Exploring the association between perceived safety of household children in the neighborhood and levels of depressive symptoms among Spanish speaking Latina adults living in a high crime, low income neighborhood

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EXPLORING THE ASSOCIATION BETWEEN PERCEIVED SAFETY OF HOUSEHOLD CHILDREN IN THE NEIGHBORHOOD AND LEVELS OF DEPRESSIVE SYMPTOMS AMONG SPANISH SPEAKING LATINA ADULTS LIVING IN A HIGH CRIME, LOW INCOME NEIGHBORHOOD

by

Randall Stetson

A Dissertation Submitted to the University at Albany, State University of New York In Partial Fulfillment of the Requirements for the Degree of Doctor of Philosophy

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EXPLORING THE ASSOCIATION BETWEEN PERCEIVED SAFETY OF HOUSEHOLD CHILDREN IN THE NEIGHBORHOOD AND LEVELS OF DEPRESSIVE SYMPTOMS AMONG SPANISH SPEAKING LATINA ADULTS LIVING IN A HIGH CRIME, LOW INCOME NEIGHBORHOOD

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Abstract

Previous research has confirmed that neighborhood level social factors (e.g. crime, safety) present chronic stressors that increase risk for depression in residents of economically disadvantaged neighborhoods. U.S. Latinos experience higher levels of poverty and thus are more likely to live in poor neighborhoods. In this study it was hypothesized that adult Latina women who reported (1) higher levels of worry regarding the general safety of their household children in the neighborhood, (2) higher levels of worry regarding influence of bad friends on their household children, and (3) higher levels of worry regarding their household children being exposed to drugs and alcohol, would also report higher levels of depression after controlling for the individual level characteristics of level of acculturation, education, age, income and marital status. This study used a cross-sectional survey design and a convenience sample of 136 Latina women. Depression was measured using the CES-D Spanish version. Hierarchical multiple linear regression analysis revealed that the first step consisting of control variables was significantly correlated with depression, \( R^2 = .14 \), \( F (5,130) = 4.261, p = .001 \). In step two, after entering the neighborhood level variables, the resulting \( R^2 \) increased significantly, \( R^2 = .21 \), \( F (1, 129) = 10.937, p < .001 \). The relationship between depression and each CES-D subscale was also explored. Understanding both micro and macro level factors that contribute to depression is essential for developing complex multi-level explanatory models and designing effective interventions. This study contributes to an emerging critical framework that illustrates how public policy influences the more proximal mechanisms that contribute to mental health and health problems.
Dedication and Acknowledgement

I dedicate this dissertation to my dear wife Magdalena who has been on my side, and by my side, from the moment I mentioned to her my desire to pursue the doctoral degree. Throughout the years, she has been a constant encouragement to me and an example of selflessness as she has put my needs ahead of her own for what seems like forever. I am grateful to have her love and devotion.

Pursuing a doctoral degree and writing a dissertation is a daunting task that cannot be accomplished alone. I, like so many others, have benefited from a network of support that has helped me to stay focused and has reenergized me when I was running low on hope. There are many to whom I am indebted and would like to acknowledge.

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Chapter I: Introduction

Study Purpose and Rationale

The purpose of this study is to further add to the scientific body of knowledge regarding the association between neighborhood level social factors and mental health in culturally diverse populations. It does so by examining the association between a Latina caregiver’s worry regarding a household child’s safety in the neighborhood and her own level of depression. This study examines this association using a sample of Spanish speaking Latinas living in a low income, high crime, inner-city neighborhood with a high concentration of Latinos in upstate New York.

Ethnically diverse families living in low income, urban neighborhoods are more likely to witness or experience violence (Aisenberg, Trickett, Mennen, Saltzman, & Zayas, 2007) and live in fear (Perkins & Taylor, 1996). Research has shown that fear regarding perceived lack of neighborhood safety has been strong enough as to motivate parents to limit child access to the neighborhood (Weir, Etelson, & Brand, 2006). Fears around child safety in the neighborhood may act as a chronic stressor for Spanish speaking female caretakers who may be less acculturated and thus more influenced by the Latino cultural values regarding family relationships and collectivist responsibility, putting them at increased risk for depression (Sabogal, Marín, Otero-Sabogal, Marín, & Perez-Stable, 1987). Previous research has also linked chronic stressors to increased levels of depression (Boardman & Alexander, 2011;

1 The term caretaker is used in this study in place of mother to reflect the fact that many Latinas care for children who are not only biological children but may be grandchildren, nieces and nephews, or “hijos de crianza” instead.
Cutrona, Wallace, & Wesner, 2006) and permanent structural and neurochemical plasticity in both developing and adult brains (McEwen & Gianaros, 2011).

This study examines how scores on a scale computed using three neighborhood level safety factors associate with individual levels of reported depressive symptoms among Spanish speaking Latinas living in an economically poor neighborhood marked by high levels of violent crime. It addresses the question of whether or not Latinas, who report higher levels of worry regarding safety of household children in the neighborhood, are also more likely to report higher levels of depressive symptoms after controlling for the individual level characteristics of age, marital status, income, education, and level of acculturation.

The National Institute of Mental Health (2011) describes depression as being characterized by chronic feelings of sadness, hopelessness, inability to concentrate, loss of appetite, feelings of worthlessness, and thoughts of death or suicide. Symptoms of depression make life particularly difficult, and at times unbearable, for those inflicted. Identifying factors that contribute to its causes and alleviation is essential.

**Statement of the Problem**

In the United States, depression is a major contributor to disability, morbidity, and mortality (D. Kim, 2008; Strine et al., 2008). Depression contributes considerably to our national financial burden as well (Insel, 2008). People who suffer from depression are at risk for further costly complications (Welch, Czerwinski, Ghimire, & Bertsimas, 2009). These complications include: increased noncompliance with other medical treatments (DiMatteo, Lepper, & Croghan, 2000; Insel, 2008), increased risk for comorbid medical problems (Druss & Walker, 2011), increased outpatient and pharmaceutical utilization rates (Welch et al., 2009), increased rates of drug and alcohol abuse (Minkoff, 2001), and increased involvement in...
criminal justice system (Domino, Norton, Morrissey, & Thakur, 2004). The development of comprehensive theoretical models capable of informing multipronged interventions is crucial.

The scientific explanation for depression has expanded over time to now include a focus on societal level factors in addition to individual factors. This has been largely in response to advances connecting both social and biological research (McCutcheon, 2006). A recent report on the social determinants of health released by the World Health Organization underscores the important role social factors and context play in determining mental health outcomes (CSDH, 2008).

One socio-ecological context of particular interest to researchers for its effect on individual level outcomes is the neighborhood in which someone resides (Fisher & Baum, 2010). Research has confirmed that neighborhood level physical factors (e.g. abandoned houses, litter), and social factors (e.g. crime, safety, and social support) present increased risk, and provide added protection against increased levels of depression in residents of economically poor neighborhoods (DeCarlo Santiago, Wadsworth, & Stump, 2011; 2010).

In the United States, neighborhood level social factors have been shown to disproportionately affect ethnically diverse groups (Zsembik & Fennell, 2005). One such group is Latinos. U.S. Latinos experience higher levels of poverty than non-Latino whites (DeNavas-Walt., Proctor, & Smith, 2011), making them more likely to live in economically poor neighborhoods. U.S. Latinos also report suffering from chronic depression at higher rates when compared to non-Latino whites (Schiller, Lucas, Ward, & Peregoy, 2012).

Many U.S. Latinos differ significantly from mainstream society which is largely dominated by Anglo American middle class values. These differences include: language, cultural values, and world view. Language and cultural values shape how individuals perceive
the world around them (Carpenter & Radhakrishnan, 2000; Triandis, Bontempo, Villareal, Asai, & Lucca, 1988). Hence, it follows that Latinos’ experience of their surroundings (i.e., neighborhoods and relationships) would differ significantly from mainstream society as well.

Notwithstanding the progress that has been made outlining many of the complex social factors associated with increased levels of depression, few if any studies to date have focused specifically on the neighborhood experience of Spanish speaking Latinos or Latinas. As a result, a number of factors still remain unclear regarding which social factors are associated with increased levels of depression in this population (Zsembik & Fennell, 2005). Vega and Lopez (2001) found that after nearly forty years, research on Latino mental health is still largely inadequate and lacking.

An emerging social determinants framework will increasingly require the engagement of individuals as partners toward better health and mental health outcomes (Forde & Raine, 2008). Therefore, it is important to understand how complex multi-level factors shape U.S. Latinos’ experience and influence health outcomes. Cultural factors are import determinants of overall intervention outcomes. For example, in a meta-analysis of treatment outcomes, Griner and Smith (2006) found that treatment tailored to the culture of the treatment group was four times as likely to be effective.

The differing cultural values, language, and worldview possessed by U.S. Latinos may act as a barrier to engagement and undermine health interventions unless steps are taken to better understand these differences and develop appropriate interventions. Research involving culturally significant factors associated with depression is lacking and needs to be better understood in regard to U.S. Latinos. More research highlighting these factors is needed.
Significance of the Study

Understanding both individual and macro level factors that contribute to depression is essential for developing complex multi-level explanatory models and designing effective interventions. This study responds to the previously identified need to develop more comprehensive theoretical models that incorporate both risk factors and socio-ecological context for explaining illness (Darling, 2007; Forde & Raine, 2008; March & Susser, 2006). It does so by identifying the effect of neighborhood level factors on depressive symptoms in a sample of U.S. Latinos.

Chapter II: Literature Review and Conceptual Framework

This literature review begins by providing current socio demographic statistics and important cultural concepts pertaining to U.S. Latinos. It then provides a review of relevant theoretical literature pertaining to stress theory and a socio-ecological framework. Then, a general overview of the concept of depression, along with epidemiological statistics for depression within the U.S. Latino population follows. Finally, this review finishes by reviewing current research linking low income neighborhoods to depression with a particular focus on perceived safety and a provides a discussion of factors underlying caretaker worry as a source of stress.

Latinos in the United States

Socio-demographic characteristics. U.S. Latinos are a heterogeneous group originating from various countries. The largest percentages of U.S. Latinos are of Mexican descent (58.5), followed by Puerto Rican (9.6), Cuban (3.5), and finally, Dominican descent (2.2). The other 28% designated as ‘other’ by the 2010 Census include the presence of more than 15 different south and central American countries (Ennis, Rios-Vargas, & Albert, 2011).
The rate of population growth for U.S. Latinos over the last decade was four times the rate of other national groups. As of the 2010, U.S. Census, Latinos became the largest and fastest growing minority group in the United States. They currently number 50,447,594 and makes up 12.5% of the overall U.S. population. (Ennis et al., 2011). The ratio of Latino males to females is approximately one to one (24,858,794 females to 25,618,800 males) (US Census Bureau, 2010b).

Part of the rapid growth experienced by Latinos in the United States can be attributed to substantial immigration activity. According to the 2010 U.S. Census, the majority of Latinos surveyed reported that they were born in the United States; 38.1% reported that they were born outside the United States. In addition, 1% of the total Latino population, or 532,695 Latinos, reported that they had lived outside the United States the year prior to the 2010 census (US Census Bureau, 2010a). This latter number may indicate a significant amount of yearly immigration activity within Latino communities.

Latinos and their communities are dispersed throughout the whole country. The highest concentrations are found in the states of California (27.8%), Texas (18.7%), Florida (8.4%), New York (6.8%), Illinois (4%), Arizona (3.8%), New Jersey (3.1%) and Colorado (2.1%). The remaining 25% are spread out among the rest of the states (Ennis et al., 2011). According to a recent Pew Hispanic Center report, a number of states with traditionally small Latino populations more than doubled their Latino populations over the last decade. Those states are Alabama, Arkansas, Kentucky, Mississippi, North Carolina, Tennessee, South Carolina, Maryland, and South Dakota (Passel, Cohn, & Lopez, 2011).

DeNavas-Walt and Colleagues (2011) report that 26.6% of U.S Latinos lived below the poverty line in 2010 compared to 9.9% of non-Latino whites. Those numbers are up from 21.6%
and 8.4% respectively, just five years earlier (DeNavas-Walt, Proctor, & Hill Lee, 2006). These figures indicate that the poverty rate for U.S. Latinos is both higher and increasing more rapidly than for non-Latino whites.

Spanish is widely spoken among U.S. Latinos. According to the most recent census, 35,468,501 Latinos (7%) reported that Spanish was the language spoken in the home with 16,415,236 (46.3%) Latinos reporting that they spoke English less than well (US Census Bureau, 2011). Although Spanish is reported to be the language most frequently spoken at home, much dialectical variation exists across Latino sub groups (Lipski, 2002).

As of 2010, the Pew Hispanic Center reported that Latino children ranked highest on the nation’s list of poor children. Latino children comprise 37.3% (6.10 million) of the nation’s poor children with non-Latino white and African American children trailing with 30.5% and 26.6% respectively (Hugo Lopez & Velasco, 2011). This may be due in part to a lack of two parent households. The adverse effects of single parent households (e.g. lower income and less parental supervision) on children have long been identified (Amato, 2000). According to 2010 Census figures, 17.4% of Latino households with children under eighteen were headed by a single parent, and 12.9% of those households were headed by females (US Census Bureau, 2010a).

Cultural characteristics. How U.S. Latinos differ from non-Latino whites can be attributed to cultural differences. Henslin (2008), defines the concept of culture as, “the language, beliefs, values, norms, behaviors and even material objects that are passed from one generation to another” (p.38). Latinos’ experience of both the environment and distress differs significantly from non-Latinos, as well as across various Latino subgroups. The following key cultural factors will be highlighted: contextualism, familismo (familism), machismo and
marianismo (male and female gender roles), personalismo (personalism), and fatalismo (fatalism).

First, Comas-Diaz (2006) discusses the notion of contextualism and how it works to shape Latinos’ perceptions of their surroundings and interactions. She asserts that in terms of time orientation, Latinos are more present oriented. In contrast, Kohls (1988), in his article “Values Americans Live By”, describes Americans as tending to see themselves as having control over the environment, future oriented, and independent. This leads to very significant differences in how people living in the same place make sense of their surroundings.

A second important cultural factor is that of familismo (familism) or a sense of interconnectedness. According to Comas-Diaz (2006), familismo refers to the collectivist orientation that is experienced by Latinos. Emphasis is placed on group goals rather than individual ones. An individual group member’s identity is tied to his or her relationships with in the family and community. This differs significantly from the dominant cultural value of individualism found in US society. Weaver (1999) describes Americans as self-reliant and independent, placing individual achievement at the pinnacle.

Third, are the important, culturally prescribed, male and female gender roles known as machismo and marianismo. According to Galanti (2003), machismo is a term used to describe male behavior. It may carry both positive and negative connotations. Machismo is used positively to describe a man who protects and provides for his family. In its negative sense, machismo refers to male high risk behaviors such as excessive drinking and promiscuousness. Culturally, the Latino family is a patriarch with the husband having the final say in most matters.

In contrast, the role of the female in Latino culture has generally revolved around maintaining the home and taking care of the children (Galanti, 2003). D’Alonzo (2012) explains
that the term marianismo refers to the cultural ideal that Latinas should strive to be like the Virgin Mary demonstrating self-sacrifice, and embracing the role of mother and wife above all. Due to the requirement that Latinas must tolerate their spouses’ behavior, marianismo can act as a risk factor for depression (Gonzalez Castro & Hernandez Alarcon, 2002).

A fourth cultural factor is personalismo (personalism). Latino culture places a high value on close personal relationships. The term personalismo refers to a culturally based preference for personalized attention (Gonzalez Castro & Hernandez Alarcon, 2002). Ortiz (2009) describes personalismo as valuing face to face contact, less formal interpersonal interactions, shaking hands and hugging. In contrast Kohls (1988) describes Americans as placing greater value on time and getting things accomplished than on developing personal relationships.

Finally, a fifth cultural factor that influences how Latinos experience the environment is fatalismo (fatalism). According to Abraido-Lanza and colleagues (2007), fatalismo is characterized by the belief that things occur as a result of fate and cannot be controlled. Fatalismo causes one to accept problems as unchangeable rather than seek solutions (Antshel, 2002). Therefore, it has also been associated with poor treatment adherence (Abraido-Lanza et al., 2007; Antshel, 2002). A general overview of depression follows.

**General Overview of Depression**

Symptoms of depression have been a part of the human experience since ancient times. Davison (2006) writes that the Greek philosopher and physician, Hippocrates (460-377 BC) is accredited with being the first to define the symptoms of depression (previously referred to as melancholy) as a mental illness. Today, depression is one of the most widely diagnosed mental health problems in the United States and the leading cause of disability for ages 15-44 (National Institute of Mental Health, n.d.).
According to Beck and Alford (2009) depression is characterized by a cluster of symptoms whose manifestation may affect any one or all of the following four areas of human functioning: emotional, cognitive, motivational, and physical. These areas correspond well to the common factor structures established in popular published psychometric measures for depression (Shafer, 2006). The Center for Epidemiological Studies Depression Scale (CES-D scale), a twenty question self-administered survey, for example, has been demonstrated to readily consist of four factors: negative affect, positive affect, somatization and retarded activity, and interpersonal relations (Radloff, 1977).

Disturbed emotional functioning is frequently characterized by feelings of despair or hopelessness. Negative feelings toward one’s own self, such as disappointment, is also often present. Feeling less satisfied with, and interested in, interpersonal relationships or activities is another common symptom, and which ultimately may lead toward isolation and avoidance (Beck & Alford, 2009).

Likewise, impaired cognitive functioning is frequently a salient feature among depressed individuals. Cognitive disturbances are often in the form of ideas of low self-worth. Depressed individuals frequently expect the worst case scenario and the worst of all possible outcomes. In addition, many depressed people blame themselves for the negative things that happen both to them and to others. Trouble committing to plans or making decisions or choices is often reported. Others report distorted images of their bodies and physical features (Beck & Alford, 2009).

Another area of functioning often affected in depressed individuals is motivation. Impairments in motivation may prevent depressed individuals from completing even the simplest
of tasks such as dressing or getting out of bed. Often, withdrawal or a desire to be gone is present. Suicidal thinking is also common in people with depression (Beck & Alford, 2009).

Finally, a number of impairments in physical functioning are characteristic of depression. People suffering with depression often complain of being overly hungry or conversely, having no appetite at all. They also report sleep difficulties. Once again, both extremes are reported. At one extreme depression can manifest itself as insomnia or interrupted sleep. At the other, it can be experienced as extreme fatigue. Depression is often associated with decreased sexual interest or impaired performance (Beck & Alford, 2009). Following is a discussion highlighting the rates of depression affecting U.S. Latinos.

**Depression and U.S. Latinos**

U.S. Latinos experience chronic depression at higher rates when compared to non-Latino whites (Schiller et al., 2012). According to the results of the National Health Interview Survey, a national representative sample of adults eighteen and older, Latinos reported that they were more likely to experience chronic feelings associated with depression compared to non-Latino whites. Four point two percent of Latinos surveyed reported feelings of sadness “most or all the time” compared to 2.8% of non-Latino whites. Likewise they reported experiencing more hopelessness 3.3% compared to 2.0%, more worthlessness 2.3% compared to 1.7%, or feeling that everything was an effort 6.5% compared to 5.6% of non-Latino whites (Schiller et al., 2012).

Within the Latino group, female Latinos henceforth referred to as Latinas, reported higher levels in all categories compared to Latino males. Latinas reported chronic sadness 5.3% compared to 3.8%, hopelessness 3.7% compared to 2.8%, worthlessness 2.5% compared to 2.0%, and the feeling that everything was an effort 6.9% compared to 6.0% (Schiller et al., 2012).
There is evidence to suggest that Latinos experience the symptoms of depression differently compared to non-Latino whites (Escobar & Gureje, 2007). Also, differences have been reported between how Latino men and women experience depressive symptoms (Posner, Stewart, Marin, & Perez-Stable, 2001) as well as differences between Latino sub groups (Stroup-Benham, Lawrence, & Trevifio, 1992).

Latinos are more likely to experience distress through both emotional and physical symptoms. Escobar and Gureje (2007) found while studying international prevalence rates of idiopathic somatic complaints and syndromes (ISCS), otherwise known as medically unexplained physical symptoms (Brown, 2004), that Puerto Rico (19%) had a significantly higher life time prevalence rate of full somatization disorder then did the United States (0.1%). Furthermore, they found that the types of somatic illness also varied across Latino cultures. Escobar also reports that in a previous study he found that Latin American and Caribbean patients also presented with a number of dissociative and trance states, as well as depression and ISCS (Escobar & Gureje, 2007).

Latino cultural values and worldview differ from the mainstream values found in the United States. Not recognizing the importance of these cultural variables brings into question the validity of any research results (Escobar & Gureje, 2007; Gonzalez Castro & Hernandez Alarcon, 2002).

Theoretical Literature

For the purpose of this study, the association of a caretaker’s worry regarding the safety of a household child in an inner city neighborhood with her own level of depression will be viewed through the lens of classic stress theory (Pearlin, 1989) along with the biological stress theory referred to as allostasis (McEwen & Seeman, 1999), and within the context of an
ecological framework (Bronfenbrenner, 1979). Although indices of allostatic load will not be measured directly in this study, the process has been well documented in the stress literature (McEwen, 1998, 2003; McEwen & Seeman, 1999; McEwen & Stellar, 1993). Allostasis provides a useful framework for explaining proximal mechanisms leading to symptoms of depression.

**Socio-ecological framework.** Currently in the United States, many inner-city neighborhoods are characterized by high levels of crime, gang activity, drug use, and violence (Peterson & Krivo, 2005). Worry regarding these neighborhood level factors has been shown to influence individual level behavior both out of concern for personal safety, and for the safety of loved ones. Datar, Nicosia, and Shier (2013), for example, found that children whose parents perceived the neighborhood as being dangerous were less likely to participate in physical activities and more likely to spend time inside watching television.

Bronfenbrenner’s (1979) socio-ecological framework affords an opportunity to conceptualize a Latina caretaker’s depression as a function of chronic, rational worry (i.e. the dangerous neighborhood and her child’s safety) about things that elusively lay outside her control, namely, the many causes that make neighborhoods problematic. According to this framework a mother’s level of depression is a function of more than just her individual level factors (e.g. age, income, education level, genetic predisposition). Rather, it is the consequence of a host of interacting influences that fall both inside and outside her individual control (e.g. housing availability, unemployment, neighborhood decay). These influential factors have been conceptualized as being part of a concentric system of influences, nested within each other, with increasingly macro levels of influence all working interdependently (Bronfenbrenner, 1979). Each of the systems in Bronfenbrenner’s socio-ecological model will be briefly discussed.
First, in Bronfenbrenner’s model, is the individual system. This system consists of a person’s individual characteristics and traits. This includes his or her physical health, mental health, and personality traits. The individual system constitutes the starting point for each individual in his or her social eco-system.

The next system in the model is the microsystem. According to McLaren and Hawe (2005), this level of the ecological system consists of all the direct interaction that an individual has within the immediate context of the social environment (e.g., teachers, family, friends). According to Bronfenbrenner (1977), it is within the microsystem that proximal level influences shape a person’s development.

Next, the mesosystem refers to the interaction among microsystems (Bronfenbrenner, 1977). For example, a child is affected by his direct contact with his school. But he or she is also affected by his parents’ interaction (or lack of) with the school. McLaren and Hawe (2005) refer to this level as the place where microsystems overlap.

Next is the exosystem. According to Bronfenbrenner (1977), the exosystem includes all the microsystems found within the mesosystem and their interaction with other formal and informal systems that may not interact directly with the individual but influence development such as the government or mass media. Swick and Williams (2006) explain that much of what we experience regarding this level we experience psychologically.
Figure 1. Socio-ecological model of stress for Latinas in low income high crime neighborhoods adopted from Bronfenbrenner (1979)

Figure one illustrates how stress related factors originate in areas that are out of personal control. Neighborhoods with low economic resources present chronic stressors for residents such as high crime and violence, drug and alcohol abuse, and gang activity (Aisenberg & Ell, 2005; Hill & Angel, 2005). These neighborhood factors have been linked to higher levels of depression above and beyond individual factors. Of particular interest to this study is how a Latina’s worry regarding a child in her household being affected by these factors is associated with her own level of depression.

There is currently a debate in the public health literature regarding the role that ecological factors should play in determining how to conceptualize causation and respond to health problems. An over-emphasis on ecological correlates portrays the individual as being in a passive role. A focus on individual risk ignores the concept of multilevel causation. Therefore
there is currently a trend incorporate both risk factor models and socio-ecological models to form a more comprehensive model (Darling, 2007; Forde & Raine, 2008; March & Susser, 2006).

Krieger (2008) posits that even the terminology associated with the socio-ecological model has become problematic because it leads to confusion and misconceptions regarding causality. She cautions against the use of the terms proximal and distal, stating that they are terms that have spilled over from referents to causal strength or weakness in spatial and temporal scales to those of levels and hierarchies. Krieger argues that levels are not scales and therefore have no absolute value in terms of closeness, distance, strength, or weakness. They are conceptual representations that serve to organize particular phenomena hierarchically and have no spatial or temporal significance (Krieger, 2008).

Critics of the socio-ecological model criticize the model for being too macro and not focused enough on individual factors. They see a lack of individual responsibility and autonomy inherent in current conceptualizations of the model (Darling, 2007; Forde & Raine, 2008). They believe that focusing on more macro level factors while excluding or minimizing individual level factors such as motivation and life style choices in epidemiology underemphasizes the role that the individual has in determining health outcomes. Darling (2007) attributes the over emphasis on context over individual found in current conceptualizations of the ecological model to an over focus on Bronfenbrenner’s earlier work and not on subsequent writings that focused on the active role of the individual making choices that define, shape, and respond to the environment.

In contrast, March and Susser (2006) opine that the risk factor paradigm currently dominant in the field of public health and epidemiology lacks the robustness necessary to keep it viable in the near future. They call for the incorporation of a number of elements that would
strengthen the model. They welcome a more ecologically based model that examines risk and protective factors on both spatial and temporal trajectories.

Finally, Forde and Raine (2008) contend that polarized conceptions of health determinants such as the social-individual dichotomy characteristic of modern medical interventions are becoming less popular. They call for an integration of both approaches and recommend a multi prong intervention that address both structural factors as well as individual motivations.

**Social stress theory.** Pearlin’s (1989, 1999) social stress theory is commonly used in neighborhood effects research to explain the pathway of a stressor to mental distress (Aneshensel, 2008). According to this theory, stress or stressors may exceed individual coping abilities and resources thereby creating risk for health and mental health problems. For example, a child’s physical, emotional and psychological wellbeing is of primary importance to a caretaker. According to social stress theory, chronic worry regarding the safety of household children in the neighborhood may exceed the caretaker’s coping resources increasing risk for depressive symptoms.
In the social stress literature, there is a distinction made among the many types of stressors that may affect someone. Stressors have been labeled either acute or chronic depending on the temporal element involved (McEwen & Gianaros, 2011). They have also been labeled primary or secondary based on the order that they are experienced and their relationship to each other (Schneiderman, Ironson, & Siegel, 2004).

Conceptualizing stressors as primary or secondary helps to delineate the relationship of one stressor to the other in terms of temporal occurrence, but not importance or magnitude of impact (Pearlin, 1989). Many stressors give rise to additional stressors. The new or secondary stressor is a consequence of having experienced the first or primary stressor. An example of this relationship would be to consider how losing a job (primary stressor) might give rise to homelessness (secondary stressor). Pearlin (1989) argues that secondary stressors are likely to be as potent as primary stressors.
Another way of characterizing stressors is based on duration of exposure to the stressor namely, acute or chronic. Acute stressors are considered to be more transient and thus less likely to elicit the same potentially dangerous biological responses as chronic stressors. In fact, McEwen and Gianaros (2011) argue that transient stressors may serve a benefit by promoting education and growth. Chronic stressors on the other hand, are those that are ongoing or reoccur as a part of everyday life (Aneshensel, 1992). Examples of chronic stressors include financial problems, poor working conditions, and ongoing conflictual relationships with romantic partners, children, and neighbors (Hammen, Kim, Eberhart, & Brennan, 2009). Neighborhood social and structural makeup has also been identified as a source of chronic stressors (Matheson et al., 2006).

Characterizing stressors or stress as either chronic or acute may appear to help in the conceptualization of these experiences, however, Aneshensel (1992) argues that these characterizations often do more harm than good because they refer only to the duration of the stressor and not its effect. She argues that this dichotomy is often inaccurate and has opened the door to assigning further attributes such as linking objectivity or subjectivity to the nature of a stressor. For example, she takes issue with the accuracy of common conceptualizations of acute stressors as being objective events that are independent of interpretation and chronic stressors being subjective and a product of psychological and emotion functioning (Aneshensel, 1992).

Nevertheless, all stressors, acute and chronic, as well as primary and secondary, have been found to have varying effects in the population (Schneiderman et al., 2004). This variation can be attributed to a number of influences. However, the interaction of genetic predisposition with the environment ultimately plays an important role in the development of stress related pathologies (McCutcheon, 2006; McEwen & Gianaros, 2011; Schneiderman et al., 2004; Selye,
In her article discussing the need to integrate both social and biological research, McCutcheon (2006) articulates how varying levels of genetic risk may interact with varying levels of stress to form disorder.

The differential influence of stressors may also be due to a host of other factors such as: assigning differing meanings to a stressor (Downey & Van Willigen, 2005), the interaction among acute and chronic stressors (Aneshensel, 1992), differing sets of unobserved stressors associated with the observed stressor (Schneiderman et al., 2004). According to Schneiderman and colleagues (2004), the effect that stressors ultimately have on an individual is contingent on a number of factors including, the age and health of the individual, type and frequency of the stressors, as well as individual coping and genetic factors.

**Allostasis and allostatic load.** A caretaker’s chronic worry about her child’s safety in a high crime, low income neighborhood, with its increased access to deviant peers, drugs and alcohol, and increased risk of harm, could be a precipitating factor for depressive symptoms from a physiological perspective. Allostasis is a physiological model of change adaption rooted in both the theory of homeostasis, and the general adaption syndrome (GAS) (McEwen & Wingfield, 2003; Selye, 1950). According to McEwen (2005), the concept of allostasis is a reformulation of the GAS based on research advances. Both theories posit that a response to a stressor, regardless of its source, is ultimately linked to complex internal biological processes and neurophysiology. However, rather than seeing stress related physical and psychological abnormalities as resulting from depleted defense mechanisms as does the GAS (Selye, 1950), allostasis attributes these abnormalities to processes in the body that, at some point, start to actively work against itself causing a host of pathologies (McEwen, 2005). Allostatic processes
have been well documented in the stress literature (de Kloet, Joels, & Holsboer, 2005; King & Hegadoren, 2002; McEwen, 1998, 2000; McEwen & Gianaros, 2011; Turner & Lloyd, 1999).

Figure 3. Diagram of the process of allostasis in reference to a Latina caregivers worry and chronic worry about neighborhood risk factors affecting child.

McEwen (1998) explains that the concept of allostasis refers to the body’s attempt at maintaining a homeostatic state while adapting to change. In the midst of stressful situations, the body secretes stress hormones (adrenaline and cortisol), that boost its ability to remain stable until the stressor is resolved or passes (McEwen, 2000). According to McEwen and others (de Kloet et al., 2005; McEwen, 2000; McEwen & Gianaros, 2011; Schneiderman et al., 2004),
when the allostatic system is used appropriately there is minimal adverse effect. But, with the overstimulation that can occur through exposure to chronic stressors, the body starts to experience negative consequences or what is referred to as ‘allostatic load’ (McEwen, 1998).

Goldstein and McEwen (2002) use the analogy of a thermostat in the house to illustrate the concepts of allostasis and allostatic load. They explain that when a furnace is activated by the thermostat it begins to work harder to meet the new demand (allostasis). If the furnace continues to be active without breaks, the furnace suffers added wear and tear that could ultimately contribute to its own demise (allostatic load). In the case of a human being, allostatic load refers to a collection of medical and psychological pathologies.

A number of authors have discussed the link between stress physiology and mood and behavior disorders (de Kloet et al., 2005; King & Hegadoren, 2002; McCutcheon, 2006; Schneiderman et al., 2004). In a randomized controlled laboratory study aimed at connecting chronic exposure to stress hormones with depressive symptoms, Kalynchuk and colleagues (2004) found that by injecting rats with 40mg of the stress hormone coricosterone daily for a 21 day regiment, they could produce behaviors that were interpreted to be depressive symptoms.

Chronic exposure to stress hormones has also been linked to sickness behavior, an adaptive behavior that is regulated by the brain to help fight infections and to promote the healing process (Schneiderman et al., 2004). The goal of sickness behavior is to maximize the body’s ability to recover from a malady by limiting otherwise natural behaviors. Many of these behaviors (e.g., decrease in activity, less interest in mating, decreased food intake) are similar to the symptoms associated with depression and can be maladaptive if chronically present (Schneiderman et al., 2004).
However there is contention around defining stress in terms of a physiological process. According to Wheaton (1999), adapting a definition of stress that defines a stressor solely as an event or series of events that elicit physiological responses is problematic in relation to mental health outcomes. This definition would not recognize the possible effect of some long term chronic stressor that was never potent enough to elicit a physiological response but succeeded in shaping perceptions that contribute to depression.

Thoits (1995) makes a distinction between stress or stressor and the stress response. She writes that stress or a stressor is an event, social, environmental, or internal, that requires a change in usual patterns of behavior to adapt. She defines a stress response as the physiological response, and like Wheaton, believes that this process may or may not occur as a result of a stressor.

**Neighborhood Disorder**

**Defining neighborhood.** One of the most salient issues in research on how neighborhood influences mental health has been delineating the concept of neighborhood (Messer, 2007; Weiss, Ompad, Galea, & Vlahov, 2007). Weiss and colleagues (2007) affirm that there is agreement in the literature that the concept of neighborhood refers to a particular geographic area with similar housing and population characteristics. There is also a certain level of interaction between the members.

They, as well as others, contend that the subjective nature of that definition has made it difficult to operationalize in any clear cut and meaningful way (Coulton, Korbin, Chan, & Su, 2001; Messer, 2007; Weiss et al., 2007; Wodtke, Harding, & Elwert, 2011). A review of recently published studies that measure the concept of neighborhood boundary as one of the variables illustrates this difficulty by revealing a number of different ways identified for
measuring neighborhood boundaries. These different ways are: participant defined boundaries, census tract defined boundaries, boundaries defined by zip codes, boundaries defined by buffering zones around participant’s home, and a combination of methods. A review of each type follows.

The construct of neighborhood has often been defined in a more general sense relative to each participant’s own perception without referring to a specific common spatial area. (Hill, Burdette, & Hale, 2009b; Weiss et al., 2007). This participant defined measure of neighborhood is popular because it is less labor intensive and cost friendly. Also, it does not require that participants reside in the same neighborhood. However, any research results obtained are more susceptible to criticism regarding self-report bias (Bauhoff, 2011).

Other researchers have tried to be more objective in their measurement of neighborhood. They have used geographic boundaries established by the census tract (Hill, Ross, & Angel, 2005), and postal zip code areas (DeCarlo Santiago et al., 2011) to delineate the physical boundaries of neighborhoods. This measure of neighborhood is particularly attractive because it provides an objective measure that is replicable and avoids the self-report bias criticism. It also more closely matches part of the definition provided above by Weiss and colleagues (2007). However, this method has also been criticized. Critics claim that although census and area code tracts represent a specific area, that area does not necessarily correspond to the naturally occurring neighborhoods (Cutrona et al., 2005; Stockdale et al., 2007).

A number of researchers have tried to incorporate the means of responding to this criticism in their measure of neighborhood. Kruger, Reischl and Gee (2007) for example, used geographic information systems (GIS) software to map buffering zones around participants homes there by creating personalized neighborhoods. Leventhal and Brooks-Gun (2003) used a
combination of census demographic information as well as parental ratings regarding neighbor physical and social deterioration.

Ethnic group membership has also been used to define neighborhood. In her study regarding neighborhood disorder and social cohesiveness with Dominicans in Reading, PA, Oropesa (2012) used a participant defined approach to defining neighborhood after recruiting a non-probability sample from a predominately Dominican area of the city. Ethnic group membership was an important factor used to determine whether or not someone belonged to the neighborhood.

**Neighborhood level influences.** Another important question in neighborhood effects research is what represents a neighborhood level influence? What should be included in any measure of that construct? Two aspects of the neighborhood that are commonly measured in the research literature regarding neighborhood level influences are the structural aspect of the neighborhood and the social aspect. Elements of both follow.

**Structural aspect.** The appearance of any neighborhood in terms of cleanliness and good maintenance sends a message about the residents of that neighborhood. According to Ross and Jang (2000), visual cues of the physical deterioration of a neighborhood send a message of lawlessness and lack of social control. This in turn may result in fear and mistrust on the part of the residents. Two common visual cues that are measured in neighborhood effects literature are the number of abandoned houses and buildings present within the neighborhood (Latkin, German, Hua, & Curry, 2009; Ross & Mirowsky, 2009), and the amount of trash or litter present (Feldman & Steptoe, 2004; Hill et al., 2009b; Latkin et al., 2009). These aspects have been measured by both participant response to survey items and direct field observation by researchers.
**Social aspect.** Another aspect of the neighborhood that is commonly measured in the literature on neighborhood effects is the social aspect of the neighborhood. Measurements of this aspect have generally focused on the level of perceived crime in the neighborhood, the sense of personal safety associate with the neighborhood, and the quality of the interactions and social support present among the residents. Common social aspects identified in the literature that relate to crime and personal safety are the level of crime in the neighborhood (Dupere & Perkins, 2007; Hill et al., 2009b), the amount of vandalism (Latkin et al., 2009), prevalence of public drinking or drug use (Hill et al., 2005), and the presence of gang activity in the neighborhood (Stockdale et al., 2007).

**Neighborhoods Disorder and Depression**

**Depression and individual level factors.** Depressive symptoms have often been linked to individual level variables. In order to better understand the effect that neighborhood level variables have on depression the effect of individual level variables must be controlled. A review of common individual level variables frequently used as control variables in research on neighborhood effects follows.

**Age.** The age of a study participant is a variable that is often controlled in neighborhood studies. Mirowsky and Ross (2003) found a curvilinear relationship between age and depression. Middle aged men and women were least likely to experience depression. Younger adults and older adults both reported higher levels.

**Marital Status.** Marital status is another important variable that is commonly controlled. Research studies on the relationship between depression and marital status consistently point to the protective benefits of being married (Hill, Reid, & Reczek, 2013).
**Sex.** Another common variable frequently controlled is the sex of the study participant. Stockdale and colleagues (2007) found that women were more likely to experience depression or anxiety. This may be true in part by the presence of higher numbers of single parent female headed households (Oropesa, 2012) experiencing higher levels of poverty (Cutrona et al., 2006).

According to Mirowsky and Ross (2003), many individual level variables are associated with higher levels of psychological distress because they limit the control that people have over their own lives. In disadvantaged neighborhoods, people often find themselves being affected by a number of these variables at the same time. Furthermore, some variables make it more likely that you will be affected by others.

**Education.** One such variable that affects many of the other variables is education. Gapen and colleagues (2011) found that level of education was negatively associated with depression. Those who reported lower levels of education also reported higher levels of depression. However, education was positively associated for those who had higher levels of education but were still experiencing poverty.

**Acculturation.** Acculturation refers to the process by which the language, ideas, attitudes, behaviors, and values of the host society are assimilated by a member of a subgroup with a different cultural background (Sam & Berry, 2010). The level of acculturation obtained by the members of any subgroup differs from individual to individual within the group (Sam & Berry, 2010). The link between acculturation and depression has been frequently document in the research literature (Mikolajczyk, Bredehorst, Khelaifat, Maier, & Maxwell, 2007). As a research variable, the concept of acculturation has also been criticized for being poorly delineated and defined (Hunt, Schneider, & Comer, 2004).
Depression and neighborhood level factors. Neighborhood economic level and perceptions of crime and safety have been consistently linked to depression (Aneshensel & Sucoff, 1996). However Latinos, and particularly non-Mexican Latinos, have been underrepresented in neighborhood research studies. For example, Latkin & Curry (2003) found a strong association between levels of perceived negative neighborhood characteristics and depression. Their results were based on a sample of 818 found in high drug use areas. However, no Latinos were reported as part of the sample.

In a meta-analysis of research studies published between 1990-2007, Mair, Diez Roux, and Galea (2008) identified 45 studies that tested the relationship between neighborhood factors and depression. They reported that out of the 45 studies, 37 concluded that neighborhood disorder was positively associated with depression. However, there was no significant presence of Latinos reported in any of the samples except one that focused on Mexican Americans 65 years of age or older. There were ten studies however, whose samples were made up solely of African Americans.

Likewise, Truong and Ma (2006) reported similar findings a few years earlier in their meta-analysis of studies published between 1987-2005. However, their analysis was not limited to just depression. It included mental health in general. They reported a positive association between neighborhood factors and mental health in 27 of the 29 studies analyzed. These study samples also underrepresented Latinos. In addition to the same study reported above with the Mexican American sample, Truong and Ma reported one additional study having Latinos in the sample. Common neighborhood factors cited in the published studies connecting neighborhood factors to depression were level of perceived crime and safety in neighborhood and the mediating
effects of social cohesion, social support, and powerlessness. A review of a sample of these studies follows.

**Crime and safety.** One of the most studied aspects of the neighborhood is the amount of crime present and the corresponding level of feelings of safety. For example, Stockdale and colleagues (2007) reported a positive association between neighborhood violent crime and mental health outcomes. They found that living in high crime areas with exposure to violence was associated with higher levels of depression. Their results were based on cross sectional data from the Health Care for Communities telephone survey that included 7% Latinos with no reference to subgroups. Neighborhood disadvantage was measured using available census data on the median family income and percentage of owner occupied housing in the neighborhood. This study measured violent crime by using arrest rate at the county level. Also, alcohol availability was measure by business patterns for different zip codes.

Ross and Mirowsky (2009) studied a sample of 2,482 subjects aged 19-92 in Illinois who were part of the 1995 Survey of Community Crime and Health. This survey was a random digit dialing telephone survey that was limited to English speakers. No Latinos reported in the sample. Ross and Mirowsky found a positive association between neighborhood crime and disorder and depression, anxiety, and anger. Neighborhood physical and social disorder were measured by participant self-reports of neighborhood characteristics that included level of noise, presence of graffiti, abandoned buildings, cleanliness, people hanging around, level of crime, drug and alcohol use, and problems with neighbors. Neighborhood disadvantage was measured using census data reporting percentage of households under poverty line, percentage female headed households, percentage of adults with college degrees, and percentage of owner occupied housing units.
One prospective neighborhood study that included the experience of Latinos was the Moving to Opportunity study (MTO) (Leventhal & Brooks-Gunn, 2003). In the MTO study, Leventhal and Brooks-Gunn (2003) found up to a 33% reduction in depressive symptoms for parents who moved their families out of low resource, high crime neighborhoods to better neighborhoods. Although the MTO study was made up of 46.8% Latino parents, no consideration for culturally based differences was included in the discussion. Latinos have important cultural values that add richness to the discussion of research findings for this population.

There have also been some conflicting results reported regarding the relationship between neighborhood crime and depression. In their study of 69 welfare recipients in Chicago, Carvalho and Lewis (2003) found that safety not fear was the most prominent reaction to the neighborhood by neighbors. They also found that safety was associated with living longer in neighborhood and hence more opportunity to develop coping skills. Equal amounts of participants reported both fear and anger towards neighborhood conditions. However, working respondents reported that they were more angry than afraid. There were no Latinos reported in sample. Positive and negative aspects of the neighborhood were studied such as, quality of schools, streets, condition of buildings, relationship with neighbors, and level of gang activity. Information was gathered using a combination of participant reported characteristics along with objective observations by researchers.

A number of studies have also identified mediating variables in the relationship between crime and safety and depression. Hill and colleagues (2009b) for example, reported a positive correlation between neighborhood crime and disorder and psychological distress. They also found that psychological distress was partially mediated by sleep quality. Their study was based
on a random telephone sample of 1444 respondents over the age of 18. The study sample included an undisclosed proportion of Mexicans. Perceptions of neighborhood disorder were measured by participants’ answers on the following three survey questions: the amount of crime in the neighborhood, if the neighborhood was noisy, and the cleanliness of neighborhood.

In another study, Mair and colleagues (2010) used the Community Adult Health Study, a stratified, multi stage probability sample of 3105 adults living in Chicago to investigate the mediating effect social support had with depressed individuals living in high crime neighborhoods. They found that social support was associated with reduced depression in women but not men. Their sample included 25.8% Latinos. This study measured perceived neighborhood crime and violence, reciprocal exchange, social ties, and social cohesion, using surveys, user rated assessment of physical environment, and systematic social observation. They also developed four scales using the 2000 census data. The scales measured poverty, affluence, family structure, and residential stability.

Also, Booth, Ayers, and Marsiglia (2012) found that powerlessness, mistrust, and social isolation mediated the relationship between feeling safe in the neighborhood and psychological distress. Their results were based on the 2008 Arizona Health Survey (N = 4,196), a random digit dialing probability sample survey. The researchers reported that the sample included 26% Latinos. No mention was made regarding subgroup of Latinos.

Vega and his colleagues (2011) identified both linguistic isolation and collective efficacy in the neighborhood as mediators of depression in Latinos who have resided in the United States more than 15 years. These findings were based on a study of 1468 subjects in Los Angeles County. No Latino subgroup breakdown of the sample was provided.
Finally, although not specific to depression, Gapen and colleagues (2011) studied a convenience sample of 615 African Americans aged 18-81 (272 males & 343 females). They found that neighborhood crime and disorder and low neighborhood cohesion were associated with higher levels of post-traumatic stress disorder. They further found that higher neighborhood cohesion acted as a partial mediator. There were no Latinos included in sample. Neighborhood was participant defined by the wording of questions regarding conditions in “participants” neighborhood. Disorder was measured with the Neighborhood Disorder Scale. Community cohesion was measured with the Community Cohesion Scale.

**Parental stress and child safety**

Although parenting may be considered a rewarding experience, it has also been shown to be a stressful experience. Mirowsky and Ross (2003), report that parenting can be distressing due to a number of reasons, the most salient being the increased economic hardship that comes with extra family members, and the strain that it puts on marital or concubinary relationships. Olson and Banyard (1993) found similar results while studying stress and coping in low income single mother parents. They found that over half of the daily stressors reported (473 stressors) in a two week period where stressful interactions with the child such as disobedience and annoying behaviors. Stressful interactions with other adults, such as boyfriends and financial stress were the second and third most reported stressors.

Research regarding parental worry and neighborhood conditions has generally focused on the link between a parental figure’s perceptions of neighborhood risk factors and child centered outcomes. These outcomes include issues, such as obesity (Datar et al., 2013) asthma (Vangeepuram, Galvez, Teitelbaum, Brenner, & Wolff, 2012), behavioral problems (Ingoldsby et al., 2006), and child mental health (Butler, Kowalkowski, Jones, & Raphael, 2012). For
example, while examining the interrelationship among community violence exposure, immigrant Latino mothers level of depression, and their adolescent children’s acting out behavior, Aisenberg et al. (2007) found that maternal depression mediated adolescent behavior.

However, in addition to these previously mentioned issues, Latinas may also worry chronically about the influence of other people in the neighborhood on her developing child, along with any risk from harm that may result. Certain neighborhood dynamics present considerable risk for developing children. These risk factors include the presence of delinquent behaviors and drug and alcohol abuse which are due in part to neighborhood normative standards and peer expectations (Hawkins, Catalano, & Miller, 1992). For example, Lopez and colleagues (2008) found that in a sample of 204 Latino adolescents’ drug and alcohol use was predicted by peer usage. Children are highly influenced by what peers do.

Few researchers to date have studied the relationship of parental stress in high crime, low income neighborhoods to maternal depression (Zhang, Eamon, & Zhan, 2015). Those who have studied the relationship report a positive association (Franco, Pottick, & Huang, 2010; Kohen, Leventhal, Dahinten, & McIntosh, 2008; Lamis, Wilson, Tarantino, Lansford, & Kaslow, 2014). For example, Franco and colleagues (2010) found a positive association between parental stress and adverse neighborhood conditions that varied by ethnicity in a sample of 3288 mothers with children up to age three. Their sample included 26% Latino. Unexpectedly, they also found that minority mothers actually reported less parenting stress than did their white counterparts.

Similarly, Christie-Mizell, Steelman, and Stewart (2003) found a positive association between negative neighborhood perception and maternal psychological distress in a sample of 2204 mothers with children up to age three. Their sample included 354 Mexican Americans. They discovered that living in the inner city was associated with significantly more
psychological distress than living either in the suburbs or rural areas. However, they found that minority women had higher levels of distress, with African American women being affected the most.

Finally, Lamis and colleagues (2014) studied the moderating effect of spiritual wellbeing on the relationship between neighborhood conditions and parenting stress in a sample (n=144) of inner city African American mothers. They found that mothers who perceived the neighborhood as more problematic also had higher levels of parenting stress.

Summary of Literature Review

Latinos are the fastest growing ethnic group in America. However they are also more likely to live in poverty and live in disadvantaged neighborhoods where they will be exposed to more chronic stressors. Chronic stressors have been linked to depression and other problems through stress physiology and the stress process. How this process effects urban dwelling Latinos is less understood than it is regarding African Americans or non-Latino whites. This is largely due to a lack of research focused in this area. It is reasonable to assume that less acculturated Latinos would understand the world a bit different than non-Latino whites and African Americans. Latinos may possess a collectivist world view that values the group over the individual, as well as an increased value on family and family responsibility. They may also have a fatalistic orientation that would keep them from seeing some of the same solutions that non-Latino whites may see. How this group is affect by neighborhood factors is still largely unknown.

Neighborhood factors have been repeatedly linked to depression. A review of the literature on crime and neighborhood disorder shows that there is consistent association between neighborhood crime and perceptions of safety and the incidence of depression (Mair et al.,
Neighborhood crime undermines a person’s sense of safety (Trickett, Duran, & Horn, 2003). Caretakers may be at an increased risk for depression due the added worry regarding their children’s safety as it relates to neighborhood factors. This is particularly true concerning the risk of harm that is present due to the influence of bad friends and the availability of drugs and alcohol (Lopez et al., 2008).

Few studies were found that focused on the association between child caretaker depression and chronic worry regarding children being exposed to adverse neighborhood dynamics, namely safety, delinquency and drug and alcohol use. Furthermore, few studies have examined the neighborhood experience of Latinos in general. The studies that have included Latinos fail to interpret the findings in light of Latino cultural characteristic.

Conceptual Framework

Theoretical relationships. The link between neighborhood resources and depression has been well established in the neighborhood effects literature. However, studies that establish the mechanisms in the neighborhood that are associated with high levels of depression are lacking. Few studies to date have considered the relationship between worry regarding child safety in the neighborhood and level of caretaker depression. The conceptual framework for this proposed study is explicated below.

First, this study builds on previous work establishing higher than average levels of depression in low income high crime neighborhoods. The sample for this study was drawn from a neighborhood with low economic resources and high crime. In previous research, objective and subjective measures have been found to be highly correlated with both being considered adequate measures of neighborhood characteristic. For example, Roosa, White, Zeiders, and
Tein (2009) found a strong correlation between the objective measures of adverse neighborhood conditions and subjective experiences in a sample of Mexican born American women.

This study proposes that the levels of depressive symptoms reported by this sample of Latinas will vary as a function of the levels of worry regarding household children’s safety in the neighborhood. This worry is hypothesized to include general safety of the child related to (a) fear that somehow her child will be victimized or injured due to exposure to neighborhood hazards; (b) fear that her child may be placed at risk for injury or victimization through associations with deviant peers or (c) fear that child may be exposed to drugs or alcohol ultimately leading to involvement. The maps in figures four and five illustrate the hypothesized relationship between neighborhood factors and depression.

**Independent variable.** The independent variable for the study is a summated scale that was computed using three items from the Hispanic women’s social stressor scale (Goodkind, Gonzales, Malcoe, & Espinosa, 2008). These Likert type questions ask about time spent worrying about (a) child’s safety in the neighborhood, (b) influence of bad friends, and (c) availability of drugs and alcohol.

**Dependent variable.** The dependent variable for this study is the level of depressive symptoms experienced rather than a diagnosis of depression. Depressive symptoms will be examined using both whole scale scores and subscale scores.

**Control variables.** Individual level control variables for this study are common individual level variables that have been shown to correlate with depression. These variables are age, marital status, household income, education, and level of acculturation. Gender is also controlled by sampling.
Figure 4. Path diagram illustrating theoretical relationship of IVs to the CES-D with controls
Chapter III: Methods and Procedures

Research Questions and Hypotheses

Do Latinas who report higher levels of worry regarding the safety of household children in the neighborhood also report higher levels of depression after controlling for the individual level characteristics of age, marital status, income, education, and level of acculturation?

If so, is the association with depression scores better accounted for by one of the four factors of the CES-D depression scale (depressed affect, positive affect, somatic and retarded activity, interpersonal) over the others?
Hypothesis regarding CES-D depression scale
H1. Latinas who report higher levels of worry on the NWS will also report higher total scores on the CES-D depression scale after controlling for the individual level characteristics of age, marital status, income, education, and acculturation.

Hypothesis regarding CES-D depressed affect subscale
H2. Latinas who report higher levels of worry on the NWS will also report higher total scores on the CES-D depressed affect subscale after controlling for the individual level characteristics of age, marital status, income, education, and acculturation.

Hypothesis regarding CES-D positive affect subscale
H3. Latinas who report higher levels of worry on the NWS will also report lower total scores on the CES-D positive affect subscale after controlling for the individual level characteristics of age, marital status, income, education, and acculturation.

Hypothesis regarding CES-D somatic and retarded activity subscale
H4. Latinas who report higher levels of worry on the NWS will also report higher total scores on the CES-D somatic and retarded activity subscale after controlling for the individual level characteristics of age, marital status, income, education, and acculturation.

Hypothesis regarding CES-D interpersonal relations subscale
H5. Latinas who report higher levels of worry on the NWS will also report higher total scores on the CES-D interpersonal relations subscale after controlling for the individual level characteristics of age, marital status, income, education, and acculturation.
Data Source and Study Design

This study uses secondary data analysis of cross sectional survey data collected for the Health and Health Education among Latina Family Caregivers Study (Blanca Ramos) to answer the research questions and test hypotheses. Secondary data analysis has been shown to be an important and useful tool for answering research questions due to its convenience and relatively low cost (Windle, 2010). A cross sectional survey design provides descriptive statistics, correlational information, as well as the prevalence of depression in the sample. Major disadvantages of a cross sectional survey is its inability to establish causality, and its susceptibility to confounding.

Sample Population and Neighborhood Characteristics

The Health and Health Education among Latina Family Caregivers Study utilized a nonrandomized convenience sample of Latina women. Convenience samples are often used with hard to reach populations (Johnston & Sabin, 2010). Costs associated with probability sampling of hard to reach populations would be too prohibitive. Self-identified Latina women 18 years of age or older were sampled from sites in three different cities in Upstate New York: Albany, Schenectady, and Syracuse. Participants were offered 15 dollars as incentive for participating.

Data at the Syracuse site was collected between October 2010 and April 2011 from a low resource, high crime neighborhood in Syracuse with a high Latino concentration. The neighborhood is known as “the Westside”. Only the 136 Latina participants that filled out the Spanish version of the study survey were included in the present study. Although exact percentages are not available, all participants sampled either lived in the neighborhood, had family currently living in the neighborhood, or had some daily connection (work or school) that required that they be in the neighborhood regularly.
The Westside is known for its large Latino population. Many of the businesses and agencies in this neighborhood are bilingual. In addition, some of the streets in this neighborhood have been informally renamed to correspond to neighborhoods in Loiza, Puerto Rico (e.g. La Carrera, el Pueblo). This neighborhood is also known for its high crime and violence. For example, a housing report prepared by the Syracuse Mayor’s office in 2010 provides the following description, “The Near Westside has a high crime rate and is plagued with gangs, drugs, and violent crime. The police should seek a better relationship with residents and focus on drug and gang enforcement” (Miner, 2010, p. 79). Table 2 displays the number and location of reported violent crimes occurring throughout the city during the data gathering phase of The Health and Health Education among Latina Family Caregivers Study. The data for the Westside are highlighted. Compared to the other areas, the Westside had the highest total number of incidents reported (445). This area also had the highest number of shots fired (184), shootings with injuries (52), and deaths by shooting (5).

Table 1. Violent crimes in Syracuse NY from Jan 2010 to Oct 2011

<table>
<thead>
<tr>
<th>Area of City</th>
<th>Assault</th>
<th>Shots fired</th>
<th>Stabbing</th>
<th>Shooting with injuries</th>
<th>Homicide (other)</th>
<th>Homicide (Shooting)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Downtown</td>
<td>46</td>
<td>22</td>
<td>39</td>
<td>6</td>
<td>0</td>
<td>0</td>
<td>113</td>
</tr>
<tr>
<td>Eastside</td>
<td>13</td>
<td>14</td>
<td>10</td>
<td>8</td>
<td>0</td>
<td>2</td>
<td>47</td>
</tr>
<tr>
<td>Eastwood</td>
<td>13</td>
<td>11</td>
<td>18</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>43</td>
</tr>
<tr>
<td>Northside</td>
<td>115</td>
<td>51</td>
<td>118</td>
<td>16</td>
<td>2</td>
<td>1</td>
<td>303</td>
</tr>
<tr>
<td>Southside</td>
<td>78</td>
<td>135</td>
<td>87</td>
<td>43</td>
<td>3</td>
<td>4</td>
<td>350</td>
</tr>
<tr>
<td>Strathmore</td>
<td>20</td>
<td>52</td>
<td>26</td>
<td>16</td>
<td>0</td>
<td>2</td>
<td>116</td>
</tr>
<tr>
<td>University</td>
<td>33</td>
<td>20</td>
<td>15</td>
<td>9</td>
<td>0</td>
<td>1</td>
<td>78</td>
</tr>
<tr>
<td>Westside</td>
<td>112</td>
<td>184</td>
<td>89</td>
<td>52</td>
<td>3</td>
<td>5</td>
<td>445</td>
</tr>
<tr>
<td>Total</td>
<td>430</td>
<td>489</td>
<td>402</td>
<td>151</td>
<td>8</td>
<td>15</td>
<td>1495</td>
</tr>
</tbody>
</table>

Source: Syracuse.com crime data base
Measures of neighborhood SES are often used as proxies for measuring neighborhood resource level (Ostir, Eschbach, Markides, & Goodwin, 2003; Wen, Hawkley, & Cacioppo, 2006). Using 2010 Census figures for Onondaga county for census tracts 30, 38, 39, 40, which correspond to the Westside neighborhood (Table 3), displays education and poverty percentages for individuals and families living in the neighborhood (Bureau, 2010). The percentage of adults age 25 and over without a high school degree is 40%. Similarly, the percentage of those who receive SNAP/food stamp benefits is 41.9. Half (50.8%) of all families lived below the poverty line. The percentage of families headed by a female is 71%. The percentage of those female headed families who lived below the poverty line is 67.5%.

Table 2. Education and poverty demographics for the Westside

<table>
<thead>
<tr>
<th>Census Tract</th>
<th>Total Pop</th>
<th>Percent Latino</th>
<th>Total number of adults 25+ w/o HS Diploma</th>
<th>SNAP/food stamp benefits</th>
<th>Total number of families</th>
<th>Families below Poverty line</th>
<th>Female headed families below poverty line</th>
</tr>
</thead>
<tbody>
<tr>
<td>30</td>
<td>2,111</td>
<td>34.2%</td>
<td>44.4%</td>
<td>56.6%</td>
<td>436</td>
<td>61.9%</td>
<td>75.2%</td>
</tr>
<tr>
<td>38</td>
<td>2,520</td>
<td>23.8%</td>
<td>36.4%</td>
<td>38.9%</td>
<td>568</td>
<td>42.3%</td>
<td>57.4%</td>
</tr>
<tr>
<td>39</td>
<td>3,602</td>
<td>30.4%</td>
<td>28.2%</td>
<td>38.8%</td>
<td>982</td>
<td>49.7%</td>
<td>62.5%</td>
</tr>
<tr>
<td>40</td>
<td>1,580</td>
<td>30.6%</td>
<td>34.9%</td>
<td>33.1%</td>
<td>229</td>
<td>49.3%</td>
<td>74.6%</td>
</tr>
<tr>
<td>Total</td>
<td>9,813</td>
<td>29.75%</td>
<td>40%</td>
<td>41.9%</td>
<td>2215</td>
<td>50.8%</td>
<td>67.5%</td>
</tr>
</tbody>
</table>

Variable Measures

**Depressive symptoms.** Depressive symptoms were measured using the Center for Epidemiologic Studies Depression Scale (CES-D), (Radloff, 1977). The CES-D is a 20 item Likert-type scale that measures frequency of depressive symptoms over the past week. The items in table 4 were reversed scored prior to computing sum scores. However, subscale scores were analyzed in their original form.
Table 3. *List of CES-D items reverse scored before computing sum score*

<table>
<thead>
<tr>
<th>Item No</th>
<th>Statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>I felt that I was just as good as other people.</td>
</tr>
<tr>
<td>8</td>
<td>I felt hopeful about the future</td>
</tr>
<tr>
<td>12</td>
<td>I was happy</td>
</tr>
<tr>
<td>16</td>
<td>I enjoyed life</td>
</tr>
</tbody>
</table>

Originally, Radloff (1977) identified a four factor structure in the general population using a random sample: depressed affect, positive affect, somatic and retarded activity, and interpersonal relations. Table 5 displays a list of the four factors each with an abbreviated version of the corresponding questions that make up the factor.

Table 4. *CES-D factor structure with corresponding abbreviated items*

Factor I: Depressed Affect
- Could not shake off the blues even with the help of family or friends
- Felt depressed
- Had crying spells
- Felt sad
- Felt lonely
- Thought my life had been a failure
- Felt fearful

Factor II: Positive Affect
- Felt that I was just as good as other people
- Felt hopeful about the future
- I was happy
- Enjoyed life

Factor III: Somatic and Retarded Activity
- Was bothered by things that usually don’t bother me
- Did not feel like eating; appetite was poor
- Had trouble keeping my mind in what I was doing
- Felt that everything I did was an effort
- My sleep was restless
- Could not get going
- Talked less than usual

Factor IV: Interpersonal Relations
- People were unfriendly.
- Felt that people disliked me
The CES-D has been found to be a reliable measure of depressive symptoms in the general population. Radloff (1977) found the CES-D to have good internal constancy reporting Alpha coefficients ranging from .85 in the general population and .90 in the psychiatric population. She also reported moderate test-retest correlations in the .45-70 range.

The CES-D has also been shown to be a valid measurement in the general population. The CES-D has good discriminate validity. It was able to successfully discriminate between a group of psychiatric patients and the general public. For example, 70% of the psychiatric patients scored about the cutoff compared to only 21% of the general population (Radloff, 1977). Finally, the CES-D has moderate concurrent validity correlating with the Hamilton depression scale at .54 and the Raskin scale .44 (Radloff, 1977).

Measuring depression in Spanish speaking groups Various researchers have tested the performance of the CES-D across different ethnic boundaries and languages, particularly as it relates to Spanish speaking populations. These studies have had mixed results regarding the consistency of Radloff’s original factor structure across gender and Latino subgroups. For example, Guarnaccia, Angel, and Worobey (1989) found that in the Hispanic Health and Nutrition Examination Survey factor structures for the CES-D varied across gender, country of origin, and language of interview. Likewise, Rivera-Medina, Caraballo, Rodriguez-Cordero, Bernal, and Dávila-Marrero (2010), looking at a probability sample from Puerto Rico, found a good fit with a two factor, negative-positive, structure that was later found to hold true only for women (Stroup-Benham et al., 1992). However, Campo-Arias and colleagues (2007) studying Colombians, and Posner and colleagues (2001) studying Latinos unidentified by sub group,
found that the four factor structure held true. They further found that they had a better model fit when they controlled for level of acculturation.

**Worry regarding children in neighborhood.** Worry will be measured using a scale created by summing three survey questions that were originally part of the Hispanic Woman’s Social Stressor Scale (Goodkind et al., 2008). The new summed scale will be referred to as the Neighborhood Worry Scale (NWS). Each survey participant was asked the following questions:

During the past 12 months, how stressful were each of these experiences for you?

- Feeling your children were not safe in your neighborhood
- Your children being influenced by bad friends
- Your children being exposed to drugs or alcohol

Participants responded by choosing one of the following responses: “not at all stressful”, “a little stressful”, “somewhat stressful”, “very stressful”, or “did not happen”.

For this analysis, “not at all stressful” and “did not happen” will be combined. These categories both represent no worry. Also, “a little stressful” and “somewhat stressful” will also be combined. They are somewhat ambiguous but clearly represent the middle. Finally, “very stressful” will remain its own category.

**Control variables.** This study controlled five individual level variables known to correlate with depression. They are age, marital status, income, education, and level of acculturation.

Age was measured as a continuous variable. Participants were asked to enter their date of birth. A new variable was created computing age in years from respondents’ birth dates. A histogram of this variable revealed that the resulting variable was positively skewed. This was corrected using a natural log transformation.
Marital status was measured as a nominal variable by asking participants to select “all that applied” in relation to the following categories, “married”, “living with partner”, “widowed”, “separated”, “divorced”, “single, never married” and “other”. For simplicity, all categories except the married category were combined resulting in a dichotomous variable indicating if a participant was “married” or “not married”.

Income was measured as an ordinal variable by asking participants to check the appropriate box for “annual household income.” Categories ranged from “under 10,000” to “100,000 or more”. Because the categories for this variable were not equal the variable was dichotomized to “14,999 and below” and “15,000 and above”. The lower bounds represent 74.8% of the sample. The rationale for splitting income at this level is that it corresponds to federal government poverty guidelines. The 2011 HHS poverty guidelines for a family of two was 14,710 dollars according to the poverty guidelines updated periodically in the Federal Register by the U.S. Department of Health and Human Services under the authority of 42 U.S.C. 9902(2) (DHHS, 2011).

Education was measured as an ordinal variable asking participants to check “highest level of education completed.” Categories ranged from “elementary” to “graduate school”. Because this variable contained one nominal category “other”, and this category only affected five cases, the “other” category was recoded to missing and was imputed. The education variable was then dichotomized to indicate whether a Latina’s educational attainment was “less than high school” or “high school grad or beyond”.

Finally, acculturation was controlled through the Spanish language preference of the sample as well as through the Psychological Acculturation Scale (PAS) (Tropp, Erkut, Coll, Alarcón, & García, 1999). All participants filled out the survey in Spanish. Language preference
has been used as a measure of acculturation (Lee, Nguyen, & Tsui, 2011). Also each participant filled out the PAS. The PAS is a 10 item questionnaire that focuses on the psychological aspects of acculturation rather than behavioral aspects. Examples of items found on the scale include, “With which group(s) of people do you feel you share most of your beliefs and values?” and “In which culture(s) do you know what is expected of a person in various situations?” The PAS has been found to have good psychometric properties. Conbach’s alpha was between .83-.91. Good convergent and discriminant validity was established as well (Tropp et al., 1999). Cronbach’s alpha for this sample is .97 indicating that it has good internal consistency reliability.

Chapter IV: Results

Analytic Strategy

Data were analyzed using SPSS Statistic, Release Version 23.0.0 (March 3, 2015). Preliminary analysis consisted of checking frequency distributions and summary statistics. Corresponding graphical displays were examined for errors, outliers, non-normal distributions, and missing data. Bivariate analysis was performed and residual plots were examined for linearity and homogeneity of variance. Due to the small sample size (n=136), all randomly missing values up to 20% of the data were replaced using expectation maximization (EM) multiple imputation (Fox-Wasylyshyn & El-Masri, 2005). Saunders et al. (2006), caution social work researchers not to ignore missing data and state that imputing up to 20% of missing values is an acceptable guideline. Schlomer, Bauman, and Card (2010), also found that a multiple imputation strategy worked well with up to 20% of missing values.
After the preliminary analysis, hierarchical multiple regressions\(^2\) were performed in five separate analyses starting with the depression total score and then with each of the four subscales in the following order: depressed affect, positive affect, somatic and retarded activity, and interpersonal relations. Each dependent variable was regressed on independent and control variables in the following order.

Step 1: Individual level control variables

✓ Age, marital status, income, education, acculturation

Step 2: Neighborhood level variables

✓ Neighborhood worry scale

**Preliminary Analysis**

**Missing data.** Missing data were analyzed for type of mechanism. Little’s MCAR test was employed and returned a chi-square that was statistically significant \(X^2 = 456.352, \text{DF} = 389, p = .01\) indicating that the data were not missing completely at random (MCAR). A Separate Variance t Test was performed with variables containing more than 5% of their values missing to determine whether or not observed values could predict the missing values (Garson, 2015).

Missing data were adequately predicted and deemed missing at random (MAR). Expectation maximization (EM) imputation algorithm was used to replace the missing values. Missing values were imputed first on the PAS items separately to preserve the covariance matrix structure (Ginkel, Ark, & Sijtsma, 2007) and then on all control and predictor variables. A sum score for the PAS was computed. EM imputation is considered to be an excellent method for replacing

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\(^2\) Hierarchical regression as used here refers to the practice in multiple linear regression of building successive linear regression models by adding additional groups of predictors in a theoretically relevant way and should not be confused with Hierarchical Linear Models or HLM.
missing data especially with questionnaires (Acock, 2005; Saunders et al., 2006). Tables 7, 8, and 9 show the descriptive statistics for the CES-D scale items (Table 7), PAS scale items (Table 8) and the remaining variables (Table 9) prior to imputation.

**Regression Assumptions.** Prior to conducting the hierarchical multiple regression models of this study, all necessary assumptions were tested. The results follow.

**Multicollinearity.** First, an examination of the correlations between all independent variables confirmed that no independent variables were highly correlated (Table 7). Also, the collinearity statistics, tolerance and variance inflation factor (VIF), that were produced in later analyses were all within acceptable limits. Allison (1999), advocates for cutoffs for these two statistics in the range of not below .40 for the tolerance statistic and 2.50 and above for the VIF. No statistic in this study violated those thresholds. Thus, the assumption regarding multicollinearity was deemed to have been met.

**Multivariate outliers.** Multivariate outliers were detected using Mahalanobis scores with the threshold set at p=.01 with 6 degrees of freedom which corresponds to an $X^2$ value of 16.812. An examination of the Mahalanobis distance scores revealed no multivariate outliers to be excluded from the analysis. Using the Mahalanobis scores is considered the best way of detecting multivariate outliers with small samples containing less than 10% outliers (Oyeyemi, Bukoye, & Akeyede, 2015).

**Normality, linearity, and homoscedasticity.** Examining residual and scatter plots, confirms that the assumptions of normality, linearity and homoscedasticity were all satisfied. In addition, the Durbin-Watson test was within normal range indicating that the residuals were independently distributed. Table 10 displays the final set of all variables that are included in the hierarchical multiple regression analysis. The final sample size is 136.
A sample size of 136 was deemed adequate given the six independent variables to be included in the analysis. There is considerable variation in the literature regarding the appropriate observation to independent variable ratio required for multiple linear regressions. Some researchers have reported the need for a minimum ratio as high as 20:1 (Schneider, Hommel, & Blettner, 2010). Others maintain that a minimum of 2:1 is sufficient (Austin & Steyerberg, 2015).

**Descriptive statistics.** The sample for this study was comprised of 136 Spanish speaking adult Latina women who chose to fill out the survey questionnaire in Spanish. The majority, 87 (68.5%) traced their country of origin to Puerto Rico with Cuba and Dominican Republic being the second and third most selected, 20 (15.7%) and 12 (9.4%), respectively. Four (3.1%) participants selected Mexico as their country of origin and four (3.1%) selected other. The age of study participants ranged from 18 to 85 years old with a mean age of 37.52 and a standard deviation of 12.07 years. Thirty-six (26.5%) of participants reported being married. One hundred twenty-six Latinas (90%) reported having at least one household child. In terms of socioeconomic level, most participants, 94 (73.4%), reported a household income of less than 15,000 dollars a year. Also, 68 (50%) participants reported having earned less than a high school diploma or GED. Table 5 displays demographic characteristics of the sample.
Table 5. Characteristics of sample (n=136)

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>n</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Country of Origin</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Puerto Rico</td>
<td>87</td>
<td>68.5%</td>
</tr>
<tr>
<td>Cuba</td>
<td>20</td>
<td>15.7%</td>
</tr>
<tr>
<td>Dominican Republic</td>
<td>12</td>
<td>9.4%</td>
</tr>
<tr>
<td>Mexico</td>
<td>4</td>
<td>3.1%</td>
</tr>
<tr>
<td>Other</td>
<td>4</td>
<td>3.1%</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18-24</td>
<td>29</td>
<td>21.3%</td>
</tr>
<tr>
<td>25-34</td>
<td>35</td>
<td>25.7%</td>
</tr>
<tr>
<td>35-44</td>
<td>42</td>
<td>30.9%</td>
</tr>
<tr>
<td>45-54</td>
<td>21</td>
<td>15.4%</td>
</tr>
<tr>
<td>55-64</td>
<td>7</td>
<td>5.1%</td>
</tr>
<tr>
<td>75 or older</td>
<td>2</td>
<td>1.5%</td>
</tr>
<tr>
<td><strong>Household Children</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>One or more</td>
<td>126</td>
<td>90%</td>
</tr>
<tr>
<td>None</td>
<td>10</td>
<td>10%</td>
</tr>
<tr>
<td><strong>Marital Status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not married</td>
<td>100</td>
<td>73.5%</td>
</tr>
<tr>
<td>Married</td>
<td>36</td>
<td>26.5%</td>
</tr>
<tr>
<td><strong>Household Income</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than $15,000</td>
<td>94</td>
<td>73.4%</td>
</tr>
<tr>
<td>$15,000 or more</td>
<td>34</td>
<td>26.5%</td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than high school</td>
<td>68</td>
<td>50%</td>
</tr>
<tr>
<td>High school grad or above</td>
<td>68</td>
<td>50%</td>
</tr>
</tbody>
</table>

Table 6. Descriptive statistics for items of the NWS before EM imputation

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Valid</th>
<th>Missing</th>
<th>Mean</th>
<th>Std. Dev</th>
<th>Range</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child Safety in neighborhood</td>
<td>133</td>
<td>3</td>
<td>3.57</td>
<td>1.389</td>
<td>4</td>
<td>1</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Influence of bad friends</td>
<td>131</td>
<td>5</td>
<td>3.71</td>
<td>1.384</td>
<td>4</td>
<td>1</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Availability of drugs and alcohol</td>
<td>132</td>
<td>4</td>
<td>3.82</td>
<td>1.445</td>
<td>4</td>
<td>1</td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>
Table 7. Descriptive statistics for control variables before EM imputation

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Valid</th>
<th>Missing</th>
<th>Percent</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Range</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>124</td>
<td>12</td>
<td></td>
<td>40.51</td>
<td>12.638</td>
<td>67</td>
<td>21</td>
<td>88</td>
<td></td>
</tr>
<tr>
<td>Household income</td>
<td>128</td>
<td>8</td>
<td></td>
<td>1.99</td>
<td>1.681</td>
<td>7</td>
<td>1</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td>124</td>
<td>12</td>
<td></td>
<td>3.82</td>
<td>1.822</td>
<td>7</td>
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<td>Marital status</td>
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<td>Not married</td>
<td>73.5</td>
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<tr>
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<td>married</td>
<td>26.5</td>
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</table>

Table 8. Descriptive statistics for control variables after EM imputation

<table>
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<tr>
<th></th>
<th>N</th>
<th>Range</th>
<th>Min</th>
<th>Max</th>
<th>Percent</th>
<th>Mean</th>
<th>Std Deviation</th>
</tr>
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<tbody>
<tr>
<td>Sum CES-D</td>
<td>136</td>
<td>57.00</td>
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<td>57.00</td>
<td>25.880</td>
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<tr>
<td>Age (Ln trans)</td>
<td>136</td>
<td>1.43</td>
<td>3.04</td>
<td>4.48</td>
<td>3.659</td>
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<tr>
<td>Sum PAS acculturation</td>
<td>136</td>
<td>78.00</td>
<td>10.00</td>
<td>88.00</td>
<td>41.558</td>
<td>17.600</td>
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<tr>
<td>Sum NWS worry scale</td>
<td>136</td>
<td>9.00</td>
<td>3.00</td>
<td>12.00</td>
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<tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>married</td>
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<td>Household income</td>
<td>136</td>
<td>1.00</td>
<td>0.00</td>
<td>1.00</td>
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<td>Less than 15,000</td>
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<td>15,000 or more</td>
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<td>0.00</td>
<td>1.00</td>
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<td></td>
</tr>
<tr>
<td>Less than HS</td>
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<td>50.0</td>
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<tr>
<td>HS grad or more</td>
<td>68</td>
<td>50.0</td>
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</tbody>
</table>

Correlational analysis. Correlational analyses consisted of computing the covariance matrix for all study variables and the Cronbach’s alpha for all scales and subscales. Highly correlated variables can lead to issues of multicollinearity in multiple regression and suggested cut off at .8 has been reported in the literature (Mason & Perreault Jr, 1991). An examination of the covariance matrix (table 9) reveals that all correlations are well below this point and are in the mild to moderate range.

In addition, the internal consistency reliability statistics for all scales and subscale were computed (Table 10). Cronbach’s alpha coefficients ranged from .75 to .97 for all scales and subscales. They were for the most part substantially higher than the .7 to .8 range considered to be acceptable in research environments as reported by Bland and Altman (1997).
Table 9. *Pearson’s correlations for all study variables*

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
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<th>11</th>
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<td>1. Age</td>
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</tr>
<tr>
<td>2. Marital</td>
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<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>3. Income</td>
<td>.087</td>
<td>.284**</td>
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<td>4. Education</td>
<td>.038</td>
<td>.233**</td>
<td>.223**</td>
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<tr>
<td>5. Sum PAS</td>
<td>-.009</td>
<td>-.030</td>
<td>.079</td>
<td>-.214*</td>
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<td><strong>Independent Variable</strong></td>
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<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>6. Not safe in neigh</td>
<td>-.101</td>
<td>-.156</td>
<td>-.180*</td>
<td>-.105</td>
<td>.010</td>
<td>1</td>
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<tr>
<td>7. Influ Bad friends</td>
<td>.018</td>
<td>-.133</td>
<td>-.158</td>
<td>-.170*</td>
<td>.070</td>
<td>.640**</td>
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<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>8. Drugs &amp; alcohol</td>
<td>.072</td>
<td>-.094</td>
<td>-.051</td>
<td>-.164</td>
<td>-.012</td>
<td>.437**</td>
<td>.586**</td>
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<td></td>
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</tr>
<tr>
<td>9. NWS</td>
<td>-.005</td>
<td>-.152</td>
<td>-.154</td>
<td>-.174*</td>
<td>.027</td>
<td>.827**</td>
<td>.883**</td>
<td>.805**</td>
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<td><strong>Dependent Variables</strong></td>
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<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>10. Sum CESD</td>
<td>-.041</td>
<td>-.264**</td>
<td>-.215*</td>
<td>-.320**</td>
<td>.075</td>
<td>.415**</td>
<td>.296**</td>
<td>.200*</td>
<td>.362**</td>
<td>1</td>
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<tr>
<td>11. Dep affect</td>
<td>-.050</td>
<td>-.252**</td>
<td>-.187*</td>
<td>-.315**</td>
<td>.092</td>
<td>.391**</td>
<td>.273**</td>
<td>.179*</td>
<td>.335**</td>
<td>.954**</td>
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<tr>
<td>12. Pos affect</td>
<td>-.003</td>
<td>.117</td>
<td>.099</td>
<td>.051</td>
<td>.073</td>
<td>-.078</td>
<td>-.044</td>
<td>-.059</td>
<td>-.072</td>
<td>-.239**</td>
<td>-.034</td>
<td>1</td>
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</tr>
<tr>
<td>13. Somatic</td>
<td>-.028</td>
<td>-.192*</td>
<td>-.149*</td>
<td>-.270**</td>
<td>.081</td>
<td>.351**</td>
<td>.267**</td>
<td>.163</td>
<td>.311**</td>
<td>.897**</td>
<td>.868**</td>
<td>.089</td>
<td>1</td>
</tr>
<tr>
<td>14. Interpersonal</td>
<td>-.043</td>
<td>-.223**</td>
<td>-.262*</td>
<td>-.304**</td>
<td>.111</td>
<td>.426**</td>
<td>.302**</td>
<td>.216*</td>
<td>.376**</td>
<td>.752**</td>
<td>.727**</td>
<td>-.001</td>
<td>.627**</td>
</tr>
</tbody>
</table>

*p<.05, **p<.01*
Table 10. Reliability statistics for all scales and subscales

<table>
<thead>
<tr>
<th>Scale</th>
<th>N of Items</th>
<th>Cronbach’s Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>CES-D depression scale</td>
<td>20</td>
<td>.913</td>
</tr>
<tr>
<td>CES-D subscale: depressed affect</td>
<td>7</td>
<td>.931</td>
</tr>
<tr>
<td>CES-D subscale: positive affect</td>
<td>4</td>
<td>.791</td>
</tr>
<tr>
<td>CES-D subscale: somatic/retarded activity</td>
<td>7</td>
<td>.854</td>
</tr>
<tr>
<td>CES-D subscale: interpersonal</td>
<td>2</td>
<td>.750</td>
</tr>
<tr>
<td>PAS psychological acculturation scale</td>
<td>10</td>
<td>.971</td>
</tr>
<tr>
<td>NWS neighborhood worry scale</td>
<td>3</td>
<td>.786</td>
</tr>
</tbody>
</table>

Primary Analysis

Hierarchical multiple regression with CES-D scale. A two stage hierarchical multiple linear regression was conducted with CES-D depression score as the dependent variable. The hierarchical regression analysis revealed that the first step, consisting of the five individual control variables: age, marital status, income, education, and acculturation, contributed significantly to the regression model, \( R^2 = .151, \) adjusted \( R^2 = .119, \) \( F(5, 130) = 4.633, \) \( p = .001 \) accounting for 11.9% of the variation in depression scores.

In step two, the addition of the NWS explained an additional 7.6% of the variation in depression scores with the resulting \( R^2 = .231, \) adjusted \( R^2 = .195, \) \( F(1, 129) = 13.383, \) \( p < .001. \) (see Table 11). Looking at the analysis of variance statistics (ANOVA) presented in table 12 confirms that both models are statistically significant. More detailed information pertaining to all variables, as well as hypothesis testing follows.

Table 11. Model summary for CES-D score

<table>
<thead>
<tr>
<th>Model</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
<th>R Square Change</th>
<th>F Change</th>
<th>df1</th>
<th>df2</th>
<th>Sig. F Change</th>
<th>Durbin-Watson</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.389(^a)</td>
<td>.151</td>
<td>.119</td>
<td>13.215</td>
<td>.151</td>
<td>4.633</td>
<td>5</td>
<td>.130</td>
<td>.001</td>
</tr>
<tr>
<td>2</td>
<td>.481(^b)</td>
<td>.231</td>
<td>.195</td>
<td>12.627</td>
<td>.080</td>
<td>13.383</td>
<td>1</td>
<td>.129</td>
<td>.000</td>
</tr>
</tbody>
</table>

\(^a\) Predictors: (Constant), Sum PAS, Age, Marital status, Income, Education
\(^b\) Predictors: (Constant), Sum PAS, Age, Marital status, Income, Education, NWS
### Table 12. ANOVA for the total CES-D score

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Regression</td>
<td>4045.649</td>
<td>5</td>
<td>809.130</td>
<td>4.633</td>
</tr>
<tr>
<td></td>
<td>Residual</td>
<td>22702.468</td>
<td>130</td>
<td>174.634</td>
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</tr>
<tr>
<td></td>
<td>Total</td>
<td>26748.118</td>
<td>135</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Regression</td>
<td>6179.495</td>
<td>6</td>
<td>1029.916</td>
<td>6.459</td>
</tr>
<tr>
<td></td>
<td>Residual</td>
<td>20568.623</td>
<td>129</td>
<td>159.447</td>
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</tr>
<tr>
<td></td>
<td>Total</td>
<td>26748.118</td>
<td>135</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<sup>a</sup> Predictors: (Constant), Sum PAS, Age, Marital Status, Income, Education

<sup>b</sup> Predictors: (Constant), Sum PAS, Age, Marital Status, Income, Education, NWS

**Control variables**

In step one, education was negatively associated with CES-D depression total scores. The relationship was statistically significant with \( b=-6.986, \beta = -.249, p=.005 \). Being married was also negatively associated and significant with \( b=-5.481, \beta = -.172, p=.047 \). However age, income and level of acculturation were not significantly associated with CES-D depression scores (see Table 13).

**Hypotheses regarding CES-D depression scale**

In step two, while controlling for the effects of the control variables, NWS was positively associated with CES-D total scores. That relationship was statistically significant with \( b=1.272, \beta = .290, p<.001 \), showing evidence in support for H1. Also, level of education continued to be statistically significant with \( b=-5.934, \beta = -.212, p = .012 \). All other variables were insignificant (Table 13).
Hierarchical multiple regression with CES-D depressed affect subscale. Likewise, a two-step hierarchical multiple linear regression was conducted using the score on the depressed affect subscale of the CES-D depression scale as the dependent variable. The hierarchical regression analysis revealed that the first step, consisting of the five individual control variables: age, marital status, income, education, and acculturation contributed significantly to the regression model, $R^2 = .141$, adjusted $R^2 = .108$, $F (5, 130) = 4.261$, $p = .001$ accounting for 10% of the variation in depressed affect subscale scores.

In step two, the addition of NWS explained an additional 6.3% of the variation in depressed affect subscale scores with the resulting $R^2$ increasing significantly, $R^2 = .208$, adjusted $R^2 = .171$, $F (1, 129) = 10.973$, $p = .001$. (Table 14). Looking at the analysis of variance statistics (ANOVA) presented in table 15 confirms that both models are statistically significant. More detailed information pertaining to all variables, as well as hypothesis testing follows.
Table 14. Model summary for CES-D depressed affect subscale

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
<th>Change Statistics</th>
<th>Sig. F</th>
<th>Durbin-Watson</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>R Square</td>
<td>Adjusted R Square</td>
<td>Std. Error of the Estimate</td>
<td>Change Statistics</td>
<td>Sig. F</td>
<td>Durbin-Watson</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>.375a</td>
<td>.141</td>
<td>.108</td>
<td>6.53537</td>
<td>4.261</td>
<td>5</td>
<td>130</td>
</tr>
<tr>
<td>2</td>
<td>.456b</td>
<td>.208</td>
<td>.171</td>
<td>6.29826</td>
<td>10.973</td>
<td>1</td>
<td>129</td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), Sum PAS, Age, Marital Status, Income, Education
b. Predictors: (Constant), Sum PAS, Age, Marital Status, Income, Education, NWS

Table 15. ANOVA for CES-D depressed affect subscale

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Regression</td>
<td>909.962</td>
<td>5</td>
<td>181.992</td>
<td>4.261</td>
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<tr>
<td></td>
<td>Residual</td>
<td>5552.442</td>
<td>130</td>
<td>42.711</td>
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<tr>
<td></td>
<td>Total</td>
<td>6462.404</td>
<td>135</td>
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<td></td>
</tr>
<tr>
<td>2</td>
<td>Regression</td>
<td>1345.229</td>
<td>6</td>
<td>224.205</td>
<td>5.652</td>
</tr>
<tr>
<td></td>
<td>Residual</td>
<td>5117.176</td>
<td>129</td>
<td>39.668</td>
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<tr>
<td></td>
<td>Total</td>
<td>6462.404</td>
<td>135</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), Sum PAS, Age, Marital Status, Income, Education
b. Predictors: (Constant), Sum PAS, Age, Marital Status, Income, Education, NWS

Control variables

In step one, education was significantly associated with the depressed affect scores. The relationship was negative with \( b = -3.406, \beta = -.247, p = .005 \). However age, marital status, income, and level of acculturation were not significantly associated with those scores (Table 16).

Hypotheses regarding depressed affect subscale of CES-D

In step two, while controlling for the effects of the control variables, the relationship between NWS and the CES-D depressed affect subscale scores was positive and statistically significant, \( b = .575, \beta = .267, p = .001 \), showing evidence in support of H2. Education also continued to be significantly related \( b=-2.931, \beta = -.213, p = .013 \). No other control variables were statistically significant (Table 16).
Hierarchical multiple regression with CES-D positive affect subscale. A two stage hierarchical multiple linear regression was conducted using the score on the positive affect subscale of the CES-D depression scale as the dependent variable. The hierarchical regression analysis revealed that the first step, consisting of the five individual control variables: age, marital status, income, education, and acculturation did not contribute significantly to the regression model (see Table 19).

In step two, the relationship between NWS and scores on the CES-D positive affect subscale was not statistically significant either (see Table 17). Examining the analysis of variance statistics (ANOVA) presented in table 18 confirms that neither model is statistically significant. More detailed information pertaining to all variables, as well as hypothesis testing follows.
Table 17. Model summary for CES-D positive affect subscale

<table>
<thead>
<tr>
<th>Model</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
<th>R Square Change</th>
<th>F Change</th>
<th>df1</th>
<th>df2</th>
<th>Sig. F Change</th>
<th>Durbin-Watson</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.156a</td>
<td>.024</td>
<td>-.013</td>
<td>3.659</td>
<td>.024</td>
<td>.651</td>
<td>5</td>
<td>130</td>
<td>.661</td>
</tr>
<tr>
<td>2</td>
<td>.163b</td>
<td>.027</td>
<td>-.019</td>
<td>3.669</td>
<td>.002</td>
<td>.280</td>
<td>1</td>
<td>129</td>
<td>.597</td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), Sum PAS, Age, Marital Status, Income, Education
b. Predictors: (Constant), Sum PAS, Age, Marital Status, Income, Education, NWS

Table 18. ANOVA for CES-D positive affect subscale

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Regression</td>
<td>43.585</td>
<td>5</td>
<td>8.717</td>
<td>.651</td>
</tr>
<tr>
<td></td>
<td>Residual</td>
<td>1740.231</td>
<td>130</td>
<td>13.386</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>1783.816</td>
<td>135</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Regression</td>
<td>47.358</td>
<td>6</td>
<td>7.893</td>
<td>.586</td>
</tr>
<tr>
<td></td>
<td>Residual</td>
<td>1736.459</td>
<td>129</td>
<td>13.461</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>1783.816</td>
<td>135</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), Sum PAS, Age, Marital Status, Income, Education
b. Predictors: (Constant), Sum PAS, Age, Marital Status, Income, Education, NWS

Control variables

In step one, none of the individual control variables: age, marital status, income, education, or level of acculturation, were significantly related to scores on the CES-D positive affect subscale (see Table 19).

Hypotheses regarding positive affect subscale of CES-D

In step two, while controlling for the effects of the control variables, the NWS was not significantly related to the variation in CES-D positive affect subscale scores among Latinas. Therefore there is no evidence to support H3 (see Table 19).
Hierarchical multiple regression with CES-D somatic and retarded activity subscale. A two stage hierarchical multiple linear regression was also conducted using the score on the somatic and retarded activity subscale of CES-D depression scale as the dependent variable. The hierarchical regression analysis revealed that the first step, consisting of the five individual control variables: age, marital status, income, education and acculturation contributed significantly to the regression model with $R^2 = .095$, adjusted $R^2 = .061$, $F (5, 130) = 2.740$, $p = .022$ and explain 6.1% of the variation in depression scores (see Table 20).

In step two, the addition of the NWS resulted in a statistically significant increase with $R^2 = .158$, adjusted $R^2 = .118$, $F (1, 129) = 9.544$, $p = .002$. The addition of the NWS explained an additional 5.7% of the variation in depression scores (Table 20). Looking at the analysis of variance statistics (ANOVA) presented in table 21 confirms that both models are statistically significant. More detailed information pertaining to all variables, as well as hypothesis testing follows.
Table 20. Model summary for CES-D somatic and retarded activity subscale

<table>
<thead>
<tr>
<th>Model</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
<th>Change Statistics</th>
<th>Sig. F Change</th>
<th>Durbin-Watson</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.309a</td>
<td>.095</td>
<td>.061</td>
<td>5.51991</td>
<td>.095</td>
<td>5</td>
</tr>
<tr>
<td>2</td>
<td>.397b</td>
<td>.158</td>
<td>.118</td>
<td>5.34700</td>
<td>.062</td>
<td>9.544</td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), Sum PAS, Age, Marital Status, Income, Education
b. Predictors: (Constant), Sum PAS, Age, Marital Status, Income, Education, NWS

Table 21. ANOVA for CES-D somatic retarded activity subscale

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Regression</td>
<td>417.446</td>
<td>5</td>
<td>83.489</td>
<td>2.740</td>
</tr>
<tr>
<td></td>
<td>Residual</td>
<td>3961.024</td>
<td>130</td>
<td>30.469</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>4378.471</td>
<td>135</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Regression</td>
<td>690.306</td>
<td>6</td>
<td>115.051</td>
<td>4.024</td>
</tr>
<tr>
<td></td>
<td>Residual</td>
<td>3688.164</td>
<td>129</td>
<td>28.590</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>4378.471</td>
<td>135</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), Sum PAS, Age, Marital Status, Income, Education
b. Predictors: (Constant), Sum PAS, Age, Marital Status, Income, Education, NWS

Control variables

In step one, education was significantly associated with the depressed affect scores. The relationship was negative with b = -2.475, \( \beta = -.218, \ p = .016 \). However age, marital status, income and, level of acculturation were not significantly related to those scores (see Table 24).

Hypotheses regarding somatic and retarded activity subscale of CES-D

In step two, while controlling for the effects of the control variables, the relationship between NWS and the CES-D somatic and retarded activity subscale scores was positive and statistically significant with b = .455, \( \beta = .256, \ p = .002 \), showing evidence in support of H4. Education also continued to be significantly associated with b = -2.099, \( \beta = -.185, \ p = .036 \). No
other control variables were significantly associated with the CES-D somatic and retarded activity subscale (Table 22).

Table 22. Coefficients for CES-D somatic and retarded activity subscale

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>Collinearity Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
</tr>
<tr>
<td>1</td>
<td>Age</td>
<td>-.102</td>
<td>1.608</td>
</tr>
<tr>
<td></td>
<td>Marital Status</td>
<td>-1.552</td>
<td>1.139</td>
</tr>
<tr>
<td></td>
<td>Income</td>
<td>-.841</td>
<td>1.096</td>
</tr>
<tr>
<td></td>
<td>Education</td>
<td>-2.475</td>
<td>1.015</td>
</tr>
<tr>
<td></td>
<td>Sum PAS</td>
<td>.012</td>
<td>.028</td>
</tr>
<tr>
<td>2</td>
<td>Age</td>
<td>-.176</td>
<td>1.558</td>
</tr>
<tr>
<td></td>
<td>Marital Status</td>
<td>-1.241</td>
<td>1.108</td>
</tr>
<tr>
<td></td>
<td>Income</td>
<td>-.525</td>
<td>1.067</td>
</tr>
<tr>
<td></td>
<td>Education</td>
<td>-2.099</td>
<td>.991</td>
</tr>
<tr>
<td></td>
<td>Sum PAS</td>
<td>.011</td>
<td>.027</td>
</tr>
<tr>
<td></td>
<td>NWS</td>
<td>.455</td>
<td>.147</td>
</tr>
</tbody>
</table>

*p<.05, **p<.01

Hierarchical multiple regression with CES-D interpersonal relations subscale. A two stage hierarchical multiple linear regression was also conducted using the scores on the interpersonal relations subscale of the CES-D scale as the dependent variable. The hierarchical regression analysis revealed that the first step, consisting of the five individual control variables: age, marital status, income, education, and acculturation contributed significantly to the regression model with $R^2 = .150$, adjusted $R^2 = .117$, $F(5, 130) = 4.587$, $p = .001$ and explained 11.7% of the variability in depression scores.

In step two, the addition of the NWS resulted in a statistically significant increase with $R^2 = .238$, adjusted $R^2 = .203$, $F(1, 129) = 14.969$, $p < .001$. The addition of NWS explained an additional 8.6% of the variation in the depression scores (Table 23). Looking at the analysis of variance statistics (ANOVA) (Table 24) confirms that both models are statistically significant.
More detailed information pertaining to all variables, as well as hypothesis testing follows.

Table 23. Model summary for CES-D interpersonal subscale

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
<th>R Square Change</th>
<th>F Change</th>
<th>df1</th>
<th>df2</th>
<th>Sig. F Change</th>
<th>Durbin-Watson</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.387a</td>
<td>.150</td>
<td>.117</td>
<td>1.86854</td>
<td>.150</td>
<td>4.587</td>
<td>5</td>
<td>130</td>
<td>.001</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>.488b</td>
<td>.238</td>
<td>.203</td>
<td>1.77558</td>
<td>.088</td>
<td>14.969</td>
<td>1</td>
<td>129</td>
<td>.000</td>
<td>2.075</td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), Sum PAS, Age , Marital Status, Income, Education
b. Predictors: (Constant), Sum PAS, Age , Marital Status, Income, Education, NWS

Table 24. ANOVA for CES-D interpersonal relations subscale

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Regression</td>
<td>80.084</td>
<td>5</td>
<td>16.017</td>
<td>4.587</td>
</tr>
<tr>
<td></td>
<td>Residual</td>
<td>453.887</td>
<td>130</td>
<td>3.491</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>533.971</td>
<td>135</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Regression</td>
<td>127.276</td>
<td>6</td>
<td>21.213</td>
<td>6.728</td>
</tr>
<tr>
<td></td>
<td>Residual</td>
<td>406.695</td>
<td>129</td>
<td>3.153</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>533.971</td>
<td>135</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), Sum PAS, Age , Marital Status, Income, Education
b. Predictors: (Constant), Sum PAS, Age , Marital Status, Income, Education, NWS

Control variables

In step one, income was negatively and significantly associated with CES-D interpersonal relations subscale scores with $b = -0.793$, $\beta = -0.185$, $p = 0.034$. Also, level of education was statistically significant and negatively associated with $b = -0.870$, $\beta = -0.219$, $p = 0.013$. However age, marital status, and level of acculturation were not significantly associated with the CES-D depression scores (Table 25).

Hypotheses regarding score on CES-D interpersonal subscale

In step two, while controlling for the effects of the control variables, the relationship between the interpersonal subscale scores and NWS was positive and statistically significant with $b = 0.189$, $\beta = 0.305$, $p < 0.001$, showing evidence in support of H5. Also, education continued
to be negatively associated with interpersonal subscales scores. The relationship was statistically
significant with $b = -.713$, $\beta = -.180$, $p = .032$ (Table 25).

Table 25. Coefficients for CES-D interpersonal subscale

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>Collinearity Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>-.070</td>
<td>.544</td>
<td>-.010</td>
</tr>
<tr>
<td>Marital Status</td>
<td>-.523</td>
<td>.386</td>
<td>-.116</td>
</tr>
<tr>
<td>Income</td>
<td>-.793</td>
<td>.371</td>
<td>-.185</td>
</tr>
<tr>
<td>Education</td>
<td>-.870</td>
<td>.344</td>
<td>-.219*</td>
</tr>
<tr>
<td>Sum PAS</td>
<td>.008</td>
<td>.009</td>
<td>.075</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>-.101</td>
<td>.517</td>
<td>-.015</td>
</tr>
<tr>
<td>Marital Status</td>
<td>-.394</td>
<td>.368</td>
<td>-.088</td>
</tr>
<tr>
<td>Income</td>
<td>-.662</td>
<td>.354</td>
<td>-.154</td>
</tr>
<tr>
<td>Education</td>
<td>-.713</td>
<td>.329</td>
<td>-.180*</td>
</tr>
<tr>
<td>Sum PAS</td>
<td>.008</td>
<td>.009</td>
<td>.073</td>
</tr>
<tr>
<td>NWS</td>
<td>.189</td>
<td>.049</td>
<td>.305***</td>
</tr>
</tbody>
</table>

*p<.05, ***p<.001.

Summary of Findings

The findings of this study indicate that worry about children in the neighborhood is an
important factor associated with increased depressive symptoms in Latina caregivers. There was
a statistically significant increase (7.6%) in the explained variance in overall depressive scores
with the addition of the NWS. Regression coefficients indicate a positive relationship between
the NWS and the CES-D total scale score (H1). There was also a statistically significant positive
relationship between three of the four subscales. First, the addition of the NWS explained an
additional 6.3% of the variation in depressed affect subscale scores (H2). There was no
statistically significant relationship between the NWS and the positive affect subscale (H3). The
NWS explained an additional 5.7% of the variation in the somatic and retarded activity subscale
scores (H4). Finally, the NWS explained the most variation (8.6%) in scores on the interpersonal
relation subscale (H5). Across all significant models education was also statically significant
and negatively associated with the depression scores. Tables 26 and 27 below display the comparison of significant results across all models.

**Chapter V: Discussion**

A significant amount of research has shown that depression disproportionately affects those living within areas marked by high unemployment, low educational attainment, high percentage of female headed, single parent households, and with a disproportionate amount of families living below the poverty line (DeCarlo Santiago et al., 2011; Diez Roux & Mair, 2010; Ross, 2000). These areas are often plagued with high levels of violent crime, deviant peers, and drug and alcohol addiction and hence provide higher than normal stress levels.

The present study utilized classical stress theory, along with the theory of allostasis, in the context of a socio-ecological framework to address the question of whether or not Latina caregivers living in a high crime neighborhood, who report higher levels of worry regarding the safety of household children in the neighborhood, also report higher levels of depressive symptoms after controlling for individual level characteristics of age, marital status, income, education, and level of acculturation? It also asked whether or not any association with depression scores could better be accounted for by one of the four factors of the CES-D depression scale (depressed affect, positive affect, somatic and retarded activity, interpersonal) over the others?

With respect to these questions, the results of this study indicate that worry regarding a household child’s safety in relation to neighborhood risk is a significant factor associated with increased depressive symptoms in Latina caretakers. Caretaker worry is positively associated with the overall CES-D depressive score and with the scores on three of the four subscales. Surprisingly, no significant association was found between the NWS and the positive affect.
subscales. Furthermore, when comparing all the CES-D subscales, caretaker worry was found to be more strongly associated with the interpersonal relations subscale scores than to the others (Table 26). Also, in line with other studies (Miech & Shanahan, 2000), participants who completed at least a high school education consistently reported less depressive symptoms across all models after controlling for all other variables (Table 27).

Table 26. Comparison of r-square change for all models

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Hypothesis R</th>
<th>Adjusted R Square</th>
<th>Change Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1&lt;sup&gt;a&lt;/sup&gt;</td>
<td>.481</td>
<td>.231</td>
<td>.195</td>
</tr>
<tr>
<td>H2&lt;sup&gt;b&lt;/sup&gt;</td>
<td>.456</td>
<td>.208</td>
<td>.171</td>
</tr>
<tr>
<td>H3&lt;sup&gt;c&lt;/sup&gt;</td>
<td>.163</td>
<td>.027</td>
<td>-.019</td>
</tr>
<tr>
<td>H4&lt;sup&gt;d&lt;/sup&gt;</td>
<td>.397</td>
<td>.158</td>
<td>.118</td>
</tr>
<tr>
<td>H5&lt;sup&gt;e&lt;/sup&gt;</td>
<td>.488</td>
<td>.238</td>
<td>.203</td>
</tr>
</tbody>
</table>

a. CES-D total scale  
 b. CES-D depressed affect subscale  
 c. CES-D positive affect subscale  
 d. CES-D somatic and retarded activity scale  
 e. CES-D interpersonal relations subscale
Table 27. Statistically significant coefficients for all regression analyses

<table>
<thead>
<tr>
<th>Dependent Variables</th>
<th>Independent Variables</th>
<th>B</th>
<th>Std. Error</th>
<th>Beta</th>
<th>T</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total CES-D</td>
<td>Marital Status</td>
<td>5.481</td>
<td>2.727</td>
<td>.172</td>
<td>2.010</td>
<td>.047</td>
</tr>
<tr>
<td></td>
<td>Education</td>
<td>-6.986</td>
<td>2.431</td>
<td>-.249</td>
<td>-2.874</td>
<td>.005</td>
</tr>
<tr>
<td></td>
<td>NWS</td>
<td>1.272</td>
<td>.348</td>
<td>.290</td>
<td>3.658</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>Education</td>
<td>-5.934</td>
<td>2.341</td>
<td>-.249</td>
<td>-2.874</td>
<td>.005</td>
</tr>
<tr>
<td>Depressed affect</td>
<td>Education</td>
<td>-3.406</td>
<td>1.202</td>
<td>-.247</td>
<td>-2.833</td>
<td>.005</td>
</tr>
<tr>
<td></td>
<td>NWS</td>
<td>.575</td>
<td>.173</td>
<td>.267</td>
<td>3.313</td>
<td>.001</td>
</tr>
<tr>
<td></td>
<td>Education</td>
<td>-2.931</td>
<td>1.167</td>
<td>-.213</td>
<td>-2.511</td>
<td>.013</td>
</tr>
<tr>
<td>Somatic &amp; retarded</td>
<td>Education</td>
<td>-2.475</td>
<td>1.015</td>
<td>-.218</td>
<td>-2.438</td>
<td>.016</td>
</tr>
<tr>
<td>activity</td>
<td>NWS</td>
<td>.455</td>
<td>.147</td>
<td>.256</td>
<td>3.089</td>
<td>.002</td>
</tr>
<tr>
<td></td>
<td>Education</td>
<td>-2.099</td>
<td>.991</td>
<td>-.185</td>
<td>-2.118</td>
<td>.036</td>
</tr>
<tr>
<td>Interpersonal</td>
<td>Income</td>
<td>-.793</td>
<td>.371</td>
<td>-.185</td>
<td>-2.138</td>
<td>.034</td>
</tr>
<tr>
<td>relations</td>
<td>Education</td>
<td>-.870</td>
<td>.344</td>
<td>-.219</td>
<td>-2.531</td>
<td>.013</td>
</tr>
<tr>
<td></td>
<td>NWS</td>
<td>.189</td>
<td>.049</td>
<td>-.305</td>
<td>-3.869</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>Education</td>
<td>-.713</td>
<td>.329</td>
<td>-.180</td>
<td>-2.168</td>
<td>.032</td>
</tr>
</tbody>
</table>

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

While the association between aspects of the neighborhood environment and depressive symptoms is consistently supported in the research literature, it is often done so in a general sense and with little regard to the meaning the results may have in their cultural and everyday context. According to Pawson, Greenhalgh, Harvey, and Walshe (2005b), it is important to consider the underlying connections between the mechanisms and their context when seeking to truly understand the relationship between two variables.

This study provides an important window into mechanisms that contribute to depressive symptoms in a sample of Latina caregivers living in high crime, low income neighborhood. While the findings of this study are supported by existing research, they also raise important questions regarding the ambiguity of their interpretation. This discussion section explores the associations found in this study and examines them against the backdrop of competing cultural, contextual and theoretical explanations. Exposing mechanisms relating to depressive symptoms
in all contexts is important and requires proper contemplation of the complexity of those associations. Depression has been identified as a major source of health and mental health problems (Kim, 2008; Strine et al., 2008) and contributes substantially to a growing financial burden for American society (Insel, 2008). An in depth discussion of the key findings of this study follows.

**Key Significant Findings**

*NWS and CES-D depression scale.* In this study, it was hypothesized that Latina caregivers who report higher scores on the NWS will also report higher levels of depressive symptoms on the CES-D scale after controlling for the individual level characteristics of age, marital status, household income, education and level of acculturation (H1). As expected, the data supported this hypothesis. The amount of added variability in the total CES-D depression scores explained by worry about a child’s safety in the neighborhood in this sample is modest (7.6%). This small amount of change is a little surprising and may be an indication that the original factor structure for the CES-D depression scale proposed by Radoff (1977) (depressed affect, positive affect, somatic and retarded activity, interpersonal relations) does not fit the given sample well. There have been conflicting studies around which factor structure fits best with Latinos (Campo-Arias et al., 2007; Guarnaccia et al., 1989; Rivera-Medina et al., 2010) . For example Rivera-Medina and colleagues (2010) found that a two factor (positive-negative) structure fit best with Puerto Rican women. In light of the modest findings of this study a confirmatory factor analysis was performed post hoc using AMOS release version 23 to determine if Radoff’s original factor structure indeed fit this sample. The results of this analysis can be found in Appendix E.
In order to determine model fit, a number of fit indices were examined (Hooper, Coughlan, & Mullen, 2008). A chi square test yielded a value of 336.113, with 165 degrees of freedom, and a p value less than 0.001 indicating poor model fit. The Root Mean Square Error of Approximation (RMSEA) was 0.09, which was more than 0.08 also indicating poor model fit. The p value for the test of close fit was less than .001, which was significant, also indicating poor model fit. The Comparative Fit Index was 0.90 which was less than 0.95, once again indicating poor model fit. These indices uniformly point toward poor model fit. Inspection of the residuals and modification indices revealed a number of issues indicating poor fit as well.

Based on the results of this confirmatory factor analysis, it is determined that Radoff’s original factor structure does not fit this sample well, and may have contributed to the modest findings of this study. Future studies should consider using a depression measure that has been not only translated into Spanish, but normed with Latino samples as well. Also, these findings suggest that the use of the CES-D in clinical settings may provide biased estimations regarding the level of depression that is being experienced. Clinicians should take caution when using this measure or consider an alternative measure.

These results notwithstanding, the overall findings of this study are supported by findings of a positive association between adverse neighborhood conditions and depressive symptoms reported by other neighborhood effects studies (Booth et al., 2012; Chung & Steinberg, 2006; Clark et al., 2008; Cutrona et al., 2006). In two separate meta-analyses, Truong and Ma (2006) and Mair et al. (2008) both found overwhelming support for the connection between neighborhood effects and not only depression but, poor mental health in general. Together they found that sixty-four out of the seventy-four studies reported a positive association. However, because most of the studies included in those meta-analyses largely lacked the experience of
urban dwelling Latinos it calls into question the validity of the results of those studies with respect to Latinos, who possess cultural characteristics that are distinct from non-Latino whites and African Americans. Indeed, few studies to date have examined the neighborhood experience of Latinos,

Furthermore, only one other study could be found that utilized a “caretaker’s worry” about neighborhood factors affecting their children as a means of measuring neighborhood effects. Roosa and colleagues (2005) developed the Neighborhood Quality Evaluation Scale (NQES) to examining the connection between neighborhood risk factors and child externalizing behaviors. The NQES has two questions that relate directly to caretaker worry, “I worry about the type of people my children will meet in my neighborhood” and, “my neighborhood is safe for children” (S. Y. Kim, Nair, Knight, Roosa, & Updegraff, 2009) Other studies have mainly relied on a caretaker’s appraisal of the neighborhood in general and not by linking it to child related worry.

In contrast, the NWS used in this study is a simple three item summed scale that captures three significant aspects of worry for some caretakers in regard to neighborhood risk: safety, drugs, and negative peer influence. Due to its brevity, this measure is a promising way to measure important risk factors both as a research tool and in clinical settings, without further adding to the burden of paperwork.

This study is a timely addition to the neighborhood effects literature and helps to bridge that gap by limiting its focus solely to the experience of Latinas living in a high crime, low income urban neighborhood. However, despite the results of this study being supported by previous research on neighborhood effects and depression, they bring up a number of important questions related to ambiguity around their interpretation. Can researchers be reasonably certain
that all the questions on the CES-D scale are measuring symptoms of depression for this sample or could it be that some items are describing aspects of reality (i.e., context) for caretakers with children living in low income, high crime neighborhoods? For example, it is plausible that a number of the items in the CES-D scale could be measuring appropriate emotional responses that the Latina caretaker is having in relation to objective experiences in her daily life, while others might be better understood in the context of cultural characteristics such as familism or marianismo. Even still, a number of questions could be describing the effects of underlying biological processes (allostatic load). This discussion however, would be better served if given in the context of each of the individual subscales.

**NWS and CES-D subscales.**

*NWS and depressed affect subscale.* The depressed affect subscale of the CES-D is comprised of questions that are synonymous with conventional notions of depression such as, feeling blue, sad, depressed, and having crying spells. It also asks about feelings of loneliness, fearfulness, and life being a failure. In this study it was hypothesized that there would be a positive association between the NWS and the depressed affect subscale (H2). As expected, this hypothesis was supported by the data. The NWS explains an additional 6.3% of the variability in depressed affect scores. Furthermore, these findings are supported by other studies that found similar results using abbreviated scales or subscales largely focusing on similar aspects of depression (Booth et al., 2012; Hill, Burdette, & Hale, 2009a; Rios, Aiken, & Zautra, 2012). For example, Booth and colleagues (2012) report a positive association between feeling unsafe in the neighborhood and the Kessler 6, a measure of psychological distress (Kessler et al., 2002). The Kessler 6 is a six item Likert type questionnaire with content similar to the CES-D depressed affect subscale.
In addition to studies that support these findings, conflicting results have also been reported, especially in regard to Latinos. Clark et al. (2008) used the depression subscale of the Behavioral Symptom Inventory (BSI) (Derogatis & Melisaratos, 1983) to measure the effect of exposure to neighborhood violence on depression in a sample of urban dwelling women. Although these authors report a positive association over all, the association did not hold true for Latinas when the sample was stratified by ethnicity. Further investigation into the context in which the association occurs may shed light on these conflicting findings.

Similarly, in order to fully understand the relationship between the NWS and the depressed affect subscale, research capable of linking particular survey item responses to the context to which they are attached is needed. The results of this study indicate that there is a relationship between two measures but lack the ability to explain any of the complexities. Without further inquiry, the results of this study lend themselves to a number of interpretations.

From a pragmatic perspective, a Latina caregiver with a child involved with gang violence or drug sales may score high on the NWS and on a number of items on the CES-D depressed affect subscale because those are the appropriate emotional responses warranted in her situation. She may cry a lot, worry a lot, and be fearful, but all in reference to the child’s activities and not her own internal state of depression. Crying is a culturally sanctioned way of dealing with emotional pain in Latino culture (Azocar, Arean, Miranda, & Muñoz, 2001).

Likewise, a Latina caregiver who indicates that she “feels lonely all the time” may do so as a consequence of having isolated herself and her family from contact with the dangerous neighborhood as a means of keeping everyone safe from harm rather than being a symptom of depression. Avoiding contact with the neighborhood is a common safety strategy that has been documented among Latinas living in high crime inner city neighborhoods (Ceballo, Kennedy,
Bregman, & Epstein-Ngo, 2012). Furthermore, previous research has demonstrated that people living in high crime neighborhoods generally lack social cohesion and mistrust those around them which leaves them socially isolated (Ross & Jang, 2000).

Within a cultural context, individual choices on the NWS or the depressed affect subscale may reflect underlying cultural values rather than depressive symptoms (Azocar et al., 2001). Values such as familism and marianismo, which emphasize family wellbeing over individual wellbeing, require the subjugation of individual need to that of the family and may play a central role in Latina caregivers’ daily lives (D’Alonzo, 2012; Steidel & Contreras, 2003). These values may evoke in Latina caregivers a stronger sense of responsibility for the wellbeing and safety of their children relative to non-Latina whites (Fuligni, Tseng, & Lam, 1999). Within this context, if children are involved in dangerous activities it might illicit feelings in a Latina caretaker that her life has been a failure or a waste, prompting her to mark that item on the depression measure. Knowing whether or not CES-D depressed affect survey responses are indicative of true depressive symptoms or a function of some other underlying mechanism requires further inquiry into the context within which they occur. Qualitative studies may help understand the true nature of these symptoms.

**NWS and the positive affect subscale.** The positive affect subscale consists of feeling that one is just as good as other people, hopeful about the future, happy, and enjoys life. It was hypothesized that there would be a negative relationship between this subscale and the NWS (H3). Surprisingly, the data did not support this hypothesis. Although it may seem logical that positive affect and negative affect would be bipolar opposites, with high scores on one corresponding to low scores on the other, there has been much contention around the nature of
this relationship with some studies reporting that the relationship is bipolar while others report that it is orthogonal (see Pressman & Cohen, 2005).

However, from a cultural standpoint, it has been reported elsewhere that Latinos are less likely to report feelings of positive affect on the CES-D depression scale (Golding, Aneshensel, & Hough, 1991; Iwata, Turner, & Lloyd, 2002). This may be due in part to the effect of the cultural value marianismo. For example, in a qualitative study of 28 immigrant Latinas on the influence of marianismo, several women stated that they were socialized to not expect much in life and to give rather than receive. Low self-esteem was a common theme in that study (D’Alonzo, 2012).

*NWS and the somatic and retarded activity subscale.* The somatic and retarded activity subscale of the CES-D is comprised of items that correspond to physical symptoms associated with depression such as feeling bothered by things that usually are not bothersome, often described as irritability. Also measured are poor appetite, restless sleep, wandering mind or lack of concentration, low or no motivation, and being less talkative. In this study, it was hypothesized that there would be a positive association between the NWS and the somatic and retarded activity subscale (H3).

As expected this hypothesis was supported by the data. The NWS explained an additional 5.7% of the variability in depression scores. These findings are supported by other findings that demonstrate the positive association of somatic complaints and neighborhood factors (DeCarlo Santiago et al., 2011; Kamimura et al., 2014).

From a psychophysiological view point and the theory of allostasis, somatic symptoms are exactly the types of symptoms that would be expected to occur with an overload of stress hormones and the corresponding metabolic dysregulation that might occur in the context of
chronic worry around neighborhood risk factors (McEwen, 2003; Penninx, Milaneschi, Lamers, & Vogelzangs, 2013). For example, agitation, poor concentration, and sleep difficulties are all consequences of chronic stress pathway activation (McEwen, 2008). Also, poor appetite is a symptom of a number of digestive ailments that have been linked to stress physiology (Konturek, Brzozowski, & Konturek, 2011). More research is needed that incorporates the biological markers of chronic stress in relation to neighborhood factors.

NWS and the interpersonal relations subscale. The interpersonal relations subscale consists of feeling that people are not friendly, and that one is disliked. It was hypothesized that scores on the NWS would be positively associated with the interpersonal relations subscale. This hypothesis was also supported by the data. Furthermore, the results indicate that the NWS is more strongly associated with the interpersonal relationship subscale than with either the total scale or with any other subscale, explaining an additional 8.6% of the variability. Latina caregivers in this study who see the neighborhood as more worrisome also report feeling that they are disliked and that others aren’t that friendly toward them. This is also consistent with studies highlighting the importance of social cohesion and social support (Mair et al., 2010; Rios et al., 2012).

Due to the collectivist orientation held by Latinos and the importance placed on relationships, Latinas in this study may feel disconnected from positive social relations which could in turn serve to exacerbate the feelings of depression that are experienced. The association between family and social relationships and mental health outcomes among Latinos has been demonstrated in the research literature (Campos et al., 2008; Priest & Denton, 2012; Rivera et al., 2008; Vega, Kolody, Valle, & Weir, 1991). For example, Mulvaney-Day, Alegria, and
Sribney (2007) found that both friend support, and family support were positively and significantly related to self-rated mental health.

However, perceiving others to be not friendly and that you are not liked could lead to feelings of worry about safety in the neighborhood. Kraus, Côté, and Keltner (2010), discovered that subjects with a contextual orientation (like that possessed by Latinos) were able to more accurately perceive the emotions of others. Latinas who perceive people as unfriendly may do so in relation to some objective cue. More research is needed in this area.

**Other significant findings.** In this study education is found to be negatively associated with depressive symptoms across all models. Latina’s who report having at least a high school diploma on average report less depressive symptoms. These findings are supported by other studies that report the protective nature of education in relation to depressive symptoms (Gapen et al., 2011). As a group, less Latinos obtain a high school diploma relative to non-Latino whites (Belfield, 2008).

**Non-Significant Findings**

In this study control variables age, household income, acculturation, and marital status were positively associated with depressive scores but did not reach the level of statistical significance. All four of these covariates have been demonstrated to be significantly associated with depression in other studies (Frech & Williams, 2007; Mirowsky & Ross, 2003). Lack of significance in the study is most likely due to the small sample size and homogeneity of this sample on those particular variables.

**Strengths and Limitations**

Like all studies this study has a number of strengths and limitations. Similar to many neighborhood effect studies, this study considers the effects of neighborhood conditions on
depressive symptomology from the perspective of social stress theory and an ecological model (for example, Booth et al., 2012). However, unlike the majority of studies, it attempts to conceptually link those symptoms to the natural biological processes that occur as a result of chronic exposure to more distal, stress inducing mechanisms. This is an important distinction because biologically based theories have more power to connect social structural level policy decisions in areas such as housing, education and financial allocations, to individual level consequences.

Also, this study’s focus on the effect of the social environment on Latina caregivers’ mental health is a valuable addition to the literature measuring depression as an outcome. Previous studies focusing on caretaker or parental depression have done so in reference to the effect the depression has on child centered outcomes. This study is one of few studies to date that focus on the association between caretaker centered outcomes and the effects of chronic worry regarding children being exposed to adverse neighborhood dynamics. It also attempts to understand that association through the lens of culture and context and by applying a more realist approach to the interpretation of the findings (Pawson et al., 2005b).

In the same respect, this study shares a number of limitations with other studies using similar cross sectional methodology. Cross sectional studies are unable to establish causality, which in regard to this study leaves a number of questions unanswered. For example, were mothers in the study already depressed and by being so, more likely to live in the neighborhood due to economic reasons, availability of services or due to language need? Nevertheless this study provides important information about the added effects of neighborhood level correlates of depressive symptoms in addition to individual ones.
Also, the nature of the sample presents some limitations. The generalizability of a convenience sample is ultimately limited to itself. Even so, similar patterns might exist in the larger population as well and the findings of this study can be used to build and further test theoretical relationships and intervention models.

A further limitation related to the sampling procedure is the potential for selection bias. Because participants were not selected randomly, it’s impossible to tell why they decided to become part of the study and if the reason affects the results in any way. However, research samples with hard to reach populations are difficult to obtain. This study provides a valuable glimpse into some of the factors that are associated with depressive symptoms in this group.

A final limitation of this study is the small homogeneous sample. Small samples lack the power to detect effects that are less dramatic and limit the inclusion of potential confounding variables as well as the ability to test for interactions. In this study a larger sample size might have provided enough power to produce statistically significant relations between age, income and acculturation with depressive symptoms. The homogeneity of the sample is also a limitation. The lack of variability makes it difficult or impossible to detect confounding relationships that may exist outside the study sample. For example, the size of the sample was taken into consideration when selecting the number of independent variables to include in the model. Future studies may seek to include a larger more heterogeneous sample in terms of both neighborhood dynamics (e.g., crime, income) and individual characteristic (e.g., ethnicity, marital status) in order to include more control variables and increase the ability to detect confounders.
Implications for Social Work Policy and Practice

This study contributes to an emerging critical framework that illustrates how public policy, both within and outside of healthcare, influences the more proximal mechanisms that contribute to mental health and health problems and thus highlights the need for more institutionally based responses to human needs and adverse social conditions (Blas et al., 2008).

The results of this study serve as both a lesson and reminder for social work policy makers and direct service workers regarding the need for policies and interventions that not only address individual level correlates of depression but that also address macro level correlates. It also highlights the importance of connecting those correlates to the context in which they occur. Forde and Raine (2008) call for an integration of both approaches and recommend a multi prong intervention that address both structural and individual factors.

In light of the findings of this study, social policy makers should consider how policy level decisions influence individual level experiences from a pragmatic, cultural, and biological perspective. Participants in this study were recruited from low income families living in low income neighborhoods. Policies that support safe and affordable housing as well as access to adequate financial resources are key ways that could address these issues and reduce stress in this population. Also, policy makers could allocate funds to target areas in need of revitalization projects particularly those that seek community involvement and foster opportunities to build positive relationships such as community gardens. Efforts could also be made to increase neighborhood residents involvement in community planning decision making and advocating for resources. This would give residents a sense of belonging. Cutrona et al. (2006) advocate dealing with issues that affect the whole community at the community level.
Direct service workers can also make use of these findings in a number of ways. First, the findings of this study reinforce the need to understand the complexity of the relationships underlying answers on standardized instruments and the experiences of those who are responding to them. With the push for evidence based practice and the increasing use of standardized instruments as outcome measures in both agency and clinical settings (Jensen-Doss & Hawley, 2010), this study will help social workers realize the value of using participant responses on these instruments as tools to better understand important connections. This can be done by asking questions about the context within which particular item responses occur.

Second, this study can be a valuable resource for social workers working with Latinas in low income inner city areas where lack of social cohesion and social support created by not engaging with the community due to fear, may leave Latina caregivers feeling isolated and not welcomed. Programs that encourage and facilitate connections that may continue outside of the program, in less formal venues, may help to alleviate some of the feelings of isolation. This may be accomplished by presenting interventions in small group format and allowing time for adequate socialization. A small group format also recognizes the collectivist orientation characteristic of Latino cultures.

**Implications for Future Research and Conclusion**

This study explores the connection between neighborhood risk factors and depression and adds to current theoretical knowledge building by introducing a new mechanism that associates positively with depression symptoms in a culturally diverse group. Worry regarding the safety of household children in the neighborhood in relation to the child’s general safety, influence of bad friends and the availability of drugs and alcohol are associated with higher levels of depressive symptoms in Latina caregivers, especially in relation to interpersonal relationships.
While these findings are supported by the findings of other studies reporting the deleterious effect of neighborhood factors on individual mental health, they also highlight gaps in the ability to build better theoretical models. More research is needed that not only collects data but that can capture the contextual richness of that data by linking particular answer choices to the context to which they are attached. For example, what are some of the factors that influence the particular answer choices regarding interpersonal relations? Is it lack of trust? If so, is lack of trust based on past experiences or current observations? Or maybe it’s based on parental teachings? A qualitative study that examines the rationale behind particular answer choices would help clarify this issue.

In this study, a number of alternative hypotheses were generated for each subscale regarding its relationship to the NWS. These alternatives indicate that overall CES-D answer choices could be accounted for by other factors besides the presence of depression. Some alternative hypotheses were pragmatic, highlighting how items reflected normal coping, others were cultural, indicating the influence of some underlying cultural factor. Even still some linked those answers to underlying biological processes.

Further research should include a larger, more representative sample. A study sample that better reflects the ethnic and socioeconomic characteristics of the neighborhood would allow for a comparison across groups and could affirm any similarities or differences. Also, a more systematic way of measuring neighborhood worry that included more factors could help clarify some of the relationships between a Latina caretaker’s worry and her level of depressive symptoms.

Finally, researchers should address the ambiguity around the neighborhood-mental health connection by asking not only what is happening but, in the tradition of the realist orientation to
theory building (Pawson, Greenhalgh, Harvey, & Walshe, 2005a), it should also seek to understand how, where, when, why, and for whom it is happening.
References


HESR295 [pii]


Appendices

Appendix A: Socio Demographic Variables

4. What is your current marital status? Check all that apply.
   □ Married    □ Living with partner     □ Widowed   □ Separated    □ Divorced
   □ Single, never married            □ Other (specify) _______________

6. What is your date of birth? ____________________________

10. Check the appropriate box for the total annual household income for all persons living with you.
   □ Less than $10,000     □ $10,000 to $14,999     □ $15,000 to $24,999     □ $25,000 to $34,999
   □ $35,000 to $49,999     □ $50,000 to $74,999     □ $75,000 to $99,000     □ $100,000 or more

15. What is the highest level of education that you have completed?
   □ Elementary (Primaria)     □ 8th Grade     □ Some High School (Segundaria)
   □ High School Graduate or GED □ Bachelors Degree □ Some College /Associates Degree
   □ Graduate Study or Degree    □ Other (specify) ______________
Appendix B: Psychological Acculturation Scale

Please tell us about your cultural beliefs and values. (PAS)

1. With which group of people do you feel you share most of your beliefs and values?

   1----------2----------3----------4----------5----------6----------7----------8----------9
   Only with Latinos   Equally with Latinos and Anglos   Only with Anglos (Americans)

2. With which group of people do you feel you have the most in common?

   1----------2----------3----------4----------5----------6----------7----------8----------9
   Only with Latinos   Equally with Latinos and Anglos   Only with Anglos (Americans)

3. With which group of people do you feel most comfortable?

   1----------2----------3----------4----------5----------6----------7----------8----------9
   Only with Latinos   Equally with Latinos and Anglos   Only with Anglos (Americans)

4. In your opinion, which group of people best understands your ideas (your way of thinking)?

   1----------2----------3----------4----------5----------6----------7----------8----------9
   Only with Latinos   Equally with Latinos and Anglos   Only with Anglos (Americans)

5. Which culture do you feel proud to be a part of?

   1----------2----------3----------4----------5----------6----------7----------8----------9
   Only with Latinos   Equally with Latinos and Anglos   Only with Anglos (Americans)

6. In what culture do you know how things are done and feel that you can do them easily?

   1----------2----------3----------4----------5----------6----------7----------8----------9
   Only with Latinos   Equally with Latinos and Anglos   Only with Anglos (Americans)

7. In what culture do you feel confident you know how to act?

   1----------2----------3----------4----------5----------6----------7----------8----------9
   Only with Latinos   Equally with Latinos and Anglos   Only with Anglos (Americans)

8. In your opinion, which group of people do you understand best?

   1----------2----------3----------4----------5----------6----------7----------8----------9
   Only with Latinos   Equally with Latinos and Anglos   Only with Anglos (Americans)

9. In what culture do you know what is expected of a person in various situations?

   1----------2----------3----------4----------5----------6----------7----------8----------9
   Only with Latinos   Equally with Latinos and Anglos   Only with Anglos (Americans)

10. Which culture do you know the most about (for example: its history, traditions, and customs)?

    1----------2----------3----------4----------5----------6----------7----------8----------9
    Only with Latinos   Equally with Latinos and Anglos   Only with Anglos (Americans)
Appendix C: CES-D Depression Scale

Please check the box indicating how often you have felt this way during the past week.

<table>
<thead>
<tr>
<th></th>
<th>Rarely or none of the time (less than 1 day)</th>
<th>Some or a little of the time (1-2 days)</th>
<th>Occasionally or a moderate amount of the time (3-4 days)</th>
<th>All of the time (5-7 days)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>I was bothered by things that usually don’t bother me</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>I did not feel like eating; my appetite was poor.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>I felt that I could not shake off the blues even with help from my family.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>I felt that I was just as good as other people.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>I had trouble keeping my mind on what I was doing.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>I felt depressed.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>I felt that everything I did was an effort.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>I felt hopeful about the future.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>I thought my life had been a failure.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td>I felt fearful.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11.</td>
<td>My sleep was restless.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12.</td>
<td>I was happy.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13.</td>
<td>I talked less than usual.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15.</td>
<td>People were unfriendly.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16.</td>
<td>I enjoyed life.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17.</td>
<td>I had crying spells.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18.</td>
<td>I felt sad.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19.</td>
<td>I felt that people disliked me.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20.</td>
<td>I could not “get going.”</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Appendix D: Hispanic Woman’s Social Stressor Scale Items

During the past 12 months, how stressful were each of these experiences for you? (HWS)

<table>
<thead>
<tr>
<th>Experience</th>
<th>Not at all stressful</th>
<th>A Little Stressful</th>
<th>Somewhat Stressful</th>
<th>Very Stressful</th>
<th>Did not happen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feeling your children were not safe in your neighborhood</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Your children being influenced by bad friends</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Your children being exposed to drugs or alcohol.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix E: Confirmatory Factor Analysis for CES-D
Notes for Model (Default model)
Computation of degrees of freedom (Default model)
Number of distinct sample moments: 210
Number of distinct parameters to be estimated: 45
Degrees of freedom (210 - 45): 165

Result (Default model)
Minimum was achieved
Chi-square = 336.113
Degrees of freedom = 165
Probability level = .000

Model Fit Summary

CMIN

<table>
<thead>
<tr>
<th>Model</th>
<th>NPAR</th>
<th>CMIN</th>
<th>DF</th>
<th>P</th>
<th>CMIN/DF</th>
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<tbody>
<tr>
<td>Default model</td>
<td>45</td>
<td>336.113</td>
<td>165</td>
<td>.000</td>
<td>2.037</td>
</tr>
<tr>
<td>Saturated model</td>
<td>210</td>
<td>.000</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Independence model</td>
<td>20</td>
<td>1894.678</td>
<td>190</td>
<td>.000</td>
<td>9.972</td>
</tr>
</tbody>
</table>

RMR, GFI

<table>
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<th>RMR</th>
<th>GFI</th>
<th>AGFI</th>
<th>PGFI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Default model</td>
<td>.110</td>
<td>.802</td>
<td>.748</td>
<td>.630</td>
</tr>
<tr>
<td>Saturated model</td>
<td>.000</td>
<td>1.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Independence model</td>
<td>.561</td>
<td>.209</td>
<td>.126</td>
<td>.189</td>
</tr>
</tbody>
</table>

Baseline Comparisons

<table>
<thead>
<tr>
<th>Model</th>
<th>NFI Delta1</th>
<th>RFI rho1</th>
<th>IFI Delta2</th>
<th>TLI rho2</th>
<th>CFI</th>
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Parsimony-Adjusted Measures

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<tr>
<th>Model</th>
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<th>PCFI</th>
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<tbody>
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### NCP

<table>
<thead>
<tr>
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<tbody>
<tr>
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### FMIN

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### RMSEA

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### AIC

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### ECVI

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### HOELTER

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