighborhood stress process model. Individuals are nested within neighborhoods, with 'i' and 'j' respectively representing individual- and neighborhood- level characteristics. The dotted arrow from status characteristics to neighborhood conditions indicate compositional or selection effects. Compositional effects describe a situation where residents of socioeconomically disadvantaged neighborhoods have poor health outcomes because they are poor; and they live in poor neighborhoods because they are poor (Aneshensel, 2010b). In the case of selection effects, for example, people in poor health are not sufficiently productive economically to afford to live in socioeconomically advantaged neighborhoods, so they select into or they are unable to leave disadvantaged neighborhoods (Aneshensel, 2010b). Several individual-level status characteristics (e.g., age, race/ethnicity, income) are controlled in an effort to reduce confounding of results by compositional and selection effects.

In addition to determining the neighborhoods in which people live, status characteristics also are linked to depressive symptoms (e.g., Simon, 2002; Yu & Williams, 1999) and they can influence the stressors (e.g., financial strain, discrimination) to which people are exposed and the stress-buffering resources such as mastery available to them (e.g., de Vaus, Gray, Qu, & Stanton, 2007; McCann & Giles, 2002; Schieman & Campbell, 2001; Slagsvold & Sorensen, 2008) as depicted by the solid arrows from status characteristics to these constructs.

The stress process model has been applied extensively to examine the direct and indirect (e.g., via stressor and resources) relationship between status characteristics and depression at the individual level (Aneshensel & Phelan, 1999; Turner & Turner, 1999; Turner & Avison, 2003; Pearlin, Schieman, Fazio, & Meersman, 2005). Analyses in this dissertation focus instead on gender differences in the effects of neighborhood conditions on stressors, resources, and depressive symptoms as indicated by the boxes in bold, the dotted and round-headed line in bold, and the solid arrows in bold.

Figure 1.2 Neighborhood Stress Process Model: ***Neighborhoods, Gender, and Depressive Symptoms***



Adapted from Aneshensel (2010a)

Neighborhood disadvantage can be expected to have a greater negative impact on women's than men's mental health because unfavorable neighborhood conditions can give rise to disorder (e.g., crime, harassment, violence) that threatens safety in the neighborhood (Ross & Jang, 2000); and women's greater fear of victimization (Elliott, 2001; Hatch & Dohrenwend, 2007) and concern for their family, friends, and neighbors (Bird & Rieker, 2008; Kessler & McLeod, 1984; Strazdins & Broom, 2004) can create stress that undermines mental health (Stafford, Chandola, & Marmot, 2007). Neighborhoods also are characterized by favorable conditions that may have greater positive effects on women's than men's mental health because neighborhood advantage (e.g., affluence, residential stability) can encourage social connectedness and the formation and maintenance of support networks (Browning & Cagney, 2003; McCulloch, 2003) that women are more actively involved in (Lepore, 1992; Schuster et al., 1990; Turner & Marino, 1994) and that promote mental health (Glass et al., 2006; Haines, Beggs, & Hurlbert, 2011; Thoits, 2011). These conditional relationships are shown in Figure 1.2 by the bold round-headed dotted line from gender to the bold solid lines from neighborhood conditions to depressive symptoms.

I also hypothesize gender differences in the effects of stressors and psychosocial resources on depressive symptoms, depicted by the round-headed dotted lines from gender to the solid lines going from stressors and resources to depressive symptoms. Research shows that stressors like perceived neighborhood physical disorder and financial strain are positively associated with depression (Gary, Stark, & Laveist, 2007; Ross, 2000; Kahn & Pearlin, 2006); and the magnitude of the association between financial strain and depression was significantly higher among women than men in a study by Lee and Brown (2007). Mastery, social support, and social cohesion also have been shown to protect against depressive symptoms (Jang et al., 2002; Mechakra-Tahiri, 2010; Echeverria et al., 2008); with studies indicating that men have more mastery (Ross & Wright, 1998) whereas women perceive more social cohesion (Berry & Welsh, 2010) and have larger social support networks (McLaughlin, Vagenas, Pachana, Begum, & Dobson, 2010). This study examines the role of stressors and resources as mediators of the effect of neighborhood conditions on depressive symptoms (see solid arrows from neighborhood conditions to stressors/resources, and the solid arrows from stressors/resources to depressive symptoms); and also assess gender differences in these relationships as indicated by the dotted arrows flowing from gender.

The neighborhood stress process theoretical framework builds upon the individual-level stress process model, which has been successfully applied in research concerned with the social determinants of health. It serves as the basis for this study's conceptual model and is well suited to guide the achievement of the study's specific aims.

Summary: In this chapter, I introduced the subject of this dissertation, which investigates gender differences in neighborhood effects on depressive symptoms. Next, I presented the specific aims of the study, described depression as a major health challenge, and provided a brief review of the literature on intra-individual and social status explanations of gender differences in depression. I also briefly reviewed the literature on neighborhood effects on depression, including the relationship between neighborhood conditions and stressors/psychosocial resources consequential to mental health. Thereafter, I discussed why neighborhood conditions should be expected to have a greater impact on depression among women compared to men. In the last section of this chapter, I presented the neighborhood stress process conceptual framework that guides this dissertation.

CHAPTER 2:

METHODS

2.1 Introduction

This chapter presents the research methods used in this dissertation, which focuses on gender differences among components of the neighborhood stress process model. The study is based on secondary analysis of data from the Health and Retirement Study (HRS), a biannual longitudinal survey of a national probability sample of U.S. adults over the age of 50 compiled of five birth cohorts who entered the study at different times, as described below. The HRS is designed to study people as they make the transition from employment through retirement to advanced old age. This study uses a combination of cross-sectional baseline data from the multiple HRS cohorts, the main 2006/2008 HRS interviews, and a 2006 and 2008 HRS supplemental psychosocial questionnaire (analytic n = 8,248). HRS data are linked to neighborhood data from the 2000 U.S. Census. Analyses are performed within a multilevel framework where level-2 is neighborhood, defined as census tract, and level-1 is the individual. The study is restricted to urban neighborhoods.

In the first section, I briefly describe the HRS including the data collection procedures. I then describe how I operationalized the individual and neighborhood measures employed in this analysis. Next, I provide an account of the derivation of the analytic sample used to achieve the specific aims of this dissertation. Subsequently, I revisit the study's specific aims and present the associated research hypotheses. The final section of this chapter provides the data analysis plan, including a detailed delineation of the specific analysis performed for each study aim and hypothesis.

2.2 The Health and Retirement Study (HRS)

The following overview of the methods used to conduct this study draws heavily on a description by Aneshensel (2010b) and information provided on the HRS website (Institute of

Social Research-University of Michigan [ISR-UM], 2011a) unless otherwise noted. The HRS is comprised of five birth cohorts who entered the study at different times. In 1992, the first HRS study (HRS1) sampled the cohort of adults born between 1931 and 1941 with the intention of following them forward in time as they completed their working years and entered retirement. A second study, Assets and Health Dynamics of the Oldest Old (AHEAD), was initiated in 1993 and included the cohort of individuals age 70 years and older who were born before 1924. This study focused on the post-retirement period through the end of life. In 1998, HRS1 and AHEAD were combined into one study and two new cohorts were added: Children of the Depression Era (CODA), born between 1924 and 1930, and War Babies (WB), born between 1942 and 1947. A fifth cohort, Early Baby Boomers (EBB), born between 1948 and 1953, was introduced in 2004. HRS survey data is gathered biannually except for the AHEAD cohort for whom data was gathered in 1993 when they entered the study and again in 1995, after which biannual data collection commenced in 1998 (St. Clair et al., 2010).

HRS respondents were selected via a four stage area probability sampling design based on the University of Michigan's Survey Research Center's 84 strata National Sample frame (Institute for Social Research, University of Michigan, [ISR-UM], 2008). At the primary sampling stage, U.S. Metropolitan Statistical Areas (MSA) and non-MSA counties (the sampling units) were selected based on probability proportionate to size criteria where the probability of selecting an MSA or county is proportionate to the size of its population (McGinn, 2004). In the second stage, area segments (i.e., secondary sampling units or SSUs) were sampled from MSAs and counties; and in the third stage, housing units (HU) were systematically selected from a list of all HUs located in the sampled SSUs. In the last stage, at least one respondent was selected from each sampled HU if he/she met one of the following criteria: (1) single/not married and age-eligible (i.e., based on the birth cohort years); (2) married and age-eligible; (3) spouse, age-eligible or not, of an age-eligible sampled person; (4) age-eligible married couple. Given the presence of two or more unrelated age-eligible people in a HU, one person was randomly chosen to participate in the study. AHEAD and CODA samples were supplemented by respondents drawn from a list of age-eligible people enrolled in Medicare. In order to increase the sample size of select subgroups of the U.S. population, the HRS oversampled blacks, Hispanics, and people living in Florida given a higher concentration of older people in the state (Juster & Suzman, 1995). This analysis takes into account the complex design of the HRS sample.

2.3 HRS Data Collection Procedures

The HRS is jointly managed by the National Institute on Aging (NIA) and the Institute for Social Research (ISR) at the University of Michigan (Hodes & Suzman, 2011). The ISR team designs, administers, and conducts HRS interviews (Hodes & Suzman, 2011). Most baseline interviews were conducted face-to-face by trained interviewers. Follow-up interviews were generally administered by telephone except when a household lacked a phone or when a health challenge necessitated a face-to-face interview. Respondents were interviewed in English or Spanish. Data was gathered on several topics including but not limited to: demographic characteristics, health status including psychosocial measures and biomarkers, health care utilization and costs; employment, income, assets, retirement planning, and expectations about the future; family structure, co-residence, and intergenerational transfers of time and money (Hodes & Suzman, 2011).

In 2006/2008, an enhanced face-to-face interview was administered to a random half of the sample at each time, which included a self-administered leave-behind psychosocial questionnaire (PQ). Respondents were instructed to mail the PQ back to the main field office.

Those who did not return the PQ received two reminder notices and a telephone follow-up interview.

2.4 Study Measures

The primary outcome of interest in this dissertation is depressive symptoms. Neighborhood conditions are the primary independent variables whose effects on depressive symptoms, and gender differences therein, are the focus of the study. Sociodemographic characteristics are included in the analyses as independent variables because they represent social and economic status positions that have been linked to depressive symptoms and determine at least in part exposure to stressors and access to psychosocial resources. Stressors and psychosocial resources are included in the study because they may function as the pathways through which the effects of neighborhood conditions on depressive symptoms are channeled; and psychosocial resources can protect against the deleterious effects of neighborhood disadvantage on depressive symptoms. Residential tenure is included to control for exposure to the neighborhood environment.

Current and past employment and marital statuses are considered in this dissertation because they are associated with exposure to stressors and access to psychosocial resources consequential to mental health. Occupancy of these statuses is in flux during the stages in the life course encompassed by this sample. In addition, these characteristics may be important to the influence of neighborhood conditions on mental health. Therefore, the effects on depressive symptoms of both current and past marital and employment status are examined and controlled.

2.4.1 Individual Level Variables

In this section I describe the individual-level study measures used in this dissertation. Where needed, scale items were reverse scored to ensure that all response codes are consistent with each other for items that are "reverse worded" in terms of what a low or high value means, for example, all indicators of neighborhood physical disorder are scored so that a high score on each item means a greater amount of disorder. Unless otherwise noted, scale scores were created by averaging across the items to maintain the scoring metric of the response codes. Internal consistency reliability was calculated using the 2006 data. Some study measures were log-transformed to address skew, as described below. Missing values were imputed with the mean for continuous measures if no more than half of the items were missing. The mode was imputed for categorical variables. Otherwise, the measure was scored as missing.

(a) Primary Outcome Measure

Depressive symptoms, the primary outcome measure, is assessed using an 8-item version of the Center for Epidemiologic Studies-Depression Scale (CES-D) (Radloff, 1977). To facilitate easy telephone administration in the HRS, the original CES-D that measures symptom duration on a four-point scale was modified to assess the presence (yes) or absence (no) of depressive symptoms (Soldo, Hurd, Rodgers, & Wallace, 1997). Methodological studies show that the psychometric properties of the depressive symptoms count used in the HRS are similar to those of the original CES-D (Turvey, Wallace, & Herzog, 1999; Kohout, Berkman, Evans, & Cornoni-Huntley, 1993; Soldo et al., 1997); and report good internal consistency reliability ($\alpha=0.78$; Turvey et al., 1999) and construct validity (Wallace & Herzog, 1995; Soldo et al., 1997).

HRS respondents were asked if they experienced (yes/no) the following eight symptoms "much of the time during the past week": (1) felt depressed, (2) felt that everything you did was an effort, (3) your sleep was restless, (4) you were happy, (5) you felt lonely, (6) you enjoyed life, (7) you felt sad, (8) you could not get going (ISR-UM, 2011b). Depressive symptoms scores were generated by first reverse-scoring the positively worded items and then taking the average score across the eight items for persons reporting at least four symptoms. The average symptoms score was multiplied by eight to convert back to the 0-8 count metric. Scores ranged from 0 to 8 (mean=1.44, SD=1.75) with higher scores representing more symptoms. The log of CES-D scores are used in analyses due to the skewed distribution of this measure.

(b) Sociodemographic Characteristics

Sociodemographic characteristics include continuously measured: (1) *age,* (2) *education* in years, (3) *household income* - the log of respondent and spouse income in thousands of dollars, and (4) *wealth,* the log of wealth (assets – debts) in thousands of dollars. Prior to taking the log of household income and wealth all values were increased by one to eliminate zero values because the log of zero is not defined. Categorical measures include: (5) *gender:* male/female; (6) *race/ethnicity*-four categories of non-Hispanic white, black/African American, Hispanic, other (i.e., American Indians/Alaskan natives, Asians/Pacific Islanders, and other). The distribution of these measures are described below in section 2.4.2.

(c) Current and Past Employment and Marital Status

This dissertation is based on a national sample of U.S. adults ages 50 years and older. I refer to these adults as retirement age (ages 50-64), the young-old (ages 65-74), and the old to oldest old (ages ≥75 years). Past and current marital and employment statuses are relevant to this study’s sample of adults who are at various stages in the life course and are likely to have experienced changes in these statuses. The life-course principle of linked lives calls attention to the influence of marital status on mental well-being. Relative to people in retirement age, the young-old and especially the old to oldest old face a higher risk of widowhood, a negative life event associated with poor mental health (Bennett et al., 2005; Lee & DeMaris, 2007; Maciejewski et al., 2007). However, the deleterious effects of widowhood on mental health subside with time (Harlow et al., 1991; Lee & DeMaris, 2007; Lichtenstein et al., 1996).

The life course principle of life-span development (Elder et al., 2003) also recognizes that, for example, the degree to which job-related stressors (e.g., high job demands) and resources (e.g., higher pay/income) influence mental health depends on one’s job tenure (Bird & Ross, 1993; Link et al., 1993; Luong & Hebert, 2009; Murphy & Athanasou, 1999). Compared to retirement age persons, older persons are less likely to be exposed to these job characteristics because most of them are not in the labor force (USBLS, 2011).

As discussed in chapter one, exposure to unfavorable neighborhood conditions can increase risk of victimization, thereby creating fear and concern that can undermine mental health (Ross & Jang, 2000; Elliott, 2001). Favorable neighborhood conditions (e.g., affluence, residential stability) can promote mental health by encouraging an orderly and safe neighborhood environment and the formation of social ties and support networks that buffer stress (Altschuler et al., 2004; Ross & Jang, 2000; McCulloch, 2003). Certain marital and employment statuses also are associated with greater exposure to the neighborhood. Compared to people who are employed, people who are not employed such as homemakers or retirees are likely to spend more time in the neighborhood; so are long term retirees and homemakers relative to those who have occupied these statuses for shorter durations of time. I therefore consider in this dissertation how short term/current and long term (i.e., past six years) exposure to employment and marital statuses influence risk for depressive symptoms in this sample of middle-age and older adults.

In creating the measures below for current and past employment and marital status, the 2006 and 2008 HRS subsamples were followed back for six years, that is: 2006-2000 and 2008-2002 respectively. Creating these variables was complicated by the fact that many participants missed one or more interviews during this period, generating substantial missing data. In addition, participants from the EBB cohort were not assessed until 2004 and therefore have incomplete data for the prior six years. For this reason, the primary analytic categories are derived based on information about those with complete follow back data.

Current and past marital status: Marital status categories at each HRS wave were: married, separated/divorced, never married, widowed. This was used to identify people who were currently married, currently separated/divorced, and never married. Due to insufficient Ns these categories could not be subdivided by duration in the role. The currently widowed are differentiated, however, as: consistently widowed in the recent past; not consistently widowed in the recent past; and missing at one or more interviews in the recent past. The distribution of these measures are described below in section 2.4.2. For example, the recently divorced (n=165), a conceptually meaningful group, were included in the currently divorced category because they were too small to analyze. Differentiating the widowed into these three categories permits a comparison of the recently widowed and those who have been widowed for at least six years as clear categories for this measure.

Current and past employment status: Combining current employment status with that of the recent past permits the simultaneous assessment of past and present employment status; and also is desirable because these statuses intersect during this time, generating overlap and empty cells. The categories for employment status at each HRS wave were: employed, unemployed, retired, homemaker, other (i.e., temporarily laid off, on sick or other leave, disabled, other). This information was used to identify people who, for the past six years, were consistently (a) employed, (b) unemployed,(c) retired, (d) homemakers, or (e) in the 'other' category. These variables were then cross-classified by current employment status to produce the combined typology shown in Table 2.1 and described further in section 2.4.2 below. In doing so, it became apparent that the employed and the retired could be subdivided into those who held these positions for at least six years, and those who became employed or retired during that time.

Table 2.1 Weighted Current and Past Marital and Employment Status

Characteristic	Men N=3,294 %	Women N=4,954 %	Total N=8,248 %
Current & Past Marital Status			
Married currently	75.6***	53.0	62.7
Separated/divorced currently	11.8	17.5	15.1
Never married	5.3	4.0	4.6
Widowed consistently[a]	3.4	15.1	10.0
Widowed recently	2.9	7.8	5.7
Widowed duration unknown[b]	1.0	2.7	1.9
Current & Past Employment Status			
Employed consistently[a]	17.3***	15.0	16.0
Employed recently	27.8	21.1	24.0
Retired consistently	23.6	16.6	19.6
Retired recently	16.8	19.8	18.5
Retired duration unknown[b]	4.4	3.1	3.7
Homemaker consistently	0.0	6.2	3.5
Homemaker duration unknown	0.2	8.5	4.9
Other recently/consistently	10.0	9.7	9.9

* Men and women are significantly different from each other: *p ≤ .05. **p ≤ .01. ***p ≤ .001.
[a] Consistently=for the past 6 years
[b] Duration unknown=missing at one or more prior interviews

As can be seen in the Table, the sample is quite heterogeneous in this regard. Among those who are currently employed, somewhat more were not working sometime in the recent past than worked continuously during this period. Among those who are currently retired about the same proportion were continuously retired or worked sometime during the past six years. The other homogeneous category is current homemakers who have been in that role for at least six years. Some categories with small Ns (e.g., currently retired but missing at one or more interviews in the recent past: N=326) are retained not for analysis, but to make the comparisons between other categories unambiguous.

(d) Residential Tenure and Moving

Residential tenure: This measure was created using the same procedure described above for creating the measures for current and past marital and employment statuses. The measure identifies people who did not move in the past six years (52.8%) given that they had the same census tract ID at each data collection wave. The other category contains everyone who is not known to have been in the same tract over this interval (i.e., moved, non-respondent or missing census tract ID at one or more prior interviews). Although this is a heterogeneous category, it permits clear identification of those who are known to have been in the neighborhood for at least six years.

Downward residential mobility: The psychosocial questionnaire also assessed downward residential mobility. Respondents were asked to indicate whether or not (yes/no) they had moved to a worse residence or neighborhood in the past five years. Those with missing values on this measure (N=196) were considered to not have moved to a worse residence or neighborhood, which was the most common response. A very small proportion (2.4%) of individuals had moved to a worse neighborhood. Given the poor distribution of this measure, it is presented only for descriptive purposes and is not used in analyses.

(e) Perceived Neighborhood Stressors and Resources

Perceived neighborhood physical disorder is a stressor associated with increased risk for depression (Latkin & Curry, 2003; Hill & Angel, 2005; Ross, 2000) and perceived neighborhood social cohesion is a psychosocial resource that buffers stress detrimental to mental health (Fone et al., 2007; Rios et al., 2012). These psychosocial factors are examined in this dissertation because they may act as the channels through which the effects of neighborhood conditions on mental health are transmitted (e.g., Ross, 2000). Neighborhood disadvantage (e.g, poverty, female-headed households) has been associated with higher levels of perceived neighborhood physical disorder (Franzini et al., 2005; Geis & Ross, 1998; Ross, 2000) and lower levels of social cohesion (Ross et al., 2001), or characteristics that encourage social cohesion such as collective efficacy, reciprocal exchange, and social ties (Furstenberg, 1993; Ross et al., 2001; Sampson et al., 1999; Wacquant & Wilson, 1989).

Neighborhood conditions conceptualized as indicators of advantage in this study (e.g., affluence, higher proportions of older adults) also have been shown to be positively associated with perceived neighborhood social cohesion (Almeida, 2009) or indicators of cohesion such as reciprocal exchange and collective efficacy (Browning & Cagney, 2003; Duncan et al., 2003; Sampson et al., 1999). Perceived neighborhood social cohesion and physical disorder are important components of this dissertation that will help elucidate the association between neighborhood conditions and depressive symptoms. The following is a description of these measures, which also are presented in Table 2.2.

Perceived neighborhood physical disorder is a 4-item scale adapted from the English Longitudinal Study of Aging (ELSA) (Marmot, Banks, Blundell, Lessof, & Nazroo, 2003). Respondents were asked to consider their neighborhood and indicate the extent to which they agreed that: (a) vandalism and graffiti are a big problem in this area, (b) people would be afraid to walk alone in this area after dark, (c) this area is always full of rubbish and litter, and (d) there are many vacant or deserted houses or storefronts in this area. Item scores were rated on a 7-point scale ranging from 1 for less neighborhood disorder (e.g., vandalism/graffiti not a problem) to 7 for more disorder (e.g., vandalism/graffiti a big problem); Cronbach's alpha (α) is .645, which is questionable based on an evaluation by George and Mallery (2003)[1]. Thus, reliability is not ideal but the richness of this construct justifies its use here. As shown in Table 2.2, the modal response category for neighborhood disorder is one and it was reported by 16.5% of the sample. The average score of 2.52 (standard deviation [SD]=1.24) represents an overall low level of disorder, but some respondents score the maximum possible, indicating that disorder is a major problem in their neighborhood.

Table 2.2 Weighted Summary Statistics: Study Scales (N=8,248)

Scale	*Mean*	*SD*[1]	*Range*[2]	*Mode (% of sample)*
Depressive symptoms[3]	1.44	1.75	0-8	0(46.9)
Neighborhood physical disorder	2.52	1.24	1-7	1(16.5)
Financial strain	2.35	0.86	1-5	1.5(19.0)
Everyday discrimination	1.68	0.68	1-6	1(34.3)
Neighborhood social cohesion	5.42	1.20	1-7	7(15.1)
Social support	3.12	0.47	1-4	3(6.8)
Sense of mastery	4.77	0.97	1-6	6(14.9)

[1]Standard deviation
[2]Higher scores represent more of the given construct e.g., more financial strain
[3]Depressive symptoms count (yes/no)

[1] As provided by George and Mallery (2003): $\alpha < 0.5$ = unacceptable, $\alpha \geq 0.5$ and < 0.6 = poor, $\alpha \geq 0.6$ and < 0.7 = questionable, $\alpha \geq 0.7$ and < 0.8 = acceptable, $\alpha \geq 0.8$ and < 0.9 = good, and $\alpha \geq 0.9$ = excellent

Perceived neighborhood social cohesion is a 4-item scale adapted from ELSA (Marmot et al., 2003); α=0.816; good (George & Mallery, 2003). Respondents considered their feelings about their neighborhood and indicated the extent to which they agreed with the statements: (a) I really feel part of this area, (b) if you were in trouble, there are lots of people in this area who would help you; most people in this area: (c) can be trusted, (d) are friendly. Scores were rated on a 7-point scale ranging from 1 for less neighborhood social cohesion (e.g., do not feel part of the area) to 7 for more cohesion (e.g., feel part of the area). The modal response category of 7 was reported by 15.1% of the sample. The average score of 5.42 (SD=1.20) represents moderately high social cohesion overall, but some respondents score the lowest possible, indicating that they do not feel well connected to their neighborhoods and the residents.

(f) Other stressors

Individual-level studies indicate that everyday discrimination and financial strain are stressors that impinge on mental health (Bradshaw & Ellison, 2010; Kahn & Pearlin, 2006; *for a review see* Pascoe & Smart Richman, 2009). Some studies also find that neighborhood disadvantage can limit employment opportunities (Betrand & Mullainathan, 2003; Kirschenman & Neckerman, 1991), thereby increasing risk for financial strain. Studies are needed that examine the role of these stressors as possible mechanisms linking neighborhood conditions and depressive symptoms. This dissertation begins to fill this research gap. The following is a description of these stressors, which also are presented in Table 2.2 above.

Everyday discrimination is a 5-item scale (Williams, Yu, Jackson, & Anderson, 1997) assessing discriminatory encounters in daily life; α=0.789, acceptable (George & Mallery, 2003). Respondents were asked if they have experienced the following: (a) you are treated with less courtesy or respect than other people, (b) you receive poorer service than other people at restaurants or stores, (c) people act as if they think you are not smart, (d) people act as if they are afraid of you, (e) you are threatened or harassed. The frequency of these experiences was rated on a 6-point scale from 1=never to 6=almost every day. Responses were averaged across items. As shown in Table 2.2, the modal response category of one was reported by 34.3% of the sample. The average score of 1.68 (SD=.68) represents an overall low level of exposure to discrimination, but discrimination is an everyday occurrence for some respondents who score the maximum possible.

Financial strain is a 2-item scale (Clarke, Fisher, House, Smith, & Weir, 2008; Williams et al., 1997) that measures respondents' financial status through the statements: (a) how satisfied are you with you/your family's present financial situation (rated on a 5-point scale: 1=completely satisfied, 2=very satisfied to 5=not at all satisfied); and (b) how difficult is it for you/your family to meet monthly payments on your/your family's bills (rated on a 5-point scale: 1=not at all difficult, 2=not very difficult to 5=completely difficult); α=0.794, acceptable (George & Mallery, 2003). The modal response category of 1.5 was reported by 19% of the sample. The average score of 2.35 (SD=.86) represents moderate strain overall, but some respondents score the maximum possible, indicating that they are particularly burdened by financial strain.

(g) Other Psychosocial Resources

The stress process model has been applied at the individual-level to study social support and mastery as psychosocial resources that buffer stress detrimental to mental health (Pearlin, 1999; Turner, 2010). In this dissertation, I assess the extent to which neighborhood disadvantage erodes these resources, thereby creating pathways through which stress emanating from unfavorable neighborhood conditions increase risk for depression. I also examine the protective effects of social support and mastery by positing that, for example, the deleterious effects of neighborhood socioeconomic disadvantage (NSD) on depressive symptoms are smaller among women with higher levels of social support and mastery compared to those with lower levels of these resources. This dissertation makes a contribution to the research literature by focusing on these well-established psychosocial resources within an ecological/neighborhood stress process framework (Aneshensel, 2010a; Bronfenbrenner, 1974). The following is a description of these psychosocial resources, which also are presented in Table 2.2 above.

Positive social support is measured using four 3-item scales; α: range=0.806-0.856; good (George & Mallery, 2003). Items were administered to respondents four times to assess social support from (1) spouse/partner, (2) children, (3) other immediate family, and (4) friends; thereby generating the four scales. As pertains to each of the sources of support (e.g., spouse, children), respondents were asked: (a) how much do they really understand the way you feel about things, (b) how much can you rely on them if you have a serious problem, (c) how much can you open up to them if you need to talk about your worries. Answers were rated on a 4-point scale: 1=not at all to 4=a lot. Respondents (N=112) with missing values on all four sources of support were declared missing and excluded from analyses. An average positive social support scale was created by adding respondents' scores across all four sources of support and then dividing by the number of sources of support. As seen in Table 2.2, the modal response category of 3 was reported by 6.8% of the sample. The average score of 3.12 (SD=.47) represents high levels of social support overall, but some respondents score the lowest possible, indicating that they are not receiving social support from family and friends.

Sense of mastery is assessed by a 5-item scale (Pearlin & Schooler, 1978); α=.892; good (George & Mallery, 2003). Respondents indicated the extent to which they agreed with the statements: (a) I can do just about anything I really set my mind to, (b) when I really want to do something, I usually find a way to succeed at it, (c) whether or not I am able to get what I want is in my own hands (d) what happens to me in the future mostly depends on me, (e) I can do the things that I want to do. Responses were rated on a 6-point scale: 1=strongly disagree to 6=strongly agree. The modal response category of 6 was reported by 14.9% of the sample. The average score of 4.77 (SD=.97) represents moderately high levels of mastery overall, but some respondents score the lowest possible, indicating that they lack a sense of mastery (i.e., they feel powerless).

2.4.2 Neighborhood Level (Census Tract) Measures

Neighborhoods are operationalized by the U.S. census, which demarcates areas where residents are generally similar with regard to economic status and living conditions (USCB, 2000). Additionally, census tracts, which are designed to include between 1,500 and 8,000 people, serve as reasonable proxies for densely populated urban neighborhoods (USCB, 2000). On the other hand, census tracts poorly capture respondents' sense/definition of neighborhood considering that they are official boundaries created for statistical purposes. However, census tracts remain a viable option for representing neighborhoods given the paucity of data pertinent to other conceptualizations of neighborhood. This study's census tract operationalization of neighborhood also facilitates the comparison of study results to existing research that also use census tracts as proxies for neighborhoods.

There are 3,316 census tracts/neighborhoods in this study and between 1 and 78 people per tract. There are an average of 6 people per tract, and about 1,552 tracts (46.8%) with only one person (i.e., singleton tracts). The uneven and sparse distribution of respondents in census tracts is a limitation of this study. Singleton tracts lack within-census tract variation in the outcome of interest (e.g., depressive symptoms). However, it has been shown that random intercept multilevel models such as the ones I am estimating in this dissertation do not require each neighborhood (i.e., cluster) or even the majority of neighborhoods to have more than one individual provided that: (a) the goal is to assess neighborhood effects on individual-level outcomes; and (b) there is adequate variation in the neighborhood characteristic under investigation across the neighborhoods in the sample (e.g., Bell, Ferron, & Kromrey, 2008).

The measures of neighborhood characteristics used in this dissertation come from the GeoLytics Annual Estimates database (Geolytics, 2007). GeoLytics is a company that provides academic, government, non-profit, and business clients with census, geographic, and demographic data (Geolytics, 2011). GeoLytics uses 2000 Census Bureau Short Form block level data as the benchmark for making Census block and Census tract level projections of demographic variables (Geolytics, 2011). This study uses neighborhood data from the 2000 U.S. Census.

This dissertation is restricted to urban neighborhoods, which are delineated by the U.S. census and include densely populated areas (USCB, 2011). Urban is operationalized as residing in a census tract in which at least 75% of the population lives in an urbanized area. The cutoff point of 75% was arbitrarily chosen in order to include predominantly urban census tracts in the study and is consistent with previously published work using HRS data (e.g., Aneshensel et al. 2007, 2011; Wight et al.2006, 2008, 2009, 2010, 2011). Focusing on urban neighborhoods is appropriate for this study because the unfavorable neighborhood conditions (e.g., high neighborhood proportion of households below the federal poverty line, unemployed adults) hypothesized to undermine mental health are more likely to characterize urban neighborhoods. Additionally, high population density and close proximity between residential units in urban neighborhoods creates a social context that is markedly different from that found in suburban or rural neighborhoods (Aneshensel, 2010b). For example, urban dwellers are more likely to see, and possibly interact with, their neighbors more frequently than rural residents (Aneshensel, 2010b), and social engagement has been linked to mental well-being (Glass et al., 2006). Such differences in social processes that characterize urban and rural neighborhoods, and that are consequential to mental health, provide reason for studying urban neighborhoods separately from rural areas.

Neighborhood Disadvantage: This dissertation examines the effects of unfavorable neighborhood conditions on depressive symptoms and gender differences therein. As described in chapter one, neighborhood conditions such as NSD, female-headed households, vacant housing units, and non-family households are conceptualized as indicators of neighborhood disadvantage because they can generate disorder, insecurity, and social isolation in the neighborhood (Derzon, 2010; Hannon & Cuddy, 2006; Ross & Jang, 2000; Sampson, 1990). In turn, these neighborhood conditions can increase risk for depression by engendering feelings of concern and worry among residents; they also threaten the formation and maintenance of social ties and support networks that buffer stress (Echeverría et al., 2008; Glass et al., 2006; Kawachi & Berkman, 2001).

Measures of neighborhood disadvantage: This study employs both single indicators and composite measures of neighborhood disadvantage. The composite indicator of neighborhood socioeconomic disadvantage (NSD) is operationalized as a principal component of the neighborhood (i.e., census tract) proportion of: (a) individuals age 25 years or older without a high school diploma, (b) unemployed persons age 16 years or older, (c) households receiving public assistance income, (d) individuals living below the federal poverty level. Principal component analysis is a data reduction mathematical procedure in which several variables that are correlated are transformed into a smaller number of uncorrelated variables known as principal components (Cushon, Vu, Janzen, & Muhajarine, 2011; Pearson, 1901). The first principal component accounts for the most variability in the data. The following components successively account for smaller amounts of variability in the data (Cushon et al., 2011; Pearson, 1901).

The principal component employed in this study is a measure of NSD and it accounted for 82% of the total variation across the four original indicators of neighborhood disadvantage (eigenvalue=3.277). This principal component, and not the other three that were generated, had an eigenvalue greater than one, indicating that it explained a substantial amount of variability across the original measures.

Single indicators of neighborhood disadvantage used in this study include neighborhood proportion of: (e) housing units that are vacant, (f) female-headed households with own children under 18 years of age, and (g) non-family households, defined as "a person living alone or a householder who shares the home with nonrelatives only; for example, with roommates or an unmarried partner" (Simmons & O'Neill, 2001, p. 2).

Neighborhood Advantage: Indicators of neighborhood advantage examined in this dissertation include neighborhood proportion of: (a) households with an income of $50,000 or more (i.e., affluence), (b) people ages five years or older who have lived in the same house for the past five years (i.e., residential stability), (c) owner-occupied housing units, (d) married-couple households with own children under 18 years of age, (e) persons ages 65 and older.

These neighborhood characteristics are expected to be associated with fewer depressive symptoms because: they represent the availability of neighborhood amenities (e.g., parks, access to municipal services) that increase sense of satisfaction (Altschuler et al., 2004), they are associated with a more orderly and safe neighborhood environment (Saunders, 1990; Ross & Jang, 2000), and they encourage social cohesion/collective efficacy (Browning & Cagney, 2003; Duncan et al., 2003; Putnam, 2000) and the formation of social ties and support networks (McCulloch, 2003; Moore et al., 2010; Sampson et al., 1999) beneficial to mental health (Geronimus, 2000; Musick & Wilson, 2003; Rios et al., 2012).

By examining gender differences, this study will enhance our understanding of the extent to which neighborhoods are more consequential to women's than men's mental health considering that neighborhood advantage can promote resources (e.g., social ties/support networks) that are particularly sought after by women (Lepore, 1992; Schuster et al., 1990; Turner & Marino, 1994) and may therefore confer greater benefits to women's than men's mental health. On the other hand, unfavorable neighborhood conditions can create insecurity in the neighborhood, and women's greater fear of victimization and concern about the welfare of their network members (Bird & Rieker, 2008; Kessler & McLeod, 1984; Strazdins & Broom, 2004) can increase their vulnerability to depressive symptoms relative to men.

2.4.3 Descriptive Characteristics of Neighborhoods

The neighborhoods (census tracts) studied in this dissertation differ from each other with regard to their sociodemographic characteristics, which are given in Table 2.3. Neighborhood disadvantage is absent in some neighborhoods (e.g., minimum=0%) but is a key feature of other neighborhoods, for example, percentage of: persons age 25 and above without a high school degree (maximum=79%), unemployed persons ages 16 and above (maximum=46%), persons living below the federal poverty level (maximum=70%), female-headed households with children 18 years old and younger (62%). Similarly, some neighborhoods lack favorable characteristics (e.g., maximum=0%) whereas others are entirely comprised of owner occupied households (maximum=100%) or are largely affluent (maximum=95%, incomes at or above $50,000).

Table 2.3 Descriptive Statistics of Neighborhood (Census Tract) Variables[a] (N=3,316)[b]

	Mean	SD[c]	Minimum	Maximum
Socioeconomic disadvantage[d]	-0.13	0.87	-1.35	6.11
Persons age 25+ no high school degree[e]	0.18	0.12	0.00	0.79
Unemployed persons age 16[e]	0.06	0.04	0.00	0.46
Households receiving public assistance income[e]	0.08	0.06	0.00	0.62
Persons living below the federal poverty level[e]	0.11	0.09	0.00	0.70
Vacant housing units[e]	0.07	0.06	0.00	0.81
Female-headed households w/ own children < 18 yrs old[e]	0.10	0.06	0.00	0.62
Non-family households[e]	0.31	0.11	0.00	0.88
Affluent[e]	0.52	0.18	0.00	0.95
Residentially stable[e]	0.54	0.10	0.01	0.85
Owner-occupied housing units[e]	0.68	0.17	0.00	1.00
Married couple households w/ own children < 18 yrs old[e]	0.33	0.09	0.00	0.70
Persons 65+ years old[e]	0.14	0.08	0.00	1.00

[a] 2000 U.S. Census
[b] Number of census tracts
[c] Standard deviation
[d] Factor score
[e] Proportion

On average, the neighborhoods examined here have sizeable proportions of people ages 25 years or older without a high school degree (18%), individuals living below the federal poverty level (11%), and female-headed households with children 18 years old or younger (10%). The neighborhoods also have high proportions of affluent (52%) and residentially stable (54%) households, on average; as well as owner occupied housing units (68%). Overall, there are low proportions of adults ages 65 and above (14%), but some neighborhoods are entirely comprised of older persons (100%).

Correlations among neighborhood characteristics are presented in Table 2.4. As can be seen, single indicators that comprise the composite measure of neighborhood disadvantage have positive and high correlations with each other, confirming the results of the principal component analysis. Neighborhood proportion female-headed households with own children under 18 years of age, which is conceptualized in this study as an indicator of neighborhood disadvantage, also is moderately to highly correlated with all measures of neighborhood disadvantage except for neighborhood proportion of vacant housing units. Female-headed households with children have been studied as part of composite measures of NSD. It is examined separately in this study because it represents social conditions whereas NSD is primarily an indicator of economic characteristics.

Neighborhood proportion owner occupied housing units has moderate positive correlations with affluence and residential stability; and married couple households with children under 18 years of age also is positive and moderately correlated with affluence. Overall, the composite and single measures of neighborhood disadvantage have moderate to high negative correlations with affluence, owner occupied housing units, and married couple households with own children under 18 years of age. The latter also has a moderate negative correlation with neighborhood proportion persons ages 65 and above. Other correlations among neighborhood conditions are low.

Overall, these results indicate that neighborhood characteristics are appropriately conceptualized as indicators of advantage/disadvantage. Positive and at least moderately high correlations among most indicators of neighborhood advantage/disadvantage show that these measures, to some extent, paint a similar picture about the neighborhood. For example, high neighborhood proportions of owner-occupied housing units and married-couple households may serve as indicators of a stable family-oriented neighborhood. Even so, it is worthwhile to examine the effects of single measures of neighborhood characteristics; effects that may be hidden if the measures are combined into a single composite variable.

Table 2.4 Correlations of Neighborhood (Census Tract) Variables[a] (N=3,316)

Tract-Level Variable	A	B	C	D	E	F	G	H	I	J	K	L	M
A. Socioeconomic Disadvantage[b]	1												
B. Persons age 25+ no high school degree[c]	d	1											
C. Unemployed persons age 16+[c]	d	.67***	1										
D. Households receiving public assistance income[c]	d	.78***	.77***	1									
E. Persons living below the federal poverty level[c]	d	.78***	.79***	.83***	1								
F. Vacant housing units[c]	.33***	.26***	.30***	.26***	.36***	1							
G. Female-headed households with children < 18 yrs old[c]	.70***	.50***	.63***	.70***	.72***	.21***	1						
H. Non-family households[c]	.05***	-.07***	.06***	.01	.18***	.21***	.19***	1					
I. Affluent households[c]	-.80***	-.79***	-.64***	-.71***	-.78***	-.39***	-.64***	-.23***	1				
J. Residentially stable[c]	-.02	.05***	-.01	.04***	-.13***	-.14***	-.14***	-.33***	.09***	1			
K. Owner-occupied housing units[c]	-.58***	-.44***	-.49***	-.54***	-.63***	-.16***	-.64***	-.58***	.54***	.41***	1		
L. Married couple households with children < 18 yrs old[c]	-.42***	-.29***	-.40***	-.41***	-.43***	-.41***	-.47***	-.50***	.54***	-.07***	.37***	1	
M. Persons 65+ years old[c]	-.12***	-.08***	-.10***	-.12***	-.14***	.30***	-.26***	.32***	-.09***	.15***	.17***	-.51***	1

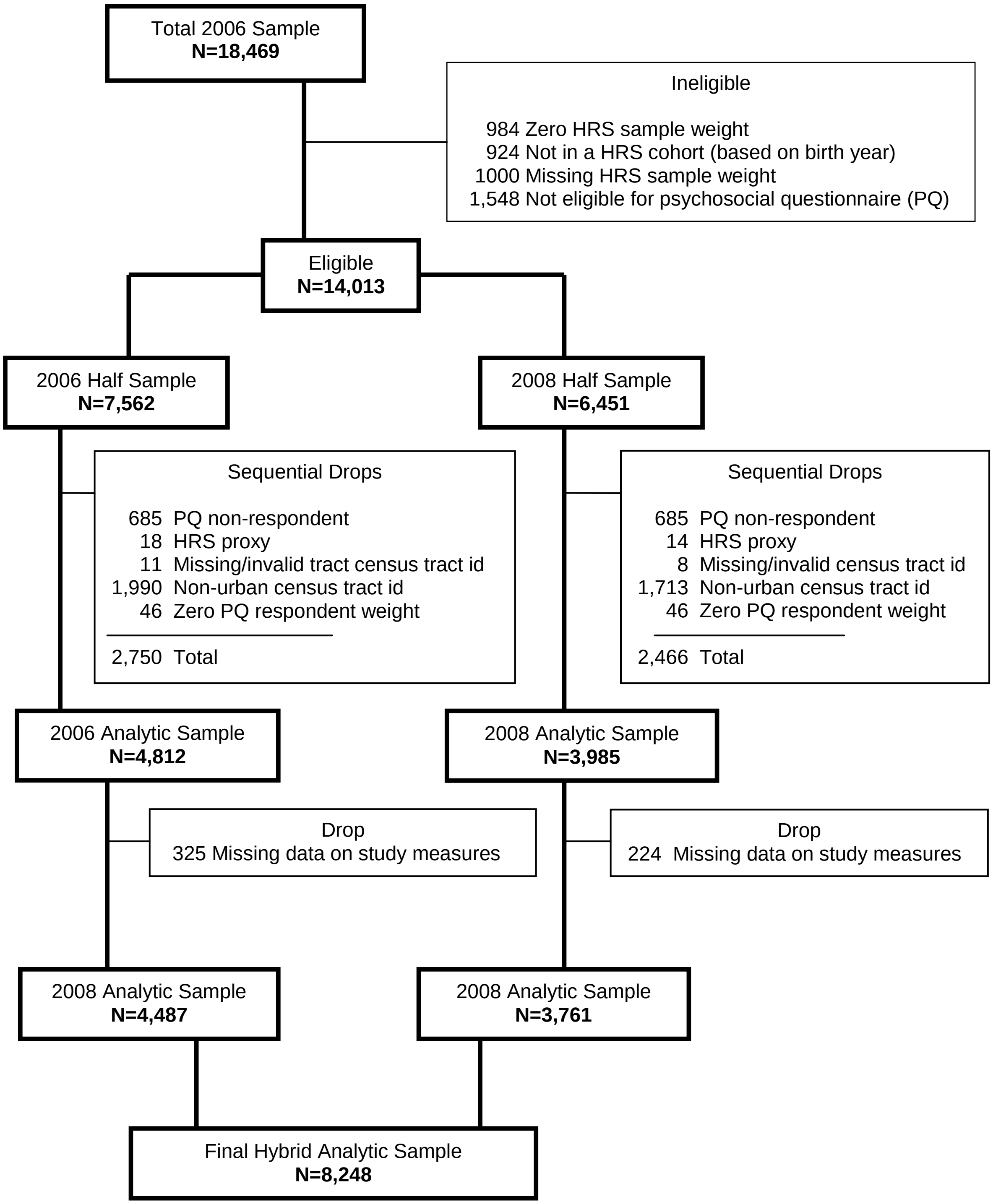
[a] 2000 U.S. Census
[b] Factor score: Neighborhood %: persons ages 25+ without a high school degree, unemployed persons ages 16+, households receiving public assistance income, persons living below the federal poverty level.
[c] Proportion of residents or households.
[d] Correlation of factor score with component.
*p ≤ .05. **p ≤ .01. ***p ≤ .001.

2.5 The Analytic Sample

This study is based on all five HRS cohorts and includes data from the main 2006/2008 HRS interviews, fixed demographic data (e.g., gender) collected at that cohort's baseline, and data from a 2006 and 2008 HRS supplemental psychosocial questionnaire (PQ) described in section 2.2 above. The 2006 HRS random half samples who were administered the PQ in 2006 or 2008 have been combined to create a larger hybrid sample to increase statistical power. Figure 2.1 shows how the hybrid analytic sample was derived.

Starting with a total 2006 HRS sample of 18,469 respondents, 4,456 respondents were ineligible for the analytic sample because they: (a) were not part of the HRS probability sampling frame (i.e., they had a zero or missing sample weight because of age ineligibility), (b) were not in one of the five HRS cohorts based on birth year (i.e., not born before 1954), or (c) were not eligible for the PQ (i.e., missing or not selected to receive PQ in 2006/2008). Of the remaining eligible respondents, 7,562 and 6,451 respectively comprised the 2006 and 2008 half samples; from which 2,750 respondents were removed from the 2006 half sample and 2,466 from the 2008 half sample in the following sequence for these reasons: not completing the PQ, completing the PQ by proxy considering that information provided by proxy may differ from information provided by the respondent, missing a census tract id or having an invalid one, residing in a non-urban census tract, and missing a PQ sampling weight. An additional 325 and 224 respondents from the 2006 and 2008 half samples respectively were excluded for having missing data on key study measures. The sequential drops resulted in a 2006 and 2008 analytic sample of 4,487 and 3,761 respondents respectively; who were combined to form the final analytic sample of 8,248 respondents.

Figure 2.1 Analytic Sample Derivation by Year (2006 & 2008) (Level One Individuals)



2.5.1 Sample Weights

HRS sample weights adjust for differences in the probabilities that individuals are selected to participate in the study. The weights also adjust for individuals who do not agree to participate at their cohort's baseline (i.e., initial non-response); and for attrition and mortality during subsequent data collection waves. Additionally, as described by Aneshensel and colleagues (in preparation), “post-stratification adjustments to the weights [were] made based on the corresponding Current Population Survey on the basis of the birth cohort, gender, and race/ethnicity” (Aneshensel, Kelley, Acholonu, & Clinton, in preparation, p. 14). Sample weights were also generated for the PQ data, and they adjust for individuals who did not respond to the questionnaire.

Respondents are assigned the PQ weight that corresponds to the year they provided data (i.e., 2006/2008). When the PQ sample weights are applied, each PQ half sample represents the total U.S. population meeting criteria for inclusion in the analytic sample. This means that when the two PQ half samples are combined, they double the full population. The PQ weights are therefore divided by two in order for the combined PQ half samples to expand to the full population, and not double the population. The PQ weights are applied for two periods (i.e., 2006 and 2008) and therefore reflect the population in 2007, the midway point between 2006 and 2008 (Aneshensel et al., in preparation). Applying these weights when analyzing the data makes it possible for the analytic sample to be nationally representative of individuals born before 1954 who met criteria for inclusion in the analytic sample. Considering that the sample is restricted to respondents living in the community and excludes proxy respondents, the analytic sample is somewhat biased towards people who are healthy.

2.5.2 Participation: Response Rates and Missing Data

Table 2.5 looks at how the rate of response to the supplemental psychosocial questionnaire among individuals who were eligible for the questionnaire varied by sociodemographic characteristics. As seen in the first column, women participated at a significantly higher rate (63.9%) than men (61.1%), although the difference is not large. The rate of response to the PQ also varied significantly by categories of all the other characteristics. For example, it appears that adults ages 80 and older had a response rate higher than that of their younger counterparts; and so did Hispanics compared to non-Hispanics. Additionally, people who have never been married have relatively high rates of response to the PQ; and so do unemployed and retired people, and those with more education and high household income or debt.

The second column in Table 2.5 assesses the way in which the rate of complete (i.e., non-missing) PQ data varied by sociodemographic characteristics among respondents to the PQ. Women had a significantly lower rate of complete data (93.3%) than men (94.6%), but the difference is quite small. Also it appears that the rate of completion is higher among younger versus older respondents, whites relative to other racial/ethnic groups, the married as opposed to individuals of other marital statuses, people with more education than the less educated, and individuals with the most income and wealth versus those with less. Individuals with the most education and/or income consistently had a higher rate of response to the PQ and a higher rate of complete data. Although women, Hispanics, adults in the oldest age group (i.e., age 80+), and never married individuals had a high rate of response to the PQ, they had lower rates of complete data. Response to the questionnaire (i.e., agreeing to participate) did not always reflect actual participation (i.e., providing data).

Table 2.5 Percent Response to the Psychosocial Questionnaire and Percent Complete Psychosocial Questionnaire Data by Sociodemographic Characteristics

Characteristics	% Response[a] (N=14,013)	% Complete Data[b] (N=8,797)
Gender		
Male	61.1***	94.6*
Female	63.9	93.2
Age (years)		
50-59	61.1***	96.4***
60-69	60.9	95.3
70-79	63.9	93.4
80+	66.3	89.0
Race/Ethnicity		
Non-Hispanic White	60.7***	95.2***
African American	68.0	90.2
Hispanic	72.3	88.9
Other	63.5	93.4
Marital Status		
Married	60.9***	95.4***
Separated/divorced	66.1	93.7
Widowed	65.0	89.8
Never married	73.3	91.4
Education (years)		
0-8	55.2***	85.8***
9-12	60.2	92.9
13+	67.4	96.2
Employment Status		
Employed	62.4***	96.9***
Unemployed	67.4	96.8
Retired	64.9	93.0
Homemaker	58.6	91.1
Other	55.7	90.8
Household income (thousands $)		
25 and below	62.0*	89.1***
26-50	62.4	95.0
51-100	62.6	96.5
>100	65.6	97.7
Household wealth (thousands$)		
Debt	68.7***	91.8***
0-20	62.3	88.5
21-300	60.4	93.5
301-1,000	64.9	95.5
>1,000	64.6	96.7

[a]Among those eligible for the psychosocial questionnaire
[b]Among respondents to the psychosocial questionnaire
Significant group differences by sociodemographic characteristics (e.g., the differences between men and women) in the rate of response to the psychosocial questionnaire or in the rate of complete data: *p ≤ .05. **p ≤ .01. ***p ≤ .001.

Rate of response to the PQ and rate of complete PQ data also varied by depressive symptoms. People with four or more symptoms were designated as having a high score on depressive symptoms and those with less than four symptoms were considered to have a low score as guided by benchmark studies and other evaluations of the HRS 8-item depressive symptoms count (Steffick, 2000). People with high depressive symptoms scores had a significantly lower rate of response (59.3%) compared to those with fewer symptoms (63.4%). A similar pattern was observed in the rate of complete data, where individuals with high symptom scores had a significantly lower rate of complete data (90%) compared to those with fewer symptoms (94.4%). The rate of willingness to participate and actual participation in the psychosocial questionnaire thus appears to have varied by depressive symptoms.

Some differences in the rate of response to the PQ and rate of complete PQ data were large, for example, differences in the rate of response between adults with more education (i.e., 13+ years) and those with less education (8 years or less) was 12.2%; and differences between these two groups of adults in the rate of complete PQ data was 10.4%. However, some differences were small. Of particular importance, the difference between men and women in the rate of response to the PQ and the rate of complete PQ data was 2.8% and 1.33% respectively. Large disparities in the rate of response to the PQ and in the rate of complete PQ data by some sociodemographic characteristics (e.g., education) may render study results less generalizeable to individuals with certain sociodemographic profiles, for example, the less educated. However, the PQ weights (discussed below) adjust for non-response to the questionnaire, thereby enhancing the generalizeability of this study's results so that they apply to the nationally representative sample of U.S. adults born before 1954 who met criteria for inclusion in the analytic sample.

2.5.3 Sample Characteristics

Table 2.6 summarizes the demographic characteristics of the analytic sample (N=8,248); and the 2006 (N=4,487) and 2008 (N=3,761) subsamples that comprise the analytic sample. The subsamples are largely similar as indicated by lack of significant differences between the groups on several characteristics except that 2008 respondents are significantly older on average by 1.4 years due to the lag in data collection, and the 2006 sample is wealthier. The samples are also different from each other in current marital and employment status. For example, there are more people who married or employed in the 2006 sample whereas in the 2008 group there are more formerly married and retired persons. These two differences may be due to aging during the two-year lag between data collection. Similarities between the 2006 and 2008 subsamples make it reasonable to combine them, but I examine the effect of data collection year on study results by including an indicator variable for year of data collection (i.e., 2006 or 2008) in the analyses. When the term is significant, I include it in the analyses to control for the effect of the year of data collection on study outcomes.

The analytic sample shown in the third column of Table 2.6 predominantly includes non-Hispanic whites and currently married individuals. There are almost as many currently employed as there are currently retired persons; and the proportion of women exceeds that of men. The sample is aged 66 years on average, with an age-range of 52 to 104. The sample received 13 years of education on average, but some received no formal education whereas the most educated reported 17 years. Average household income is high but varies widely between zero and over five million dollars (not shown).

Table 2.6 Weighted Sample Characteristics

Characteristic	2006 N=4,487 % or Mean (SD[1])	2008 N=3,761 % or Mean (SD)	2006/2008 N=8,248 % or Mean (SD)
Female	56.5	57.0	56.7
Age (years)	65.84	67.28***	66.53
	(9.23)	(8.51)	(8.91)
Race/Ethnicity			
Non-Hispanic White	79.7	78.4	79.1
African American	10.1	10.6	10.4
Hispanic	7.9	8.5	8.2
Other	2.3	2.5	2.4
Marital Status			
Married	65.2***	60.1	62.7
Separated/divorced	14.1	16.1	15.1
Widowed	16.1	19.2	17.6
Never married	4.6	4.6	4.6
Education (years)	13.11	13.07	13.09
	(2.65)	(2.63)	(2.64)
Employment Status			
Employed	42.0**	37.7	40.0
Unemployed	1.3	1.6	1.5
Retired	39.6	44.3	41.8
Homemaker	9.3	7.4	8.4
Other	7.8	9.0	8.4
Household income (thousands $)[2]	72.56	73.49	73.01
	(122.30)	(97.49)	(110.66)
Household wealth (thousands $)[2]	621.42***	564.47	594.14
	(2631.46)	(1207.79)	(2046.84)

2006 and 2008 samples are significantly different from each other: *p ≤ .05. **p ≤ .01. ***p ≤ .001.
[1]Standard deviation
[2]Significant group differences assessed on the log transformed value

The measures for current and past marital status were described in Section 2.3.1 and shown in Table 2.1 on page 69. I present this table again and describe the distribution of respondents across these statuses.

Table 2.1 Weighted Current and Past Marital and Employment Status

Characteristic	Men N=3,294 %	Women N=4,954 %	Total N=8,248 %
Current & Past Marital Status			
Married currently	75.6***	53.0	62.7
Separated/divorced currently	11.8	17.5	15.1
Never married	5.3	4.0	4.6
Widowed consistently[a]	3.4	15.1	10.0
Widowed recently	2.9	7.8	5.7
Widowed duration unknown[b]	1.0	2.7	1.9
Current & Past Employment Status			
Employed consistently[a]	17.3***	15.0	16.0
Employed recently	27.8	21.1	24.0
Retired consistently	23.6	16.6	19.6
Retired recently	16.8	19.8	18.5
Retired duration unknown[b]	4.4	3.1	3.7
Homemaker consistently	0.0	6.2	3.5
Homemaker duration unknown	0.2	8.5	4.9
Other recently/consistently	10.0	9.7	9.9

* Men and women are significantly different from each other: *p ≤ .05. **p ≤ .01. ***p ≤ .001.
[a] Consistently=for the past 6 years
[b] Duration unknown=missing at one or more prior interviews

As seen in the first and second columns of the table, there are significant differences by gender. There are more women than men who were recently widowed or who have been consistently widowed for the past six years and substantially more men than women who are currently married. Homemakers are almost entirely women. As a result, there are fewer women than men in the other categories of employment status except the recently retired group.

The third column of Table 2.1 provides the distribution of current and past marital and employment status characteristics for the full sample irrespective of gender. The majority of the sample is currently married and there is a sizeable proportion (15.1%) who are currently separated/divorced. A smaller proportion of the sample (5.7%) was recently widowed compared to those who have been consistently widowed for the past six years (10%). Under 5% of the sample have never been married. There are slightly more people (19.6%) who have been consistently retired for the past six years relative to those who were recently retired (18.5%). On the other hand, the proportion of people who were recently employed (24%) or homemakers (4.9%) exceed the proportion who have occupied these statuses consistently for the past six years. A somewhat sizeable proportion (9.9%) of the sample are in the "other" employment status (i.e., unemployed, temporarily laid off, on sick or other leave, disabled, other).

2.6 Research Hypotheses

In this section, I present the aims, sub-aims, and hypotheses of this dissertation.

2.6.1 AIM 1: To examine gender differences in the association between neighborhood-level characteristics and depressive symptoms.

(a) To assess the extent to which cross-level positive associations between multiple dimensions of neighborhood-level disadvantage (e.g., the proportion of unemployed persons, individuals living below the poverty line) and depressive symptoms are greater among women than men and therefore place women at significantly higher risk of depressive symptoms.

(b) To assess the extent to which cross-level inverse associations between neighborhood-level advantage (e.g., affluence, residential stability) and depressive symptoms are greater among women than men and therefore confer significantly higher protection against depressive symptoms for women.

I address the first aim by testing the following research hypotheses. Except for the first hypotheses, all entail controls for individual-level characteristics that are associated with depressive symptoms, namely: age, race/ethnicity, marital- and employment- status, education, and household income and wealth.

H1a: Women have higher levels of depressive symptoms than men.

H1b: Women have higher levels of depressive symptoms than men net of individual-level characteristics.

H1c: Multiple dimensions of *neighborhood disadvantage* are positively associated with *depressive symptoms* and these associations are greater among women than men.

H1d: Multiple dimensions of *neighborhood advantage* are negatively associated with *depressive symptoms* and these associations are greater among women than men.

2.6.2 AIM 2: To examine the extent to which relationships among components of the multilevel neighborhood stress process model differ by gender.

(a) To ascertain gender differences in any cross-level associations between neighborhood-level socioeconomic disadvantage (NSD) and individual-level stressors (i.e., perceived neighborhood physical disorder, financial strain, everyday discrimination) or psychosocial resources (i.e., perceived neighborhood social cohesion, social support, mastery).

(b) To assess gender differences in any cross-level associations between neighborhood-level advantage and individual-level stressors or psychosocial resources.

(c) To examine gender differences in the effect of individual-level stressors and psychosocial resources on depressive symptoms.

It is reasonable to expect men and women residing in the same neighborhood to be equally exposed to neighborhood advantage and disadvantage, but women may differ from men in their perceptions of these neighborhood conditions and the associated mental health outcomes. The second aim is achieved by testing the following research hypotheses, all of which control for individual-level characteristics that are associated with depressive symptoms.

H2a: *NSD* is positively associated with *perceived neighborhood physical disorder and other stressors*, and the magnitude of these associations is significantly greater among women than men.

H2b: *NSD* is negatively associated with *perceived neighborhood social cohesion and other psychosocial resources*, and the magnitude of these associations is significantly greater among women than men.

H2c: *NA* is negatively associated with *neighborhood physical disorder and other stressors*, and the magnitude of these associations is significantly greater among women than men.

H2d: *NA* is positively associated with *neighborhood physical disorder and other psychosocial resources*, and the magnitude of these associations is significantly greater among women than men.

H2e: *Perceived neighborhood physical disorder and other stressors* are positively associated with *depressive symptoms*, and the magnitude of these associations is significantly greater among women than men.

H2f: *Perceived neighborhood social cohesion and other psychosocial resources* are negatively associated with *depressive symptoms*, and the magnitude of these associations is significantly greater among women than men.

H2g: *Perceived neighborhood physical disorder and other stressors* are positively associated with depressive symptoms, and the magnitude of these associations is significantly *smaller among individuals with higher levels of psychosocial resources* than those with lower levels of psychosocial resources.

2.6.3 AIM 3: To examine the extent to which the neighborhood stress process model explains variation in depressive symptoms among women.

(a) To estimate the cross-level association between neighborhood conditions and depressive symptoms among women.

(b) To assess the extent to which exposure to stressors and access to psychosocial resources mediate the relationship between neighborhood conditions and depressive symptoms.

(c) To determine the extent to which ND and NA are more strongly associated with depressive symptoms among women with high rather than low exposure to stressors.

(d) To ascertain the extent to which ND and NA are more strongly associated with depressive symptoms among women with greater rather than lesser access to psychosocial resources.

I address the third aim by testing the following hypotheses, all of which control for individual-level characteristics associated with depressive symptoms:

H3a: *ND* is positively associated with *depressive symptoms* in women.

H3b: *NA* is negatively associated with *depressive symptoms* in women.

H3c: *ND* is positively associated with *perceived neighborhood disorder and other stressors*, which are positively associated with *depressive symptoms*, such that *ND* has an indirect positive effect on *depressive symptoms* among women.

H3d: *ND* is negatively associated with *neighborhood social cohesion and other psychosocial resources*, which are negatively associated with *depressive symptoms*, such that *ND* has an indirect positive effect on *depressive symptoms*.

H3e: *NA* is negatively associated with *perceived neighborhood disorder and other stressors*, which are positively associated with *depressive symptoms*, such that *NA* has an indirect negative effect on *depressive symptoms* among women.

H3f: *NA* is positively associated with *neighborhood social cohesion and other psychosocial resources*, which are negatively associated with *depressive symptoms*, such that *NA* has an indirect negative effect on *depressive symptoms*.

H3g: The magnitude of the positive association between *ND* and *depressive symptoms* is significantly *greater among women with high exposure to stressors* than women with low exposure to stressors.

H3h: The magnitude of the positive association between *ND* and *depressive symptoms* is significantly *smaller among women with higher levels of psychosocial resources* than women with lower levels of psychosocial resources.

H3i: The magnitude of the negative association between *NA* and *depressive symptoms* is significantly *smaller among women with high exposure to stressors* than women with low exposure to stressors.

H3j: The magnitude of the negative association between *NA* and *depressive symptoms* is significantly *greater among women with higher levels of psychosocial resources* than women with lower level of psychosocial resources.

2.7 Data Analysis Plan

In this section I present my plan for the secondary analysis of HRS data to achieve the specific aims of this dissertation. The models for testing the hypotheses and interpretations of the terms in the models were informed by Bryk and Raudenbush (1992), Seltzer (2010), Erausquin (2007), and Cummings (2007). The primary outcome of interest is depressive symptoms. Stressors (i.e., perceived neighborhood physical disorder, financial strain, and everyday discrimination) and psychosocial resources (i.e., perceived neighborhood social cohesion, mastery, and social support) are secondary outcomes. All dependent variables are continuous. Descriptive statistics were generated using Stata 11.2/SE (StataCorp, 2011), and so are the analyses for some study hypotheses. Hierarchichal or multilevel linear regression models are estimated using HLM 6.02 (Raudenbush, Bryk, Cheong, & Congdon Jr., 2004). In the multilevel analyses, I examine the focal relationships between neighborhood conditions at level-2 and outcome measures at level-1, and also associations between stressors or psychosocial resources and depressive symptoms all at level-1.

First, I discuss multilevel analysis, after which I address how the study aims are achieved. In multilevel analysis, the variance in the outcome measure is examined at multiple hierarchichal levels. In this study, individuals (level-1) are nested within neighborhoods/census tracts (level-2). The variance in depressive symptoms, for example, is comprised of within group variation in symptoms (i.e., variation in symptoms among individuals in the same neighborhood) and between group variation in symptoms (i.e., variation in symptoms among the neighborhoods in the study) (Raudenbush & Bryk, 2002). Such partitioning of the variance in depressive symptoms involves an assumption about the distribution of depressive symptoms across neighborhoods: that neighborhood random effects (υ_{0j}) are normally distributed with a mean of 0 and a variance equal to τ_{00}. For the population of neighborhoods in the study, τ_{00} is the variance among the neighborhood mean depressive symptoms (Raudenbush & Bryk, 2002). The multilevel model has the advantage of providing the distribution of the outcome across all neighborhoods (i.e., the level-2 units). The model also facilitates assessment of the proportion of between group (i.e., between neighborhood) variance in depressive symptoms that is accounted for when contextual-level measures (e.g., neighborhood conditions) are added to the model.

In multilevel analysis, the levels are represented by different submodels that specify the relationships between the variables at that level; and also indicate how variables at one level influence the relationships at another level. In the models below, the first submodel is the level-1 or "within-individual" model; and the second submodel is the level-2 or "between-neighborhood" model.

Level-1:

$$Y_{ij}\text{(depressive symptoms)} = \beta_{0j} + \beta_{1j}(\text{FEMALE}_{ij}) + \beta_{2j}(\text{EDUC}_{ij}) + \varepsilon_{ij} \qquad \text{(EQ1)}$$

Level 2:

$$\beta_{0j} = \gamma_{00} + \gamma_{01}(\text{UNEMPLOYED}_{j}) + \upsilon_{0j} \qquad \text{(EQ2)}$$

The subscripts *i* and *j* represent individuals and neighborhoods respectively. In the level-1 model of EQ1, $Y_{ij\text{(depressive symptoms)}}$ is the depressive symptoms score for individual i in neighborhood *j*. β_{0j} is the random intercept or the average depressive symptoms score for neighborhood *j* when all other covariates are equal to zero. FEMALE_{ij} represents the gender of individual *i* in neighborhood *j*, coded 1 for female and 0 for male. EDUC_{ij} is the years of education attained by individual *i* in neighborhood *j*. β_{1j} is the effect of being female on depressive symptoms in neighborhood *j*, controlling for education. β_{2j} is the effect of education on depressive symptoms in neighborhood *j* net of gender. ε_{ij} is an error term representing the unique contribution to variation in depressive symptoms of individual *i* in neighborhood *j*. In the level-1 model, a separate individual-level regression is specified for each neighborhood indicating that the effect varies by neighborhood (e.g., the effect of being female on depressive symptoms).

In the level-2 model of EQ2, β_{0j} is the neighborhood specific intercept or the average depressive symptoms score for neighborhood *j*. γ_{00} is the common intercept across the neighborhoods (i.e., the average depressive symptoms score across neighborhoods when all other covariates are equal to zero). γ_{01} is the partial effect of neighborhood proportion unemployed individuals on the average depressive symptoms score for neighborhood *j* (i.e., the expected increase in the average depressive symptoms score for neighborhood *j* when neighborhood *j's* value for the proportion of unemployed individuals increases by one unit, controlling for gender and education). Although the value for UNEMPLOYED_j (i.e., neighborhood proportion unemployed individuals) may vary between neighborhoods as indicated by the subscript *j* next to UNEMPLOYED, the regression coefficient γ_{01} is the same across neighborhoods. υ_{0j} is the unique contribution to the intercept that is associated with neighborhood *j*. In the level-2 model, the intercept β_{0j} and regression coefficients are functions of the neighborhood-level variables like the proportion of unemployed individuals in neighborhood *j* (UNEMPLOYED_j). That is, the relationship between being female and depressive symptoms, as represented by the intercept and/or slope, is influenced by neighborhood-level measures.

EQ1 and EQ2 jointly comprise a 2-level hierarchical linear regression model. As summarized by Erausquin (2007), EQ1 indicates that the depressive symptoms score for individual *i* in neighborhood *j* is the result of: (a) the average depressive symptoms score of the neighborhood in which the person lives, (b) the person's individual characteristics, (c) residual variation in depressive symptoms (i.e., variation that is not accounted for by 'a' and 'b'). EQ2 shows that the average depressive symptoms score of the neighborhood in which the individual resides is determined by: (i) the average depressive symptoms score across all neighborhoods in the study, (ii) the characteristics of the person's neighborhood of residence, and (iii) residual variation (i.e., variation in the average depressive symptoms score of the neighborhood in which the individual lives that is not explained by 'i' and 'ii').

In performing multilevel analyses, I begin by estimating a null model to examine whether depressive symptoms and other dependent variables vary significantly across neighborhoods before introducing other measures into the model. The intraclass correlation coefficient is a descriptive statistic designed for nested data. It describes the degree of similarity or correlation between observations in the same cluster (Bryk & Raudenbush, 1992; Koch, 1982). Using estimates from the null model, I calculate the intraclass correlation (ρ) for a 2-level hierarchichal linear regression model to assess the proportion of total variance in depressive symptoms that is present at the neighborhood level. The formula for calculating the intraclass correlation is given as (Bryk & Raudenbush, 1992, p. 18):

$$\rho = \tau_{00} / (\tau_{00} + \sigma^2) \qquad \text{(EQ3)}$$

The proportion of total variance in depressive symptoms attributable to differences in individuals (i.e., individual heterogeneity) equals 1- ρ. After estimating the null model, I adjust for individual-level sociodemographic covariates to see if significant between-neighborhood variation in depressive symptoms remain. If so, I proceed to test specific study hypotheses by introducing neighborhood factors into the model to see if they account for neighborhood-level variation in outcomes.

Centering Study Measures: To aid the interpretation of estimated parameters in multilevel analyses, level-1 covariates can be centered at the grand/overall sample mean; or at the group or cluster mean (e.g., average age of respondents living in the same neighborhood). Enders and Tofighi (2007) empirically demonstrated the circumstances under which group or grand mean centering is appropriate in multilevel analyses. In this dissertation, I follow their recommendations and employ group-mean centering of level-1 covariates in analyses where I am primarily concerned with: (a) the relationship between a level-1 focal independent variable and the outcome measure (e.g., depressive symptoms measured at level-1); and (b) cross-level interactions or interactions involving two level-1 variables (Enders & Tofighi, 2007). I also perform grand mean centering of level-1 covariates when examining the effect of a level-2 independent variable on the outcome measure. Additionally, and consistent with the recommendation of Enders and Tofighi (2007), I employ grand mean-centering of level-2 covariates across the analyses carried out in this dissertation.

2.7.1 Analytic Methods: Study Hypotheses

This study's specific aims are concerned with examining different relationships between measures in the neighborhood stress process model. The analytic models for testing different hypotheses across the study aims are generally similar in form. All but hypothesis H1a control for individual-level demographic characteristics (e.g., age, race/ethnicity, marital status). The models presented in this section are simplified; they do not include all covariates.

To test Hypothesis H1a, I regress depressive symptoms on gender using just the level-1 model (i.e., EQ1) described above. Hypothesis H1b is tested by adding individual-level characteristics to the model that already contains gender. To test Hypotheses H1c and H1d, I first estimate a null random intercept model. It is a null model because it excludes all covariates; and it is a random intercept model because the intercept for each neighborhood is allowed to vary. The model assesses variation in depressive symptoms between neighborhoods using the following equations, which are a simplified form of EQ1 and EQ2 in that there are no covariates at either level:

Level-1:

$$Y_{ij}(\text{depressive symptoms}) = \beta_{0j} + \varepsilon_{ij} \qquad \text{(EQ4)}$$

Level 2:

$$\beta_{0j} = \gamma_{00} + \upsilon_{0j} \qquad \text{(EQ5)}$$

As before in the level-1 model, Y_{ij} is the depressive symptoms score for individual i in neighborhood *j*. β_{0j} is the random intercept that represents the average depressive symptoms score in neighborhood *j*. ε_{ij} is an error term representing the unique contribution to variation in depressive symptoms of individual *i* in neighborhood *j*. In the level-2 model, β_{0j} is the neighborhood specific intercept, γ_{00} is the common intercept across the neighborhoods (i.e., the average depressive symptoms score across neighborhoods). υ_{0j} is an error term representing the unique contribution to the intercept that is associated with neighborhood *j*. After establishing that there is between neighborhood variation in depressive symptoms and eventually other dependent variables, I run 2-level hierarchical linear regression models similar to the previously described EQ1 and EQ2 to assess the effect of different neighborhood conditions on depressive symptoms net of individual-level demographic characteristics.

Gender differences in neighborhood effects on symptoms (i.e., Hypotheses H1c and H1d) are tested by adding to these models a cross-level interaction between neighborhood conditions and gender. An example is given for testing whether the effect of neighborhood proportion unemployed on depressive symptoms varies by gender (i.e., a cross-level interaction). A model for the coefficient for gender, β_{1j}, is included at level-2; and the coefficient for neighborhood proportion unemployed is allowed to vary randomly by gender (i.e., γ_{11}), representing the cross-level interaction.

Level-1:

$$Y_{ij}(\text{depressive symptoms})=\beta_{0j}+\beta_{1j}(\text{FEMALE}_{ij})+\beta_{2j}(\text{EDUC}_{ij})+\varepsilon_{ij} \qquad \text{(EQ6)}$$

Level 2:

$$\beta_{0j} = \gamma_{00} + \gamma_{01}(\text{UNEMPLOYED}_{j}) + \upsilon_{0j} \qquad \text{(EQ7)}$$

$$\beta_{1j} = \gamma_{10} + \gamma_{11}(\text{UNEMPLOYED}_j) + \upsilon_{1j} \qquad \text{(EQ8)}$$

EQ6 and EQ7 are identical to EQ1 and EQ2 respectively. The difference in this analysis is the second level-2 equation, EQ7, which predicts β_{1j}, the neighborhood specific effect of gender (i.e., the effect of being female on depressive symptoms in neighborhood *j*). γ_{10} is the common slope associated with the individual-level variable, FEMALE, across neighborhoods after adjusting for education. The coefficient for the cross-level interaction, γ_{11}, represents the effect of neighborhood proportion unemployed individuals (UNEMPLOYED) on the neighborhood specific slopes for gender (FEMALE). More specifically, it is the expected change in the gender gap in depressive symptoms score when neighborhood proportion of unemployed individuals for neighborhood *j* increases by one unit (net of education). υ_{1j} is the unique contribution of neighborhood *j* to β_{1j}, the slope for gender.

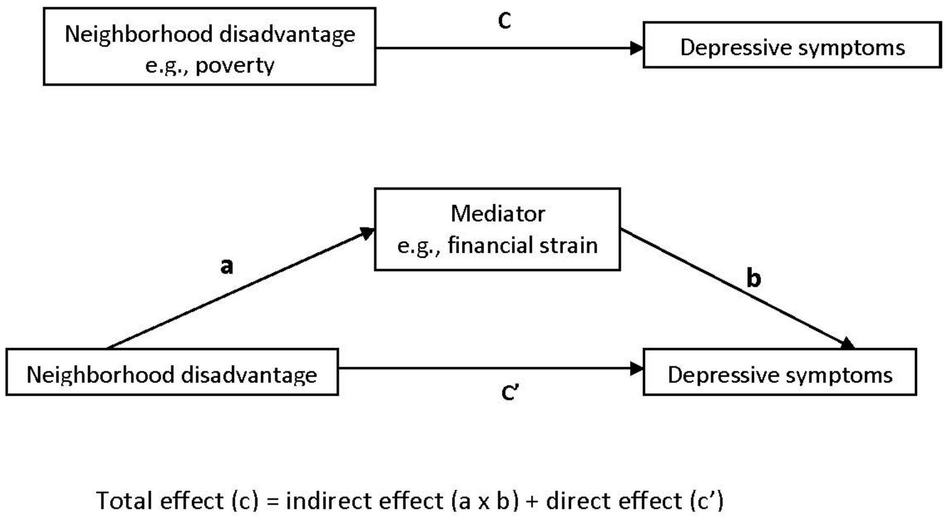
Aim 2 Hypotheses H2a-H2d posit a gender difference in the effects of neighborhood conditions on stressors and psychosocial resources. These hypotheses are tested using models similar to EQ6, EQ7, and EQ8 above. Stressors like neighborhood physical disorder and resources (e.g., social support) are the outcome measures under investigation. Hypotheses H2e and H2f are tested by expanding the models for H2a-H2b to include interactions among the appropriate individual-level terms. For example, for H2e the interaction term would be perceived neighborhood physical disorder × gender. Technical difficulties arose in estimating hypothesis H2g within a multilevel framework. Therefore, this hypothesis is tested using multiple linear regression models of the following form:

$$Y_i(\text{depressive symptoms}) = \beta_0 + \beta_1(\text{EDUC}_i) + \beta_2(\text{PNPD}_i) + \beta_3(\text{PNSC}_i) + \beta_4(\text{PNPD}_i * \text{PNSC}_i) + \varepsilon_i \qquad \text{(EQ9)}$$

β_0 is the expected depressive symptoms score of a person with no education and whose perceived neighborhood physical disorder (PNPD) and social cohesion (PNSC) scores are zero. β_1 is the expected change in depressive symptoms score associated with a one unit increase in education net of the conditional effects of PNPD and PNSC. β_2, the coefficient for PNPD, is the effect of PNPD on depressive symptoms when PNSC is equal to zero, that is, the average level of PNSC when it is mean centered. B_3, the coefficient for PNSC, is the effect of PNSC on depressive symptoms when PNPD is equal to zero, which is the average level of PNPD when it is centered at the mean. B_4, the coefficient for the interaction term, is the amount by which the effect of PNPD on depressive symptoms changes for a one-unit change in PNSC. The direction and significance of the coefficient for the interaction term (i.e., β_4) indicate whether the effect of perceived neighborhood physical disorder (PNSC) on depressive symptoms varies by perceived neighborhood social cohesion (PNSC) net of the covariates in the model. ε_i is an error term representing the unique contribution of each individual to depressive symptoms scores.

Aim 3 focuses on women only. Hypotheses H3a-H3c are examined using models similar to EQ1 and EQ2. In hypotheses H3b and H3c, stressors and psychosocial resources (level-1) are examined as possible mediators of the relationship between neighborhood disadvantage (level-2) and depressive symptoms (level-1) as depicted in Figure 2.2. In the first step, I assess whether neighborhood disadvantage is significantly associated with the mediator (e.g., financial strain) net of sociodemographic characteristics. The coefficient for neighborhood disadvantage represents effect ‘a’ in Figure 2.2. In the second step, I examine the impact of neighborhood disadvantage on depressive symptoms net of individual-level sociodemographic characteristics and the mediator. The coefficient for the mediator and neighborhood disadvantage represent effects 'b' and 'c'' respectively in Figure 2.2.

Figure 2.2 Mediation Model



To test whether there is a significant indirect effect of neighborhood disadvantage on depressive symptoms that is transmitted through the mediator, I use the program PRODCLIN to calculate a 95% confidence interval for the indirect effect (MacKinnon, Fritz, Williams, & Lockwood, 2007). MacKinnon and colleagues developed the program and describe it as: "a program that uses the distribution of the product of two normally distributed variables to compute asymmetric confidence intervals for the mediated effect" (MacKinnon et al., 2007). After calculating the confidence interval, I can make the assumption that there is a significant indirect effect of neighborhood disadvantage on depressive symptoms that is channeled through the mediator if the interval excludes zero. The last two hypotheses of my third research aim, hypotheses H3d and H3e, are tested using models similar to EQ6, EQ7, and EQ8.

2.8 Data Permission and Human Subjects

HRS data collection instruments and processes were approved by the University of Michigan's Institutional Review Board (Heisler, Cole, Weir, Kerr, & Hayward, 2007). Respondents completed human subjects protection procedures, including informed consent for participating in the study. Public use HRS data that excludes personal identifying information is available on the HRS website (http://hrsonline.isr.umich.edu), but data containing information that can be used to identify respondents, such as the neighborhood level identifiers needed for this dissertation, are restricted. Dr. Carol Aneshensel received approval to use restricted HRS data. As a graduate student research assistant working for Dr. Aneshensel, I completed a data use agreement plan that allows me to use HRS data within the auspices of Dr. Aneshensel's data use and data security agreement plan.

Summary

In this chapter, I discussed the research methods employed in this dissertation. I began with an overview of the U.S. Health and Retirement Study, which is the source of data used in this study. I described the procedures that were used to collect HRS data, how I operationalized the individual- and neighborhood- level measures employed in the analyses, and how I derived the analytic sample. I also presented the sociodemographic characteristics of the analytic sample and the hypotheses examined within each of the study's three specific aims. In the final section, I discussed the data analysis plan for achieving the aims of this dissertation.

CHAPTER 3:

GENDER DIFFERENCES IN NEIGHBORHOOD EFFECTS ON DEPRESSIVE SYMPTOMS

3.1 Introduction

In this chapter, I present the results of the first study aim, which *examines gender differences in the association between neighborhood characteristics and depressive symptoms*. This aim has two main objectives, the first is to assess the extent to which any cross-level positive associations between eight dimensions of neighborhood disadvantage and depressive symptoms are greater among women than men and therefore place women at significantly higher risk for depressive symptoms. The second objective is to investigate the degree to which any cross-level inverse associations between five measures of neighborhood advantage and depressive symptoms are greater among women than men and therefore confer significantly higher protection against depressive symptoms for women. The overall goal is to determine whether neighborhood conditions are more consequential to women's than men's mental health.

The background section in the first chapter of this dissertation showed that neighborhood disadvantage, particularly neighborhood socioeconomic disadvantage (NSD), is significantly associated with increased risk for depressive symptoms (e.g., Wight et al., 2011; Matheson et al., 2006); whereas favorable characteristics such as residential stability (Ross et al., 2000) and higher concentrations of older adults (Kubzansky et al., 2005) protect mental health. Gender differences in neighborhood effects on depressive symptoms, however, have received little research attention. As discussed in chapter one, there is reason to expect neighborhoods to be more consequential to women's than men's mental health, including women's greater: exposure to the neighborhood (La Gory & Fitzpatrick, 1992; NCHS, 2011; USBLS, 1990), fear of victimization (Elliott, 2001; Hatch & Dohrenwend, 2007; Smith, & Torstensson, 1997), and involvement in developing social ties and support networks that buffer stress (Campbell & Lee, 1991; Glass et al., 2006; Thoits, 2011; Turner & Marino, 1994) and can be enhanced or threatened by conditions (Browning & Cagney, 2003; Keene et al., 2010; McCulloch, 2003; Ross et al., 2001).

The outcome of interest in this first research aim is depressive symptoms and analyses are performed within a multilevel framework. I begin, in section 3.2, by testing for significant neighborhood variation in depressive symptoms. Next, I examine whether the higher female preponderance of depressive symptoms consistently reported in the research literature (Accortt et al., 2008; Boughton & Street, 2007) holds for this sample of U.S. middle-age and older adults. In section 3.3, I describe the main effects on depressive symptoms of favorable and unfavorable neighborhood conditions. I present findings for gender differences in neighborhood effects on depressive symptoms in section 3.4. The chapter closes with a discussion of the findings.

3.2 Gender Differences in Depressive Symptoms

A prerequisite for the ensuing analyses is: whether there is neighborhood variation in depressive symptoms. Therefore, I estimated an intercept-only or null model that showed significant variation in depressive symptoms across neighborhoods (τ=0.069, p <.001). The intraclass correlation indicated that 14.3% (ρ = 0.143) of the total variation in symptoms was present at the neighborhood level. The remaining variation in symptoms (85.7%) was at the individual level.

H1a states that *women have higher levels of depressive symptoms than men.* I tested this hypothesis by assessing whether gender at the individual-level was associated with depressive symptoms. Consistent with hypothesis H1a, women reported significantly more symptoms (b=.088, SE=.019, p <.001) than men.

H2b posits that *women have higher levels of depressive symptoms than men net of individual-level characteristics related to depressive symptoms.* As shown in Table 3.1, women did not differ from men in reports of depressive symptoms net of the control variables. These findings run contrary to the research literature that has consistently shown that women are more likely than men to be depressed even when differences in sociodemographic characteristics are controlled (Accortt et al., 2008; Boughton & Street, 2007). Even so, examining gender differences in neighborhood effects on depressive symptoms will inform our understanding of the neighborhood conditions that are more consequential to women's than men's mental health. Additionally, the possibility that an effect is conditional does not require a significant main effect (Aneshensel, forthcoming).

Several individual-level characteristics were significantly associated with depressive symptom as seen in Table 3.1. The coefficient for age-squared is significant, indicating a non-linear relationship between age and depressive symptoms. Being older was related to declines in symptoms up to around age 70, after which symptoms increased with age. However, there is only a slight difference in depressive symptoms at the ages when symptoms are highest and lowest. Compared to married people, depressive symptoms also were higher among individuals who were formerly married as shown by their positive and significant coefficients. Additionally, relative to people who were consistently employed for the past six years, those who occupied the following employment statuses reported more depressive symptoms net of the other variables in the model: (a) retired recently, (b) a homemaker for an unknown duration, and (c) 'other' employment status.

Table 3.1 Multilevel Linear Regressions of Depressive Symptoms on Sociodemographic Characteristics: U.S. Urban Adults Aged 50 and Older (N=8,248)

Independent variables	*b*	*SE*
Individual-level demographic variables		
Female (/male)	.027	.021
Age (years)	-.071***	.018
Age squared	.0005***	.0001
Race/ethnicity		
Black/African American	.014	.062
Hispanic	.016	.074
Other	.033	.077
Marital status		
Separated or divorced	.156***	.045
Widowed	.147***	.037
Never married	.024	.074
Education (years)	-.021***	.005
Current & past employment status		
Employed recently	.016	.041
Retired consistently	.071	.037
Retired recently	.094**	.036
Retired duration unknown	.065	.066
Homemaker duration unknown	.159***	.047
Other recently/consistently	.482***	.055
Household income (log)	-.047*	.019
Household wealth (log)	-.116***	.031
Residential tenure[a] (/moved)	-.042	.037
2006 data collection year (/2008)	.104***	.031
Intercept	.646***	.010
Intercept variance component		
Between-group (τ)	.077***	
Within-group (σ^2)	.382	
Model comparison[b]		
Chi-square	421.819***	
Degrees of freedom	19	

NOTE: SE=standard error; Reference groups: race/ethnicity=non-Hispanic white; marital status=married; current & past employment status=employed now and recent past

[a] People who did not move in the past six years versus movers

[b] Model 1 is compared to the model (not shown) regressing depressive symptoms on gender only (testing hypothesis H1a)

*p ≤ .05. **p ≤ .01. ***p ≤ .001.

Attaining more years of education, having higher household income, or having more household wealth was related to fewer depressive symptoms as indicated by the negative and significant coefficients for these variables in the model. Characteristics not significantly associated with reports of more symptoms included being residentially stable (i.e., living in the same neighborhood for the past six years) versus not; race/ethnicity; having never been married relative to being married; and becoming recently employed, being retired consistently over the past six years, and being retired for an unknown duration - compared to being consistently employed over the past six years.

I also examined the effect of year of data collection on depressive symptoms considering that the analytic sample is comprised of 2006 and 2008 HRS subsamples. Respondents who completed the psychosocial questionnaire (PQ) in 2006 as opposed to 2008 reported significantly more symptoms net of controls. I therefore control for year of data collection in subsequent analyses.

The variance of the random intercept in the model in Table 3.1 was significant (τ=0.077, $p < .001$), indicating that there remained significant unexplained variation in depressive symptoms at the neighborhood level after adjusting for individual-level characteristics.

3.3 Main Effects of Neighborhood Conditions and Depressive Symptoms

In previous research, neighborhood socioeconomic disadvantage (NSD) is the most commonly studied neighborhood condition. This dissertation makes a contribution to the field by also investigating the main effects on depressive symptoms of individual indicators of neighborhood disadvantage and several measures of neighborhood advantage. I present the results in Table 3.2. All of the models adjust for individual-level sociodemographic characteristics. As seen in Model 1, the coefficient for NSD is positive and significant, which indicates that middle-aged and older adults who live in more socioeconomically disadvantaged urban neighborhoods report more depressive symptoms. All four components of NSD have a similar effect on depressive symptoms (not shown). The components are neighborhood proportion: individuals aged 25 and older without a high school diploma(p=.005), unemployed persons aged 16 and older (p=.006), households receiving public assistance income (p=.001), and people living below the federal poverty level (p=.004).

Table 3.2 Multilevel Linear Regressions of Depressive Symptoms on Neighborhood Conditions (N=8,248)

Independent Variables	Model 1 *b* *(SE)*	Model 2 *b* *(SE)*	Model 3 *b* *(SE)*	Model 4 *b* *(SE)*	Model 5 *b* *(SE)*
Female (/male)	.036* (.018)	.036* (.018)	.036* (.018)	0.036* (.018)	.036* (.018)
Census tract-level variables					
Neighborhood Disadvantage					
Neighborhood socioeconomic disadvantage[a]	.038*** (.011)				
N% female-headed households with kids <18 years old		0.405** (.139)			
Neighborhood Advantage					
N% affluence			-.153** (.049)		
N% owner occupied housing units				-.140** (.046)	
N% adults ages 65+					-.206* (.080)
Intercept	.636*** (.008)	.637*** (.008)	.635*** (.008)	0.638*** (.008)	.634*** (.008)
Intercept variance component					
Between-group (τ)	.019***	.019***	.020***	.019***	0.019***
Within-group (σ^2)	.382	.382	.381	.381	.382
Model comparison[b]					
Chi-square	17.151***	11.566***	13.122***	12.525***	6.510**
Degrees of freedom	1	1	1	1	1

NOTE: SE=standard error; N=neighborhood; Percent (%) is used as a short-hand notation for proportion; All models control for: age, race/ethnicity, marital status, education, current and past employment status, household income and wealth, residential stability, and data collection year.
[a] Factor score
[b] Each model is compared to the same model without the neighborhood characteristic.
*p ≤ .05. **p ≤ .01. ***p ≤ .001.

In Model 2, the positive and significant coefficient for neighborhood proportion female-headed households with own children below 18 years of age also shows that living in a neighborhood with higher proportions of this characteristics is associated with increased risk for depressive symptoms.

Neighborhood proportion vacant housing units was not significantly related to symptoms (p=.840, not shown) and neighborhood proportion non-family households had a conditional effect on depressive symptoms and is therefore not presented here.

Model 3 shows a negative and significant coefficient for neighborhood affluence, whereby residents of more affluent neighborhoods report fewer depressive symptoms. Other favorable neighborhood conditions inversely and significantly associated with symptoms include neighborhood proportion: owner-occupied housing units (Model 4) and individuals aged 65 years and older (Model 5). However, residential stability was not significantly associated with symptoms (p=.928, not shown).

3.4 Gender Differences in Neighborhood Effects on Depressive Symptoms

Investigating gender differences in the effects of neighborhood conditions on depressive symptoms is central to this dissertation. H1c states that *multiple dimensions of neighborhood disadvantage are positively associated with depressive symptoms and these associations are greater among women than men*. I examined cross-level interactions involving being female and eight measures of neighborhood disadvantage: NSD and its components(neighborhood proportion: individuals aged 25 and older without a high school diploma, unemployed persons aged 16 and older, households receiving public assistance income, and people living below the federal poverty level); and neighborhood proportion: vacant housing units, non-family households, and female-headed households with own children under 18 years old.

As shown in Table 3.3 Model 1, which controls for individual-level sociodemographic variables, there was one significant interaction involving neighborhood proportion non-family households (level-2) and being female (level-1). The interaction term is significant and negative, which indicates that the effect on depressive symptoms of neighborhood proportion non-family households differs for men and women. The coefficient for gender is not significant, which means that there is no significant difference between men and women in symptoms, on average, when neighborhood proportion non-family households is zero, that is, at the average level of this variable because it is grand-mean centered. The coefficient for neighborhood proportion non-family households represents the effect of this variable among the omitted reference category, that is men (Aneshensel, forthcoming). This coefficient is not significant, which means that among men, neighborhood proportion non-family households is not significantly associated with depressive symptoms ($b=.095$, $SE=.082$, $p > .05$). A simple slope test (Preacher, 2012) indicates that, among women, neighborhood proportion non-family households is negative and significantly associated with depressive symptoms ($b=-.339$, $SE=.157$, $p \leq .05$).

The cross-level interaction is graphed in Figure 3.1. Values along the x-axis in Figure 3.1 and all subsequent figures are within the 5th and the 95th percentile for the neighborhood variable. Women report fewer depressive symptoms in neighborhoods with higher proportions of non-family households than men. These results do not support hypothesis H1c. The impact of neighborhood proportion non-family households varies by gender, but contrary to the hypothesized relationship, this indicator of neighborhood disadvantage is associated with better mental health among women and it has no effect among men.

Cross-level interactions involving seven out of eight measures of neighborhood disadvantage were not significant.

Table 3.3 Multilevel Linear Regressions of Depressive Symptoms on Neighborhood Conditions by Gender (N=8,248)

	Model 1		Model 2	
Independent variables	*b*	*SE*	*b*	*SE*
Female (/male)	.017	.021	.020	.021
Census tract-level variables				
N% non-family households	.095	.082		
N% non-family households X Female	-.434**	.163		
N% married-couple households with own children age <18			-.464***	.098
N% married-couple households with children age <18 X Female			.385*	.181
Intercept	.647***	.010	.651***	.010
Intercept variance component				
Between-group (τ)	.077***		.074***	
Within-group (σ^2)	.382		.382	
Model comparison[a]				
Chi-square	9.829**		5.922*	
Degrees of freedom	1		1	
Figure number[b]	Figure 3.1		Figure 3.2	

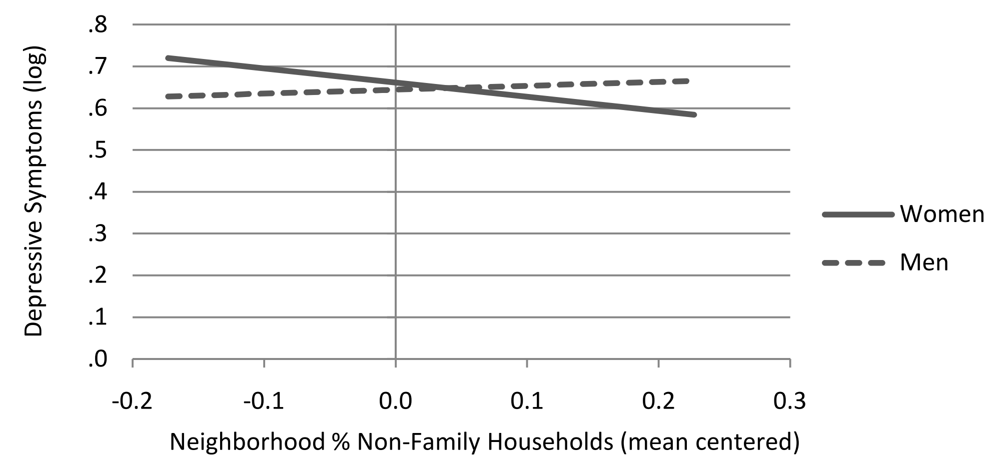
NOTE: SE=standard error; N=neighborhood; Percent (%) is used as a short-hand notation for proportion; All models control for: age, race/ethnicity, marital status, education, current and past employment status, household income and wealth, residential stability, and data collection year.

[a] Each model is compared to similar model without the interaction.

[b] Graph of the interaction.

*p ≤ .05. **p ≤ .01. ***p ≤ .001.

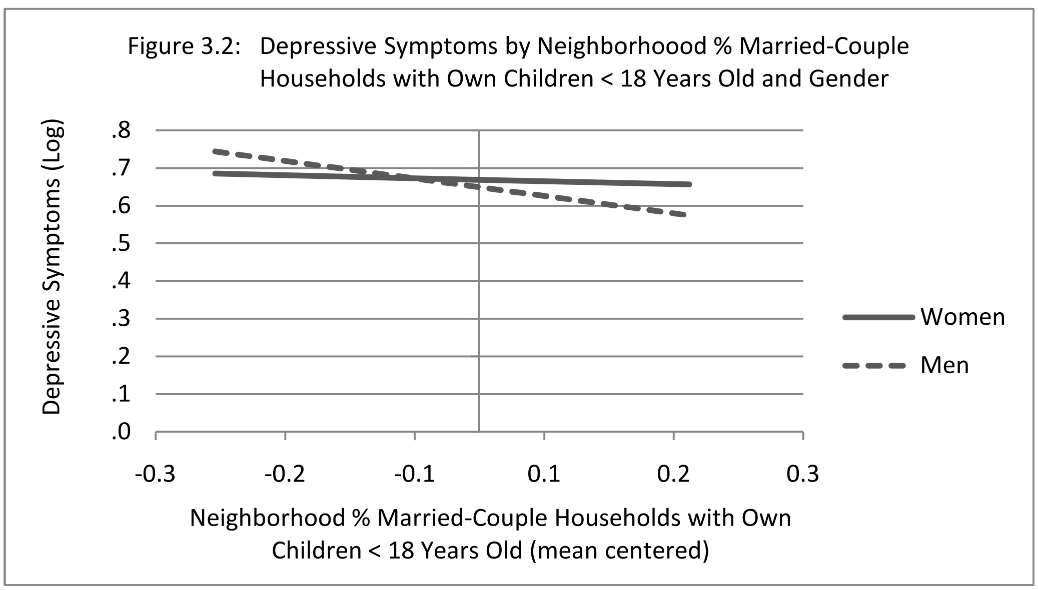
Figure 3.1: Depressive Symptoms by Neighborhood % Non-Family Households and Gender



This dissertation also is concerned with gender differences in the effects of favorable neighborhood conditions on depressive symptoms. H1d states that *multiple dimensions of neighborhood advantage are negatively associated with depressive symptoms and these associations are greater among women than men.* I examined cross-level interaction involving being female and five indicators of neighborhood advantage, namely, neighborhood proportion: affluent households, residentially stable individuals, owner-occupied housing units, married-couple families with own children under 18 years old, and people ages 65 years and older. As seen in Table 3.3 Model 2, only the interaction involving neighborhood proportion married-couple households with own children under 18 years of age is significant, indicating that the effect of this neighborhood characteristic varies by gender.

The coefficient for gender is not significant, which means that there is no significant difference between men and women in depressive symptoms, on average, when neighborhood proportion married-couple households with children is zero, that is, at the average level of this variable because it is grand-mean centered. The coefficient for neighborhood proportion married-couple families with children is negative and significant (b=-.464, SE=.098, $p \leq .001$), which shows that it is inversely associated with depressive symptoms among men, net of sociodemographic characteristics. Among women, neighborhood proportion married-couple households with children is not significantly related to symptoms (simple slope test: b=-.079, SE=.181, $p > .05$).

Figure 3.2 is a graph of the interaction. Men who live in neighborhoods with more married-couple households with children report fewer depressive symptoms. These results do not support hypothesis H1d. There is no significant association between neighborhood proportion married-couple households with children and depressive symptoms among women but among men the relationship is significant and in the expected direction.



3.5 Discussion

The first two hypotheses posited higher levels of depressive symptoms among women compared to men. Gender differences in depressive symptoms often reported in the research literature (Accortt et al., 2008; Boughton & Street, 2007) were not sustained after adjusting for individual-level sociodemographic characteristics. This study is based on a sample of middle-age and older adults who are less likely to have young children at home and more likely to be widowed, the latter being especially common among the elderly. It could be that lower exposure to parenting stress particularly among women (Bird, 1997) and men's greater risk for depressive symptomatology following widowhood (Lee & DeMaris, 2007; Sonnenberg et al., 2000) contribute to the lack of gender differences in depressive symptoms in this sample.

Sociodemographic correlates of depression identified in this first aim parallels findings from previous research. Other studies also show that the relationship between age and depression follows a U-shaped pattern (Kessler, Foster, Webster, & House, 1992; Mirowsky & Kim, 2007; Schieman, Van Grundy, & Taylor, 2001) where depression generally declines with age during young adulthood and – similar to this study's finding – during middle-age, after which symptoms increase with age. The finding that people who were previously married have poor mental health relative to those who are married is expected (Barrett, 2000; LaPierre, 2009; Marks & Lambert, 1996), as are results indicating that higher income and levels of education reduce risk for depressive symptoms (Lorant et al., 2003). The beneficial effect of education on mental health may be channeled through mastery, a psychosocial resource that buffers stress and is positively associated with education (Ross & Sastry, 1999; Schieman & Plickert, 2008).

The literature also supports results in this study indicating that homemakers, newly retired people, and others outside the labor force report more depressive symptoms than people who have been employed for the past six years. Compared to working people, homemakers have been shown to have higher risk for depressive symptomatology in some but not all studies (Bird & Ross, 1993; Riley & Keith, 2004; Silver, 2010) partly because their role provides fewer rewards (e.g., earnings, recognition, social engagement) that promote mental health. Difficulties adjusting to retirement and related changes, such as loss of: the employee role identity, income, and social integration in the workplace (Schellenberg et al., 2005; Stevens & Van Tilburg, 2011) also can create stress detrimental to mental health.

The third hypothesis focused on gender differences in the effect of neighborhood disadvantage on depressive symptoms. I assessed whether eight indicators of neighborhood disadvantage were significantly more harmful to women's than men's mental health. Neighborhood proportion non-family households was the only characteristic whose effect on symptoms significantly varied by gender. Specifically, this neighborhood condition conceptualized as an indicator of disadvantage was associated with fewer depressive symptoms among women, an unexpected result; and it had no effect among men. Due to multiple tests of statistical significance, it is possible that this finding represents a type I error, a situation where a null hypothesis that there is no significant gender difference in the effect of neighborhood proportion non-family households is erroneously rejected.

A Bonferroni correction adjusts for the problem of multiple tests of statistical significance (Abdi, 2007; Bonferroni, 1936). For this hypothesis (H1c), eight cross-level interactions were tested at a significance level of $p \leq .05$. The new significance level based on the Bonferroni correction (i.e., .05 divided by 8) is $p \leq .006$. The p-value for the cross-level interaction term for neighborhood proportion non-family households by gender in Table 3.3

Model 1 is: p=.008. This p-value exceeds the adjusted significance level and suggests that the finding represents a type I error and should be viewed with caution.

The test of the last hypothesis examined gender differences in the impact of five indicators of neighborhood advantage on depressive symptoms. Only the influence of neighborhood proportion married-couple households with children on symptoms varied significantly by gender. Contrary to expectations, this favorable neighborhood characteristic had no effect among women. However, men reported fewer depressive symptoms in neighborhoods with more married-couple households with children, which is in the expected direction. Children with two parents/guardians are likely to receive good supervision (Casper, Hawkins, & O'Connell, 1994; Casper & Smith, 2004), which can reduce problem behaviors (Mott, Crowe, Richardson, & Flay, 1999; Posner & Vandell, 1999). A general effect of this supervision may be a lack in neighborhood disorder that otherwise threatens mental health (Aneshensel & Sucoff, 1996; LaGrange et al., 1992; Ross, 2000). Compared to single parents, married-couples with children also may have more time to engage in activities/community organizing aimed at increasing social control, promoting safety, and maintaining amenities (e.g., parks, sidewalks) in the neighborhood (Duncan et al., 2003). Such organizing can increase social connectedness and cohesion in the neighborhood, which are beneficial for mental health (Forrest & Kearns, 1999; Kang, 2011; Rios et al., 2012).

A safer, more socially cohesive neighborhood environment may be beneficial for women's mental health considering that they have greater exposure to the neighborhood (Alavinia & Burdorf, 2008; La Gory & Fitzpatrick, 1992), are more concerned about their safety and the welfare of their network members (Bird & Rieker, 2008; Elliott, 2001; Kessler & McLeod, 1984), and they are more involved in activities that encourage social connectedness and support (Campbell & Lee, 1991; Turner & Marino, 1994). The finding that neighborhood proportion married-couple households with children protects men's mental health but has no effect among women is surprising and difficult to explain.

In this first research aim, I also assessed the main effects of neighborhood conditions on depressive symptoms. Results were consistent with other studies that showed that NSD and its components (e.g., poverty) are associated with increased risk for depressive symptomatology (Cutrona et al., 2005; Ostir, Eschbach, Markides, & Goodwin, 2003; Ross, 2000). The effect on depressive symptoms of NSD, a composite measure of neighborhood disadvantage, was similar to the effect of its components. This finding indicates that NSD is an acceptable way of conceptualizing neighborhood socioeconomic disadvantage. The finding that higher concentrations of older adults in the neighborhood is beneficial for mental health also is consistent with similar reports by Kubzansky and colleagues (Kubzansky et al., 2005).

The influence of neighborhood proportion owner-occupied housing units on depressive symptoms has not received much research attention; and previous studies examining the impact of neighborhood affluence on depressive symptoms have not found significant associations (Aneshensel et al., 2007; Hybels et al., 2006; Kubzansky et al., 2005). This study makes an important contribution by showing that these neighborhood characteristics benefit mental health above and beyond the influence of individual-level sociodemographic characteristics such as income and wealth.

Overall, results for this first research aim indicate that neighborhoods are equally consequential to men's and women's mental health considering that only neighborhood proportion non-family households and married-couple families with children were involved in significant cross-level interactions from among eight indicators of neighborhood disadvantage and five measures of neighborhood advantage.

Table 3.4 Summary of Results: Aim One

Dependent Variable = Depressive Symptoms	
Hypothesis H1C	
Indicator of neighborhood disadvantage	
NSD (factor score)	***YES***
Vacant housing	
Non-family households	‡
Female-headed households	***YES***
Hypothesis H1D	
Indicator of neighborhood advantage	
Affluence	***YES***
Residential stability	
Owner-occupied housing	***YES***
Married couple & children	‡
Adults age 65 and older	***YES***

YES = Main effect of neighborhood advantage/disadvantage is statistically significant.

‡ = Interaction by gender is statistically significant – hypothesis not supported

H1C = Multiple dimensions of neighborhood disadvantage are positively associated with depressive symptoms and these associations are greater among women than men.

H1D = Multiple dimensions of neighborhood advantage are negatively associated with depressive symptoms and these associations are greater among women than men.

CHAPTER 4:

THE RELATIONSHIPS AMONG GENDER, NEIGHBORHOOD CHARACTERISTICS, PSYCHOSOCIAL FACTORS, AND DEPRESSIVE SYMTOMS

4.1 Introduction

This chapter is concerned with the second aim of this dissertation, which *examines the extent to which relationships among components of the neighborhood stress process model differ by gender*. This aim has three main objectives, the first is to ascertain gender differences in any cross-level associations between multiple indicators of neighborhood-level disadvantage and individual-level stressors (e.g., perceived neighborhood physical disorder) or individual-level psychosocial resources (e.g., social support). The second objective is to assess gender differences in any cross-level associations between these multiple indicators of neighborhood advantage and stressors or resources. The third objective involves examining gender differences in the effect of individual-level stressors and psychosocial resources on depressive symptoms; and the extent to which any associations between stressors and symptoms vary by resources.

As discussed in chapter one, favorable neighborhood conditions can promote psychosocial resources whereas unfavorable conditions can erode resources and proliferate stress. Stressors and resources may act as the channels through which the effects of neighborhood conditions on mental health are transmitted (e.g., Ross, 2000; Franzini et al., 2005). Examining gender differences in the effects of neighborhood conditions on stressors and psychosocial resources, and also in the effects of these factors on depressive symptoms will inform our understanding of their role in the relationships among neighborhood conditions, gender, and depressive symptoms.

The outcomes of interest in this aim are: depressive symptoms; three stressors, namely, perceived neighborhood physical disorder, financial strain, and everyday discrimination; and three psychosocial resources - perceived neighborhood social cohesion, social support, and mastery. All analyses except for those that pertain to the last hypothesis are performed within a multilevel framework. The last hypothesis is assessed using individual-level multiple linear regression. I begin, in section 4.2, by testing for significant neighborhood variation in stressors and psychosocial resources and examining the sociodemographic correlates of these factors. In section 4.3, I describe the main effects of neighborhood conditions on stressors and psychosocial resources. Next, in section 4.4, I present findings for the first four hypotheses concerned with gender differences in neighborhood effects on stressors and psychosocial resources. Thereafter in section 4.5, I describe results for the last three hypotheses that focus on the conditional effects of stressors/psychosocial resources on depressive symptoms. The chapter closes with a summary of the findings.

4.2 Sociodemographic Correlates of Individual-Level Stressors and Psychosocial Resources

Prior to examining the main hypotheses of this aim, I tested for significant neighborhood variation in each of the stressors and psychosocial resources examined as outcomes. Results showed significant neighborhood variation across all the stressors and resources (τ range 0.099 to 0.644, $p < .001$). Intraclass correlations indicated the following levels of neighborhood variation in the outcomes: neighborhood physical disorder (31.9%), financial strain (27.6%), discrimination (13.6%), neighborhood social cohesion (21.2%), social support (9.5%), and mastery (7.5%). Over 20% of the variation in two stressors: perceived neighborhood physical disorder and financial strain, and one resource, perceived neighborhood social cohesion, was at the neighborhood level. Sense of mastery varied the least at the neighborhood level.

Next, I assessed individual-level sociodemographic correlates of stressors and psychosocial resources. Results are presented in Table 4.1. The dependent variables across the models are: perceived neighborhood physical disorder (Model 1), financial strain (Model 2), everyday discrimination (Model 3), neighborhood social cohesion (Model 4), social support

(Model 5), and mastery (Model 6). The coefficient for gender is negative and significant in Model 3, indicating that compared to men, women reported fewer experiences of everyday discrimination net of the other measures in the model. However, women reported higher levels of perceived neighborhood social cohesion (Model 4) and social support (Model 5) than men as indicated by the positive and significant coefficient for gender in Models 4 and 5. Women were not significantly different from men with regard to perceived neighborhood physical disorder (Model 1), financial strain (Model 2), or mastery (Model 3).

Being older was related to fewer experiences of everyday discrimination and higher levels of neighborhood social cohesion net of the other variables in the models. A non-linear relationship between age and mastery also was present as indicated by the significant term for age-squared in Model 6. Age was associated with higher levels of mastery up to around age 70, after which mastery declined with age. Age was not significantly related to perceived neighborhood physical disorder, financial strain, or social support.

Across Models 1-5, there are no race/ethnic or marital status differences in stressors and two resources: neighborhood social cohesion and social support. However, in Model 6, ‘other’ racial/ethnic minorities have significantly lower sense of mastery than non-Hispanic whites. All the other racial/ethnic groups do not differ from whites in mastery. Additionally, people who were previously married had significantly higher levels of mastery than married people and those who have never been married did not differ from the married in mastery.

Table 4.1 Multilevel Linear Regressions of Stressors and Psychosocial Resources on Sociodemographic Characteristics: U.S. Urban Adults Aged 50 and Older (N=8,248)

	Dependent Variables					
	Neighborhood physical disorder <u>Model 1</u>		Financial strain <u>Model 2</u>		Everyday discrimination <u>Model 3</u>	
Independent Variables	*b*	*SE*	*b*	*SE*	*b*	*SE*
Individual-Level Demographic variables						
Female (/male)	-.006	.039	.023	.023	-.163***	.025
Age (years)	-.058	.037	-0.035	.025	-.050*	.020
Age squared	.0004	.0003	.0001	.0002	.0002	.0001
Race/ethnicity						
Black/African American	-.047	.120	.157	.093	.170	.094
Hispanic	-.103	.149	.019	.078	-.061	.077
Other	.041	.162	.056	.119	.236	.131
Marital status						
Separated or divorced	-.041	.077	.019	.062	.039	.052
Widowed	-0.059	.071	.002	.050	.046	.042
Never married	.171	.148	-.166	.093	.046	.095
Education (years)	-0.027**	0.009	-.005	.006	-.003	0.006
Current & past employment status						
Employed recently	.155	.079	.041	.055	.042	.050
Retired consistently	.151	.080	-.188***	.050	-.027	.042
Retired recently	.122	.068	-.077	.048	-.023	.043
Retired duration unknown	.288*	.136	-.24**	.093	.012	.084
Homemaker duration unknown	.166	.087	-.172**	.058	-.021	.049
Other recently/consistently	.375***	.108	.413***	.067	.148*	.066
Household income (log)	-.027	.040	-.224***	.033	-.037	.024
Household wealth (log)	-.084	.047	-.576***	.159	-.045	.073
Residential tenure[a](/moved)	.147*	.074	-.063	.055	.032	.041
2006 data collection year (/2008)	.103	.072	.455***	.117	.121*	.059
Intercept	2.543***	.023	2.379***	.016	1.666***	.012
Intercept variance component						
Between-group (τ)	.645		.327***		.087***	
Within-group (σ^2)	1.363		.598		.501	
Model comparison[b]						
Chi-square	67.541***		921.302***		243.981***	
Degrees of freedom	20		20		20	

Notes: SE=standard error; Reference groups: race/ethnicity=non-Hispanic white; marital status=married; current & past employment status=employed now and recent past; Employment status – consistently=for the past 6 years, duration unknown=missing at one or more prior interviews.

[a] People who did not move in the past six years versus movers; [b] Each model is compared to the respective null model – not shown; *p ≤ .05. **p ≤ .01. ***p ≤ .001.

Table 4.1 Continued: Multilevel Linear Regressions of Stressors and Psychosocial Resources on Sociodemographic Characteristics (N=8,248)

	Dependent Variables					
	Neighborhood social cohesion Model 4		Social support Model 5		Mastery Model 6	
Independent Variables	*b*	*SE*	*b*	*SE*	*b*	*SE*
Individual-Level Demographic Variables						
Female (/male)	.139***	.038	.157***	.016	.044	.035
Age (years)	.074*	.038	.011	.014	.108***	.030
Age squared	-.0005	.0003	-.00004	.0004	-.0008***	.0002
Race/ethnicity						
Black/African American	-.102	.131	.010	.048	.018	.097
Hispanic	.045	.126	.029	.050	-.068	.126
Other	-.217	.182	-.126	.071	-.223*	.099
Marital status						
Separated or divorced	-.067	.088	.042	.035	.158*	.066
Widowed	-.069	.080	.047	.030	.123*	.060
Never married	-.041	.138	.055	.063	.085	.103
Education (years)	.020*	.010	.002	.004	.009	.009
Current & past employment status						
Employed recently	-.124	.078	-.038	.036	.038	.074
Retired consistently	.008	.081	.046	.032	.022	.066
Retired recently	-.051	.072	.00002	.031	-.040	.068
Retired duration unknown	-.216	.128	.0002	.062	.080	.105
Homemaker duration unknown	-.038	.094	-.017	.037	-.080	.074
Other recently/consistently	-.352***	.105	-.068	.043	-.380***	.092
Household income (log)	.047	.039	.048**	.015	.160***	.030
Household wealth (log)	.233**	.080	.030	.026	.107*	.049
Residential tenure[a](/moved)	-.046	.076	.005	.033	-.056	.068
2006 data collection year (/2008)	-.269***	.072	-.005	.033	-.015	.064
Intercept	5.380***	.021	3.122***	.008	4.763***	.015
Intercept variance component						
Between-group (τ)	.406***		.029***		.095***	
Within-group (σ^2)	1.459		.249		1.091	
Model comparison[b]						
Chi-square	106.602***		194.700***		193.773***	
Degrees of freedom	20		20		20	

Notes: SE=standard error; Reference groups: race/ethnicity=non-Hispanic white; marital status=married; current & past employment status=employed now and recent past; Employment status – consistently=for the past 6 years, duration unknown=missing at one or more prior interviews.

[a] People who did not move in the past six years versus movers

[b] Each model is compared to the respective null model – not shown.

*p ≤ .05. **p ≤ .01. ***p ≤ .001.

Across the models in Table 4.1, middle-aged and older adults who were employed consistently (i.e., for the past six years) are the reference group to whom those in the other employment status categories are compared. Employment status differences are fairly minimal. The “other” category (i.e., unemployed, temporarily laid off, on sick or other leave, disabled, other) is relatively high on two stressors, perceived neighborhood physical disorder and everyday discrimination; and low on resources except for social support. Also for financial strain, threel groups are significantly lower than the consistently employed and those in the “other” category are significantly higher.

Attaining more years of education was related to lower levels of perceived neighborhood physical disorder and higher levels of perceived neighborhood social cohesion. However, education was not significantly related to financial strain, discrimination, social support, or mastery. Income and wealth differences in stressors are limited to a significant negative association with financial strain. However, income is significant and positively associated with social support and mastery; and wealth is significant and positively associated with neighborhood social cohesion and mastery. Relatively high levels of neighborhood physical disorder are reported by middle-aged and older adults who were residentially stable compared to movers. Residentially stable adults were not significantly different from movers in other stressors or any resources.

Completing the PQ in 2006 as opposed to 2008 is associated with significantly more financial strain and experiences of everyday discrimination; and lower levels of neighborhood social cohesion. I therefore control for year of data collection in subsequent analyses.

The variance of the random intercept across the models in Table 4.1 was significant (τ ranged from 0.029 to 0.645, p <.001), indicating that there remained significant unexplained neighborhood variation in the stressors and resources after adjusting for individual-level characteristics. Intraclass correlations across the models was as follows: neighborhood physical disorder (ρ=0.321), financial strain (ρ=0.354), discrimination (ρ =0.148), neighborhood social cohesion (ρ=0.218), social support (ρ=0.104), mastery (ρ=0.08). The models in Table 4.1 that include individual-level sociodemographic characteristics are a significant improvement to the null models: χ^2 range from 64.082 to 921.302, p < .0001.

4.3 Main Effects of Neighborhood Conditions on Stressors and Psychosocial Resources

In this section, I describe the main effects of neighborhood characteristics on the individual-level stressors and psychosocial resources examined as outcomes in this aim. Main effects are not presented when a conditional effect is present because the latter provides a better fit to the data. Tables 4.2-4.8 present the main effects of neighborhood conditions on stressors and resources. The models adjust for individual-level sociodemographic characteristics (not shown). They extend the models in Table 4.1 by including neighborhood characteristics and they are significant improvements to those models (χ^2 ranges from 5.310 to 415.221, p < .001).

Neighborhood Conditions and Perceived Neighborhood Physical Disorder: Table 4.2 shows the main effects of neighborhood disadvantage on perceived neighborhood physical disorder. The positive and significant coefficient for NSD in Model 1 indicates that higher NSD is associated with higher levels of perceived neighborhood physical disorder among these middle-aged and older adults. Similar significant results (not shown) were found for three components of NSD, namely, neighborhood proportion: individuals aged 25 and older without a high school diploma, unemployed persons aged 16 and older, and persons living below the federal poverty level. People living in urban neighborhoods with higher proportions of these characteristics reported more disorder. Other indicators of neighborhood disadvantage were similarly associated with neighborhood disorder: neighborhood proportion non-family households (Model 2) and female-headed households with children (Model 3).

Table 4.2 Multilevel Linear Regressions of Perceived Neighborhood Physical Disorder on Neighborhood Disadvantage (N=8,248)

Independent Variables	Model 1 *b* *(SE)*	Model 2 *b* *(SE)*	Model 3 *b* *(SE)*
Census tract-level variables			
Neighborhood socioeconomic disadvantage	.417*** (.027)		
N% non-family households		.737*** (.158)	
N% female-headed households with children			4.431*** (.349)
Intercept	2.586*** (.019)	2.563*** (.020)	2.588*** (.019)
Intercept variance component			
Between-group (τ)	.272***	.367***	.306***
Within-group (σ^2)	1.385	1.401	1.390
Model comparison[a]			
Chi-square	415.221***	26.112***	271.277***
Degrees of freedom	1	1	1

Notes: SE=standard error; All models control for: age, race/ethnicity, marital status, education, current and past employment status, household income and wealth, residential stability, and data collection year. Percent (%) is used as a short-hand notation for proportion.
[a] Each model is compared to the same model without the neighborhood characteristic.
*p ≤ .05. **p ≤ .01. ***p ≤ .001.

Table 4.3 presents results of the main effects of neighborhood advantage on perceived neighborhood physical disorder. In Model 1, the negative and significant coefficient for neighborhood affluence shows that middle-aged and older adults who live in affluent neighborhoods perceive less physical disorder in their neighborhoods. Similar results were found for neighborhood proportion: owner occupied housing units (Model 2), married-couple families with children (Model 3), and adults ages 65 years and older (Model 4). However, residential stability, which also is conceptualized as an indicator of neighborhood advantage, was not significantly related to disorder (not shown).

Table 4.3 Multilevel Linear Regressions of Perceived Neighborhood Physical Disorder on Neighborhood Advantage (N=8,248)

Independent Variables	Model 1 *b* *(SE)*	Model 2 *b* *(SE)*	Model 3 *b* *(SE)*	Model 4 *b* *(SE)*
Census tract-level variables				
N% affluent households	-1.870*** (.117)			
N% owner-occupied housing units		-1.146*** (.103)		
N% married-couple households with children			-1.666*** (.199)	
N% adults age 65+				-.546** (.186)
Intercept	2.582*** (.019)	2.581*** (.020)	2.567*** (.020)	2.556*** (.020)
Intercept variance component				
Between-group (τ)	.280***	.343***	.595***	.374***
Within-group (σ^2)	1.385	1.389	1.182	1.400
Model comparison[a]				
Chi-square	381.100***	160.280***	87.060***	8.700**
Degrees of freedom	1	1	1	1

Notes: SE=standard error; All models control for: age, race/ethnicity, marital status, education, current and past employment status, household income and wealth, residential stability, and data collection year. Percent (%) is used as a short-hand notation for proportion.

[a] Each model is compared to the same model without the neighborhood characteristic.

*p ≤ .05. **p ≤ .01. ***p ≤ .001.

Neighborhood Conditions and Financial Strain: In Table 4.4, three indicators of disadvantage are positively associated with financial strain: two components of NSD namely: neighborhood proportion: individuals ages 25 and older without a high school diploma (Model 1) and households receiving public assistance income (Model 2). An additional indicator of disadvantage was positive and significantly associated with financial strain: neighborhood proportion female-headed households with children (Model 3). However, four measures of disadvantage were not significantly related to financial strain: the composite measure NSD and neighborhood proportion: unemployed individuals, people living in poverty, and vacant housing units (not shown).

Table 4.4 Multilevel Linear Regressions of Financial Strain on Neighborhood Characteristics (N=8,248)

Independent Variables	Model 1 *b* *(SE)*	Model 2 *b* *(SE)*	Model 3 *b* *(SE)*	Model 4 *b* *(SE)*
Census tract-level variables				
Neighborhood Disadvantage	.280*			
N% individuals without a HS diploma	(.129)			
N% households receiving public assistance income		.422* (.208)		
N% female-headed households with children			.478* (.200)	
Neighborhood Advantage				-.184*
N% affluent households				(.082)
Intercept	2.311*** (.012)	2.311*** (.012)	2.312*** (.012)	2.311*** (.012)
Intercept variance component				
Between-group (τ)	.110***	.110***	.110***	.110***
Within-group (σ^2)	.600	.600	.600	.600
Model comparison[a]				
Chi-square	8.215**	5.786*	8.020**	9.204**
Degrees of freedom	1	1	1	1

Notes: SE=standard error; All models control for: age, race/ethnicity, marital status, education, current and past employment status, household income and wealth, residential stability, and data collection year. Percent (%) is used as a short-hand notation for proportion.

[a] Each model is compared to the same model without the neighborhood characteristic.

*p ≤ .05. **p ≤ .01. ***p ≤ .001.

In terms of neighborhood advantage, only neighborhood affluence was significant and negatively associated with financial strain (Model 4) among middle-aged and older adults. Other favorable neighborhood conditions were not significantly related to financial strain: neighborhood proportion: residentially stable individuals, owner-occupied housing units, married-couple households with children, and adults aged 65 and older (not shown).

Neighborhood Conditions and Everyday Discrimination: Table 4.5 shows the main effects of neighborhood conditions on everyday discrimination. NSD was positively associated with discrimination (Model 1). Similar results were found for all the components of NSD: neighborhood proportion: individuals without a high school diploma, unemployed people ages 16 and older, households receiving public assistance income, and people living in poverty (not shown). Other indicators of disadvantage also were positively associated with discrimination among middle-aged and older adults: neighborhood proportion: non-family households (Model 2) and female-headed households with children (Model 3). However, neighborhood proportion vacant housing units was not significantly related to discrimination (not shown).

Two measures of neighborhood advantage were significant and negatively associated with everyday discrimination: neighborhood affluence (Model 4) and neighborhood proportion owner-occupied housing units (Model 5). None of the other indicators of advantage were significantly related to discrimination: neighborhood proportion: residentially stable people, married-couple households with children, and adults aged 65 and older (not shown).

Table 4.5 Multilevel Linear Regressions of Everyday Discrimination on Neighborhood Characteristics (N=8,248)

Independent Variables	Model 1 *b* *(SE)*	Model 2 *b* *(SE)*	Model 3 *b* *(SE)*	Model 4 *b* *(SE)*	Model 5 *b* *(SE)*
Census tract-level variables					
Neighborhood Disadvantage	.041**				
Neighborhood socioeconomic disadvantage	(.015)				
N% non-family households		.241**			
		(.088)			
N% female-headed households with children			.575**		
			(.195)		
Neighborhood Advantage				-.220***	
N% affluent households				(.064)	
N% owner-occupied housing units					-.176**
					(.059)
Intercept	1.632***	1.632***	1.634***	1.632***	1.634***
	(.010)	(.010)	(.010)	(1.632)	(.010)
Intercept variance component					
Between-group (τ)	.051***	.051***	.051***	.051***	.051***
Within-group (σ^2)	.501	.501	.501	.501	.501
Model comparison[a]					
Chi-square	13.586***	10.394**	15.953***	18.469***	13.477***
Degrees of freedom	1	1	1	1	1

NOTE: SE = standard error; All models control for: age, race/ethnicity, marital status, education, current and past employment status, household income and wealth, residential stability, and year of data collection. Percent (%) is used as a short-hand notation for proportion.

[a] Each model is compared to the same model without the neighborhood characteristic.

*p ≤ .05. **p ≤ .01. ***p ≤ .001.

Neighborhood Conditions and Perceived Neighborhood Social Cohesion: Table 4.6 shows indicators of neighborhood disadvantage that are significant and negatively associated with neighborhood social cohesion in this sample, namely, neighborhood proportion: non-family households (Model 1) and female-headed households with children (Model 2). In Table 4.7, four measures of neighborhood advantage were significant and positively associated with neighborhood social cohesion: neighborhood proportion: residentially stable people (Model 1), owner occupied housing units (Model 2), married-couple households with children (Model 3), and adults aged 65 years and older (Model 4).

Table 4.6 Multilevel Linear Regressions of Perceived Neighborhood Social Cohesion on Neighborhood Disadvantage (N=8,248)

	Model 1		Model 2	
Independent Variables	*b*	*SE*	*b*	*SE*
Census tract-level variables				
N% non-family households	-.476**	.148		
N% female-headed households with children			-2.866***	.328
Intercept	5.411***	.019	5.396***	.019
Intercept variance component				
Between-group (τ)	.250***		.222***	
Within-group (σ^2)	1.477		1.474	
Model comparison[a]				
Chi-square	12.055***		121.613***	
Degrees of freedom	1		1	

Notes: SE=standard error; All models control for: age, race/ethnicity, marital status, education, current and past employment status, household income and wealth, residential stability, and data collection year. Percent (%) is used as a short-hand notation for proportion.

[a] Each model is compared to the same model without the neighborhood characteristic.

*p ≤ .05. **p ≤ .01. ***p ≤ .001.

Table 4.7 Multilevel Linear Regressions of Perceived Neighborhood Social Cohesion on Neighborhood Advantage (N=8,248)

Independent Variables	Model 1 *b* *(SE)*	Model 2 *b* *(SE)*	Model 3 *b* *(SE)*	Model 4 *b* *(SE)*
Census tract-level variables				
N% residentially stable individuals	.541*** (.162)			
N% owner-occupied housing units		.838*** (.099)		
N% married-couple households with children			.948*** (.197)	
N% adults age 65+				.543** (.197)
Intercept	5.408*** (.019)	5.397*** (.019)	5.409*** (.019)	5.415*** (.019)
Intercept variance component				
Between-group (τ)	.247***	.236***	.249***	.248***
Within-group (σ^2)	1.479	1.471	1.474	1.479
Model comparison[a]				
Chi-square	14.499***	93.064***	30.829***	9.242**
Degrees of freedom	1	1	1	1

Notes: SE=standard error; All models control for: age, race/ethnicity, marital status, education, current and past employment status, household income and wealth, residential stability, and data collection year. Percent (%) is used as a short-hand notation for proportion.

[a] Each model is compared to the same model without the neighborhood characteristic.

*p ≤ .05. **p ≤ .01. ***p ≤ .001.

Neighborhood Conditions and Social Support/Mastery: The main effects of neighborhood characteristics on social support and mastery are presented in Table 4.8. NSD and all of its components were not significantly associated with social support. However, neighborhood proportion female-headed households with children was significant and negatively associated with social support (Model 1) among middle-aged and older adults. The other two indicators of disadvantage were not significantly related to social support: neighborhood proportion: vacant housing units and non-family households.

Two measures of advantage were significant and positively associated with social support: neighborhood proportion: owner-occupied housing unit (Model 2) and married-couple households with children (Model 3). However, neighborhood proportion: residentially stable individuals and adults aged 65 years and older were not significantly related to social support (not shown).

Among eight indicators of neighborhood disadvantage and five measures of neighborhood advantage, only neighborhood proportion non-family households was significant and negatively associated with mastery (Model 4).

Table 4.8 Multilevel Linear Regressions of Social Support and Mastery on Neighborhood Characteristics (N=8,248)

	Dependent Variables			
	Social Support			Mastery
	Model 1	Model 2	Model 3	Model 4
	b	*b*	*b*	*b*
Independent Variables	*(SE)*	*(SE)*	*(SE)*	*(SE)*
Census tract-level variables				
Neighborhood Disadvantage				
N% female-headed households with children	-.278* (.129)			
N% non-family households				-.253* (.122)
Neighborhood Advantage				
N% owner-occupied housing units		.077* (.039)		
N% married-couple households with children			.179* (.073)	
Intercept	3.140*** (.007)	3.141*** (.007)	3.141*** (.007)	4.745*** (.014)
Intercept variance component				
Between-group (τ)	.025***	.025***	.024***	.073***
Within-group (σ^2)	.247	.247	.247	1.084
Model comparison[a]				
Chi-square	7.586***	5.310*	7.554**	5.726*
Degrees of freedom	1	1	1	1

Notes: SE=standard error; All models control for: age, race/ethnicity, marital status, education, current and past employment status, household income and wealth, and residential stability. Percent (%) is used as a short-hand notation for proportion.
[a] Each model is compared to the same model without the neighborhood characteristic.
*p ≤.05. **p ≤ .01. ***p ≤ .001.

Summary: In this study's sample of middle-aged and older adults living in urban neighborhoods, three measures of neighborhood disadvantage were positively associated with perceived neighborhood physical disorder and everyday discrimination: NSD, neighborhood proportion non-family households and female-headed households with children. Additionally, three measures of disadvantage were positively associated with financial strain: neighborhood proportion: individuals without a high school diploma, households receiving public assistance income, and female-headed households with children. Neighborhood proportion non-family households was inversely associated with perceived neighborhood social cohesion and mastery; and neighborhood proportion female-headed households with children was similarly associated with neighborhood social cohesion and social support.

Middle-aged and older adults who lived in affluent neighborhoods perceived less disorder in their neighborhoods. They also reported less financial strain and experiences of everyday discrimination. Other favorable neighborhood conditions that were inversely associated with disorder included: neighborhood proportion: owner-occupied housing units, married-couple households with children, and adults ages 65 and older.

Four measures of neighborhood advantage were positive and significantly related to perceived neighborhood social cohesion: residential stability, neighborhood proportion: owner-occupied housing units, married-couple households with children, and adults ages 65 and older. Middle-aged and older adults who lived in neighborhoods with more owner-occupied housing units reported less financial strain and more social support.

4.4 Gender Differences in Neighborhood Effects on Stressors and Psychosocial Resources

This study is concerned with gender differences in neighborhood effects on depressive symptoms. It is guided by the neighborhood stress process framework (Aneshensel, 2010a; Pearlin et al., 1981) focusing on stressors and psychosocial resources as mechanisms underlying the relationships among neighborhood conditions, gender, and depressive symptoms. In this section, I assess the extent to which neighborhood effects on stressors and resources differ by gender. The eight measures of neighborhood disadvantage and five indicators of neighborhood advantage were examined for significant cross-level interaction effects on stressors and resources.

Neighborhood Disadvantage and Stressors: H2a states that *neighborhood disadvantage is positively associated with perceived neighborhood physical disorder and other stressors, and the magnitude of these associations is significantly greater among women than men*. I present the results examining this hypothesis in Table 4.9. All the models adjust for individual-level sociodemographic characteristics (not shown) and contain the interaction term of the neighborhood characteristic by gender.

Table 4.9 Multilevel Linear Regressions of Neighborhood Physical Disorder on Neighborhood Disadvantage by Gender (N=8,248)

	Model 1		Model 2	
Independent Variables	*b*	*SE*	*b*	*SE*
Individual-level variable				
Female (/male)	-.027	.041	.001	.039
Census tract-level variables				
N% households receiving public assistance income	6.706***	.304		
N% households receiving public assistance income X Female	-1.184*	.567		
N% vacant housing units			1.888***	.447
N% vacant housing units X Female			.955*	.453
Intercept	2.593***	0.021	2.550***	.023
Intercept variance component				
Between-group (τ)	.374***		.622***	
Within-group (σ^2)	1.373		1.364	
Model comparison[a]				
Chi-square	6.044*		4.547*	
Degrees of freedom	1		1	
Figure number[b]	Figure 4.1		Figure 4.2	

Notes: SE=standard error; F=female; All models control for: age, race/ethnicity, marital status, education, current and past employment status, household income and wealth, and residential stability. Percent (%) is used as a short-hand notation for proportion.

[a] Each model is compared to the same model without the interaction.

[b] Graph of the interaction.

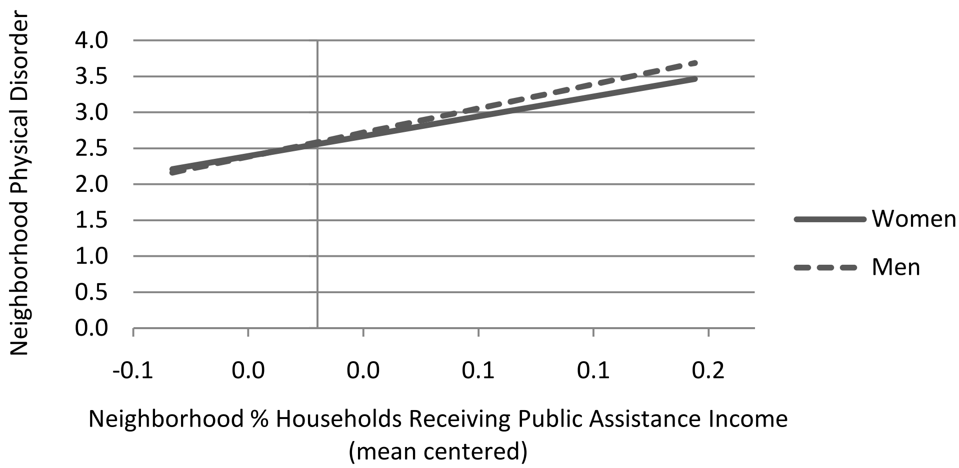
*p ≤ .05. **p ≤ .01. ***p ≤ .001.

Model 1 shows results for neighborhood proportion households receiving public assistance income. The interaction term is significant and negative, which indicates that the effect on perceived neighborhood physical disorder of neighborhood proportion households receiving public assistance income varies by gender. The coefficient for neighborhood proportion households receiving public assistance income is positive and significant (b=6.706, SE=.304, $p \leq .001$). It represents the effect of this variable among the omitted reference category, that is men (Aneshensel, forthcoming). This means that among men, living in a neighborhood with more households that receive public assistance income is associated with higher levels of perceived neighborhood physical disorder.

A simple slope test (Preacher, 2012) indicates that among women, living in a neighborhood with more households that receive public assistance income also is associated with higher levels of perceived neighborhood physical disorder (b=5.523, SE=.524, $p \leq .001$). However, the slope for women is smaller than the slope for men indicating that the effect on perceived neighborhood physical disorder of neighborhood proportion households receiving public assistance income is smaller among middle-age and older adult women than men. The coefficient for gender indicates that there is no significant difference between men and women in reports of perceived neighborhood physical disorder, on average, when neighborhood proportion of households receiving public assistance income is zero, that is, at the average level of this variable because it is grand-mean centered.

The interaction is graphed in Figure 4.1. Values along the x-axis in this and all subsequent figures are within the 5th and the 95th percentile. Living in a neighborhood with more households that receive public assistance income is associated with higher levels of perceived neighborhood physical disorder, and the effect is slightly larger among men than women.

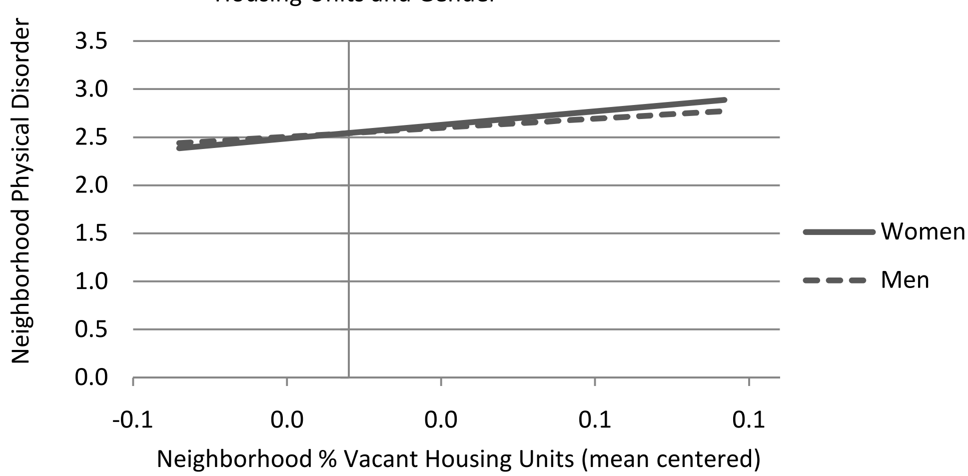
Figure 4.1: Neighborhood Physical Disorder by Neighborhoood % Individuals Receiving Public Assistance Income and Gender



Model 2 shows results for neighborhood proportion vacant housing units. As shown, the interaction term is significant and positive, indicating that the effect of neighborhood proportion vacant housing units on perceived neighborhood physical disorder differs by gender; specifically, the effect is greater for women than men. The coefficient for neighborhood proportion vacant housing units is positive and significant (b=1.888, SE=.447, p <.001) indicating that, among men, more vacancies are associated with higher levels of perceived neighborhood physical disorder. Neighborhood proportion vacant housing units also is positively associated with disorder among women (simple slope test: b=2.844, SE=.535, p <.001), and as hypothesized, this neighborhood characteristic has a greater impact on women's than men's perceptions of disorder. The coefficient for gender shows that there is no significant difference between middle-aged and older adult men and women in reports of perceived neighborhood physical disorder, on average, when neighborhood proportion vacant housing units is zero; that is, at the average value of this variable.

The cross-level interaction is graphed in Figure 4.2. People perceive more disorder in neighborhoods with more vacant housing units. Consistent with hypothesis H2a, neighborhood proportion vacant housing units has a somewhat larger effect on women's than men's perception of disorder. Higher proportions of this indicator of neighborhood disadvantage are associated with higher levels of perceived neighborhood physical disorder more so for women than men.

Figure 4.2: Neighborhood Physical Disorder by Neighborhoood % Vacant Housing Units and Gender



Gender differences were not observed in the effects on perceived neighborhood physical disorder of the other indicators of neighborhood disadvantage: NSD and three of its components (neighborhood proportion: individuals aged 25 years and older without a high school diploma, unemployed individuals aged 16 and older, people living below the federal poverty level), and neighborhood proportion non-family households and female-headed households with children.

For financial strain and everyday discrimination, there were no significant gender differences in the effects of any of the measures of neighborhood disadvantage examined in this dissertation (not shown).

Neighborhood Disadvantage and Psychosocial Resources: H2b posits that *neighborhood disadvantage is negatively associated with perceived neighborhood social cohesion and other psychosocial resources, and the magnitude of these associations is significantly greater among women than men*. Among 24 interactions tested, only five were significant. They involved one outcome, perceived neighborhood social cohesion; and gender by: NSD, three of its components (i.e., neighborhood proportion: unemployed individuals, households receiving public assistance income, and people living in poverty), and neighborhood proportion vacant housing units. Results are presented in Table 4.10. All the models control for individual-level sociodemographic characteristics (not shown) and contain the interaction term of the neighborhood characteristic by gender.

Model 1 shows results for NSD. The interaction term is significant and negative indicating that the impact of NSD on perceived neighborhood social cohesion varies by gender. The coefficient for NSD (b=-.329, SE=.022, p <.001) shows that, among men, higher levels of NSD is associated with lower levels of perceived neighborhood social cohesion. NSD also is inversely associated with neighborhood social cohesion among women (simple slope test: b=-.432, SE=.039, p <.001). However, the effect among women is slightly larger than the effect among men. The coefficient for gender is positive and significant, which means that relative to men, women perceive their neighborhoods to be more socially cohesive, on average, when NSD is zero (i.e., at average levels of NSD).

Table 4.10 Multilevel Linear Regressions of Neighborhood Social Cohesion on Neighborhood Disadvantage by Gender (N=8,248)

	Model 1		Model 2	
Independent Variables	*b*	*SE*	*b*	*SE*
Individual-level variable				
Female (/male)	.115**	.041	.132***	.039
Census tract-level variables				
Neighborhood socioeconomic disadvantage	-.329***	.022		
Neighborhood socioeconomic disadvantage X F	-.103*	.041		
N% vacant housing units			-1.215***	.339
N% vacant housing units X F			-1.177*	.547
Intercept	5.346***	.020	5.376***	.021
Intercept variance component				
Between-group (τ)	0.289***		.397***	
Within-group (σ^2)	1.458		1.459	
Model comparison[a]				
Chi-square	8.641**		6.472*	
Degrees of freedom	1		1	
Figure number[b]	Figure 4.3		Figure 4.4	

Notes: SE=standard error; F=female; All models control for: age, race/ethnicity, marital status, education, current and past employment status, household income and wealth, residential stability, and data collection year. Percent (%) is used as a short-hand notation for proportion.

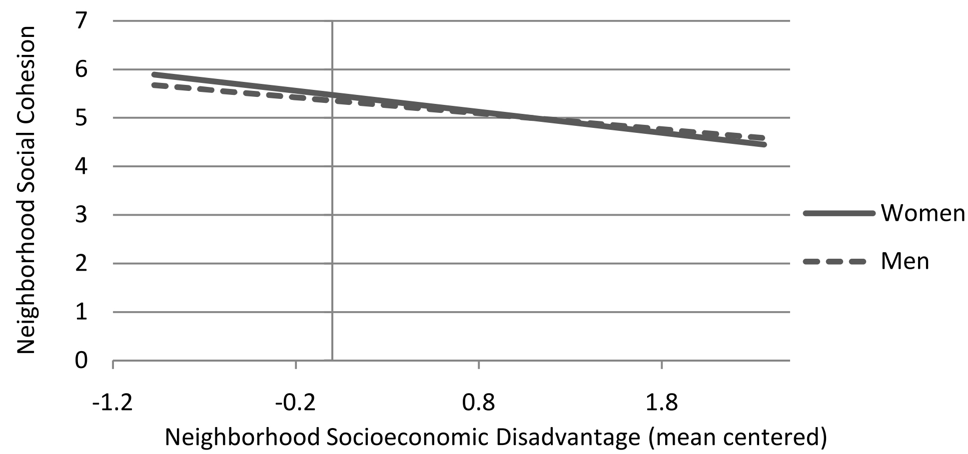
[a] Each model is compared to the same model without the interaction.

[b] Graph of the interaction.

*p ≤ .05. **p ≤ .01. ***p ≤ .001.

Figure 4.3 is a graph of the interaction. Middle-aged and older adults perceive their neighborhoods to be less socially cohesive when NSD is high than low. As hypothesized, NSD has a slightly larger impact on perceived neighborhood social cohesion among women than men. These results held for three of the components of NSD: neighborhood proportion: unemployed individuals aged 16 and older, households receiving public assistance income, and individuals living in poverty (not shown).

Figure 4.3: Neighborhoood Social Cohesion by Neighborhood Socioeconomic Disadvantage and Gender



Model 2 shows results for proportion vacant housing units. The interaction term is significant and negative, indicating that the impact of neighborhood proportion vacant housing units on neighborhood social cohesion is greater among women than men. The coefficient for neighborhood proportion vacant housing units shows that, among men, living in a neighborhood with more vacancies is associated with lower levels of perceived neighborhood social cohesion ($b=-1.215$, $SE=.339$, $p<.001$). A similar effect is observed among women (simple slope test: $b=-2.392$, $SE=.534$, $p<.001$). However, women's slope is steeper than men's indicating that neighborhood proportion vacant housing units has a larger negative impact on perceived neighborhood social cohesion among middle-aged and older adult women than men. The coefficient for gender shows that compared to men, women perceive more neighborhood social cohesion, on average, when neighborhood proportion vacant housing units is zero (i.e., at average levels).

The interaction is graphed in Figure 4.4. Consistent with hypothesis H2b, neighborhood proportion vacant housing units has a larger negative impact on women's than men's perceptions of neighborhood social cohesion. Seen from another angle, in neighborhoods with fewer vacant housing units, women report more social cohesion than men. The gender gap narrows at higher neighborhood proportion vacant housing units, with women perceiving less social cohesion than men in neighborhoods with the highest concentration of vacant housing units.

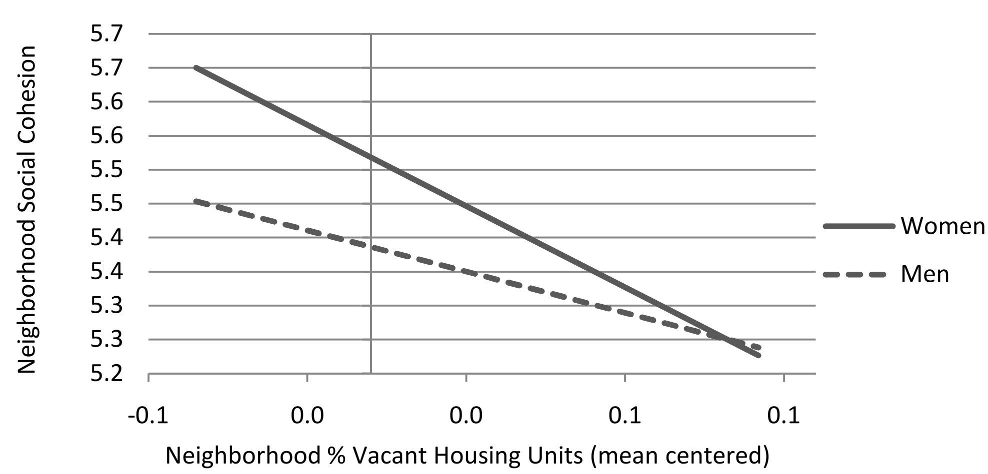


Figure 4.4: Neighborhood Social Cohesion by Neighborhoood % Vacant Housing Units and Gender

Gender differences were not observed in the effects on perceived neighborhood social cohesion of other indicators of neighborhood disadvantage: neighborhood proportion: individuals aged 25 years and older without a high school diploma, non-family households, and female-headed households with own children under 18 years of age.

Also, there were no significant gender differences in the effects on financial strain and everyday discrimination of all eight measures of neighborhood disadvantage examined in this dissertation.

<u>*Neighborhood Advantage and Stressors*</u>: H2c states that *neighborhood advantage is negatively associated with neighborhood physical disorder and other stressors, and the magnitude of these associations is significantly greater among women than men*. No support was found for this hypothesis. That is, for all stressors examined as outcomes (i.e., perceived neighborhood physical disorder, financial strain, everyday discrimination), there was no significant cross-level interaction effect involving gender and each of the five indicators of neighborhood advantage included in this study.

<u>*Neighborhood Advantage and Psychosocial Resources*</u>: H2d posits that *neighborhood advantage is positively associated with neighborhood social cohesion and other psychosocial resources, and the magnitude of these associations is significantly greater among women than men.* Fifteen interactions were tested and two were statistically significant. They involved two outcomes, perceived neighborhood social cohesion and social support; and neighborhood affluence by gender. Results are presented in Table 4.11.

Table 4.11 Multilevel Linear Regressions of Neighborhood Social Cohesion and Social Support on Neighborhood Affluence by Gender (N=8,248)

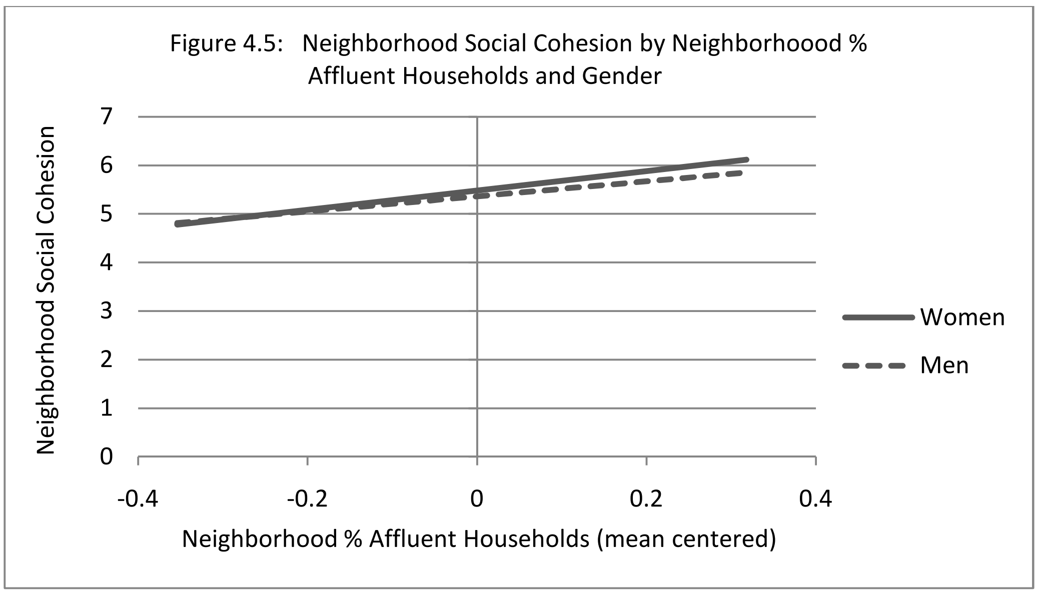
	Dependent Variables			
	Neighborhood Social Cohesion Model 1		Social Support Model 2	
Independent Variables	*b*	*SE*	*SE*	*b*
Individual-level variable				
Female (/male)	.122**	.040	.151***	.016
Census tract-level variables				
N% affluent households	1.548***	.099	.194***	.037
N% affluent households X F	.443**	.171	.178*	.076
Intercept	5.353***	.021	3.118***	.008
Intercept variance component				
Between-group (τ)	.306***		.029***	
Within-group (σ^2)	1.453		.248	
Model comparison[a]				
Chi-square	7.972**		7.560***	
Degrees of freedom	1		1	
Figure number[b]	Figure 4.5		Figure 4.6	

Notes: SE=standard error; F=female; All models control for: age, race/ethnicity, marital status, education, current and past employment status, household income and wealth, and residential stability. Percent (%) is used as a short-hand notation for proportion.
[a] Each model is compared to the same model without the interaction.
[b] Graph of the interaction.
*p ≤ .05. **p ≤ .01. ***p ≤ .001.

Model 1 shows results for neighborhood social cohesion. The positive and significant interaction indicates that the effect of neighborhood affluence on neighborhood social cohesion is greater among women than men.

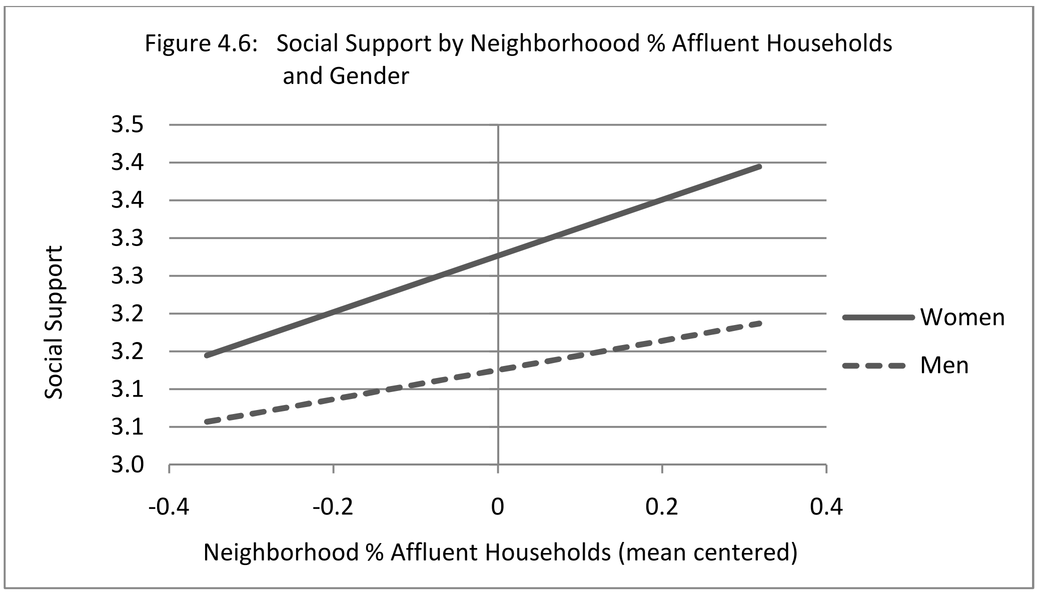
The coefficient for neighborhood affluence (b=1.548, SE=.099, p≤.001) shows that men who live in more affluent neighborhoods perceive more neighborhood social cohesion than those in less affluent neighborhoods. A similar effect is observed among women (simple slope test: b=1.990, SE=.180, p <.001), and the slope for women is slightly larger than men's indicating that neighborhood affluence has a larger positive effect on perceptions of neighborhood social cohesion among women than men. The coefficient for gender shows that, relative to men, women perceive their neighborhoods to be more socially cohesive, on average, when neighborhood affluence is zero, that is, at the average level of this variable because it is centered at its grand-mean.

The interaction is graphed in Figure 4.5. Consistent with hypothesis H2d, living in a more affluent urban neighborhood is associated with higher levels of perceived neighborhood social cohesion, and especially so among middle-aged and older adult women than men.



Model 2 shows results for social support. The positive and significant interaction shows that the effect of neighborhood affluence on social support is larger among women than men. The coefficient for neighborhood affluence shows that, among men, living in a more affluent neighborhood than a less affluent one is significantly associated with more social support ($b=.194$, $SE=.037$, $p \leq .001$). Neighborhood affluence also is positively associated with social support among women (simple slope test: $b=.372$, $SE=.073$, $p < .001$). The slope for women is larger than the slope for men indicating that neighborhood affluence has a larger impact on social support among women than men. The coefficient for gender shows that, compared to men, women report more social support, on average, when neighborhood affluence is zero.

This interaction is graphed in Figure 4.6. As hypothesized, neighborhood affluence exerts a larger positive effect on social support among women than men; and gender differences in the impact of neighborhood affluence on support increase at higher levels of affluence.



Gender differences were not present in the effects on perceived neighborhood social cohesion and social support of neighborhood proportion: residentially stable individuals, owner-occupied housing units, married-couple households with children, and adults ages 65 and older.

Additionally, there were no significant gender differences in the effects on mastery of all the indicators of neighborhood advantage examined in this study.

Comprehensive Models: Table 4.12 provides a summary of the conditional effects of neighborhood characteristics on stressors and resources that support hypotheses H2a-H2d. Table 4.13 summarizes both the main and conditional effects of neighborhood characteristics on stressors and resources.

Table 4.12 Multilevel Gender Contingent Effects of Neighborhood Characteristics on Stressors/Resources: Hypotheses Supported

	H2A			**H2B**		
Hypothesis:	Neighborhood Disadvantage x Gender: **STRESSORS**			Neighborhood Disadvantage x Gender: **RESOURCES**		
Indicator of Neighborhood Disadvantage	Neighborhood Physical Disorder	Financial Strain	Everyday Discrimination	Neighborhood Social Cohesion	Social Support	Mastery
NSD[a]				***YES***		
Vacant housing	***YES***			***YES***		
Non-family households						
Female-headed households						

	H2C			**H2D**		
Hypothesis:	Neighborhood Advantage			Neighborhood Advantage		
Indicator of Neighborhood Advantage						
Affluence				***YES***	***YES***	
Residential stability						
Owner-occupied						
Married couple & children						
Adults 65 and older						

Notes:
H2A=Neighborhood disadvantage is positively associated with neighborhood physical disorder and other stressors, and the magnitude of these associations is significantly greater among women than men.

H2B=Neighborhood advantage is negatively associated with perceived neighborhood social cohesion and other psychosocial resources, and the magnitude of these associations is significantly greater among women than men.

H2C=Neighborhood advantage is negatively associated with neighborhood physical disorder and other stressors, and the magnitude of these associations is significantly greater among women than men.

H2D=Neighborhood advantage is positively associated with neighborhood physical disorder and other psychosocial resources, and the magnitude of these associations is significantly greater among women than men.

YES = Impact of neighborhood disadvantage/advantage on stressor/resource is greater among women than men.

Table 4.13 Multilevel Main and Conditional Effects of Neighborhood Characteristics on Stressors/Resources

Hypothesis:	H2A Neighborhood Disadvantage: **STRESSORS**			H2B Neighborhood Disadvantage: **RESOURCES**		
Indicator of Neighborhood Disadvantage	Neighborhood Physical Disorder	Financial Strain	Everyday Discrimination	Neighborhood Social Cohesion	Social Support	Mastery
NSD[a]	***YES***		***YES***	†		
Vacant housing	†			†		
Non-family households	***YES***		***YES***	***YES***		***YES***
Female-headed households	***YES***	***YES***	***YES***	***YES***	***YES***	

Hypothesis:	H2C Neighborhood Advantage			H2D Neighborhood Advantage		
Indicator of Neighborhood Advantage						
Affluence	***YES***	***YES***	***YES***	†	†	
Residential stability				***YES***		
Owner-occupied	***YES***		***YES***	***YES***	***YES***	
Married couple & children	***YES***			***YES***	***YES***	
Adults 65 and older	***YES***			***YES***		

Notes:
H2A=Neighborhood disadvantage is positively associated with neighborhood physical disorder and other stressors, and the magnitude of these associations is significantly greater among women than men.

H2B=Neighborhood advantage is negatively associated with perceived neighborhood social cohesion and other psychosocial resources, and the magnitude of these associations is significantly greater among women than men.

H2C=Neighborhood advantage is negatively associated with neighborhood physical disorder and other stressors, and the magnitude of these associations is significantly greater among women than men.

H2D=Neighborhood advantage is positively associated with neighborhood physical disorder and other psychosocial resources, and the magnitude of these associations is significantly greater among women than men.

YES = Main effect of neighborhood disadvantage/advantage on stressor/resource is significant.

† = Interaction by gender is statistically significant in the expected direction.

‡ = Interaction by gender is statistically significant in the opposite direction.

[a] The effect on perceived neighborhood physical disorder of one indicator of neighborhood socioeconomic disadvantage (NSD), neighborhood proportion households receiving public assistance income, was greater for men than women.

Cross-level interactions testing hypothesis H2a found significant gender differences in the effect on perceived neighborhood physical disorder of neighborhood proportion: households receiving public assistance income (not shown) and vacant housing units. I also assessed whether these cross-level interactions remained significant when considered together in the same model. Results are presented in Table 4.14. The model controls for individual-level sociodemographic characteristics (not shown). Both cross-level interactions are significant, making this the preferred model. These results are similar to the previous findings when the interactions were considered individually.

Table 4.14 Multilevel Linear Regressions of Neighborhood Physical Disorder on Neighborhood Disadvantage by Gender (N=8,248)

Independent Variables	*b*	*SE*
Individual-level variable		
Female (/male)	-.023	.041
Census tract-level variables		
N% households receiving public assistance income	6.631***	.311
N% households receiving public assistance income X Female	-1.518**	.572
N% vacant housing units	.344	.310
N% vacant housing units X Female	1.276**	.441
Intercept	2.593***	.021
Intercept variance component		
Between-group (τ)	.374***	
Within-group (σ^2)	1.371	
Model comparison[a]		
Chi-square	682.269***	
Degrees of freedom	4	
Figure number[b]	Figure 4.7/4.8	

Notes: SE=standard error; F=female; All models control for: age, race/ethnicity, marital status, education, current and past employment status, household income and wealth, and residential stability. Percent (%) is used as a short-hand notation for proportion.

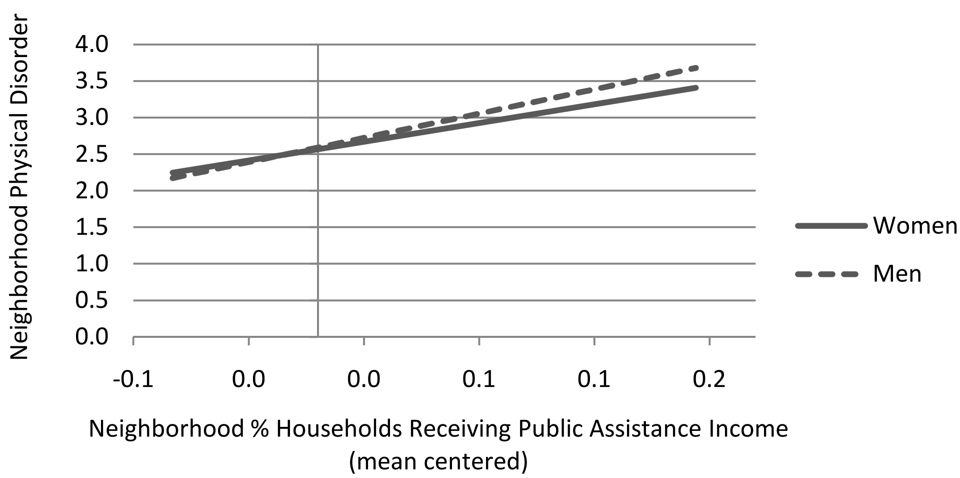
[a] The model is compared to the same model without the neighborhood characteristics/interactions.

[b] Graph of the interaction.

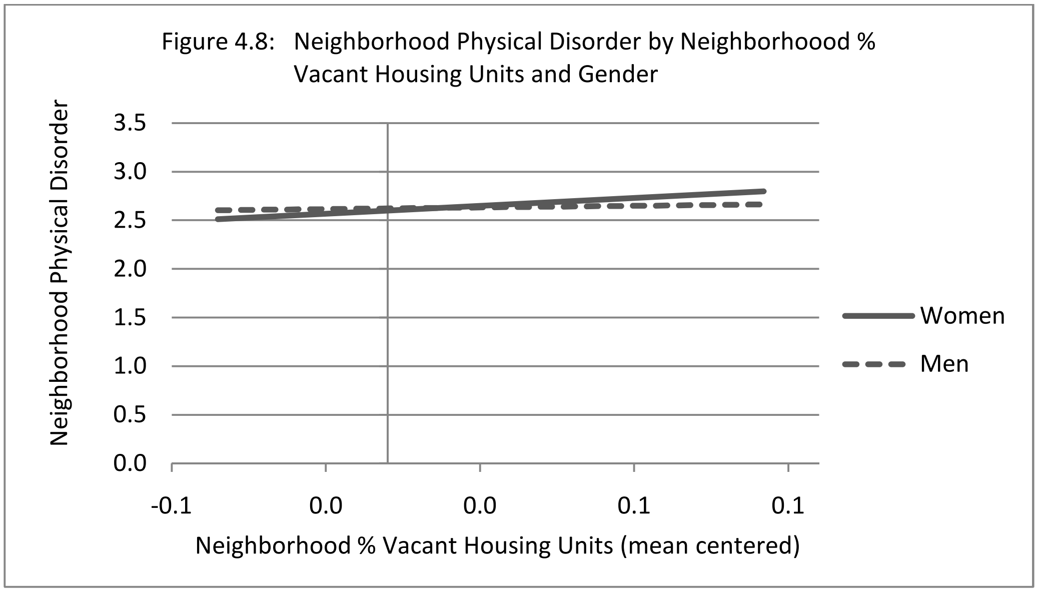
*p ≤ .05. **p ≤ .01. ***p ≤ .001.

Specifically, the negative and significant coefficient for the interaction term for neighborhood proportion of households receiving public assistance income by female indicates that the effect on neighborhood physical disorder of this unfavorable neighborhood characteristic is larger for men than women. This interaction is graphed in Figure 4.7, which shows that living in a neighborhood with more households that receive public assistance income is associated with higher levels of perceived neighborhood physical disorder more so for middle-aged and older adult men than women.

Figure 4.7:   Neighborhood Physical Disorder by Neighborhoood % Households Receiving Public Assistance Income and Gender



The coefficient for the interaction term for neighborhood proportion vacant housing units by female is negative and significant, which shows that this indicator of neighborhood disadvantage has a larger impact on women's than men's perception of disorder. This finding is consistent with hypothesis H2a. The interaction is graphed in Figure 4.8. The slope for women is steeper than men's. Among women relative to men, living in a neighborhood with more vacant housing units is associated with higher levels of perceived neighborhood physical disorder. Considered from a different angle, women perceive more disorder than men in neighborhoods with more as opposed to fewer vacant housing units.



As summarized in Tables 4.12 and 4.13, significant gender differences also were found for the effect on perceived neighborhood social cohesion of NSD (hypothesis H2b), neighborhood proportion vacant housing units (hypothesis H2b), and neighborhood affluence (hypothesis H2d). I examined these cross-level interactions together in the same model and also in pairs within the same model. None were statistically significant in these comprehensive models (not shown). These results indicate that these interactions capture the same effect. That is, the impact of NSD on perceived neighborhood social cohesion that is conditional on gender is not unique from the effect of neighborhood proportion vacant housing units on social cohesion that also varies by gender. Additionally, gender differences in the effect of neighborhood affluence on social cohesion is similar, albeit in the opposite direction, to the conditional effects of NSD and vacant housing units on social cohesion. That is, if NSD is inversely associated with perceived neighborhood social cohesion more so for women than men, neighborhood affluence also can be expected to be positively associated with social cohesion more so for women than men.

Summary: The first four hypotheses of this aim investigated gender differences in neighborhood effects on stressors and psychosocial resources among middle-aged and older adults. Higher neighborhood proportion vacant housing units was associated with higher levels of perceived neighborhood physical disorder more so for women than men, providing support for the first hypothesis (H2a). However, and contrary to expectations, living in a neighborhood with more households receiving public assistance income was associated with higher levels of disorder among men than women. These results were sustained in a comprehensive model that included both of the interactions.

Gender differences were not observed in the effects of unfavorable neighborhood characteristics on financial strain or discrimination.

NSD had a larger negative impact on perceived neighborhood social cohesion among women than men, as did neighborhood proportion vacant housing units. These findings supported the second hypothesis (H2b). However, the impact of neighborhood disadvantage on social support or mastery did not vary by gender.

The third hypothesis (H2c) states that *neighborhood advantage is negatively associated with stressors, and the magnitude of the association is significantly greater among women than men*. Results from the previous section indicated that, for example, neighborhood affluence and neighborhood proportion owner-occupied housing units were associated with lower levels of neighborhood disorder and fewer experiences of everyday discrimination among middle-aged and older adults. These favorable characteristics also promoted neighborhood social cohesion and social support. Non-significant findings for the third hypothesis indicate that these beneficial effects of neighborhood advantage do not vary by gender.

There was some support for the fourth hypothesis (H2d). Living in an affluent neighborhood was associated with higher levels of perceived neighborhood social cohesion and social support more so among women than among men. No gender differences were observed in the effects of favorable neighborhood conditions on mastery.

For the outcome of perceived neighborhood social cohesion, the significant findings that support hypotheses H2b and H2d were not sustained in comprehensive models that examined the interactions together. This indicates that each of the three interactions capture a similar conditional effect.

4.5 Main and Conditional Effects of Stressors and Resources on Depressive Symptoms

Perceived neighborhood physical disorder, financial strain, and discrimination have been identified in the research literature as stressors that increase risk for depression. Perceived neighborhood social cohesion, social support, and mastery also have been studied for their beneficial effects on mental health. In this section, I examine the main effects of these psychosocial factors on depressive symptoms among this study's sample of middle-aged and older adults. Additionally, and in line with this study's aim of assessing gender differences among components of the neighborhood stress process model, I examine whether the effects of stressors and resources on symptoms differ by gender. I also assess the extent to which associations between stressors and depressive symptoms vary by levels of psychosocial resources at the individual-level.

Stressors and Depressive Symptoms. H2e states that *perceived neighborhood physical disorder and other stressors are positively associated with depressive symptoms, and the magnitude of these associations is significantly greater among women than men.* Table 4.12 presents the main effects on depressive symptoms of everyday discrimination, a stressors, and three psychosocial resources: perceived neighborhood social cohesion, social support, and mastery net of sociodemographic characteristics (not shown). The models extend Model 1 in Table 3.1 in chapter three that regressed depressive symptoms on individual-level sociodemographic characteristics by including these psychosocial factors. These models all are significant improvements to that model (χ^2 ranges from 201.618 to 395.360, $p < .001$).

The main effects model for two stressors, perceived neighborhood physical disorder and financial strain, are not presented because subsequent models with interaction terms involving these stressors provide a better fit to the data.

In Model 1 of Table 4.15, the positive and significant coefficient for everyday discrimination indicates that higher levels of this stressor are associated with more depressive symptoms. In Model 2, higher levels of perceived neighborhood social cohesion are associated with fewer depressive symptoms. The same is observed for the effect on depressive symptoms of social support (Model 3) and mastery (Model 4).

Table 4.15 Multilevel Linear Regressions of Depressive Symptoms on Psychosocial Factors (N=8,248)

Independent Variables	Model 1 *b* *(SE)*	Model 2 *b* *(SE)*	Model 3 *b* *(SE)*	Model 4 *b* *(SE)*
Everyday discrimination	.173*** (.013)			
Perceived neighborhood social cohesion		-.076*** (.007)		
Social support			-.224*** (.017)	
Mastery				-.128*** (.008)
Intercept	.633 (.008)	.633*** (.008)	.633*** (.008)	.632*** (.008)
Intercept variance component				
Between-group (τ)	.016***	.017***	.016***	.018***
Within-group (σ^2)	.369	.374	.372	.364
Model comparison[a]				
Chi-square	344.808***	201.618***	281.956***	395.360***
Degrees of freedom	1	1	1	1

Notes: SE=standard error; All models control for: age, race/ethnicity, marital status, education, current and past employment status, household income and wealth, residential stability, and year of data collection.

[a] Each model is compared to a model (not shown) that regresses depressive symptoms on individual-level sociodemographic characteristics.

*p ≤ .05. **p ≤ .01. ***p ≤ .001.

The significant finding pertaining to hypothesis H2e is presented in Table 4.16. The model adjusts for individual-level sociodemographic characteristics (not shown). The interaction term is significant and negative indicating that the effect of neighborhood physical disorder on depressive symptoms is greater for men than women. The coefficient for neighborhood physical disorder shows that, among men, living in a neighborhood with higher levels of perceived neighborhood physical disorder is associated with more depressive symptoms (b=.072, SE=.013, $p \leq .001$). Among women, living in a more disordered neighborhood also is associated with more symptoms (simple slope test: b=.040, SE=.014, $p \leq .01$). However, perceived neighborhood physical disorder has a greater impact on depressive symptoms among middle-aged and older adult men than women. The coefficient for gender is positive and significant indicating that women report more depressive symptoms, on average, when perceived neighborhood physical disorder is zero, that is, at the average level of this variable because it is group-mean centered.

Table 4.16 Multilevel Regression of Depressive Symptoms on Neighborhood Physical Disorder by Gender (N=8,248)

Independent Variables	*b*	*SE*
Female (/male)	.107**	.040
Neighborhood physical disorder	.072***	.013
Neighborhood physical disorder X Female	-.032*	.015
Intercept	.646***	.010
Intercept variance component		
Between-group (τ)	0.078***	
Within-group (σ^2)	0.379	
Model comparison[a]		
Chi-square	6.715**	
Degrees of freedom	1	
Figure number[b]	Figure 4.9	

Notes: SE=standard error; All models control for: age, race/ethnicity, marital status, education, current and past employment status, household income and wealth, residential stability, and data collection year.

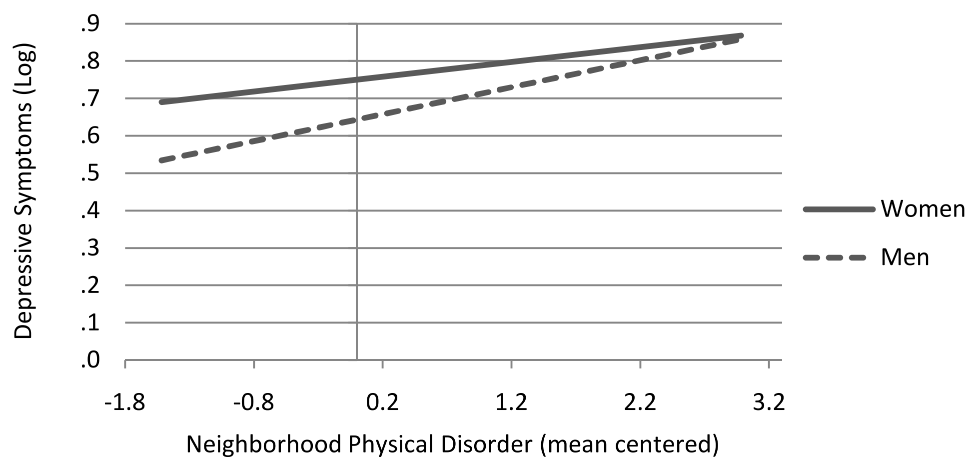
[a] The model is compared to the same model without the interaction.

[b] Graph of the interaction.

*p ≤ .05. **p ≤ .01. ***p ≤ .001.

This interaction is graphed in Figure 4.9. Values along the x-axis are within the 5th and the 95th percentile. The slope for men is steeper than the slope for women. This shows that neighborhood physical disorder has a greater negative impact on men's than women's mental health, which is contrary to the hypothesized relationship. Gender differences in the effect on depressive symptoms of perceived neighborhood physical disorder also narrows at higher levels of disorder. Gender differences were not observed in the effects on symptoms of financial strain or everyday discrimination.

Figure 4.9: Depressive Symptoms by Neighborhood Physical Disorder and Gender



Psychosocial Resources and Depressive Symptoms. H2f posits that *perceived neighborhood social cohesion and other psychosocial resources are negatively associated with depressive symptoms, and the magnitude of these associations is significantly greater among women than men*. No support was found for this hypothesis. That is, there were no significant gender differences in the effects on depressive symptoms of perceived neighborhood social cohesion, social support, or mastery.

Stressors, Psychosocial Resources, and Depressive Symptoms. H2g states that *perceived neighborhood physical disorder and other stressors are positively associated with depressive symptoms, and the magnitude of these associations are significantly smaller among individuals with higher levels of psychosocial resources than those with lower levels of psychosocial resources.* Low, average, and high levels of psychosocial resources respectively represent scores that are one standard deviation below the mean, at the mean, and one standard deviation above the mean. This hypothesis was tested using individual-level multiple linear regression, and results are presented in Table 4.17. The models control for individual-level sociodemographic characteristics (not shown).

Table 4.17 Individual-Level Regressions of Depressive Symptoms on Stressors by Resources (N=8,248)

	Model 1		Model 2	
Independent Variables	*b*	*SE*	*b*	*SE*
Neighborhood social cohesion	-.073***	.008		
Social support			-.183***	.016
Neighborhood physical disorder	.021*	.009		
Financial strain			.139***	.009
Neighborhood physical disorder X Neighborhood social cohesion	.011**	.004		
Financial strain X social support			-.045*	.018
Intercept				
Model comparison[a]				
F-statistic	43.64***		69.47***	
Degrees of freedom	2, 55		2, 55	
[b]ΔR^2	.012		.021	
Figure number[c]	Figure 4.10		Figure 4.11	

Notes: SE=standard error; All models control for: age, race/ethnicity, marital status, education, current and past employment status, household income and wealth, residential stability, and data collection year.

[a] Each model is compared to the same model without the interaction.

[b] The difference in R^2 between Model 1 or 2 and the models they are compared to.

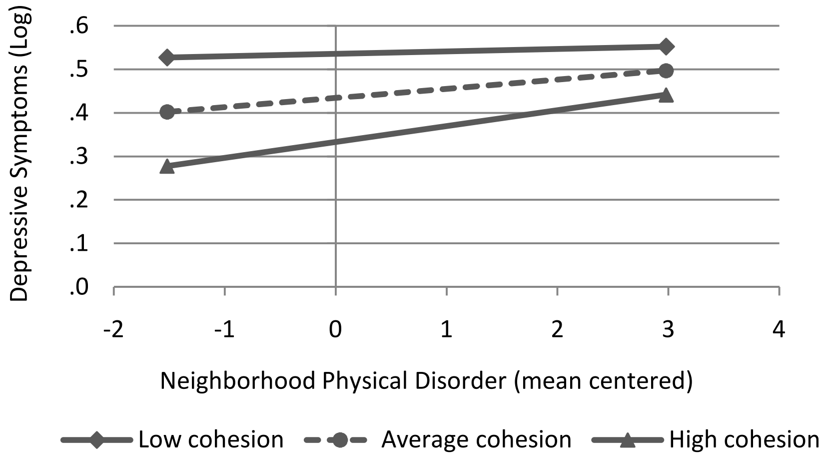
[c] Graph of the interaction.

*p ≤ .05. **p ≤ .01. ***p ≤ .001.

In Model 1, the coefficient for the interaction term is positive and significant, indicating that the effect of neighborhood physical disorder on depressive symptoms varies significantly by levels of neighborhood social cohesion. The coefficient for perceived neighborhood physical disorder represents its effect on depressive symptoms when perceived neighborhood social cohesion is zero, that is, at the average level of social cohesion because it is group-mean centered. The coefficient for neighborhood physical disorder is positive and significant indicating that when neighborhood social cohesion is zero, higher levels of neighborhood physical disorder are associated with more depressive symptoms. The coefficient for perceived neighborhood social cohesion represents the effect of this psychosocial resource on depressive symptoms when perceived neighborhood physical disorder is zero (i.e., at average levels of the variable because it is group-mean centered). It is negative and significant indicating that when neighborhood physical disorder is equal to zero, higher levels of neighborhood social cohesion are associated with fewer depressive symptoms.

Simple slope tests (UCLA Statistical Consulting Group, n.d.) show that neighborhood physical disorder is positive and significantly associated with depressive symptoms among those who report high ($b=.036$, $SE=.011$, $p \leq .01$) or average levels ($b=.021$, $SE=.009$, $p \leq .05$) of perceived neighborhood social cohesion. Surprisingly, disorder is not significantly associated with depressive symptoms among people who perceive low levels of neighborhood social cohesion ($b=.006$, $SE=.009$, $p > .05$). This interaction is graphed in Figure 4.10. The negative impact of perceived neighborhood physical disorder on mental health is greater among middle-aged and older adults who perceive more social cohesion, as indicated by the steeper slope for this group relative to the others. Perceived neighborhood social cohesion is not functioning as a stress buffer.

Figure 4.10: Depressive Symptoms by Neighborhood Physical Disorder and Neighborhood Social Cohesion



Considered from another perspective, when perceived neighborhood physical disorder is high, perceived neighborhood social cohesion confers little protection against depressive symptoms. This is indicated by the lines in the figure that come closer to converging such that depressive symptoms are relatively high among people with different levels of perceived neighborhood social cohesion. However, when disorder is low, perceived neighborhood social cohesion is beneficial for mental health. Perceiving low levels of neighborhood physical disorder and high levels of neighborhood social cohesion represents cumulative advantage. People who report these characteristics have the lowest levels of depressive symptoms.

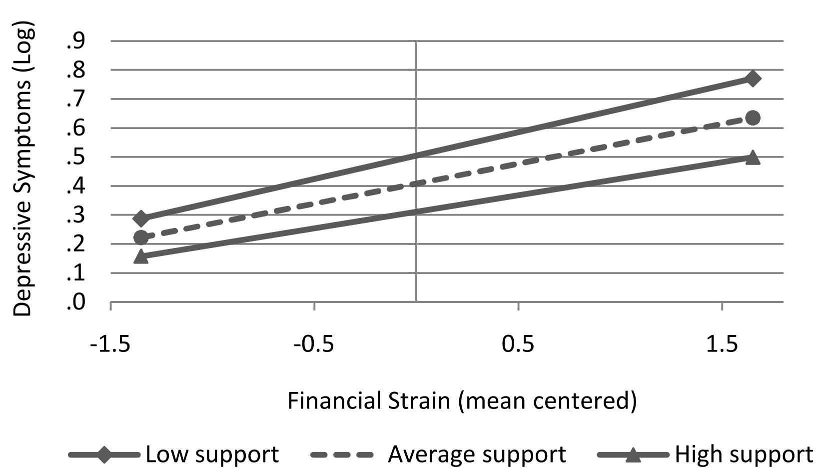
The difference in R^2 between Model 1 and the model without the interaction term to which it was compared is small (ΔR^2=.012). However, including the interaction term is a significant improvement to the previous model (not shown).

The impact of neighborhood physical disorder on depressive symptoms did not vary significantly by levels of social support or mastery.

Model 2 assesses whether the effect of financial strain on depressive symptoms varies by social support. The coefficient for the interaction term is significant, indicating that the effect of financial strain on depressive symptoms varies by social support. The coefficient for financial strain indicates that when social support is zero, higher levels of financial strain are associated with more depressive symptoms; and the coefficient for social support shows that when financial strain is zero, having more social support reduces risk for depressive symptoms.

Simple slope tests indicate that people with low (b=.161, SE=.013, $p \leq .001$), average (b=.138, SE=.009, $p \leq .001$), and high (b=.114, SE=.013, $p \leq .001$) social support all report more depressive symptoms at higher levels of financial strain. As expected, the association between financial strain and symptoms is largest for people with low social support. Figure 4.11 is a graph of the interaction. Consistent with hypothesis H2g, financial strain is less damaging to mental health for urban middle-aged and older adults with high levels of social support relative to those with low levels of support. Social support is functioning as a stress buffer.

Figure 4.11: Depressive Symptoms by Financial Strain and Social Support



The difference in R^2 between Model 2 and the model without the interaction term to which it was compared is small (ΔR^2=.021), but including the interaction of financial strain and social support is a significant improvement to the previous model (not shown).

The effect of financial strain on depressive symptoms did not vary significantly by levels of perceived neighborhood social cohesion or mastery. The impact of everyday discrimination on depressive symptoms also did not vary significantly by levels of neighborhood social cohesion, social support, or mastery.

Comprehensive Model: The test of hypothesis H2e found that the effect on depressive symptoms of perceived neighborhood physical disorder significantly varied by gender. Also for hypothesis H2g, the effect on symptoms of perceived neighborhood physical disorder and financial strain significantly varied by perceived neighborhood social cohesion and social support, respectively. These results are described above and summarized in Table 4.18.

I also assessed whether these interactions remained significant when considered together in the same model. The interaction involving perceived neighborhood physical disorder and neighborhood social cohesion was not significant. Table 4.19 presents results of the significant interactions. It controls for individual-level sociodemographic characteristics, stressors, and resources (not shown). This comprehensive model is preferred to the previous models that examined these interactions individually.

Table 4.18 Main and Conditional Effects of Stressors/Resources on Depressive Symptoms

	Main Effect	**Moderators**			
		Gender	Neighborhood Social Cohesion	Social Support	Mastery
Hypotheses:		**H2E/H2F**	**H2G**	**H2G**	**H2G**
Stressors:		‡	‡		
Neighborhood physical disorder					
Financial strain				†	
Everyday discrimination	***YES***				
Resources:	***YES***				
Neighborhood social cohesion					
Social support	***YES***				
Mastery	***YES***				

†= Interaction is statistically significant in the expected direction.
‡= Interaction is statistically significant in the opposite direction.

H2E=Perceived neighborhood physical disorder and other stressors are positively associated with depressive symptoms, and the magnitude of these associations is significantly greater among women than men.

H2F =Perceived neighborhood social cohesion and other psychosocial resources are negatively associated with depressive symptoms, and the magnitude of these associations is significantly greater among women than men.

H2G=Perceived neighborhood physical disorder and other stressors are positively associated with depressive symptoms, and the magnitude of these associations is significantly smaller among individuals with higher levels of psychosocial resources than those with lower levels of psychosocial resources.

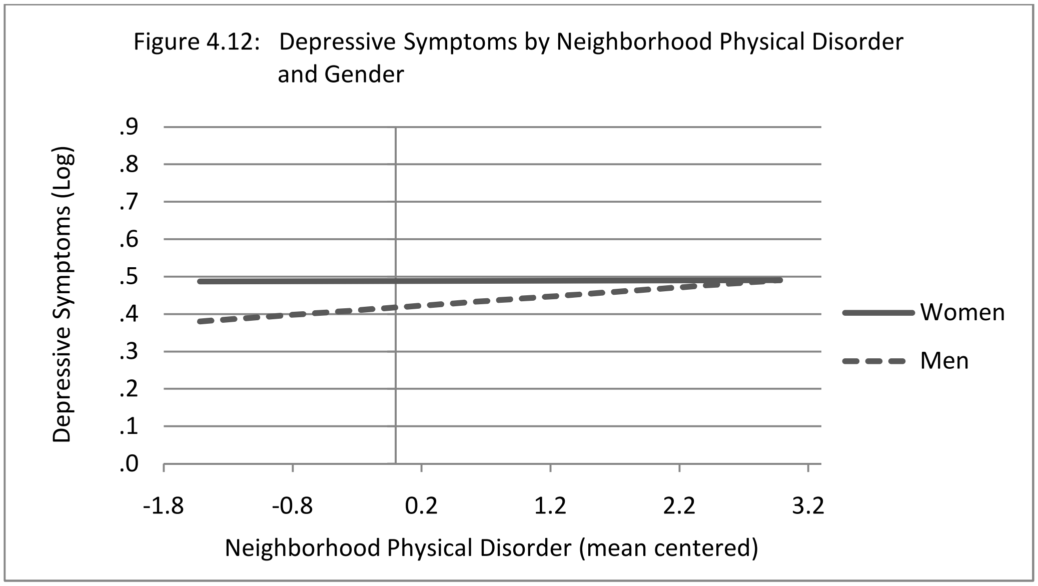
Table 4.19 Individual-Level Regressions of Depressive Symptoms on Stressors: Conditional Effects (N=8,248)

Independent Variables	*b*	*SE*
Female (/male)	.071***	.015
Social support	-.113***	.016
Neighborhood physical disorder	.025*	.009
Financial strain	.100***	.009
Neighborhood physical disorder X Female	-.024*	.011
Financial strain X social support	-.044*	.019
Intercept	2.290***	.427
Model Statistics		
F-statistic	122.55***	
Degrees of freedom	28, 29	
R^2	.254	
Figure number[a]	Figure 4.12/4.13	

Notes: SE=standard error; The model controls for: age, race/ethnicity, marital status, education, current and past employment status, household income and wealth, residential stability, everyday discrimination, perceived neighborhood social cohesion, mastery, and data collection year.
[b] Graph of the interaction.
*p ≤ .05. **p ≤ .01. ***p ≤ .001.

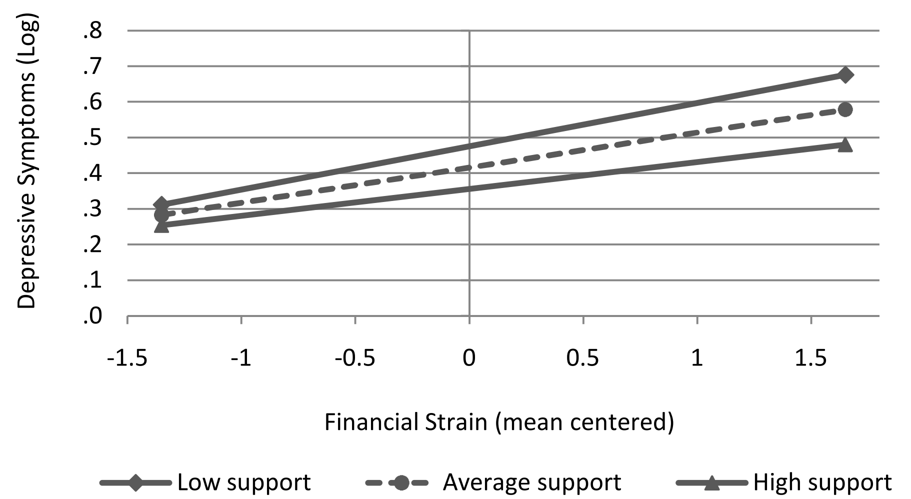
The negative and significant coefficient for the interaction term for perceived neighborhood physical disorder and gender indicates that the effect on depressive symptoms of neighborhood physical disorder is greater for men than women. The coefficient for neighborhood physical disorder represents its effect among men, the omitted reference group (Aneshensel, forthcoming). It shows that, among men, living in a neighborhood with higher levels of perceived neighborhood physical disorder is associated with more depressive symptoms (b=.025, SE=.009, p ≤ .05). In analyses (not shown) where women are the omitted reference group, the coefficient for neighborhood physical disorder (b=.0007, SE=.010, p >.05) is not statistically significant, indicating that among women, perceived neighborhood physical disorder is not associated with depressive symptoms.

The interaction is graphed in Figure 4.12. Contrary to hypothesis H2e, perceived neighborhood physical disorder is detrimental to men's mental health but among women it is not significantly associated with depressive symptoms.



The coefficient for the interaction term for financial strain by social support is significant, indicating that the impact of financial strain on depressive symptoms varies by social support. Similar to previous results and consistent with hypothesis H2g, the association between financial strain and depressive symptoms is largest for people with low social support (simple slope test: b=.121, SE=.013, $p \leq .001$), followed by those with average (simple slope test: b=.098, SE=.009, $p \leq .001$) and high (simple slope test: b=.075, SE=.013, $p \leq .001$) levels of social support. The interaction is graphed in Figure 4.13. Financial strain is least damaging to mental health for people with high levels of social support relative to those with low levels of support. Social support acts as a buffer against the deleterious effects of financial strain on mental health among middle-aged and older adults.

Figure 4.13: Depressive Symptoms by Financial Strain and Social Support



4.6 Summary

This chapter examined conditional relationships among components of the neighborhood stress process model. Depressive symptoms and three stressors (i.e, perceived neighborhood physical disorder, financial strain, everyday discrimination) and three psychosocial resources (i.e., perceived neighborhood social cohesion, social support, mastery) were examined as outcomes. Relative to men, women reported fewer experiences of everyday discrimination and higher levels of perceived neighborhood social cohesion and social support. Gender differences were not observed in perceptions of neighborhood physical disorder, financial strain, or mastery.

NSD and neighborhood proportion non-family households were positively associated with perceived neighborhood physical disorder and everyday discrimination. Middle-aged and older adults living in urban neighborhoods with more female-headed households with children reported higher levels of all three stressors and lower levels of perceived neighborhood social cohesion and social support. Among the stressors and resources examined, mastery was the least influenced by neighborhood conditions. Only neighborhood proportion non-family households was significant and inversely associated with mastery. None of the other neighborhood conditions were related to mastery.

Neighborhood affluence was associated with a lower risk for all three stressors; and residential stability was only significant and inversely related to perceptions of social cohesion in the neighborhood. Neighborhood proportion owner-occupied housing units and married-couple households with children were beneficial for perceptions of neighborhood social cohesion and social support; and they were associated with lower levels of perceived neighborhood physical disorder. Middle-aged and older adults living in neighborhoods with higher concentration of adults aged 65 and older perceived less disorder and more social cohesion in their neighborhoods.

The first four hypotheses assessed whether the effect of neighborhood conditions on stressors and resources varied significantly by gender. Some support was found for hypothesis H2a, H2b, and H2d. However, hypothesis H2c was not supported. Even so, only six interactions were significant from at least 54 that were tested. Specifically, neighborhood proportion households receiving public assistance income had a larger impact on perceived neighborhood physical disorder among men than women, thereby not supporting hypothesis H2a. However, consistent with H2a, living in a neighborhood with more vacant housing units was associated with higher levels of perceived neighborhood physical disorder more so for women than men. These significant findings for H2a were sustained in a comprehensive model that tested the interactions together.

Both NSD and neighborhood proportion vacant housing units were more damaging to women's than men's perceptions of neighborhood social cohesion, providing support for hypotheses H2b. Hypothesis H2d also was supported by findings indicating that living in a more affluent neighborhood was associated with higher levels of perceived neighborhood social cohesion and social support more so among women than men.

The significant conditional effects of neighborhood characteristics on perceived neighborhood social cohesion that support H2b and H2d were not sustained in comprehensive models that examined the interactions together. It is likely that each of the individually assessed interactions capture the same effect.

The fifth hypothesis (H2e) examined gender differences in the effect on depressive symptoms of stressors and psychosocial resources; whereas the last two hypotheses (H2g and H2f) investigated whether the effects of stressors on depressive symptoms varied by resources. Among 24 interactions tested, three were statistically significant and only one was in the expected direction.

In this sample of middle-age and older adults, those who reported more experiences of everyday discrimination also reported more depressive symptoms; whereas symptoms were lower among those with higher levels of psychosocial resources. Contrary to hypothesis H2e, perceived neighborhood physical disorder had a greater impact on men's than women's mental health, even in a comprehensive model that assessed the conditional effects of other stressors. The effect on depressive symptoms of financial strain and everyday discrimination did not vary by gender.

There were no significant gender differences in the impact on depressive symptoms of any of the psychosocial resources examined, thereby providing no support for hypothesis H2f.

Consistent with hypothesis H2g, financial strain was least damaging to mental health for people with high than low levels of support. This finding held in a comprehensive model that examined other conditional effects on depressive symptoms. However, contrary to hypothesis H2g, perceived neighborhood physical disorder had a larger positive effect on depressive symptoms for people with high than low levels of perceived neighborhood social cohesion; and this effect was not sustained in a comprehensive model.

A few hypothesis of this study aim were supported; however, the majority were not. The findings from this chapter show that, with a few exceptions, relationships among components of the neighborhood stress process model do not vary by gender or by levels of psychosocial resources.

CHAPTER 5:

NEIGHBORHOODS AND DEPRESSIVE SYMPTOMS AMONG WOMEN

5.1 Introduction

This chapter focuses on the third aim of this dissertation, which *examines the extent to which the neighborhood stress process model explains variation in depressive symptoms among middle-aged and older women.* The first objective of this aim is to estimate the association between neighborhood conditions and depressive symptoms among women. The second objective is to assess the extent to which exposure to stressors and access to psychosocial resources mediate the relationship between neighborhood conditions and symptoms. The last objective is to ascertain the extent to which the impact of neighborhood disadvantage and advantage on depressive symptoms varies by levels of stressors and psychosocial resources (i.e., cross-level interactions).

A few studies have looked at neighborhood effects on women's health, and find that NSD is positively related to weight gain and obesity, coronary heart disease, and smoking (Coogan et al., 2010; Diez-Roux et al., 1997). However, less attention has been directed towards investigating the relationship between neighborhood conditions and depressive symptoms specifically among women. Research has consistently shown that, relative to men, women face a higher risk for depressive symptoms (Accortt et al., 2008; Boughton & Street, 2007). However, findings from the first aim of this dissertation indicated that women were similar to men in reports of depressive symptoms net of sociodemographic characteristics. Even so, examining the relationship between neighborhood conditions and depressive symptoms among women – and the role of stressors and psychosocial resources therein – is warranted. Women may differ from each other in exposure to neighborhood conditions and stressors like financial strain; and also in their access to psychosocial resources beneficial to mental health. Such differences can influence risk for depressive symptoms in this sample of middle-aged and older women.

All of the analyses in this aim are performed within a multilevel framework. The dependent variable is depressive symptoms. I begin, in section 5.2, by testing for significant neighborhood variation in depressive symptoms and assessing the sociodemographic correlates of symptoms among women. In section 5.3, I describe the main and mediated effects of neighborhood conditions on depressive symptoms. Thereafter, in sections 5.4 and 5.5, I present the conditional effects of neighborhood characteristics on symptoms. I close the chapter with a summary of the findings.

5.2 Neighborhood Disadvantage and Depressive Symptoms Among Women

I began analyses for this aim by estimating an intercept-only or null model that showed significant variation in depressive symptoms across the neighborhoods inhabited by women (τ=0.055, p <.001). The intraclass correlation indicated that 10.9% (ρ = 0.109) of the total variation in depressive symptoms was present at the neighborhood level. The remaining variation in symptoms (89.1%) was at the individual level.

Next, I assessed the sociodemographic correlates of depressive symptoms among women. Results are presented in Table 5.1. The coefficient for age-squared is significant, indicating a non-linear relationship between age and depressive symptoms net of the other variables in the model. Being older was related to fewer depressive symptoms up to around age 70, after which symptoms increased with age. None of the racial/ethnic groups were significantly different from non-Hispanic whites in reports of depressive symptoms. Compared to women who were recently married, those who were recently widowed reported more depressive symptoms net of the other variables in the model. This was the only significant marital status difference in symptoms.

Table 5.1 Multilevel Linear Regression of Depressive Symptoms on Sociodemographic Characteristics among U.S. Urban Adult Women Aged 50 and Older (N=4,954)

Independent Variables	*b*	*SE*
Age (years)	-.059*	.026
Age squared	.0004*	.0002
Race/ethnicity		
Black/African American	-.039	.079
Hispanic	.080	.107
Other	-.038	.117
Current & past marital status		
Separated/divorced currently	.069	.063
Never married	.003	.109
Widowed consistently	.015	.054
Widowed recently	.236***	.061
Widowed duration unknown	.205	.123
Education (years)	-.022**	.008
Current & past employment status		
Employed recently	-.014	.071
Retired consistently	-.020	.067
Retired recently	.007	.064
Retired duration unknown	-.054	.122
Homemaker consistently	.046	.082
Homemaker duration unknown	.093	.077
Other recently/consistently	.472***	.085
Household income (log)	-.069**	.026
Household wealth (log)	-.145***	.042
Residential tenure[a] (/moved)	-.095	.049
2006 data collection year (/2008)	.100*	.044
Intercept	.686***	.013
Intercept variance component		
Between-group (τ)	.071***	
Within-group (σ^2)	.414	
Model comparison[b]		
Chi-square	224.010***	
Degrees of freedom	22	

Notes: SE=standard error; Reference groups: race/ethnicity=non-Hispanic white; recent & past marital status=married recently; recent & past employment status=employed consistently; consistently=for the past 6 years, duration unknown=missing at one or more prior interviews

[a] People who did not move in the past six years versus movers.

[b] Model compared to the null model (not shown).

*p ≤ .05. **p ≤ .01. ***p ≤ .001.

Attaining more years of education was associated with fewer symptoms. Women in the "other" employment category (i.e., unemployed, temporarily laid off, on sick or other leave, disabled, other) had more depressive symptoms than those who were consistently employed for the past six years, but women in all of the other employment status categories did not significantly differ from those who were consistently employed, other factors held constant.

Higher household income and wealth were associated with fewer symptoms net of the other variables in the model. Women who were residentially stable compared to movers had fewer symptoms, on average (p=.051). Completing the psychosocial questionnaire in 2006 as opposed to 2008 was related to reports of more depressive symptoms. Therefore, I control for this variable in subsequent analyses. The variance of the random intercept was significant (τ=0.071, $p < .001$), indicating that there remained unexplained variation in depressive symptoms at the neighborhood level after adjusting for individual-level characteristics.

5.3 Main and Mediated Effects of Neighborhood Conditions and Depressive Symptoms

In this section, I examine the main effects of neighborhood disadvantage and advantage on depressive symptoms among women. I also assess the extent to which neighborhood conditions are associated with stressors that are detrimental to mental health and psychosocial resources that promote mental health. In particular, I examine the role of stressors and resources as mediators or the channels through which the effects of neighborhood conditions on mental health are transmitted.

5.3.1 Main Effects of Neighborhood Conditions on Depressive Symptoms

H3a states that *neighborhood disadvantage is positively associated with depressive symptoms in women*. H3b posits that *neighborhood advantage is negatively associated with depressive symptoms in women*. Results for the main effect of neighborhood conditions on depressive symptoms are presented in Table 5.2. The models control for individual-level sociodemographic characteristics (not shown). They extend the model in Table 5.1 by including neighborhood conditions, thereby significantly improving that model: χ^2=7.561 (Model 1) and χ^2=9.780 (Model 2), $p < .01$.

Table 5.2 Multilevel Linear Regression of Depressive Symptoms on Neighborhood Socioeconomic Disadvantage (N=4,954)

	Model 1		Model 2	
Census tract-level variable	*b*	*SE*	*b*	*SE*
Neighborhood socioeconomic disadvantage	.032*	.014		
N% adults aged 65+			-.328***	.100
Intercept	.689***	.011	.688***	.010
Intercept variance component				
Between-group (τ)	.023***		.022***	
Within-group (σ^2)	.408		.409	
Model comparison[a]				
Chi-square	7.561**		9.780**	
Degrees of freedom	1		1	

Notes: SE=standard error; All models control for: age, race/ethnicity, recent & past marital and employment status, education, household income and wealth, residential stability, and data collection year. Percent (%) is used as a short-hand notation for proportion.
[a] Each model is compared to the model in Table 5.1.
*p ≤ .05. **p ≤ .01. ***p ≤ .001.

In Model 1, the coefficient for NSD is positive and significant, which indicates that women living in neighborhoods with higher levels of NSD report more depressive symptoms than women living in neighborhoods with lower levels of NSD. Three of the components of NSD were similarly associated with symptoms (not shown): neighborhood proportion: unemployed individuals aged 16 and older (p=.048), households receiving public assistance income (p=.011), and people living below the federal poverty level (p=.044).

Other measures of neighborhood disadvantage not significantly related to depressive symptoms include (not shown): neighborhood proportion individuals aged 25 years and older without a high school diploma (p=.151), vacant housing units (p=.732), non-family households (p=.701), and female-headed households with children (p=.073).

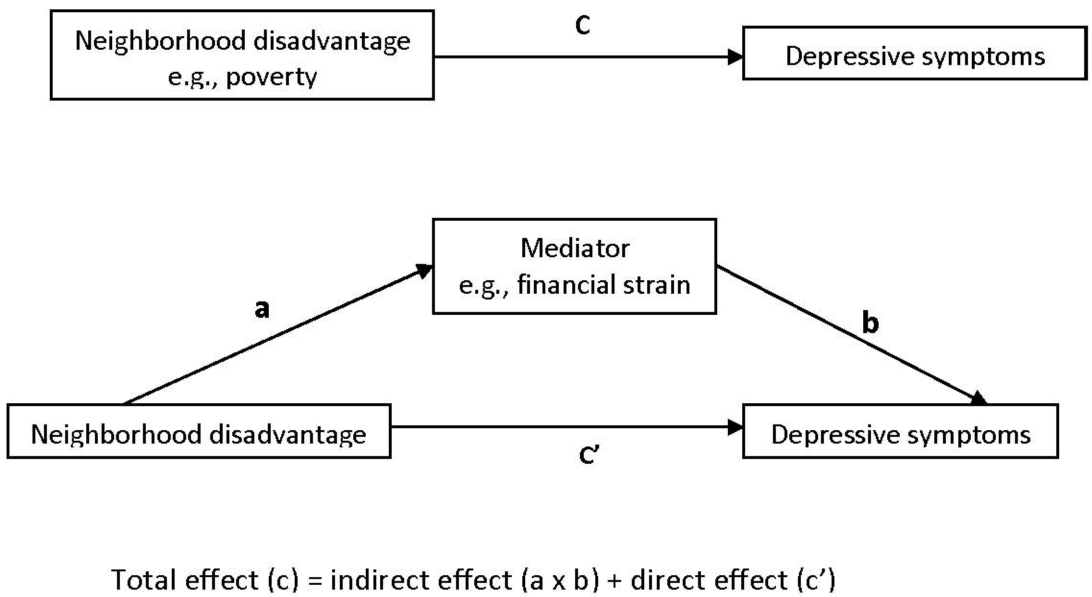
In Model 2, the coefficient for neighborhood proportion adults aged 65 and older is negative and significant, which indicates that women living in neighborhoods with higher concentrations of older adults report fewer depressive symptoms than women living in neighborhoods with fewer older adults. Measures of neighborhood advantage not significantly related to depressive symptoms include (not shown) neighborhood affluence (p=.142) and neighborhood proportion: residentially stable individuals (p=.802), owner-occupied housing units (p=.123), and married-couple households with children (p=.982).

<u>*5.3.2 Mediated Effect of Neighborhood Disadvantage on Depressive Symptoms*</u>

H3c posits that *neighborhood disadvantage is positively associated with perceived neighborhood disorder and other stressors, which are positively associated with depressive symptoms, such that neighborhood disadvantage has an indirect positive effect on depressive symptoms among women.* H3d states that *neighborhood disadvantage is negatively associated with neighborhood social cohesion and other psychosocial resources, which are negatively associated with depressive symptoms, such that NSD has an indirect positive effect on depressive symptoms*. In these hypotheses, I examine the extent to which the negative effect of neighborhood disadvantage is transmitted via stressors and psychosocial resources.

Figure 5.1 shows a basic mediation model. Mediation may occur in the presence of the following conditions: (1) the focal independent variable is significantly associated with the outcome in the absence of the mediator (i.e., path c in the figure); (2) the focal independent variable is significantly associated with the mediator (i.e., path 'a'); (3) the mediator is significantly associated with the outcome in the presence of the focal independent variable (i.e., path 'b'); and (4) the effect of the focal independent variable on the outcome declines or fully disappears in the presence of the mediator (i.e., path c'). Path c represents the total effect net of confounders and path c'□ indicates the direct effect of the focal independent variable on the outcome. Taken together, paths ‘a’ and ‘b’ represent the indirect effect (a × b) of the focal independent variable on the outcome that is transmitted through the mediator. To test whether the indirect effect is statistically significant, the coefficient and standard error of the focal independent variable (i.e., path 'a') and the mediator (i.e., path 'b') are used to calculate a confidence interval around the indirect effect using the program PRODCLIN (MacKinnon et al., 2007).

Figure 5.1 Mediation Model



Neighborhood disadvantage and depressive symptoms: I began by re-examining the relationship between NSD and the separate indicators of neighborhood disadvantage and depressive symptoms net of sociodemographic characteristics. To reiterate, as shown in Table 5.3 Model 1, at higher than lower levels of NSD, women report more depressive symptoms. Similar results (not shown) were found for three of the four components of NSD, neighborhood proportion: unemployed individuals aged 16 and older, households receiving public assistance income, people living below the federal poverty level. These four measures of neighborhood disadvantage thus fulfilled the first requirement for mediation. Their effects on depressive symptoms represent ‘path c’ in the mediation model.

The other indicators of disadvantage were not significantly related to depressive symptoms: neighborhood proportion: individuals aged 25 years and older without a high school diploma (a component of NSD), vacant housing units, non-family households, and female-headed households with children.

Neighborhood disadvantage and mediators: Next, I tested whether the four indicators of neighborhood disadvantage that met the first criteria for mediation were significantly associated with the proposed mediators (i.e., stressors, psychosocial resources) net of control variables. As seen in Table 5.3 Model 2, the coefficient for NSD shows that middle-aged and older women who live in urban neighborhoods with higher levels of NSD perceive significantly more physical disorder in their neighborhoods. In Model 3, the coefficient for NSD indicates that higher levels of NSD are significantly associated with less perceived neighborhood social cohesion.

Three components of NSD also were positively associated with perceived neighborhood physical disorder and inversely associated with perceived neighborhood social cohesion: neighborhood proportion: unemployed individuals aged 16 and older, households receiving public assistance income, and people living below the federal poverty level (not shown).

NSD and its three components were not significantly related to financial strain, everyday discrimination, social support, or mastery. These stressors and resources are therefore not considered for their potential role as mediators.

Table 5.3 Multilevel Linear Regressions of Depressive Symptoms, Perceived Neighborhood Physical Disorder, and Perceived Neighborhood Social Cohesion on Neighborhood Socioeconomic Disadvantage (N=4,954)

	Dependent Variables							
	Depressive Symptoms Model 1		Neighborhood Physical Disorder Model 2		Neighborhood Social Cohesion Model 3		Depressive symptoms Model 4	
Independent Variables	*b*	*SE*	*b*	*SE*	*b*	*SE*	*b*	*SE*
Neighborhood socioeconomic disadvantage	.032*	.014	.389***	.032	-.228***	.031	.018	.014
Perceived neighborhood physical disorder							-.0004	.011
Neighborhood social cohesion							-.065***	.011
Intercept	.689***	.011	2.590***	.022	5.443***	.022	.688***	.010
Intercept variance component								
Between-group (τ)	.023***		.236***		.149***		.021***	
Within-group (σ^2)	.408		1.480		1.644		.402	

Notes: SE=standard error; All models control for: age, race/ethnicity, recent & past marital and employment status, education, household income and wealth, residential stability, and data collection year.

*p ≤ .05. **p ≤ .01. ***p ≤ .001.

Mediators and depressive symptoms: Perceived neighborhood physical disorder and neighborhood social cohesion emerged as potential mediators. Next, I estimated the effects of these variables on depressive symptoms within a multiple-mediation framework whereby the impact of neighborhood disadvantage on symptoms is transmitted through both neighborhood physical disorder and neighborhood social cohesion. The findings pertaining to the three significant components of NSD - neighborhood proportion: unemployed individuals aged 16 and older, households receiving public assistance income, people living below the federal poverty level – were similar to results involving NSD. I therefore only present results for NSD. In Table 5.3 Model 4, the coefficient for neighborhood physical disorder is not significant net of neighborhood social cohesion, NSD, and sociodemographic characteristics. Neighborhood physical disorder does not meet the fourth requirement for mediation.

The coefficient for neighborhood social cohesion is negative and significant net of neighborhood physical disorder, NSD, and sociodemographic characteristics. Therefore, neighborhood social cohesion may mediate the focal relationship between NSD and depressive symptoms.

Mediated effects: In Table 5.4 Model 1, the coefficient for NSD indicates that at higher rather than at lower levels of NSD women reported more depressive symptoms. In Model 2, which extends Model 1 by including perceived neighborhood physical disorder and neighborhood social cohesion, the coefficient for NSD is smaller (b=.018 versus b=.032 in Model 1) and not significant. The focal relationship between NSD and depressive symptoms appears to be completely mediated by perceived neighborhood social cohesion. However, there is no support for multiple mediation of the focal relationship between NSD and symptoms by both neighborhood social cohesion and perceived neighborhood physical disorder because the coefficient of the latter is not significant.

Table 5.4 Multilevel Linear Regressions of Depressive Symptoms on Neighborhood Socioeconomic Disadvantage: Mediated Effect (N=4,954)

Independent Variables	Model 1		Model 2	
	b	*SE*	*b*	*SE*
Neighborhood socioeconomic disadvantage	.032*	.014	.018	.014
Perceived neighborhood physical disorder			-.0004	.011
Neighborhood social cohesion			-.065***	.011
Intercept	.689***	.011	.688***	.010
Intercept variance component				
Between-group (τ)	.023***		.021***	
Within-group (σ^2)	.408		.402	

Notes: SE=standard error; All models control for: age, race/ethnicity, recent & past marital and employment status, education, household income and wealth, residential stability, and data collection year.
*p ≤ .05. **p ≤ .01. ***p ≤ .001.

Table 5.5 shows the decomposition of the effects of NSD on depressive symptoms transmitted through perceived neighborhood physical disorder and neighborhood social cohesion. The first row shows the total effect of NSD on depressive symptoms (.032) net of individual-level sociodemographic characteristics. This effect represents path C in the mediation model. The indirect effect of NSD on symptoms channeled through perceived neighborhood physical disorder is shown in the second row. It is calculated as the product of the coefficient of NSD in Table 5.3 Model 2 and the coefficient of neighborhood physical disorder in Model 4 of the same table. To test whether this indirect effect is statistically significant, I used the program PRODCLIN (MacKinnon et al., 2007) to calculate a confidence interval around the effect using estimates for the coefficient and standard error of NSD and neighborhood physical disorder from the same models. The indirect effect is negligible (-.0002) and the 95% confidence interval (-

0.009, 0.008) includes zero, indicating that NSD is not mediated by perceived neighborhood physical disorder.

The third row in Table 5.5 shows the indirect effect of NSD on symptoms transmitted through neighborhood social cohesion. It is calculated as the product of the coefficient of NSD in Table 5.3 Model 3 and the coefficient of neighborhood social cohesion in Model 4 of the same table. This indirect effect (.019) represents over half ([.019 divided by .032] x 100=59.4%) of the total effect of NSD on depressive symptoms; and the 99% confidence interval (.007, .024) excludes zero, indicating that the effect of NSD on depressive symptoms is mediated by perceived neighborhood social cohesion. The total mediated effect (.019) is calculated as the sum of the indirect effect of NSD on depressive symptoms transmitted by neighborhood physical disorder and neighborhood social cohesion. Since the effect of NSD is not mediated by neighborhood physical disorder, it amounts to the total indirect effect, which is channeled via neighborhood social cohesion.

The fifth row shows the direct effect of NSD on depressive symptoms (.018). That is, the effect of NSD on symptoms separate from the indirect effect transmitted by the mediator, neighborhood social cohesion. The last column shows that the sum (.036) of the direct (.018) and indirect/mediated (.019) effects of NSD on symptoms approaches the value for the total effect of NSD on symptoms (.032) estimated in Table 5.3 Model 1.

Table 5.5 Decomposition of the Indirect Effect of Neighborhood Socioeconomic Disadvantage on Depressive Symptoms via Neighborhood Physical Disorder and Neighborhood Social Cohesion (N=4,954)

Estimated effect	Specific path	Value	Confidence Interval
1. Total effect of NSD on symptoms	C	.032	95% CI [.005, .059]
2. Indirect effect of NSD on symptoms via perceived neighborhood physical disorder	a1 x b1	.389 x -.0004 = -.0002	95% CI [-.009, .008]
3. Indirect effect of NSD on symptoms via neighborhood social cohesion	a2 x b2	-.288 x -.065=.019	99% CI [.007, .024]
4. Total mediated effect	(a1 x b1) + (a2 x b2)	-.0002 + .019 = .019	
5. Direct effect of NSD on symptoms	C'	.018	95% CI [-.009, .045]
6. Total effect of NSD on symptoms	(a1 x b1) + (a2 x b2) + C' = C	-.0002 + .019 + .018 = .036[a]	

Note: NSD=neighborhood socioeconomic disadvantage
[a]Not equal to but approaches the value for C (i.e., total effect of NSD on symptoms)

In additional analyses (not shown), both perceived neighborhood physical disorder and neighborhood social cohesion significantly mediated the effects of NSD (i.e., NSD and its components) on depressive symptoms when these mediators were considered by themselves. The results presented here do not support hypothesis H3b, but they support hypothesis H3c. NSD appears to erode social cohesion, thereby creating the mechanism through which its negative effect on depressive symptoms is transmitted. Perceived neighborhood social cohesion completely mediated the detrimental effect of NSD on women's mental health.

5.3.3 Mediated Effect of Neighborhood Advantage on Depressive Symptoms

H3e posits that *neighborhood advantage is negatively associated with perceived neighborhood disorder and other stressors, which are positively associated with depressive symptoms, such that NA has an indirect negative effect on depressive symptoms among women*. H3f states that *neighborhood advantage is positively associated with neighborhood social cohesion and other psychosocial resources, which are negatively associated with depressive symptoms, such that NA has an indirect negative effect on depressive symptoms*. These hypotheses assess the extent to which the effect of neighborhood advantage is channeled through individual-level stressors and psychosocial resources.

Neighborhood advantage and depressive symptoms: Neighborhood proportion adults aged 65 and older is inverse and significantly associated with depressive symptoms as shown in Table 5.6 Model 1, thus fulfilling the first requirement for mediation. Higher neighborhood concentrations of older adults is associated with fewer depressive symptoms among women.

Table 5.6 Multilevel Linear Regressions of Depressive Symptoms, Perceived Neighborhood Physical Disorder, and Perceived Neighborhood Social Cohesion on Neighborhood Proportion Adults Aged 65 and Older (N=4,954)

	Dependent Variables							
	Depressive Symptoms		Neighborhood Physical Disorder		Neighborhood Social Cohesion		Depressive symptoms	
	Model 1		Model 2		Model 3		Model 4	
Independent Variables	*b*	*SE*	*b*	*SE*	*b*	*SE*	*b*	*SE*
N% adults aged 65+	-.328***	.100	-.628**	.232	.606*	.256	-.287**	.100
Neighborhood physical disorder							.001	.010
Neighborhood social cohesion							-.065***	.010
Intercept	.688***	.010	2.585***	.023	5.444***	.023	.688***	.010
Intercept variance component								
Between-group (τ)	.022***		.321***		.166***		.020***	
Within-group (σ^2)	.409		1.498		1.658		.403	

Notes: SE=standard error; All models control for: age, race/ethnicity, recent & past marital and employment status, education, household income and wealth, residential stability, and data collection year. Percent (%) is used as a short-hand notation for proportion.
*p ≤ .05. **p ≤ .01. ***p ≤ .001.

Neighborhood advantage and mediators: Next, I tested whether neighborhood proportion adults aged 65 and older is significantly associated with the proposed mediators (i.e., stressors and psychosocial resources) net of individual-level sociodemographic characteristics. In Table 5.6 Model 2, the coefficient for neighborhood proportion adults aged 65 and older shows that middle-aged and older women who live in urban neighborhoods with more older adults perceive significantly less physical disorder in their neighborhoods. In Model 3, the coefficient for neighborhood proportion older adults indicates that higher levels of this characteristic is associated with more perceived neighborhood social cohesion.

Neighborhood proportion adults aged 65 and older was not significantly related to financial strain, everyday discrimination, social support, or mastery. These stressors and resources are therefore not considered for their potential role as mediators.

Mediators and depressive symptoms: Perceived neighborhood physical disorder and neighborhood social cohesion emerged as potential mediators. Next, I estimated the effects of these variables on depressive symptoms within a multiple-mediation framework whereby the impact of neighborhood proportion adults aged 65 and older is transmitted through both neighborhood physical disorder and neighborhood social cohesion. In Table 5.6 Model 4, the coefficient for neighborhood physical disorder is not significant net of neighborhood social cohesion, neighborhood proportion adults aged 65 and older, and sociodemographic characteristics. Neighborhood physical disorder does not meet the requirement for mediation.

The coefficient for neighborhood social cohesion is negative and significant net of neighborhood physical disorder, neighborhood proportion adults aged 65 and older, and sociodemographic characteristics. Therefore, neighborhood social cohesion may mediate the focal relationship between neighborhood proportion adults aged 65 and older and depressive symptoms.

Mediated effects: In Table 5.7 Model 1, the coefficient for neighborhood proportion adults aged 65 and older indicates that at higher rather than at lower levels of this characteristic, women report fewer depressive symptoms. In Model 2, which extends Model 1 by including perceived neighborhood physical disorder and neighborhood social cohesion, the coefficient for neighborhood proportion adults aged 65 and older is smaller (b=-.287 versus b=-.328 in Model 1) but significant. The focal relationship between neighborhood proportion adults aged 65 and older and depressive symptoms appears to be partially mediated by perceived neighborhood social cohesion. However, there is no support for multiple mediation of the focal relationship between neighborhood proportion adults aged 65 and older and depressive symptoms by both neighborhood social cohesion and perceived neighborhood physical disorder because the coefficient of the latter is not significant.

Table 5.7 Multilevel Linear Regressions of Depressive Symptoms on Neighborhood Proportion Adults Aged 65 and Older: Mediated Effect (N=4,954)

	Model 1		Model 2	
Independent Variables	*b*	*SE*	*b*	*SE*
N% adults aged 65+	-.328***	.100	-.287**	.100
Neighborhood physical disorder			.001	.010
Neighborhood social cohesion			-.065***	.010
Intercept	.688***	.010	.688***	.010
Intercept variance component				
Between-group (τ)	.022***		.020***	
Within-group (σ^2)	.409		.403	

Notes: SE=standard error; All models control for: age, race/ethnicity, recent & past marital and employment status, education, household income and wealth, residential stability, and data collection year. Percent (%) is used as a short-hand notation for proportion.
*p ≤ .05. **p ≤ .01. ***p ≤ .001.

Table 5.8 shows the decomposition of the effects of neighborhood proportion adults aged 65 and older on depressive symptoms transmitted through perceived neighborhood physical disorder and neighborhood social cohesion. The first row shows the total effect of neighborhood proportion adults aged 65 and older on depressive symptoms (-.328) net of individual-level sociodemographic characteristics. This effect represents path C in the mediation model. The indirect effect of neighborhood proportion adults aged 65 and older on symptoms channeled through perceived neighborhood physical disorder is shown in the second row. It is calculated as the product of the coefficient of neighborhood proportion adults aged 65 and older in Table 5.6 Model 2 and the coefficient of neighborhood physical disorder in Model 4 of the same table. The indirect effect is negligible (-.0006) and the 95% confidence interval (-.015, .013) includes zero, indicating that the effect on depressive symptoms of neighborhood proportion adults aged 65 and older is not mediated by perceived neighborhood physical disorder.

The third row in Table 5.8 shows the indirect effect on depressive symptoms of neighborhood proportion adults aged 65 and older on symptoms transmitted through neighborhood social cohesion. It is calculated as the product of the coefficient of neighborhood proportion adults aged 65 and older in Table 5.6 Model 3 and the coefficient of neighborhood social cohesion in Model 4 of the same table. This indirect effect (-.039) represents 11.9% ([-.039 divided by -.328] x 100) of the total effect on symptoms of neighborhood proportion adults aged 65 and older; and the 99% confidence interval (-.077, -.007) excludes zero, indicating that the effect on depressive symptoms of neighborhood proportion older adults is mediated by perceived neighborhood social cohesion.

.

Table 5.8 Decomposition of the Indirect Effect of Neighborhood Proportion Adults Aged 65+ on Depressive Symptoms via Neighborhood Physical Disorder and Neighborhood Social Cohesion (N=4,954)

Estimated effect	Specific path	Value	Confidence Interval
1. Total effect of N% adults aged 65+ on symptoms	C	-.328	95% CI [-.524, -.133]
2. Indirect effect of N% adults aged 65+ on symptoms via N. physical disorder	a1 x b1	-.628 x .001 = -.0006	95% CI [-.015, .013]
3. Indirect effect of N% adults aged 65+ on symptoms via N. social cohesion	a2 x b2	.606 x -.065 = -.039	95% CI [-.077, -.007]
4. Total mediated effect	(a1 x b1) + (a2 x b2)	-.0006 + -.039 = -.040	
5. Direct effect of N% adults aged 65+ on symptoms	C'	-.287	95% CI [-.483, -.091]
6. Total effect of N% adults aged 65+ on symptoms	(a1 x b1) + (a2 x b2) + C' = C	-.0006 + -.039 + -.287 = -.327[a]	

[a]Not equal to but approaches the value for C (i.e., total effect of N% adults aged 65+ on symptoms)

The total mediated effect (-.040) is calculated as the sum of the indirect effect on depressive symptoms of neighborhood proportion older adults transmitted by neighborhood physical disorder and neighborhood social cohesion. Considering that neighborhood physical disorder did not function as a mediator, the total mediated or indirect effect is essentially channeled through perceived neighborhood social cohesion. The fifth row shows the direct effect on depressive symptoms of neighborhood proportion older adults (-.287). That is, the effect on symptoms of neighborhood proportion older adults separate from the indirect effect transmitted by the mediator, neighborhood social cohesion. The last column shows that the sum (-.327) of the direct (-.287) and indirect/mediated (-.040) effects of neighborhood proportion older adults on symptoms approaches the value for the total effect of this neighborhood characteristic on symptoms (-.328) estimated in Table 5.6 Model 1.

In additional analyses (not shown), both perceived neighborhood physical disorder and neighborhood social cohesion significantly mediated the effect on depressive symptoms of neighborhood proportion adults aged 65 and older when these mediators were considered by themselves. The results presented here do not support hypothesis H3e, but they support hypothesis H3f. Neighborhood proportion older adults appears to increase perceptions of neighborhood social cohesion, thereby creating the mechanism through which its beneficial effect on mental health is partially transmitted.

5.4 Conditional Effects of Neighborhood Disadvantage on Depressive Symptoms

This section ascertains the extent to which the impact of neighborhood disadvantage on depressive symptoms varies by levels of stressors and psychosocial resources. Low, average, and high levels of stressors and psychosocial resources respectively represent scores that are one standard deviation below the mean, at the mean, and one standard deviation above the mean. In the figures that present graphs of interactions, values along the x-axis are within the 5th and 95th percentile for the neighborhood variable centered at the grand mean.

<u>*Variation by Levels of Stressors*</u>*:* H3g states that *the magnitude of the positive association between neighborhood disadvantage and depressive symptoms is significantly greater among women with high exposure to stressors than women with low exposure to stressors*. A total of 24 interactions were tested using various combinations of neighborhood conditions by three stressors: neighborhood physical disorder, financial strain, and everyday discrimination. Only one was statistically significant: neighborhood proportion vacant housing units by perceived neighborhood physical disorder.

As seen in Table 5.9 Model 1, the coefficient for the interaction term is positive and significant indicating that the effect of neighborhood proportion vacant housing units varies significantly by levels of perceived neighborhood physical disorder. The coefficient for neighborhood proportion vacant housing units represents its effect on depressive symptoms when neighborhood physical disorder is equal to zero; that is, at average levels of disorder because it is group-mean centered. The coefficient for neighborhood proportion vacant housing units is not significant, which means that when neighborhood physical disorder is average, neighborhood proportion vacant housing units is not significantly associated with depressive symptoms among women. The coefficient for perceived neighborhood physical disorder is its effect on depressive symptoms among women at average levels of neighborhood proportion vacant housing units; that is, when this variable is equal to zero because it is grand-mean centered. The coefficient for perceived neighborhood physical disorder is positive and significant, indicating that when neighborhood proportion vacant housing units is average, higher levels of neighborhood physical disorder are associated with more symptoms.

Simple slope tests indicate that neighborhood proportion vacant housing units has no significant effect among women who perceive low levels of neighborhood physical disorder ($b=-0.139$, $SE=.291$, $p>.05$). However, among women who perceive average (simple slope test: $b=.369$, $SE=.161$, $p \leq .05$) and high levels (simple slope test: $b=.877$, $SE=.301$, $p \leq .01$) of neighborhood disorder, depressive symptoms increase as the proportion of vacancies increase.

The interaction is graphed in Figure 5.2. Neighborhood proportion vacant housing units is more detrimental to the mental health of middle-aged and older women who perceive high levels of disorder in their neighborhoods and less damaging to the mental health of women who perceive less disorder. These findings support hypothesis H3g.

The impact of neighborhood proportion vacant housing units on depressive symptoms did not vary significantly by levels of financial strain or everyday discrimination. Additionally, the effects on depressive symptoms of all of the other indicators of neighborhood disadvantage did not vary significantly by levels of any of the three stressors (i.e., neighborhood physical disorder, financial strain, everyday discrimination). That is, there were no conditional effects on symptoms involving NSD, all of its components (neighborhood proportion: individuals aged 25 years and older without a high school diploma, unemployed individuals aged 16 and older, households receiving public assistance income, people living below the federal poverty level), and neighborhood proportion: non-family households and female-headed households with children.

Table 5.9 Regressions of Depressive Symptoms on Neighborhood Disadvantage: Conditional Effects Among U.S. Urban Adult Women Aged 50 and Older (N=4,954)

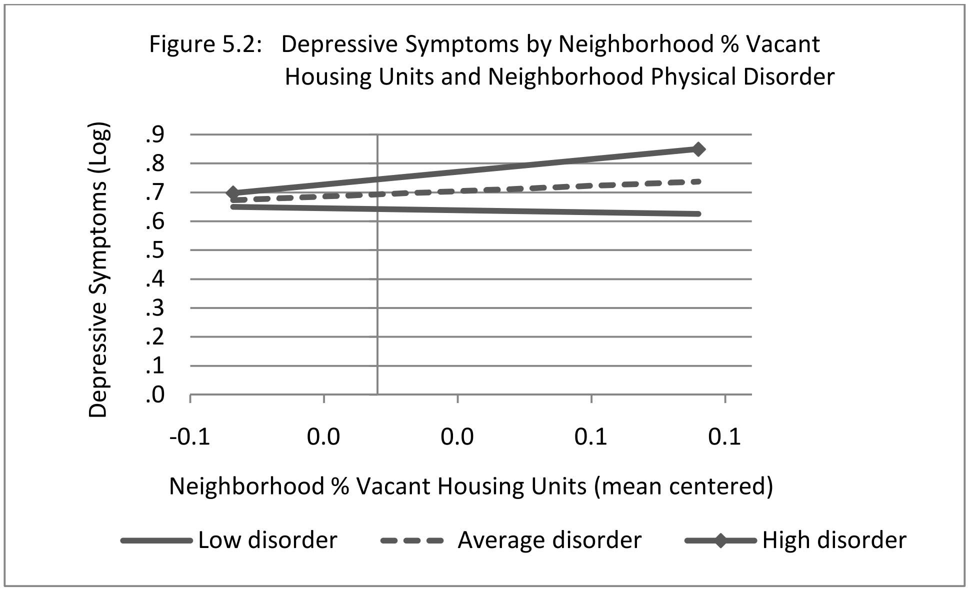
	Model 1		Model 2		Model 3	
Independent Variables	*b*	*SE*	*b*	*SE*	*b*	*SE*
Individual-level variables						
Perceived neighborhood physical disorder	.036**	.014				
Social support			-.273***	.032		
Mastery					-.147***	.015
Census tract-level variables						
N% vacant housing units	.346	.183				
Neighborhood socioeconomic disadvantage			.128***	.012	.130***	.012
Cross-level interactions						
N% vacant housing units x neighborhood physical disorder	.353*	.178				
Neighborhood socioeconomic disadvantage x support			-.067*	.028		
Neighborhood socioeconomic disadvantage x mastery					.040**	.014
Intercept	.687***	.013	.697***	.012	.697***	.012
Intercept variance component						
Between-group (τ)	.069***		.057***		.062***	
Within-group (σ^2)	.414		.401		.394	
Model comparison[a]						
Chi-square	14.502***		100.931***		131.105	
Degrees of freedom	2		2		2	
Figure number[b]	Figure 5.2		Figure 5.3		Figure 5.4	

Notes: SE=standard error; All models control for: age, race/ethnicity, marital status, education, current and past employment status, household income and wealth, residential stability, and data collection year; Percent (%) is used as a short-hand notation for proportion.

[a] Each model is compared to the same model without the interaction.

[b] Graph of the interaction.

*p ≤ .05. **p ≤ .01. ***p ≤ .001.



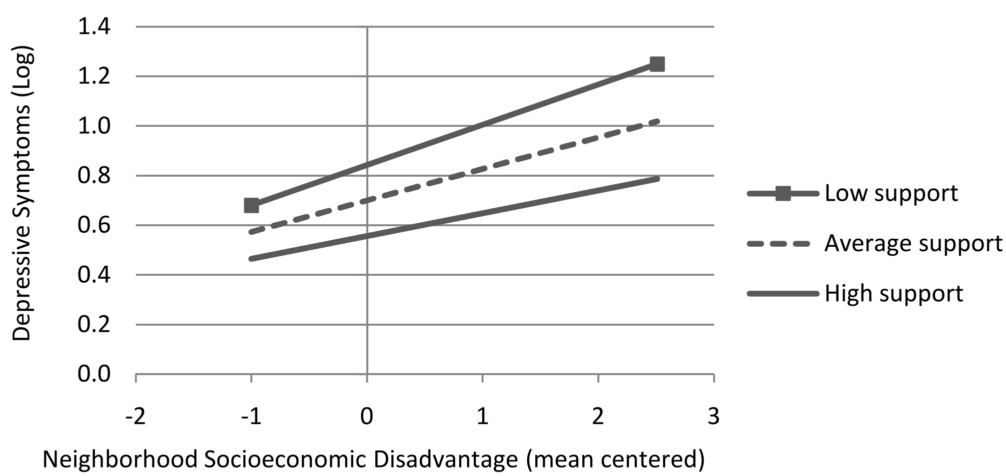
<u>Variation by Levels of Psychosocial Resources</u>: H3h posits that *the magnitude of the positive association between neighborhood disadvantage and depressive symptoms is significantly smaller among women with higher levels of psychosocial resources than women with lower level of psychosocial resources*. A total of 24 interactions were tested using various combinations of neighborhood conditions by three psychosocial resources: perceived neighborhood social cohesion, social support, and mastery. Nine were statistically significant: NSD by social support and NSD by mastery; and the remaining seven involved components of NSD by mastery or social support.

Model 2 of Table 5.9 shows results for social support. The coefficient for the interaction term is negative and significant, indicating that the effect of NSD on symptoms varies significantly by levels of social support. The coefficient for NSD shows that when social support is average (0), higher levels of NSD are associated with more depressive symptoms. The coefficient for social support indicates that, at average levels of NSD (0), having more social support is associated with fewer symptoms.

NSD has the greatest effect on depressive symptoms among women with the least social support (simple slope test: b=.162, SE=.017, p ≤ .001), followed by those with average levels of support (simple slope test: b=.127, SE=.010, p ≤ .001). NSD has the least effect among women with the most social support (simple slope test: b=.092, SE=.018, p ≤ .001).

This interaction is graphed in Figure 5.3. The impact of NSD on depressive symptoms increases as social support decreases in this sample of middle-aged and older women. Consistent with hypothesis H2h, NSD is least damaging to the mental health of women with the highest levels of social support. This is a manifestation of the classic stress-buffering role of social support.

Figure 5.3: Depressive Symptoms by Neighborhood Socioeconomic Disadvantage and Social Support



The effects on depressive symptoms of three components of NSD also varied significantly by levels of social support: neighborhood proportion: individuals aged 25 years and older without a high school diploma, households receiving public assistance income, and people living below the federal poverty level (not shown).

Model 3 in Table 5.9 shows results for mastery. The coefficient for the interaction term is significant, which shows that the effect of NSD on depressive symptoms varies significantly by levels of mastery. The coefficient for NSD means that when mastery is average (0), higher levels of NSD are associated with more depressive symptoms; and the coefficient for mastery indicates that when NSD is average (0), women with more mastery report fewer depressive symptoms.

NSD has the greatest impact on depressive symptoms among women with the most mastery (simple slope test: b=.174, SE=.017, $p \leq .001$), followed by those with average levels of mastery (simple slope test: b=.13, SE=.010, $p \leq .001$). NSD has the least effect among women with the lowest levels of mastery (simple slope test: b=.086, SE=.017, $p \leq .001$).

Figure 5.4 is a graph of the interaction. Unlike social support, mastery is not functioning as a stress buffer, but instead is amplifying the effect of NSD on depressive symptoms. The impact of NSD increases as mastery increases. People who have a strong sense of being in control of important outcomes in their lives are most adversely affected emotionally by neighborhood disadvantage, whereas people who are more fatalistic are least affected.

Considered from another angle, when NSD is high, mastery has little effect on depressive symptoms, as shown by the convergence of the lines, such that irrespective of one's level of mastery, depressive symptoms are relatively high. In contrast, in neighborhoods that are not disadvantaged, mastery has a beneficial effect such that depressive symptoms are lowest among middle-aged and older women with the highest level of mastery. In disadvantaged urban neighborhoods, having high sense of mastery has little to no beneficial effect on emotional well-being perhaps because, in actuality, people in these neighborhoods have little real control over what happens. However, in neighborhoods that are not disadvantaged (i.e., advantaged neighborhoods), perceived personal control may be beneficial because it corresponds to a real ability to control events and circumstances.

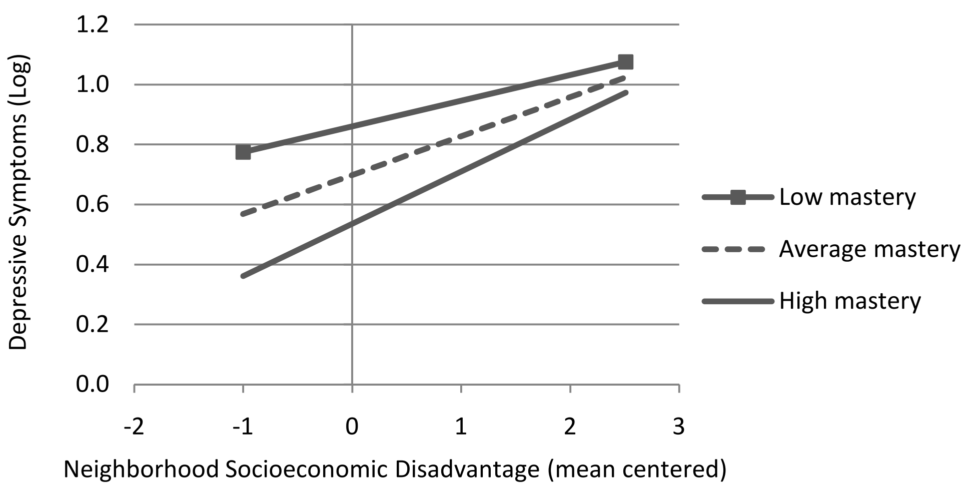


Figure 5.4: Depressive Symptoms by Neighborhood Socioeconomic Disadvantage and Mastery

The effect on depressive symptoms of all of the four components of NSD also varied significantly by levels of mastery: neighborhood proportion: individuals aged 25 years and older without a high school diploma, unemployed individuals aged 16 and older, households receiving public assistance income, and people living below the federal poverty level (not shown). Results were similar to those reported for NSD.

The impact on depressive symptoms of NSD and all of its components did not vary significantly by neighborhood social cohesion. The effect on symptoms of neighborhood proportion unemployed individuals aged 16 and older (a component of NSD) also did not depend on social support. Additionally, the effect on symptoms of neighborhood proportion: vacant housing units, non-family households, and female-headed households with children did not vary significantly by neighborhood social cohesion, social support, or mastery.

5.5 Conditional Effects of Neighborhood Advantage on Depressive Symptoms

This section examines the extent to which the impact of neighborhood advantage on depressive symptoms varies by levels of stressors and psychosocial resources. As previously noted, low, average, and high levels of stressors and psychosocial resources respectively represent scores that are one standard deviation below the mean, at the mean, and one standard deviation above the mean. In the figures that present graphs of interactions, values along the x-axis are within the 5th and 95th percentile for the neighborhood variable centered at the grand mean.

Variation by Levels of Stressors: H3i states that *the magnitude of the negative association between NA and depressive symptoms is significantly smaller among women with high exposure to stressors than women with low exposure to stressors*. A total of 15 interactions were tested using various combinations of neighborhood conditions by three stressors: neighborhood physical disorder, financial strain, and everyday discrimination. Two were statistically significant: neighborhood proportion residentially stable people by everyday discrimination, and neighborhood proportion adults aged 65 and older by perceived neighborhood physical disorder.

Table 5.10 Regressions of Depressive Symptoms on Neighborhood Advantage by Stressors Among Women (N=4,954)

	Model 1		Model 2	
Independent Variables	*b*	*SE*	*b*	*SE*
Individual-level variables				
Perceived neighborhood physical disorder			.039**	.013
Everyday discrimination	.217***	.027		
Census tract-level variables				
N% adults aged 65+			-.472***	.104
Residential stability	.083	.106		
Cross-level interactions				
Residential stability X discrimination	-.473*	.208		
N% adults aged 65+ X neighborhood physical disorder			.448**	.172
Intercept	.685***	.013	.684***	.013
Intercept variance component				
Between-group (τ)	.080***		.070***	
Within-group (σ^2)	.398		.412	
Model comparison[a]				
Chi-square	101.354**		18.159***	
Degrees of freedom	2		2	
Figure number[b]	Figure 5.5		Figure 5.6	

Notes: SE=standard error; All models control for: age, race/ethnicity, marital status, education, current and past employment status, household income and wealth, residential stability, and data collection year; N=neighborhood; Percent (%) is used as a short-hand notation for proportion.

[a] Each model is compared to the same model without the interaction.

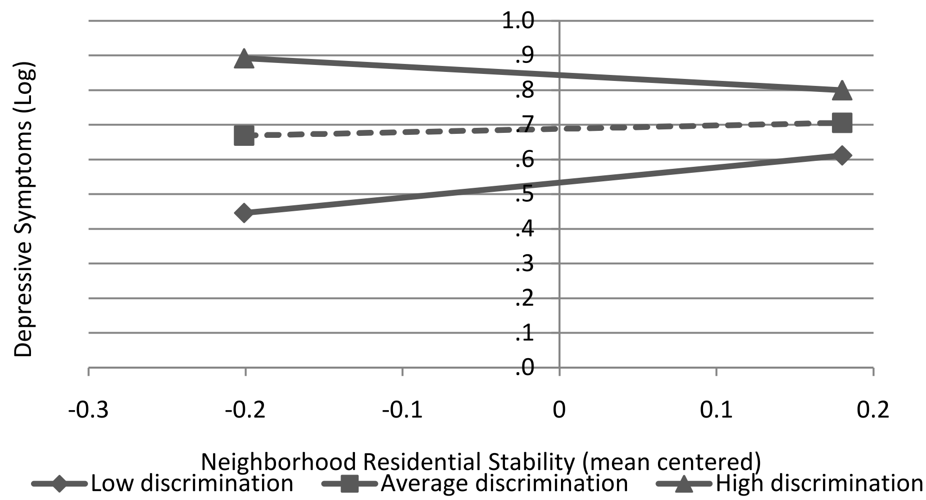
[b] Graph of the interaction.

*p ≤ .05. **p ≤ .01. ***p ≤ .001.

As seen in Table 5.10 Model 1, the coefficient for the interaction term involving residential stability is negative and significant, indicating that the effect of this neighborhood characteristic varies significantly by reports of everyday discrimination. The coefficient for residential stability is not significant, which means that when everyday discrimination is average (0), residential stability is not significantly associated with depressive symptoms. The coefficient for everyday discrimination indicates that when residential stability is average (0), women who experience more discrimination report more depressive symptoms.

Figure 5.5 is a graph of the interaction. Residential stability, which is conceptualized as an indicator of neighborhood advantage, is associated with more depressive symptoms among women who report low levels of everyday discrimination; and among women who report high levels of discrimination, residential stability is associated with fewer depressive symptoms. These findings are counterintuitive and difficult to explain. It could be that for women who experience more discrimination, living in a residentially stable neighborhood encourages social cohesion and sustains social support networks that buffer against the detrimental effects of discrimination on mental health.

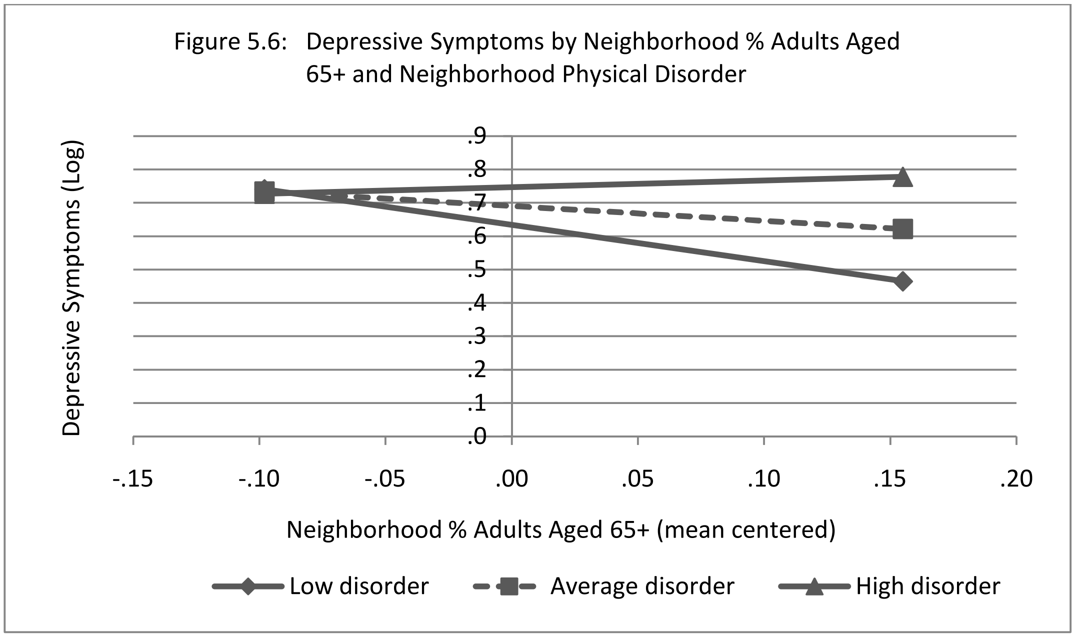
Figure 5.5: Depressive Symptoms by Neighborhood Residential Stability and Everyday Discrimination



In Model 2, the coefficient for the interaction term involving neighborhood proportion adults aged 65 and older is positive and significant, indicating that the effect of this neighborhood characteristic varies significantly by levels of perceived neighborhood physical disorder. The coefficient for neighborhood proportion older adults means that when perceived neighborhood physical disorder is average (0), higher concentrations of older adults in the neighborhood is associated with fewer depressive symptoms; and the coefficient for perceived neighborhood disorder indicates that when neighborhood proportion older adults is average (0), women who perceive more disorder in the neighborhood report more depressive symptoms.

Neighborhood proportion older adults has the greatest impact on depressive symptoms among women who perceive low levels of disorder in the neighborhood (simple slope test: $b=-1.088$, $SE=.219$, $p \leq .001$), followed by those who perceive average levels of disorder (simple slope test: $b=-.444$, $SE=.017$, $p \leq .001$). Neighborhood proportion older adults is not significantly associated with depressive symptoms among women who perceive high levels of disorder in their neighborhoods (simple slope test: $b=.201$, $SE=.244$, $p=.411$).

Figure 5.6 is a graph of the interaction. Consistent with expectations, higher neighborhood proportion of adults aged 65 and older is associated with fewer depressive symptoms more so for women who report low levels of perceived neighborhood physical disorder than women who report average levels of disorder. However, living in a neighborhood with more older adults is not related to depressive symptoms among women who perceive high levels of disorder in the neighborhood.



The impact on depressive symptoms of neighborhood affluence and neighborhood proportion: owner-occupied housing units and married-couple households with own children did not vary significantly by levels of all three stressors: perceived neighborhood physical disorder, financial strain, and everyday discrimination. Additionally, the effects on symptoms of residential stability did not depend on perceived neighborhood physical disorder or financial strain; nor did the impact of neighborhood proportion of adults aged 65 and older vary by financial strain or everyday discrimination.

<u>*Variation by Levels of Psychosocial Resources*</u>*:* H3j posits that *the magnitude of the negative association between NA and depressive symptoms is significantly greater among women with higher levels of psychosocial resources than women with lower level of psychosocial resources.* A total of 15 interactions were tested using various combinations of neighborhood conditions by three psychosocial resources: perceived neighborhood social cohesion, social support, and mastery. Four were statistically significant: neighborhood affluence by social

support/mastery; and neighborhood proportion owner-occupied housing units by social support/mastery.

In Table 5.11 Model 1, the coefficient for the interaction term involving neighborhood affluence and social support is positive and significant, indicating that the effect of neighborhood affluence on depressive symptoms varies significantly by levels of social support. The coefficient for neighborhood affluence shows that when social support is average (0), living in a more affluent neighborhood is associated with fewer depressive symptoms. The coefficient for social support indicates that, at average levels of neighborhood affluence, having more social support is associated with fewer symptoms.

Neighborhood affluence has the greatest effect on depressive symptoms among women with the least social support (simple slope test: $b=-.749$, $SE=.077$, $p \leq .001$), followed by those with average levels of support (simple slope test: $b=-.585$, $SE=.028$, $p \leq .001$). Neighborhood affluence has the least effect among women with the most social support (simple slope test: $b=-.421$, $SE=.081$, $p \leq .001$).

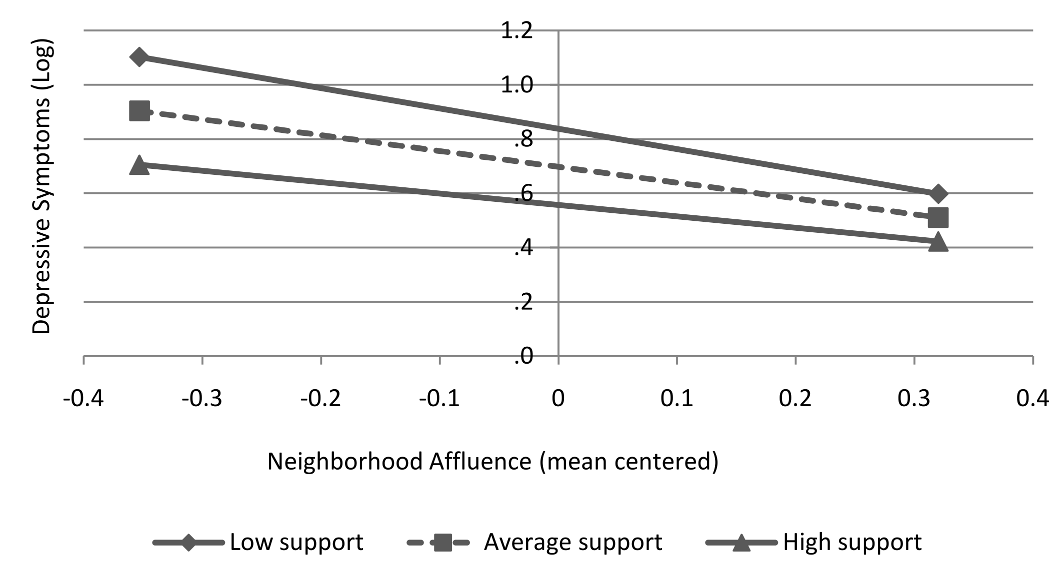
This interaction is graphed in Figure 5.7. The beneficial impact on mental health of neighborhood affluence decreases as social support increases in this sample of middle-aged and older women. Contrary to hypothesis H2j, neighborhood affluence is less beneficial to the mental health of women with high levels of social support.

Table 5.11 Regressions of Depressive Symptoms on Neighborhood Advantage by Psychosocial Resources Among Women (N=4,954)

Independent Variables	Model 1 *b (SE)*	Model 2 *b (SE)*	Model 3 *b (SE)*	Model 4 *b (SE)*
Social support	-.268*** (.033)		-.287*** (.033)	
Mastery		-.150*** (.015)		-.139*** (.015)
Census tract-level variables				
Neighborhood affluence	-.588*** (.061)	-.599*** (.061)		
N% owner-occupied housing units			-.397*** (.062)	-.410*** (.062)
Cross-level interactions				
Neighborhood affluence X social support	.314* (.149)			
Neighborhood affluence X mastery		-.218** (.078)		
N% owner-occupied housing units X social support			.349* (.174)	
N% owner-occupied housing units X mastery				-.264** (.094)
Intercept	.695*** (.012)	.694*** (.012)	.694*** (.013)	.693*** (.013)
Intercept variance component				
Between-group (τ)	.062***	.067***	.072***	.077***
Within-group (σ^2)	.399	.392	.399	.391
Model comparison[a]				
Chi-square	100.104***	132.007***	100.793***	133.856***
Degrees of freedom	2	2	2	2
Figure number[b]	Figure 5.7	Figure 5.8	Figure 5.9	Figure 5.10

Notes: SE=standard error; All models control for: age, race/ethnicity, marital status, education, current and past employment status, household income and wealth, residential stability, and data collection year; N=neighborhood; Percent (%) is used as a short-hand notation for proportion.
[a] Each model is compared to the same model without the interaction.
[b] Graph of the interaction.
*p ≤ .05. **p ≤ .01. ***p ≤ .001.

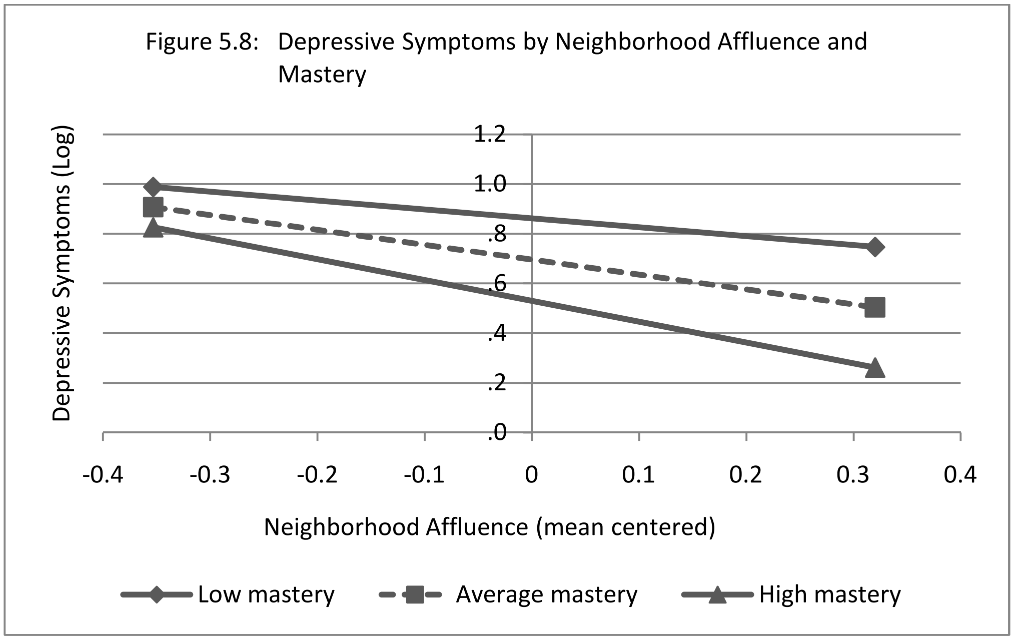
Figure 5.7: Depressive Symtpoms by Neighborhood Affluence and Social Support



The interaction term in Model 2 is negative and significant, which shows that the impact of neighborhood affluence on depressive symptoms varies significantly by levels of mastery. The coefficient for neighborhood affluence indicates that when mastery is average (0), living in a more affluent neighborhood is associated with fewer depressive symptoms. The coefficient for mastery shows that, at average levels of neighborhood affluence, higher sense of mastery is associated with fewer symptoms.

Neighborhood affluence has the greatest impact on depressive symptoms among women with high mastery (simple slope test: b=-.839, SE=.073, $p \leq .001$), followed by those with average levels of mastery (simple slope test: b=-.599, SE=.013, $p \leq .001$). Neighborhood affluence has the smallest effect among women with low mastery (simple slope test:

b=-.359, SE=.073, p ≤ .001). The interaction is graphed in Figure 5.8. Consistent with hypothesis h2j, neighborhood affluence confers the largest benefits to mental health for women with high levels of mastery than women with low levels of mastery.

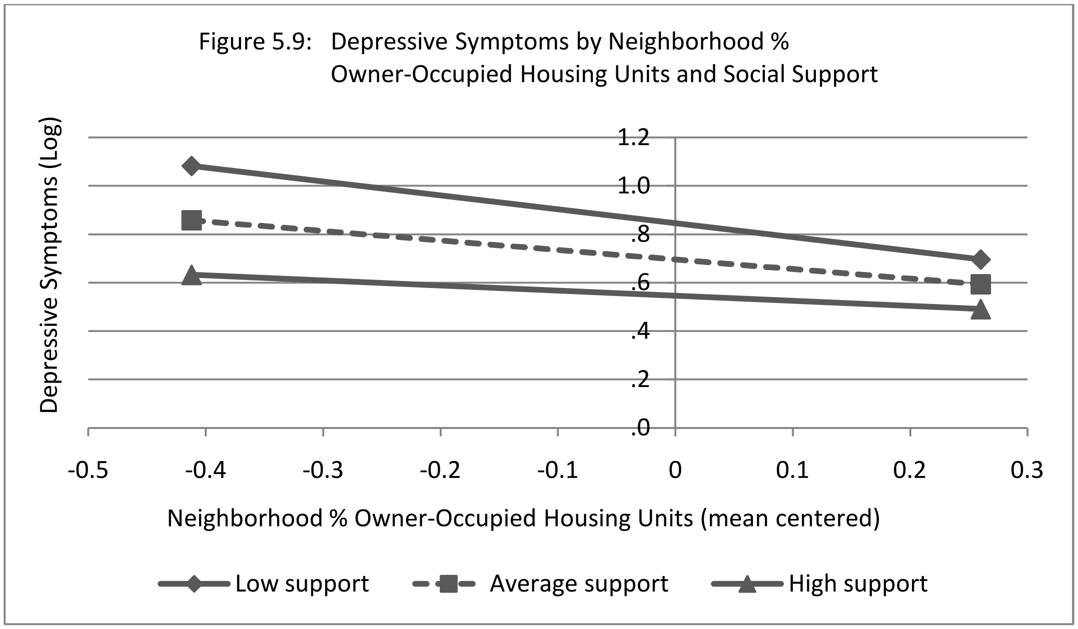


In Model 3 Table 5.11, the coefficient for the interaction term involving neighborhood proportion owner-occupied housing units and social support is positive and significant, indicating that the effect on depressive symptoms of this neighborhood characteristic varies significantly by levels of social support. The coefficient for neighborhood proportion owner-occupied housing units shows that when social support is average (0), living in a neighborhood with more owner-occupied housing units is associated with fewer depressive symptoms. The coefficient for social support indicates that, at average levels of neighborhood proportion owner-occupied housing units, having more social support is related to fewer symptoms.

Neighborhood proportion owner-occupied housing units has the largest impact on depressive symptoms among women with the least social support (simple slope test: $b=-.575$, $SE=.082$, $p \leq .001$), followed by those with average levels of support (simple slope test: $b=-.393$, $SE=.029$, $p \leq .001$). Neighborhood proportion owner-occupied housing units has the smallest effect among women with the most social support (simple slope test: $b=-.211$, $SE=.088$, $p \leq .05$).

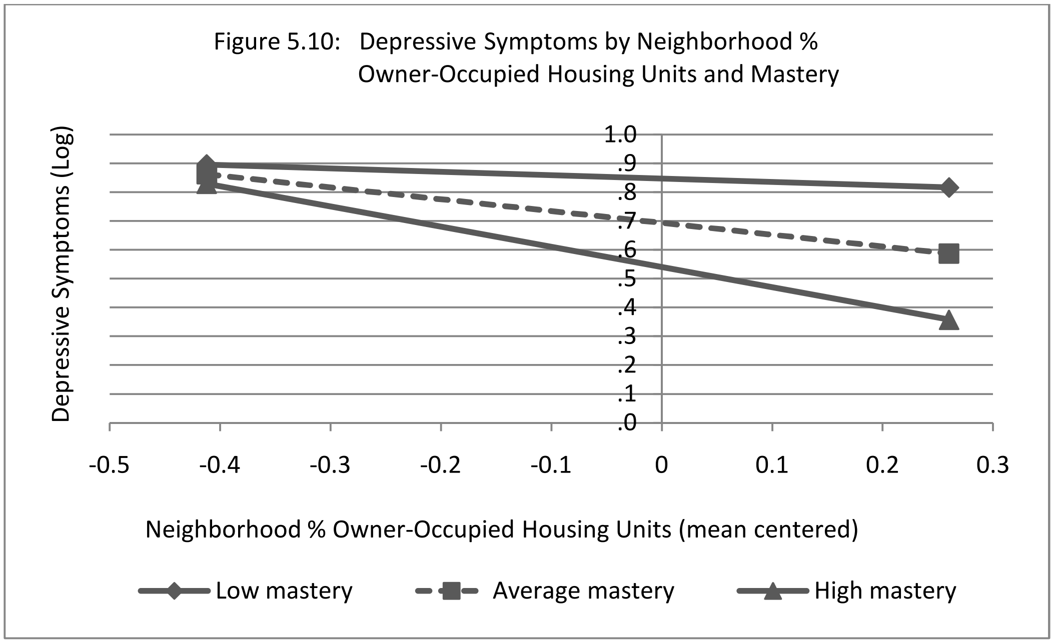
Figure 5.9 shows a graph of the interaction. The beneficial impact on mental health of neighborhood proportion owner-occupied housing units decreases at higher levels of social support. These results are not consistent with hypothesis H2j. Neighborhood proportion owner-occupied housing units was expected to be most beneficial to the mental health of women with high levels of social support, but it is least beneficial to this group. Living in a neighborhood with more owner-occupied housing units may be less beneficial to mental health in the presence of high levels of social support; and more beneficial to emotional well-being when social support is low.

In Model 4, the coefficient for the interaction term involving neighborhood proportion owner-occupied housing units and mastery is negative and significant, indicating that the effect on depressive symptoms of this neighborhood characteristic varies significantly by levels of mastery. The coefficient for neighborhood proportion owner-occupied housing units indicates that when mastery is average (0), women who live in neighborhoods with more owner-occupied housing units report fewer depressive symptoms. The coefficient for mastery shows that, at average levels of neighborhood proportion owner-occupied housing units, having higher sense of control is associated with fewer depressive symptoms.



Neighborhood proportion owner-occupied housing units has the largest impact on depressive symptoms among women with high mastery (simple slope test: b=-.702, SE=.080, p ≤ .001), followed by those with average levels of mastery (simple slope test: b=-.410, SE=.013, p ≤ .001). Neighborhood proportion owner-occupied housing units is not significantly associated with depressive symptoms among women with low mastery (simple slope test: b=-.119, SE=.080, p=.137).

This interaction is graphed in Figure 5.10. Consistent with expectations, higher neighborhood proportion of owner-occupied housing units is associated with fewer depressive symptoms more so for women with high mastery than women with low mastery. However, living in a neighborhood with more owner-occupied housing units is not significantly related to depressive symptoms among women with low mastery.



The effect on depressive symptoms of neighborhood proportion: residentially stable individuals, married-couple households with own children, and older adults aged 65 and older did not vary significantly by levels of all three psychosocial resources: perceived neighborhood social cohesion, social support, and mastery. Additionally, the impact on depressive symptoms of neighborhood affluence and neighborhood proportion owner-occupied housing units did not vary significantly by perceived neighborhood social cohesion.

5.6 Summary

This chapter examined the effects on depressive symptoms of eight indicators of neighborhood disadvantage and five measures of neighborhood advantage among women aged 50 years and older. In particular, it assessed mediation and moderation of those effects by individual-level stressors and psychosocial resources. Economic (e.g., NSD) but not social (e.g., female-headed households with children) indicators of neighborhood disadvantage were positively associated with depressive symptoms. One indicator of neighborhood advantage, neighborhood proportion adults aged 65 and older, was associated with fewer symptoms.

A multiple mediation model assessed whether the effects on depressive symptoms of NSD and neighborhood proportion adults aged 65 and older were mediated by both perceived neighborhood physical disorder and perceived neighborhood social cohesion. The indirect effect of NSD on symptoms was fully mediated by perceived neighborhood social cohesion. Perceived neighborhood social cohesion also partially mediated the effect on symptoms of neighborhood proportion older adults. In additional analyses, three components of NSD also were mediated by perceived neighborhood physical disorder and perceived neighborhood social cohesion assessed individually.

A total of 48 interactions were tested to examine whether three stressors and three psychosocial resources moderated the effects on depressive symptoms of eight indicators of neighborhood disadvantage. Only one interaction involving an individual-level stressor was significant and in the expected direction. Neighborhood proportion vacant housing units was most damaging to mental health for women who perceived high levels of neighborhood disorder and least damaging for women who perceived low levels of disorder.

Four interactions involving NSD and three of its components, and social support were statistically significant and in the expected direction. Five interactions involving NSD and all of its components, and mastery were statistically significant but not in the expected direction. The findings for NSD and its components were similar.

NSD had the largest effect on depressive symptoms among women with the least social support and the smallest impact among women with the most social support. Social support buffered the detrimental effect of NSD on mental health. However, NSD had the least impact on symptoms among women with low mastery but it was most damaging to mental health among women with high levels of mastery.

A total of 30 interactions were tested to examine whether three stressors and three psychosocial resources moderated the effects on depressive symptoms of five measures of neighborhood advantage. Two interactions involving two individual-level stressors were statistically significant, and one was in the expected direction. As hypothesized, higher neighborhood proportion of adults aged 65 and older was associated with fewer depressive symptoms more so for women who reported low levels of perceived neighborhood physical disorder than women who reported average levels of disorder. Neighborhood proportion older adults was not significantly related to symptoms among women who perceived high levels of disorder in their neighborhoods.

Four interactions involving two individual-level psychosocial resources were statistically significant, and two were in the expected direction. As hypothesized, higher neighborhood proportion of affluent households and owner-occupied housing units was associated with fewer depressive symptoms more so for women with high levels of mastery than women with low mastery. However, and contrary to expectations, living in a more affluent neighborhood or a neighborhood with more owner-occupied housing units was less beneficial to the mental health of women with high than low levels of social support.

The majority of the relationships hypothesized in this chapter were not confirmed. However, the results provide support for some of the hypotheses that were tested. In accord with the neighborhood stress process framework, one stressor in particular (i.e., perceived neighborhood physical disorder) and three psychosocial resources (i.e., perceived neighborhood social cohesion, social support, mastery) functioned as mediators or moderators of the relationship between neighborhood conditions and depressive symptoms. These findings increase our understanding of variation in neighborhood-related depressive symptoms specifically among middle-aged and older women.

Table 5.12 Multilevel Conditional Effects of Neighborhood Disadvantage on Depressive Symptoms Among Women
Summary of Significant Results

Hypotheses:	**H3G**			**H3H**		
	Neighborhood Disadvantage x Stressors			**Neighborhood Disadvantage x Resources**		
N. Disadvantage	Neighborhood Physical Disorder	Financial Strain	Everyday Discrimination	Neighborhood Social Cohesion	Social Support	Mastery
NSD					†	‡
Vacant housing	†					
Non-family households						
Female headed households						

Hypotheses:	**H3I**		**H3J**	
N. Disadvantage	**Neighborhood Advantage x Stressors**		**Neighborhood Advantage x Resources**	
Affluence			‡	†
Residential stability		‡		
Owner-occupied housing			‡	†
Married-couple hh with kids				
Adults aged 65+	†			

Notes:
H3G=The magnitude of the positive association between NSD and depressive symptoms is significantly greater among women with high exposure to stressors than women with low exposure to stressors.

H3H=The magnitude of the positive association between NSD and depressive symptoms is significantly smaller among women with higher levels of psychosocial resources than women with lower level of psychosocial resources.

H3I=The magnitude of the negative association between NA and depressive symptoms is significantly smaller among women with high exposure to stressors than women with low exposure to stressors.

H3J=The magnitude of the negative association between NA and depressive symptoms is significantly greater among women with higher levels of psychosocial resources than women with lower level of psychosocial resources.

†= Interaction is statistically significant in the expected direction.

‡= Interaction is statistically significant but not in the expected direction

CHAPTER 6:

DISCUSSION

6.1 INTRODUCTION

This dissertation investigated gender differences among components of the neighborhood stress process model, particularly gender differences in neighborhood effects on depressive symptoms. The study also examines the extent to which the neighborhood stress process model explains variation in depressive symptoms among women. Data came from the HRS, a U.S. national probability sample of adults over age 50; key measures were obtained from a Psychosocial Supplement administered in 2006 and 2008.. Depressive symptoms were assessed with a count of eight items from an abbreviated version of the CES-D. Neighborhood characteristics included eight indicators of disadvantage: (1) a principal components of neighborhood *socioeconomic* disadvantage (NSD) and each of its four components: neighborhood proportion: (2) individuals aged 25 and older without a high school diploma, (3) unemployed persons aged 16 and older, (4) households receiving public assistance income, and (5) people living below the federal poverty level), and three other indicators of neighborhood *social* disadvantage–(6) vacant housing units, (7) non-family households, and (8) female-headed households with own children under 18 years of age. Five measures of neighborhood advantage also were examined as proportion of: (1) affluent households, (2) residentially stable individuals, (3) owner-occupied housing units, (4) married-couple households with own children under 18 years of age, and (5) adults aged 65 and older.

The study also assessed variations in neighborhood effects on depressive symptoms by levels of exposure to other stressors that are hypothesized to increase vulnerability to adverse neighborhood conditions and psychosocial resources hypothesized to buffer these effects. This study included three individual-level stressors: perceived neighborhood physical disorder, everyday discrimination, financial strain; and three individual-level psychosocial resources: perceived neighborhood social cohesion, social support, and mastery.

Sociodemographic characteristics also were assessed in order to rule out to the extent possible selection effects, and to capture characteristics that are especially relevant to depressive symptoms during this stage of the life course, such as becoming widowed or retiring.

This chapter provides a summary and discussion of key study findings; describes the strengths and limitations of this research; and addresses the public health implications of the findings.

6.2 SUMMARY OF FINDINGS

6.2.1 AIM 1: To examine gender differences in the association between neighborhood characteristics and depressive symptoms.

Overall, the main hypotheses of this aim were not supported. Thirteen cross-level interactions were tested net of individual-level sociodemographic characteristics; only two were statistically significant in the opposite direction as hypothesized. One significant interaction showed that neighborhood disadvantage (i.e., neighborhood proportion non-family households) has a larger beneficial impact on women’s mental health and no significant effect among men. A second significant interaction indicated that neighborhood advantage has a larger beneficial effect on men’s than women’s mental health. Eleven interactions found that the impact of urban neighborhood conditions do not differ for middle-aged and older men and women.

First Objective: The first objective of the first aim of this dissertation was to assess the extent to which any cross-level positive associations between eight dimensions of neighborhood disadvantage and depressive symptoms are greater among women than men and therefore place women at significantly higher risk for depressive symptoms.

Hypotheses H1a & H1b: Hypothesis H1a states that *women have higher levels of depressive symptoms than men.* H2b posits that *women have higher levels of depressive symptoms than men net of individual-level characteristics related to depressive symptoms.* These hypotheses were examined prior to assessing gender differences in neighborhood disadvantage on depressive symptoms (hypotheses H1c). Women reported more depressive symptoms than men (H1a). However, women did not differ from men in depressive symptoms after adjusting for individual-level sociodemographic characteristics (H1b).

Hypothesis H1c: The hypothesis states that *multiple dimensions of neighborhood disadvantage are positively associated with depressive symptoms and these associations are greater among women than men*. One interaction out of eight was statistically significant. Neighborhood proportion non-family households was associated with fewer symptoms among women and it had no effect among men. These results ran counter to the hypothesized relationship. Due to multiple tests of statistical significance, it is possible that this finding represents a type I error, a situation where a null hypothesis that there is no significant gender difference in the effect of neighborhood proportion non-family households is erroneously rejected.

A Bonferroni correction adjusts for the problem of multiple tests of statistical significance (Abdi, 2007; Bonferroni, 1936). For this hypothesis (H1c), eight cross-level interactions were tested at a significance level of $p \leq .05$. The new significance level based on the Bonferroni correction (i.e., .05 divided by 8) is $p \leq .006$. The p-value for the cross-level interaction term for neighborhood proportion non-family households by gender ($p=.008$) exceeds the adjusted significance level and suggests that the finding represents a type I error and should be viewed with caution.

Six indicators of neighborhood disadvantage had positive main effects on depressive symptoms: NSD and all of its components, and neighborhood proportion female-headed households with children. These main effects coupled with the nonsignificant interactions suggest that these conditions are associated with depressive symptoms and that these effects do not differ for men and women. Neighborhood proportion vacant housing units did not have a main effect on symptoms, suggesting that it is not relevant to depressive symptoms among this age group.

Second Objective: The second objective was to investigate the degree to which any cross-level inverse associations between five measures of neighborhood advantage and depressive symptoms are greater among women than men and therefore confer significantly higher protection against depressive symptoms for women.

<u>*Hypothesis H1d*</u>: This hypothesis states that *multiple dimensions of neighborhood advantage are negatively associated with depressive symptoms and these associations are greater among women than men.* Only one out of five interactions was statistically significant. Contrary to expectations, neighborhood proportion married-couple households was not significantly related to symptoms among women. Among men, living in a neighborhood with more married-couple households with children was associated with fewer depressive symptoms.

Three measures of neighborhood advantage were inversely associated with depressive symptoms as main effects, neighborhood proportion: affluent households, owner-occupied housing units, adults ages 65 years and older. These main effects together with the nonsignificant interactions suggest that these conditions are associated with depressive symptoms and that these effects do not differ for men and women. Neighborhood proportion residentially stable individuals did not have a main effect on symptoms, suggesting that it is not relevant to depressive symptoms among this age group.

6.2.2 AIM 2: To examine the extent to which relationships among components of the neighborhood stress process model differ by gender.

This aim investigated seven hypotheses concerned with conditional effects (H2a-H2g). A total of 78 cross-level interactions and 15 individual-level interactions were estimated, net of individual-level sociodemographic characteristics. Two hypotheses were not supported (H2c, H2f). The others received limited support. Twelve interactions were statistically significant (12.9% = [12/93]×100), of which nine were in the hypothesized direction. They are described below. Findings for this aim show that, with a few notable exceptions, components of the neighborhood stress process model generally do not vary by gender or by levels of psychosocial resources.

First Objective: The first objective of this aim was to ascertain gender differences in any cross-level associations between eight indicators of neighborhood disadvantage and three stressors (i.e., perceived neighborhood physical disorder, financial strain, everyday discrimination) and three psychosocial resources (i.e., perceived neighborhood social cohesion, social support, mastery). All findings are net of individual-level sociodemographic characteristics.

Hypothesis H2a: This hypothesis posits that *neighborhood disadvantage is positively associated with perceived neighborhood physical disorder and other stressors, and the magnitude of these associations is significantly greater among women than men*. Twenty-four interactions pertaining to stressors as the dependent variables were tested. Two were statistically significant (8.3%), one of which was in the hypothesized direction. People who reside in neighborhoods with more vacant housing units perceived more physical disorder in their neighborhoods and, consistent with expectations, the effect was greater among women than men. However, the positive association between neighborhood proportion households receiving public assistance income and perceived neighborhood physical disorder was greater for men than women.

These interactions remained statistically significant when considered together in the same model. However, the conditional effect on perceived neighborhood physical disorder of neighborhood proportion households receiving public assistance income (p=.008) exceeds the Bonferroni adjusted p-value: $p \leq .006$ (i.e., .05 divided by 8), suggesting that the finding represents a type I error and should be viewed with caution.

Hypothesis H2b: The hypothesis states that *neighborhood disadvantage is negatively associated with perceived neighborhood social cohesion and other psychosocial resources, and the magnitude of these associations is significantly greater among women than men*. Twenty-four interactions were tested and they involved psychosocial resources as outcomes. Five were statistically significant (20.8%). They pertained to the outcome of perceived neighborhood social cohesion and they each were in the hypothesized direction. Both NSD and neighborhood proportion vacant housing units had a larger detrimental effect on women's than men's perception of neighborhood social cohesion. Similar results were present for three interactions involving three components of NSD.

These significant interactions were not sustained in a comprehensive model in which they were assessed together with another interaction pertaining to hypothesis H2d below. These conditional effects may represent the same dynamic.

Main Effects: NSD was positively associated with two of three stressors: perceived neighborhood physical disorder and everyday discrimination, the exception is financial strain. Neighborhood proportion non-family households was positively associated with neighborhood physical disorder and everyday discrimination; and inversely associated with neighborhood social cohesion and mastery, but not social support. Neighborhood proportion female-headed households with children was positively associated with all three stressors and inversely associated with neighborhood social cohesion and social support, but not mastery. The main effects on stressors and psychosocial resources of the other indicators of neighborhood disadvantage (i.e., those not involved in interactions) were not statistically significant.

Second Objective: The second objective was to assess gender differences in any cross-level associations between multiple indicators of neighborhood advantage and stressors or resources.

Hypothesis H2c: This hypothesis states that *neighborhood advantage is negatively associated with neighborhood physical disorder and other stressors, and the magnitude of these associations is significantly greater among women than men*. Fifteen interactions pertaining to stressors as the dependent variables were tested, and none was statistically significant.

Hypothesis H2d: The hypothesis posits that *neighborhood advantage is positively associated with neighborhood social cohesion and other psychosocial resources, and the magnitude of these associations is significantly greater among women than men.* Fifteen interactions were tested and they involved psychosocial resources as dependent variables. Two were statistically significant (13.3%) and they were in the hypothesized direction. Living in a more affluent neighborhood was associated with higher levels of perceived neighborhood social cohesion and social support and the effects were greater among women than men, as hypothesized. However, the conditional effect of neighborhood affluence on social cohesion disappeared when estimated in the same model with two other interactions pertinent to hypothesis H2b above (i.e., effect on perceived neighborhood social cohesion of NSD by gender and neighborhood proportion vacant housing units by gender). These interactions are likely capturing the same effect.

Main Effects: There were 13 significant main effects on stressors and psychosocial resources of the indicators of neighborhood advantage. Most of the main effects pertained to perceived neighborhood physical disorder and neighborhood social cohesion. Neighborhood affluence had a main inverse association with all three stressors and residential stability was positively associated with perceived neighborhood social cohesion. Neighborhood proportion owner-occupied housing units was inversely associated with neighborhood physical disorder and everyday discrimination; and positively associated with neighborhood social cohesion and social support. Neighborhood proportion married-couple households was negatively associated with neighborhood physical disorder and positively associated with social cohesion and social support. Higher neighborhood concentrations of adults aged 65 and older was associated with lower levels of perceived neighborhood disorder and higher levels of perceived neighborhood social cohesion.

These significant main effects suggest that these neighborhood conditions are associated with individual-level stressors and psychosocial resources and that these effects do not differ for men and women. The main effects on stressors and psychosocial resources of the other favorable neighborhood conditions (i.e., those not involved in interactions) were not statistically significant, suggesting that they are not relevant to stressors and resources among this age group.

Third Objective: The third objective involved examining gender differences in the effect on depressive symptoms of individual-level stressors (H2e) and psychosocial resources (H2f); and the extent to which any associations between stressors and depressive symptoms vary by psychosocial resources (H2g).

Hypothesis H2e: This hypothesis states that *perceived neighborhood physical disorder and other stressors are positively associated with depressive symptoms, and the magnitude of these associations is significantly greater among women than men.* Three interactions between individual-level stressors and gender were tested and only one was statistically significant, but it did not support the hypothesis. Perceived neighborhood physical disorder had a larger negative impact on mental health among men than women. This finding was sustained in a comprehensive model that assessed other conditional effects.

The effects on depressive symptoms of financial strain and everyday discrimination did not vary significantly by gender, suggesting that these effects do not differ for men and women.

Hypothesis H2f: The hypothesis posits that *perceived neighborhood social cohesion and other psychosocial resources are negatively associated with depressive symptoms, and the magnitude of these associations is significantly greater among women than men*. Three interactions between individual-level psychosocial resources and gender were tested and none was statistically significant. There were no significant gender differences in the effect on depressive symptoms of any of the three psychosocial resources. However, all of the three resources were significant and inversely associated with depressive symptoms, suggesting that these effects are present among men and women to a similar degree.

Hypothesis H2g: This hypothesis states that *perceived neighborhood physical disorder and other stressors are positively associated with depressive symptoms, and the magnitude of* *these associations are significantly smaller among individuals with higher levels of psychosocial resources than those with lower levels of psychosocial resources*. Among nine conditional effects examined between individual-level stressors and psychosocial resources, two were statistically significant (22.2%) one of which was in the expected direction. Financial strain was least damaging to mental health for people with high than low levels of support. This conditional effect supported the hypothesis and it was sustained in a comprehensive model that included other interactions.

Perceived neighborhood physical disorder had a larger positive effect on depressive symptoms among people with high than low levels of perceived neighborhood social cohesion. This finding did not support the hypothesis and it did not hold in a comprehensive model.

Main Effect: Everyday discrimination was positively associated with depressive symptoms and all three psychosocial resources were inversely associated with symptoms. These main effects suggest that these factors are associated with depressive symptoms and that these effects do not depend on levels of psychosocial resources among this age group.

6.2.3 AIM 3: To examine the extent to which the neighborhood stress process model explains variation in depressive symptoms among women.

The majority of the relationships hypothesized in this aim were not empirically supported. However, a few significant findings identify some factors that possibly link neighborhood conditions to depressive symptoms; and contribute to variation in symptoms among women.

Four out of eight indicators of neighborhood disadvantage were positive and significantly associated with depressive symptoms; and one out of five measures of neighborhood advantage was negative and significantly associated with symptoms. Among six psychosocial factors examined as possible mediators of the focal relationships between neighborhood characteristics and depressive symptoms, only one stressor and one psychosocial resource functioned as mediators. Forty-eight interactions were estimated to assess whether three stressors and three psychosocial resources moderated the effect on depressive symptoms of neighborhood disadvantage. Ten interactions were statistically significant (20.8%), of which four of the effects (40%) were in the hypothesized direction.

Additionally, 30 interactions were estimated to examine whether three stressors and three psychosocial resources moderated the effect on depressive symptoms of neighborhood advantage. Six interactions were statistically significant (20%), of which three of the effects (50%) were in the hypothesized direction. Individual-level sociodemographic characteristics were adjusted for in all of the analyses.

First Objective: The first objective of this aim was to estimate cross-level associations between eight indicators of neighborhood disadvantage and five measures of neighborhood advantage and depressive symptoms among middle-aged and older women.

Hypothesis H3a & H3b: Hypothesis H3a states that *neighborhood disadvantage is positively associated with depressive symptoms in women*. H3b posits that *neighborhood advantage is negatively associated with depressive symptoms in women.* Among eight indicators of neighborhood disadvantage examined, four were positive and significantly associated with depressive symptoms. Living in a more socioeconomically disadvantaged neighborhood was associated with reports of more depressive symptoms. Three components of NSD were similarly associated with symptoms: neighborhood proportion: unemployed individuals, households receiving public assistance income, and people living below the federal poverty level.

However, four measures of disadvantage were not related to symptoms: neighborhood proportion: individuals aged 25 years and older without a high school diploma, vacant housing units, non-family households, and female-headed households with children.

Among five measures of neighborhood advantage, only neighborhood proportion adults aged 65 and older was inversely associated with depressive symptoms. Living in a neighborhood with higher proportions of older adults was beneficial for mental health. Measures of neighborhood advantage not significantly related to depressive symptoms included: neighborhood proportion: affluent households, residentially stable individuals, owner-occupied housing units, and married-couple households with own children under 18 years of age.

Second Objective: The second objective was to assess the extent to which exposure to stressors and access to psychosocial resources mediate the relationship between neighborhood conditions and depressive symptoms.

Hypotheses H3c and H3d: Hypothesis H3c posits that *neighborhood disadvantage is positively associated with perceived neighborhood disorder and other stressors, which are positively associated with depressive symptoms, such that neighborhood disadvantage has an indirect positive effect on depressive symptoms among women.* H3d states that *neighborhood disadvantage is negatively associated with neighborhood social cohesion and other psychosocial resources, which are negatively associated with depressive symptoms, such that NSD has an indirect positive effect on depressive symptoms*.

The indirect effect of NSD on depressive symptoms was fully mediated by perceived neighborhood social cohesion within a multiple mediation model that also included perceived neighborhood physical disorder as a possible mediator. However, perceived neighborhood physical disorder did not function as a mediator. When considered individually (i.e., not together in the same model), both perceived neighborhood physical disorder and neighborhood social cohesion transmitted the indirect effect on depressive symptoms of NSD and three of its components. The other stressors and resources did not act as mediators. As previously noted, four indicators of neighborhood disadvantage were not significantly associated with depressive symptoms, a prerequisite for mediation (in the absence of suppression or offsetting indirect effects). Their effects were not assessed for mediation.

Hypotheses H3e and H3f: Hypothesis H3e posits that *neighborhood advantage is negatively associated with perceived neighborhood disorder and other stressors, which are positively associated with depressive symptoms, such that NA has an indirect negative effect on depressive symptoms among women*. H3f states that *neighborhood advantage is positively associated with neighborhood social cohesion and other psychosocial resources, which are negatively associated with depressive symptoms, such that NA has an indirect negative effect on depressive symptoms*.

The indirect effect on depressive symptoms of neighborhood proportion adults aged 65 and older was partially mediated by perceived neighborhood social cohesion within a multiple mediation model that also included perceived neighborhood physical disorder as a possible mediator. However, perceived neighborhood physical disorder did not function as a mediator. When considered individually (i.e., not together in the same model), both perceived neighborhood physical disorder and neighborhood social cohesion channeled the indirect effect on depressive symptoms of neighborhood proportion older adults. As previously noted, four measures of neighborhood advantage were not significantly associated with depressive symptoms, a prerequisite for mediation. Their effects were not assessed for mediation.

Third Objective: The third objective was to ascertain the extent to which the impact of neighborhood conditions on depressive symptoms vary by levels of stressors and psychosocial resources.

Hypothesis H3g: This hypothesis states that *the magnitude of the positive association between neighborhood disadvantage and depressive symptoms is significantly greater among women with high exposure to stressors than women with low exposure to stressors*. Twenty-four interactions were tested assessing the moderating role of stressors. Only one (4.2%) was statistically significant and the effect was in the expected direction. Living in a neighborhood with more vacant housing units was associated with more depressive symptoms, and the effect was greater among women who perceived high levels of disorder in the neighborhood than those who perceived less disorder.

Considering that several neighborhood conditions (i.e., 8) were examined to assess whether or not their effect on depressive symptoms varied significantly by perceived neighborhood physical disorder, and only this interaction involving vacant housing units was statistically significant, a Bonferroni correction for multiple tests was performed. The p-value for the conditional effect ($p=.047$) exceeds the Bonferroni adjusted significance level: $p \leq .006$ (i.e., .05 divided by 8) and thus suggests that this finding on the conditional effect on depressive symptoms of neighborhood proportion vacant housing units represent a type I error and should be treated with caution.

Hypothesis H3h: The hypothesis posits that *the magnitude of the positive association between neighborhood disadvantage and depressive symptoms is significantly smaller among women with higher levels of psychosocial resources than women with lower level of psychosocial resources*. Twenty-four interactions were tested examining the moderating role of psychosocial resources. Nine (37.5%) were statistically significant. Four of the interactions involved NSD and three of its components, and social support as the moderator; and the effects were consistent with the hypothesis. The other five interactions involved NSD and all of its components, and mastery as the moderator; but the effects were not in the expected direction. The effects on depressive symptoms of economic (i.e., NSD) but not social aspects of neighborhood (i.e., non-family households, female-headed households, vacant housing units) depend on levels of psychosocial resources.

NSD had the largest positive effect on depressive symptoms among women with less social support than women with more support. As expected, social support functioned as a stress-buffer. However, with regard to mastery as a moderator, the detrimental effect on mental health of NSD was largest among women with high than low levels of mastery.

<u>Main Effects</u>: Aside from the indicators of neighborhood disadvantage involved in interaction effects, the other measures of disadvantage were not significantly associated with depressive symptoms among women: neighborhood proportion: non-family households and female-headed households with children.

<u>Hypothesis H3i</u>: This hypothesis states that *the magnitude of the negative association between neighborhood advantage and depressive symptoms is significantly smaller among women with high exposure to stressors than women with low exposure to stressors*. Fifteen interactions were tested assessing the moderating role of stressors. Only two (13.3%) were statistically significant of which one was in the expected direction. As hypothesized, living in a neighborhood with more adults aged 65 and older was associated with fewer depressive symptoms more so for women who reported low levels of perceived neighborhood physical disorder than women who reported average levels of disorder. Neighborhood proportion older

adults was not significantly related to symptoms among women who reported high levels of disorder.

Residential stability was associated with more depressive symptoms among women who reported low levels of everyday discrimination; and among women who reported high levels of discrimination, residential stability was associated with fewer symptoms. Considering that these results are counterintuitive and this was the only significant interaction involving a measure of neighborhood advantage by everyday discrimination, a Bonferroni correction for multiple tests was performed. The p-value for this conditional effect of residential stability ($p=.023$) exceeds the Bonferroni adjusted significance level: $p \leq .01$ (i.e., .05 divided by 5) and thus suggests that this finding likely represents a type I error and should be viewed with caution.

Hypothesis H3j: The hypothesis posits that *the magnitude of the negative association between neighborhood advantage and depressive symptoms is significantly greater among women with higher levels of psychosocial resources than women with lower level of psychosocial resources.* Fifteen interactions also were tested examining the moderating role of psychosocial resources. Four (26.6%) were statistically significant, of which two were in the expected direction. As hypothesized, higher neighborhood proportion of affluent households and owner-occupied housing units was associated with fewer depressive symptoms more so for women with high levels of mastery than women with low mastery. However, and contrary to expectations, living in a more affluent neighborhood or a neighborhood with more owner-occupied housing units was less beneficial to the mental health of women with high than low levels of social support.

Main Effects: Neighborhood proportion married-couple households with own children under 18 years old did not have a significant main effect on depressive symptoms among women.

6.3 INTERPRETATION OF FINDINGS

This study's sample of adults aged 50 years and older are at a stage in the life course characterized by important changes in health, marital, and employment status. This study controlled for individual-level sociodemographic characteristics primarily to reduce selection , but I highlight associations between depressive symptoms and sociodemographic factors that are most relevant to this sample's stage in the life course. There was a curvilinear relationship between age and depressive symptoms where symptoms decreased with age up to around age 70, after which they increased with age. Functional limitations that are more common in old age and are positively associated with depressive symptoms (Braam et al., 2005; Ormel, Rijsdijk, Sullivan, Van Sonderen, & Kempen, 2002) may contribute to the higher risk of symptoms among adults aged 70 year and above relative to younger adults in the sample.

Widowhood is a major negative life event that deprives the surviving spouse of an important confidant and companion (Bennett et al., 2005; Carr & Utz, 2001). In this study, the widowed reported more depressive symptoms than people who are married, a finding that is generally consistent with the research literature (Lee & DeMaris, 2007; Maciejewski et al., 2007) and underscores the relevance of the life course principle of *linked lives* when studying the determinants of health. Especially for the oldest-of-old adults in this sample who are at a stage in the life course when widowhood is especially common. Surprisingly, people who have never been married reported fewer symptoms than married people. Most studies find that people who have never been married have poor mental health relative to those who are married (Brown, Bulanda, & Lee, 2005; Cooney & Dunne, 2001). It may be that those who have never been married in this sample of adults aged 50 and older have developed resources and skills (e.g., family and friendship ties, social participation, financial independence) that protect against any negative effects of being single on mental health (Barrett, 1999; Gordon, 1994).

The research literature on the relationship between retirement and mental health is mixed (Dave et al., 2006; Jokela et al., 2010; Szinovacz & Davey, 2004), and may reflect variations in retirees social and economic circumstances pre- and post- retirement. This study's finding that recent retirees reported more depressive symptoms than the employed may reflect challenges associated with adjusting to retirement including loss of: income, the employee role identity, and social integration in the workforce (Schellenberg et al., 2005; Stevens & Van Tilburg, 2011).

A central hypothesis of the first aim of this dissertation posited that neighborhood disadvantaged is more detrimental to women's than men's mental health. Among eight cross-level interactions, one was statistically significant: neighborhood proportion non-family households by gender. Neighborhood proportion non-family households was conceptualized as an indicator of neighborhood disadvantage. Neighborhoods with many non-family households may have many unmarried young people who could introduce disorder in the neighborhood considering that the presence of young people between ages 15-25 has been linked to higher crime rates (Steffensmeier & Allan 1996; Steffensmeier et al., 2006). Non-family households also may be comprised of tenants temporarily residing in the neighborhood and whose departure could disrupt social ties and support networks that buffer stress detrimental to mental health. Study results indicated that neighborhood proportion non-family households was associated with fewer depressive symptoms among women and it was not significantly related to symptoms among men. These results may represent a type I error and should be viewed with caution considering that among eight tests only this one was statistically significant and results were in an unexpected direction.

Gender differences in the effects on depressive symptoms of five indicators of neighborhood advantage also were examined as part of the first aim. Only one cross-level interaction was statistically significant. Contrary to expectations, neighborhood proportion married-couple households with own children under 18 years of age was not significantly related to depressive symptoms among women. Among men, this favorable neighborhood condition was associated with fewer depressive symptoms, as expected. Children with two parents/guardians are likely to receive good supervision (Casper et al., 1994; Casper & Smith, 2004), which can reduce problem behaviors (Mott et al., 1999; Posner & Vandell, 1999). A general effect of this supervision may be lower levels of neighborhood disorder that otherwise compromise mental well-being (Aneshensel & Sucoff, 1996; LaGrange et al., 1992; Ross, 2000). Compared to single parents, married-couples with children also may have more time to engage in activities/community organizing aimed at increasing social control, promoting safety, and maintaining amenities (e.g., parks, sidewalks) in the neighborhood (Duncan et al., 2003). Such organizing can increase social connectedness and cohesion in the neighborhood, which are beneficial for mental health (Forrest & Kearns, 1999; Kang, 2011; Rios et al., 2012).

A safer, more socially cohesive neighborhood environment may be beneficial for women's mental health considering that they have greater exposure to the neighborhood (Alavinia & Burdorf, 2008; La Gory & Fitzpatrick, 1992), are more concerned about their safety and the welfare of their network members (Bird & Rieker, 2008; Elliott, 2001; Kessler & McLeod, 1984), and they are more involved in activities that encourage social connectedness and support (Campbell & Lee, 1991; Turner & Marino, 1994). The finding that neighborhood proportion married-couple households with children protects men's mental health but has no effect among women is surprising and difficult to explain. This finding also should be viewed with caution given the overall negative results.

All in all, the main hypotheses of the first aim of this dissertation were not supported. Neighborhood conditions were not more consequential to women's than men's mental health considering that among 13 tests, only two were significant and they were not in the expected direction.

The first aim also examined the main effects of neighborhood conditions on depressive symptoms. That is, significant findings, other than interactions effects, that were present for both men and women. Two indicators of neighborhood disadvantage had positive main effects on depressive symptoms: neighborhood socioeconomic disadvantage (NSD) and neighborhood proportion female-headed households with own children under 18 years of age. The finding for NSD is consistent with previous research that shows that NSD and its components (e.g., poverty) are associated with increased risk for depressive symptomatology (Cutrona et al., 2005; Ostir et al., 2003; Ross, 2000). Neighborhood proportion female-headed households with children has been studied as part of composite measures of NSD. The finding that it is positively associated with depressive symptoms when examined separately suggests that the social conditions that likely characterize female-headed households may contribute to neighborhood disorder and increase risk for depressive symptoms. Stressors associated with single-parenthood, such as role strain and time constraints (Devine et al, 2009; Lockwood-Rayermann, 2000) can limit parents' capacity to effectively supervise their children. Children who lack proper supervision and nurturing may face negative influences and engage in problem behaviors (Derzon, 2010; Dornbusch et al., 1985) that can increase insecurity and disorder in the neighborhood.

Three indicators of neighborhood advantage were inversely associated with depressive symptoms with no difference between men and women: neighborhood proportion: affluent households, owner-occupied housing units, and adults aged 65 and older. The finding that higher concentrations of older adults in the neighborhood is beneficial for mental health is consistent with similar reports by Kubzansky and colleagues (Kubzansky et al., 2005). The influence of neighborhood proportion owner-occupied housing units on depressive symptoms has not received much research attention; and previous studies examining the impact of neighborhood affluence on depressive symptoms have not found significant associations (Aneshensel et al., 2007; Hybels et al., 2006; Kubzansky et al., 2005). This study makes an important contribution by showing that these neighborhood characteristics benefit mental health above and beyond the influence of individual-level sociodemographic characteristics such as income and wealth.

Overall, the significant main effects highlight the important influence on depressive symptoms of both neighborhood socioeconomic disadvantage and advantage. The results also show that not only economic but also the social conditions of neighborhoods are consequential to mental health.

The second aim focused on gender differences among components of the neighborhood stress process model. Individual-level stressors and psychosocial resources were examined as outcomes. I highlight some sociodemographic correlates of stressors and resources that are pertinent to this sample of middle-aged and older adults. Compared to men, women perceived their neighborhood to be more socially cohesive and they reported more social support. These findings are consistent with expectations considering that women are more actively involved in developing these resources (Lepore, 1992; Schuster et al., 1990; Turner & Marino, 1994).

Additionally, they may be more sensitive than men to the presence of social cohesion in the neighborhood.

In multivariate analyses that adjusted for individual-level sociodemographic characteristics, women were similar to men in reports of financial strain and sense of mastery - an unexpected finding. However, and consistent with expectations, in bivariate analyses women reported more financial strain than men ($b=.098$, $SE=.020$, $p \leq .001$) although they were similar to men in sense of mastery ($b=-.007$, $SE=.026$, $p>.05$). These results indicate that gender differences in financial strain are largely a function of differences between men and women in sociodemographic characteristics such as income. However, that men and women are similar in sense of mastery even in bivariate analyses is unexpected considering that previous research generally shows that women have low mastery than men (Rosenfield, 1999; Ross & Mirowsky, 2002; Slagsvold & Sorensen, 2008).

There was a curvilinear relationship between age and mastery. Mastery increased with age up to around age 70, after which it declined with age. Poor physical and cognitive health likely contributes to the inverse relationship between age and mastery over age 70 considering that such health declines are more common at advanced ages (Paez et al., 2009; Seeman et al., 2010; Wilkie et al., 2007) and are associated with functional limitations that can undermine sense of control (Dunlop, Manheim, Sohn, Liu, & Chang, 2002; Njegovan, Man-Son-Hing, Mitchell, & Molnar, 2001; Schieman & Turner, 1998). At younger ages (i.e., between ages 50 and 70), most adults are relatively healthy and are actively engage in activities that reinforce sense of control, such as employment and leisure activities.

Results also showed that people who are separated or divorced, and those who are widowed reported higher sense of mastery than the married. These findings are counterintuitive and difficult to explain. It could be that adjusting to the absence of a spouse required that people who occupy these statuses develop greater sense of control. This study also found that people who were retired consistently for the past six years and homemakers reported less financial strain compared to those who were consistently employed for the past six years. These findings also are counterintuitive and difficult to explain considering that these statuses are generally associated with no employment-based earnings. Among retirees, social security income, proper financial planning, and careful spending may protect against financial strain, or those with greater financial assets may be more likely to retire.

Significant gender differences in the effects of neighborhood conditions on stressors and psychosocial resources were found for one of three stressors, neighborhood physical disorder, and two of three resources, neighborhood social cohesion and social support. The finding that living in a neighborhood with more households that receive public assistance income is associated with higher levels of perceived neighborhood physical disorder more so for men than women was unexpected. Although this neighborhood characteristic increased perceptions of disorder for both men and women, men appear to be more sensitive to this indicator of neighborhood disadvantage. It is also possible that this finding reflects a type I error considering that neighborhood proportion households receiving public assistance income is one of four components of NSD, and there was no significant gender difference in the effect on neighborhood disorder of the NSD principal component or the other three of its components.

Living in a neighborhood with more vacant housing units was associated with higher levels of perceived neighborhood physical disorder, and the effect was greater among women than men. This finding was consistent with expectations. Vacant housing units can attract illicit activities such as drug dealing; or they can function as the gathering places where criminal activities are planned (Hannon & Cuddy, 2006; Spelman, 1993; Vigil, 1987). More vacancies in the neighborhood was hypothesized to be more detrimental to women's than men's perceptions of disorder because women are more likely than men to have greater exposure to the neighborhood considering that they are over-represented among homemakers and the elderly (Ward et al., 1988; NCHS, 2011; USBLS, 1990), for whom the neighborhood is the main activity space. Women also experience greater fear of victimization than do men (Elliott, 2001; Rosenfield & Mouzon, in press), and as a result, they may be especially observant of neighborhood conditions that can increase disorder and risk of victimization, such as deserted buildings.

Overall, neighborhood conditions do not generate different perceptions of neighborhood disorder among men and women given that eight indicators of neighborhood disadvantage and five indicators of neighborhood advantage were assessed for gender differences in their effects on disorder, and only the above two interactions were statistically significant. However, these two interactions suggest that men and women may be sensitive to different aspects of the neighborhood environment.

The detrimental effect on perceived neighborhood social cohesion of NSD and neighborhood proportion vacant housing units was larger for women than men. Also as hypothesized, the beneficial impact of neighborhood affluence on neighborhood social cohesion was greater among women than men. However, in comprehensive models that simultaneously assessed these conditional effects, none of the interactions were significant, indicating that they appear to be capturing the same dynamic. That is, relative to men, women's perception of social cohesion in the neighborhood is more sensitive to numerous aspects of the neighborhood environment – be it disadvantage in the form of NSD or vacant housing units; or advantage in the form of affluence.

Research shows that NSD is positively associated with crime and other forms of neighborhood disorder (Ross & Jang, 2000), and as previously noted, vacant housing units can attract illicit activities that increase insecurity in the neighborhood. Residents of neighborhoods characterized by these unfavorable features may face a higher risk of victimization. Also, they may be concerned about their own and their families' exposure to negative influences. Such fears and concerns can undermine social cohesion in the neighborhood by increasing social isolation, weakening social ties, and threatening trust among residents (Fullilove et al., 1998; Krause, 1993; Ross & Jang, 2000; Sampson, 1990). Neighborhood affluence can promote social cohesion by encouraging an orderly and safe environment with amenities such as well maintained public spaces where residents can interact and develop social ties and networks (Altschuler et al., 2004; Browning & Cagney, 2003).

Neighborhood disadvantage (i.e., NSD, vacant housing units) and advantage (i.e., affluence) can have a larger impact on women's than men's perception of neighborhood social cohesion possibly because, relative to men, women are more involved in forming social ties, maintaining social networks, and participating in reciprocal exchange (Lepore, 1992; Schuster et al., 1990; Turner & Marino, 1994). These activities promote social cohesion and can be threatened by NSD and neighborhood vacancies or encouraged by neighborhood affluence.

Similar to its effect on perceived neighborhood social cohesion, neighborhood affluence was positively associated with social support more so for women than men. Taken together, the findings for neighborhood social cohesion and social support show that women's perceptions of social ties and support are consistently more sensitive than men's to neighborhood conditions.

This could be the case because women are more involved than men in developing and maintaining these psychosocial resources (i.e., social support, neighborhood social cohesion) and may therefore be more sensitive to neighborhood effects on these resources. Even so, many aspects of neighborhoods do not appear to generate differences between men and women in perceptions of social ties.

The second aim also investigated gender differences in the effects on depressive symptoms of stressors and psychosocial resources. Perceived neighborhood physical disorder was positively associated with depressive symptoms, but contrary to expectations, its impact on symptoms was greater among men than women. Actual acts of physical violence or assault, or fear of such occurrences, can increase risk for depressive symptoms (Demaris & Kaukinen, 2005; Rentoul & Appleboom, 1997). Women express greater fear of victimization, however, men are more likely than women to witness or be the victims of physical violence (Elliott, 2001; Hatch & Dohrenwend, 2007; Rosenfield & Mouzon, in press). For men, disorder in the neighborhood may have a more salient association with risk of victimization, which may contribute to the larger positive association between disorder and depressive symptoms among men.

There were no gender differences in the detrimental effects on mental health of the other stressors (i.e., financial strain, everyday discrimination) or in the beneficial effects of the psychosocial resources (i.e., neighborhood social cohesion, social support, mastery). These findings are not consistent with the differential vulnerability hypothesis of the stress process framework: that at least some stressors have a greater effect on depression among women than men.

The second aim also assessed whether the effects of stressors on depressive symptoms varied by levels of psychosocial resources. Perceived neighborhood physical disorder had a larger positive effect on depressive symptoms among people with high than low levels of perceived neighborhood social cohesion. This finding was not consistent with expectations. The neighborhood stress process framework posits that greater access to psychosocial resources protects against the detrimental effects of stress on mental health. However, perceived neighborhood social cohesion did not function as a stress-buffer. Instead, it amplified the deleterious effects of disorder on symptoms.

Considered from a different angle, at low levels of neighborhood physical disorder, people who perceived their neighborhoods to be less socially cohesive reported the most depressive symptoms whereas people who perceived high levels of cohesion had the least symptoms. The latter group experienced cumulative advantage whereby they derived mental health benefits from living in a neighborhood that is both less disordered and more socially cohesive. When perceived neighborhood physical disorder is high, neighborhood social cohesion had little effect on depressive symptoms. People who perceived varying levels of social cohesion reported near similar and high levels of depressive symptoms. It could be that in the context of highly disadvantaged (i.e., disordered) neighborhoods, close social ties may undermine residents capacity to work jointly and effectively to increase social control and security in the neighborhood, especially if network members' family or friends are linked to the problem behaviors that increase disorder in the neighborhood. Additionally, in neighborhoods with high level of disorder and that are also likely to be socioeconomically impoverished, perceiving high levels of social cohesion or having close social ties and networks may increase the strains associated with expectations of reciprocal exchange.

The finding that the impact of financial strain on depressive symptoms was smallest for people with more social support and largest for those with less social support was consistent with the stress-buffering role of psychosocial resources as forwarded in the neighborhood stress process model. This result is similar to findings from other studies that examined the effects of individual-level stressors on mental health (Comijs, Penninx, Knipscheer, & van Tilburg, 1999; Takizawa, Kondo, Sakihara, Ariizumi, Watanabe, & Oyama, 2006; Terry, Nielsen, & Perchard, 1993).

A total of nine interactions were tested involving the three stressors and three resources examined in this study, but only the two interactions described above were significant. These results show that, overall, stressors and resources have additive effects and the resources do not appear to buffer the effects of stressors.

Overall, other than interaction effects associations between indicators of neighborhood disadvantage and advantage were most consistent for the two variables that capture people's perceptions of their neighborhoods, neighborhood physical disorder and neighborhood social cohesion. Indicators of disadvantage (e.g., female-headed/non-family households) were associated with higher levels of neighborhood physical disorder and lower levels of neighborhood social cohesion. As previously noted, high neighborhood proportion of female-headed households with children can contribute to disorder in the neighborhood through problem behaviors among poorly supervised children. Neighborhoods with many non-family households may have many unmarried young people; and young adults may introduce disorder in the neighborhood considering that they are more likely to offend. The presence of young people between ages 15-25 has been linked to higher crime rates (South & Messner, 1987; Steffensmeier & Allan 1996; Steffensmeier et al., 2006). Non-family households also are likely to be comprised of tenants temporarily residing in the neighborhood and whose departure can disrupt social ties and support networks that increase social cohesion in the neighborhood.

Measures of neighborhood advantage (e.g., owner-occupied housing units, married-couple families with children) were positively associated with neighborhood social cohesion and social support; and inversely associated with neighborhood physical disorder. Homeowners occupy their homes for longer durations than renters (Hansen et al., 1998; Rohe & Stewart, 1996) and they are more likely than renters to see their homes and neighborhoods as their permanent place of residence. As a result, they may be more actively involved in activities (e.g., community organizing) that promote the welfare of the neighborhood and increase social cohesion (Rohe & Basolo, 1997; Rossi & Weber, 1996; Saunders, 1990).

Living in a neighborhood with more married-couple households with children also can encourage social cohesion and reduce disorder in the neighborhood because raising children could motivate parents to participate in community organizations and activities that increase safety in the neighborhood and maintain amenities such as parks and schools. When parents and other residents come together and organize to achieve common goals, they can forge social ties, increase social connectedness, and collective efficacy in the neighborhood.

Neighborhood characteristics such as high proportions of owner-occupied housing units and married-couple households with children represent stability that promotes social capital (i.e., social support, social cohesion) in the neighborhood. The main effects described here show that neighborhood advantage and disadvantage especially manifest through residents' perceptions of disorder and social cohesion in their neighborhoods.

Measures of neighborhood disadvantage (i.e., NSD, female-headed households) also were positively associated with everyday discrimination. This finding is likely to be a result of residential segregation, especially the marked tendency for neighborhood disadvantage to be pronounced in predominantly African American neighborhoods (Massesy & Denton, 1993; Quillian, 2012; Wilson 1987, 1996).

The third aim examined variation in depressive symptoms among women, a group who increasingly outnumber men at older ages and therefore have greater exposure to the neighborhood. NSD and three of its components and not the other indicators of disadvantage (i.e., female-headed households, vacant housing units) were positive and significantly associated with depressive symptoms among women. These results show that, among women, unfavorable economic and not other indicators of social disadvantage in the neighborhood are consequential to mental health. Neighborhood economic disadvantage may be more potent than neighborhood social disadvantage for generating conditions (e.g., crime, vandalism, burglaries) that increase risk for depressive symptoms.

However, these results are not consistent with the findings for the sample as a whole. For the sample as a whole, the conditional effect on depressive symptoms of neighborhood proportion female-headed households with children was not significant, suggesting that there is no difference between men and women in the effect of this neighborhood condition on depressive symptoms. The main effect on symptoms of neighborhood proportion female-headed households was positive and significant, suggesting that it is consequential to both men's and women's mental health. However, among women only, neighborhood proportion female-headed households was not significantly associated with depressive symptoms. It could be that the smaller sample of only women lacks the statistical power to detect the effect.

In the full sample, neighborhood proportion non-family households had a gender-contingent effect on depressive symptoms. Among women, it was significant and inversely associated with symptoms, which was contrary to expectations. Among men it was not significantly related to symptoms. In the women only sample, it is not significantly associated with symptoms, although one would expect that it should be significant and inversely associated with symptoms consistent with the finding in the full sample. The value for the main effect on depressive symptoms of neighborhood proportion non-family households in the full sample is the average of the effects across males and females; and is not a large or significant effect ($b=.079$, $SE=.070$, $p=.258$). Therefore, the smaller sample size in the women only analyses may be problematic. There may not be enough statistical power to detect an effect.

Living in a more socioeconomically disadvantaged neighborhood was associated with higher levels of depressive symptoms among women, and perceived neighborhood social cohesion completely mediated this effect when considered jointly with neighborhood physical disorder. Perceived neighborhood social cohesion represents residents' feelings and sense that they are socially integrated in their community; and that they live in a neighborhood where people are helpful and there is mutual trust and respect (Berger-Schmitt, 2002; Sampson et al., 1997). Neighborhood social cohesion also functions as a psychosocial resource that buffers the negative impact of stress on mental health (Fone et al., 2007; Rios et al., 2012). As previously discussed, NSD can undermine neighborhood social cohesion by giving rise to a disordered and unsafe neighborhood environment characterized by distrust, social isolation, and weak social ties among residents (Fullilove et al., 1998; Krause, 1993; Ross & Jang, 2000; Sampson, 1990). By eroding perceptions of social cohesion, NSD creates the pathway that channels its deleterious effect on mental health.

The third aim also assessed the extent to which the effects on depressive symptoms of eight indicators of neighborhood disadvantage varied by levels of stressors and psychosocial resources. The finding that neighborhood proportion vacant housing units is more detrimental to the mental health of women who perceive high than low levels of disorder in their neighborhoods was consistent with expectations. As previously discussed, vacant housing units can encourage illicit activities that create insecurity in the neighborhood (Hannon & Cuddy, 2006; Spelman, 1993; Vigil, 1987), and the ensuing fears and concerns related to safety can increase risk for depressive symptoms. Even so and as suggested by the findings, the negative mental health consequences of vacant housing units is likely to be smaller in affluent neighborhoods, for example, where residents perceive low levels of disorder (e.g., low crime, vandalism) compared to disadvantaged neighborhoods where disorder is generally high.

Results for the third aim also showed that the impact of NSD on depressive symptoms was smallest for women with the most social support and largest for those with the least social support. These results are consistent with the role of social support as a stress buffer within the neighborhood stress process framework. Social support protected against the negative impact of NSD on mental health, and especially for women who reported more social support. Results also indicated that NSD had the greatest impact on depressive symptoms among women with high levels of mastery. That is, the negative impact of NSD on mental health was largest for these women relative to those with lower levels of social support. This finding runs contrary to expectations. In the neighborhood stress process framework, mastery, like social support, is considered a psychosocial resource that buffers stress. However, these results indicate that mastery amplifies the negative impact of NSD on mental health.

Considered from a different angle, when NSD is high, sense of mastery or control has little impact on depressive symptoms. That is, people with high, average, and low mastery have near similar and high levels of depressive symptoms. When NSD is low people with low mastery report the most symptoms and those with high mastery report the least symptoms. The latter group experience cumulative advantage. That is, they experience greater mental health benefits from living in a more advantaged neighborhood and also by having high levels of mastery. In disadvantaged neighborhoods, having high sense of mastery has little to no beneficial effect on emotional well-being perhaps because in actuality people in these neighborhoods have little real control over what happens. However, in neighborhoods that are not disadvantaged (i.e., advantaged neighborhoods), perceived personal control may be beneficial because it corresponds to a real ability to control events and circumstances.

The third aim additionally examined the extent to which the effects on depressive symptoms of five indicators of neighborhood advantage varied by levels of stressors and psychosocial resources. The finding that living in a neighborhood with more adults aged 65 and older is associated with fewer depressive symptoms more so for women who report low levels of perceived neighborhood physical disorder than women who report average levels of disorder is consistent with expectations. Higher concentrations of older adults in the neighborhood has been found to be associated with decreased risk for depression (Kubzansky et al., 2005) and increased social cohesion in the neighborhood (Almeida et al., 2009). Low neighborhood disorder is associated with a safer neighborhood environment (Ross & Jang, 2000) that can encourage social participation. In the context of such a neighborhood, the presence of older adults can promote psychosocial resources such as social ties and cohesion, thereby having a positive effect on mental health.

Results from the third aim also indicated that higher neighborhood proportion of affluent households and owner-occupied housing units are associated with fewer depressive symptoms more so for women with high levels of mastery than women with low mastery. These results are consistent with expectations and reflect cumulative advantage whereby having high sense of control and also living in an affluent neighborhood particularly promotes mental health.

Study findings also showed that living in a more affluent neighborhood or a neighborhood with more owner-occupied housing units was less beneficial to the mental health of women with high than low levels of social support. It could be that having high levels of social support in and of itself promotes emotional well-being, such that living in an affluent neighborhood does not confer substantial additional benefits to mental health. However, for women with low levels of social support, living in an affluent neighborhood may protect against stressors (e.g., unsafe neighborhood conditions) detrimental to mental health such that having low levels of social support becomes less consequential emotional health.

This dissertation investigated neighborhood effects on depressive symptoms, individual-level stressors, and individual-level psychosocial resources among people ages 50 years and older. Conditions within a neighborhood are a constant for everyone in the neighborhood. For example, everyone in a neighborhood with high levels of NSD is exposed to those levels of disadvantage. However, given that older people's social spheres are confined to the neighborhood more than those of younger people, their real exposure to neighborhood conditions may be greater.

Neighborhood disadvantage (e.g., NSD, vacant housing units, female-headed households) was associated with lower levels of perceived neighborhood social cohesion whereas neighborhood advantage (e.g., affluence, owner-occupied housing units) was associated with higher level of perceived neighborhood social cohesion and social support. Adults in this study are at a stage in the life course characterized by social role transitions, such as retirement and widowhood, which may disrupt social ties and support including weakening social connections with work colleagues (Stevens & Van Tilburg, 2011) and the deceased spouse's social network. Such changes may make people more sensitive to the amount of social cohesion in the neighborhood.

People who live in neighborhoods with more married-couple households with children also perceived their neighborhoods to be more socially cohesive. Although it is unlikely that this study's sample of adults have dependent children at home, they too benefit from living in a neighborhood with more married-couple households with children considering that raising children can encourage social cohesion when parents and other residents participate in activities that promote the welfare of the community and build social ties.

Examining neighborhood effects on components of the neighborhood stress process model among people ages 50 years and older is important because they are at a stage in the life course when changes in their health, employment, and marital status may make them especially vulnerable to neighborhood conditions.

6.4 STRENTHS AND LIMIATIONS

Limitations: This dissertation has some limitations. The data are cross-sectional. It is therefore not possible to establish causality, that is, to say that living in a disadvantaged neighborhood leads to more depressive symptoms, but results from cross-sectional analyses can pave the way for subsequent studies using longitudinal data. The problem of selection is a limitation that confronts many neighborhood effects studies. People generally choose, and are not randomly assigned to, the neighborhoods in which they live. This study controlled for whether or not respondents moved in the past six years in addition to a number of other individual-level sociodemographic characteristics associated with depressive symptoms and that may confound the relationship between neighborhood conditions and symptoms. Even so, unmeasured variables associated with residence in the neighborhood may contribute to the observed neighborhood effects (Leventhal & Brooks-Gunn, 2000).

This study is guided by the neighborhood stress process framework and the life course perspective (Aneshensel, 2010a; Elder et al., 2003). The former posits that variation in exposure to stressors and access to psychosocial resources influence risk for depressive symptoms. Both frameworks acknowledge the principle of *agency* whereby, for example, people actively seek out ways (e.g., accessing their support networks, developing sense of mastery) in which to engage with the environment so at to reduce the detrimental effects on mental health of exposure to unfavorable neighborhood conditions. This study examined three psychosocial resources (i.e., perceived neighborhood social cohesion, social support, mastery) that tap into the concept of agency. However, people likely employ a wider variety of behaviors and coping mechanisms to confront noxious neighborhood conditions. That this study only looked at a limited number of psychosocial resources is a limitation that can be addressed in future research.

The findings of this study are somewhat biased towards healthy individuals given analytic sample inclusion criteria that excluded eligible respondents who required a proxy to complete the HRS interview and the psychosocial questionnaire. Financial strain is one of the individual-level stressors examined in this dissertation. It is a scale comprised of two available items, which may not adequately measure the construct, thereby leading to less accurate results. The depressive symptoms count, the primary outcome measure, is based on eight instead of all 20 items from the Center for Epidemiologic Studies Depression Scale (CES-D). This shorter version of the CES-D may reduce the amount of variation in depressive symptoms and reduce the power for detecting neighborhood effects on symptoms (Aneshensel et al., 2007). Additionally, the one-week period within which depressive symptoms are assessed does not take into consideration that depressive symptoms generally manifest in multiple episodes (Ustun & Kessler, 2002; Limosin et al., 2007). The burden of depressive symptoms may have therefore been underestimated in this study.

This dissertation is concerned with neighborhoods as an important context contributing to disparities in depressive symptoms. Neighborhoods are operationalized using census tracts, which being official boundaries may not reflect the way respondents think about their neighborhoods (Pebley & Sastry, 2004). As a result, associations may be weaker between neighborhood conditions and outcomes that rely on respondents' definition of neighborhood, such as perceived neighborhood physical disorder and perceived neighborhood social cohesion. Results from studies such as this one in which neighborhood is defined by official boundaries may therefore differ from results based on subjective definition of neighborhood. However, findings from this study can be compared to existing research that also use census tracts as proxies for neighborhoods.

Respondents are not evenly distributed across neighborhoods in this study, and a large number of neighborhoods only have one resident (i.e., singleton tracts). Singleton tracts lack within-group variation in study outcomes and limit the study's capacity to find cross-level interactions. Another limitation is that, although it is not known with certainty how long respondents have lived in their neighborhoods, this study assumes that current neighborhood is the only relevant neighborhood for study outcomes, but this is unlikely to be true.

Strengths: The HRS is a U.S. national probability sample of persons over the age of 50. The data used in this study are relatively recent and cover a wide range of information about key constructs in the neighborhood stress process model. Study results can be generalized broadly to the diverse urban non-institutionalized U.S. middle-aged and older adult population and not just populations in select urban areas.

For over three decades, the stress process model has guided research concerned with how inequalities embedded within the status characteristics of individuals manifest in health disparities. The majority of this research has applied the stress process framework at the individual level. This study builds on the work of Anehsensel (2010a) by applying the stress process model in a manner that encompasses the neighborhood context of people's lives. The study also provides a more comprehensive investigation of neighborhood effects on depressive symptoms by focusing on multiple indicators of neighborhood disadvantage and advantage, some of which were previously unexamined.

Little attention has been directed towards investigating gender differences in neighborhood effects on depressive symptoms. Addressing this research gap is a major strength of this study; and the findings, albeit null overall, constitutes a valuable contribution to the research literature. Other study results also are important. They have enhanced our understanding of variations in neighborhood effects on depressive symptoms and individual-level stressors and psychosocial resources; and identified a pathway linking neighborhood disadvantage to symptoms.

Focusing on middle-aged and older adults ages 50 years and above is a strength of this study. It presents the opportunity to study neighborhood effects among adults who are approaching a period in the life course characterized by shrinking social networks as they exit the labor force, growing physical impairments and limited mobility as they age and become more restricted to the neighborhood, and threats of social isolation when spouses and friends pass away. It is therefore important to examine how neighborhood conditions influence mental health and enhance or undermine social support and cohesion, which may serve as important stress-buffers for older adults.

6.5 PUBLIC HEALTH IMPLICATIONS

This dissertation is the first to examine whether neighborhood disadvantage and advantage have a different effect on depressive symptoms among women over the age of 50 compared to their male counterparts in the United States. Overall, neighborhood effects on depressive symptoms did not differ for men and women for many aspects of neighborhood. Based on these results, gender-tailored interventions aimed at addressing the neighborhood context as a determinant of depressive symptoms do not appear to be necessary.

Findings from this study indicated that both socioeconomic (i.e., NSD, affluence) and social (i.e., female-headed households with children, owner-occupied housing units) neighborhood conditions are consequential to mental health. These findings are important because they highlight the need for investing in “upstream interventions” focused on both: (a) developing economic and social capital and stability in impoverished neighborhoods, and (b) maintaining these resources in advantaged neighborhoods. As proposed by Leventhal and Brooks-Gunn (2000), community level interventions that target the social and economic resource-base of the neighborhood are likely to be the most effective. Interventions may include rehabilitating abandoned or decaying buildings and other physical spaces and committing them to meaningful use (e.g., business, residential, parks) that economically revitalizes the community and encourages social engagement. Collaborative efforts between the police and community members to reduce truancy and restore and maintain safety in the neighborhood also are important considering that a safe neighborhood environment encourages trust, reduces social isolation among residents, and builds social capital beneficial for mental health.

This study also revealed that women's perceptions of social cohesion/social ties and support are more sensitive than men's to neighborhood socioeconomic conditions. Social ties and support are psychosocial resources whose beneficial effects on mental and physical health is well documented. That NSD threatens and neighborhood affluence promotes these resources more so for women than men is a notable finding because these resources may be the pathway through which neighborhood conditions contribute to gender differences in other health outcomes, even if absent for depressive symptoms.

Perceived neighborhood physical disorder had a greater impact on depressive symptoms among men than women. This finding was counterintuitive considering women's greater exposure to the neighborhood and their greater fear of victimization relative to men. More theoretical attention is needed to enhance our understanding of why perceived neighborhood physical disorder is more detrimental to men's than women's mental health. At the same time, interventions are needed that tackle the underlying causes of neighborhood disorder. For example, considering that socioeconomically disadvantaged neighborhoods are positively associated with neighborhood disorder (Ross & Jang, 2000), structural interventions can be designed to provide businesses with incentives (e.g., tax breaks) to operate in and thereby revitalize impoverished neighborhoods. Such neighborhood-level interventions would be particularly beneficial because they target underlying causes of health disparities and reach large numbers of people, that is, the community at large including men for whom disorder is more noxious.

Social support buffered the negative effect of financial strain on psychological well-being. This stress-buffering role of social support has been observed in other studies, which emphasizes the importance of interventions that promote this psychosocial resource, especially among this study's sample whose life course trajectories include changes in social roles (e.g., from employee to retiree; spouse to widow) that may their access to social support.

Perceived neighborhood social cohesion fully mediated or functioned as the channel through which the effect of NSD on depressive symptoms among women was transmitted. Efforts aimed at increasing neighborhood social cohesion, especially in disadvantaged neighborhoods, could benefit mental health. Identifying the mechanisms that link neighborhood conditions to depressive symptoms is a significant contribution of this research. While it can be difficult to change structural conditions that undermine health (e.g., turning an economically disadvantaged neighborhood into a thriving one), it is possible to develop interventions that reduce stress proliferation or protect psychosocial resources (e.g., perceived neighborhood social cohesion) threatened by neighborhood disadvantage. For example, the neighborhood program Highbridge Community Life Center in the Bronx, New York creates space for young and old members of the community to interact and build social networks, receive leadership training, and organize to solve problems facing their community (Highbridge Community Life Center, 2010).

The deleterious effect of NSD on depressive symptoms was largest among women with high levels of mastery. Mastery, which is conceptualized as a psychosocial resource beneficial to mental health within the neighborhood stress process framework, did not function as such. As previously discussed, in disadvantaged neighborhoods, having high mastery does little to benefit mental health possibly because in actuality people in these neighborhoods have little real control over what happens. Here is a situation that calls for interventions that address the root cause of the problem: NSD; together with programs that promote psychosocial resources that are more effective at reducing the negative impact of NSD on mental health, such as social support.

Results also indicated that women who live in advantaged neighborhoods (i.e., the least impoverished neighborhoods) and who also have high levels of mastery reported the least symptoms. This finding cautions against only targeting disadvantaged neighborhoods when developing interventions addressing the neighborhood as a contextual determinant of mental health. The results show that it is also beneficial to pay attention to advantaged neighborhoods because maintaining the favorable characteristics of these neighborhoods and also promoting psychosocial resources in these neighborhoods (e.g., social cohesion and sense of mastery among residents) also may confer mental health benefits.

Conclusion: This study is the first to examine gender differences in neighborhood effects on depressive symptoms and other components of the neighborhood stress process model. Results largely indicate that the impact of neighborhood conditions on depressive symptoms, stressors, and psychosocial resources do not differ by gender in this sample of middle-aged and older adults. However, there were some gender differences in neighborhood effects on perceived neighborhood physical disorder, neighborhood social cohesion, and social support; with results suggesting that women's perception of social ties and support are especially sensitive to neighborhood economic conditions.

Results also provided evidence of variation in the effects on depressive symptoms of neighborhood physical disorder and financial strain by levels of neighborhood social cohesion and social support. Psychosocial factors also moderated the association between neighborhood disadvantage and depressive symptoms among women; and neighborhood social cohesion completely mediated the effects of NSD on depressive symptoms. This dissertation makes an important contribution to the research literature and provides results that can help inform "upstream interventions" targeting the urban neighborhood context as an important determinant of mental health.

Middle-aged and older adults may depend more on social integration or connectedness and social support within the neighborhood as the neighborhood becomes their main activity space due to aging-related physical impairments and contracted social networks after exiting the workforce. Efforts aimed at reducing neighborhood disadvantage and developing and maintaining favorable neighborhood conditions that promote social cohesion and social support would benefit the mental health of this study's sample of adults ages 50 years and older.

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