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## Development of A New Measure to Assess for Poverty-Based Stress: The Poverty-Based Stressor Scale (PBSS)

Brianna N. Allen

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# DEVELOPMENT OF A NEW MEASURE TO ASSESS FOR POVERTY-BASED STRESS: THE POVERTY-BASED STRESSOR SCALE (PBSS)

by

BRIANNA N. ALLEN

(Under the Direction of Jeff Klibert)

## ABSTRACT

Poverty, typically measured by economic well-being or deprivation, is the result of systemic flaws that adversely impact multiple dimensions of health and well-being. The specific stressors that disproportionately impact low-income individuals are called poverty-based stressors, and they encompass multiple categories of risk including physical, psychosocial, and financial risks. Currently, there is not an adequate measure of poverty-based stressors for low-income adults in the United States (U.S.), which restricts our ability to accurately determine the effects of poverty on health-related outcomes. The purpose of this dissertation was to develop a psychometrically sound measure of poverty-based stress using rigorous analyses and statistical procedures with a sample of lower SES adults located in the U.S. Three separate studies were conducted in order to evaluate the psychometric properties of the measure. The first study identified an adequate factor structure for the items, and an exploratory factor analyses produced a three-factor solution: Housing Dysfunction, Financial Dysfunction, and Noise Dysfunction. The correlations between the factors were strong. Using confirmatory analytic procedures, the second study confirmed that the identified 3-factor solution provided solid fit, approaching good fit, to the data. The third and final study further indicated that the 3-factor solution provided good fit to the data. In addition, internal and temporal consistency, convergent validity, predictive validity (i.e., depression, anxiety, resilience, flourishing) were all high. These results suggest the 3-factor solution underlying my assessment is an excellent measure of poverty-based stressors. Results also highlighted demographic differences (i.e., ethnicity, rurality) in reports of poverty-based stress. It appears African American/Black participants residing in rural areas report the highest rates of poverty-based stressors, particularly those related to housing dysfunction. Overall, these results offer unique perspectives that should extend the literature pertaining to poverty-based stress.

**INDEX WORDS:** Poverty, Stress, Poverty-based stress, Depression, Anxiety, Resilience, Flourishing, Rural, Systemic, Health, Black Lives Matter

DEVELOPMENT OF A NEW MEASURE TO ASSESS FOR POVERTY-BASED STRESS:  
THE POVERTY-BASED STRESSOR SCALE (PBSS)

by

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B.A., University of Connecticut, 2015

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## CHAPTER 1

### INTRODUCTION

Poverty, as a term, is used to both signify literally and indirectly situations of deprivation (Walker, 1987; Wagle, 2002). Poverty may be a transient or brief situation, a persistent and continuous state, an abstract distinction between what has been socially defined as rich and poor, an indicator of insufficiency, or founded on the basis of a lack of individual capabilities (Walker, 1987; Wagle, 2002). Poverty is also classified within a system of dimensions. The first dimensions encompass deficits in financial income (Chambers, 2006). The second dimension encompasses material lack or want which is characterized by a lack of or little wealth, and lack of or low quality of other assets and essentials such as shelter, clothing, personal methods of transportation, furniture, etc. (Chambers, 2006). The third dimension is capability deprivation which refers to the things an individual can or cannot do, or be, as a result of poverty (Chambers, 2006).

There are significant disparities based on socio-economic status (SES; American Psychological Association [APA], 2017). Stressors related to social and economic disadvantage are linked to a wide range of psychological, neurobiological, physiological, and behavioral processes (APA, 2017). Individuals living in poverty report poorer mental health outcomes, are diagnosed with more chronic health conditions (e.g., diabetes, hypertension), and are characterized by shorter life spans (APA, 2017). Furthermore, impoverished, disadvantaged, and lower-SES populations are disproportionately exposed to stress across different life domains, resulting in more frequent and greater threats to health, safety, and economic advancement (Sternthal, Slopen, & Williams, 2011). Overall, the nature of poverty-based stressors is quite insidious and ubiquitous warranting greater empirical attention.

According to the theoretical literature, poverty-based stress encompasses three primary categories of risk factors: physical, psychosocial, and financial risks (Evans & Kim, 2013; Evans, & Cassells, 2014). Some examples of physical risks associated with poverty include substandard housing and a chaotic environment (e.g., noise, too many people living in the home, exposure to toxins). Examples of psychosocial risks include family turmoil as well as disconnectedness and separation from loved ones (Evans, Brooks-Gunn, & Klebanov, 2011). Finally, examples of financial risks include decreases in income, job loss, disability, illness, and repossession of a vehicle (Grable & Joo, 2001; Archuleta, Britt, Tonn, & Grable, 2011). As an addendum to these categories, research indicates that individuals residing in lower-SES communities report more general stress exposure overall (APA, 2017).

One factor that limits further evaluation of poverty-based stressors is the lack of a robust and multifaceted assessment. Interestingly, there are a handful of measures currently being used to assess poverty-based stressors. However, each of these measures fails to adequately assess for each specific category of stress (physical, psychosocial, financial), as well as a general index of stress, and other commonly related concepts (e.g., depression, anxiety, resilience, flourishing). Insufficient access to a robust measure of poverty-based stress may limit science in a number of ways. First, health professionals may be providing inadequate services to their clients if they are unable to identify the specific stressors that may be contributing to or exacerbating client mental and/or physical health concerns. Second, without access to such a dynamic assessment of poverty-based stress, practitioners may be unable to adequately assess for, identify, and provide the appropriate resources that can be helpful in mitigating or eliminating health concerns.

*Purpose*

Overall, poverty-based stressors and their corresponding effects are multidimensional and complex. What appears to be missing from the literature is a robust and scientifically rigorous assessment of poverty-based stress dimensions. Thus, the primary purpose of this study was to develop a robust and multifaceted measure of poverty-based stress. Given this primary goal, the current study attempted to complete the following: (1) identify multiple, internally consistent dimensions of poverty-based stress (e.g., physical, psychosocial, financial, and general risk factors); (2) determine and verify an adequate factor structure for the measure; (3) validate poverty-based dimensions against theoretically relevant measure of distress (anxiety, depression) and well-being (resilience, flourishing); and (4) determine whether poverty-based dimension scores vary by ethnicity and rural status. These procedures were guided by the recommendations of Clark and Watson (2019).

### *Significance*

The development of such a measure can be beneficial in filling an important gap in the literature. A measure that assesses poverty-based stress can be essential in informing treatment as a means of helping providers understand the specific stressors an individual is facing. This measure can also be essential in helping understand a client's presenting concerns, as well as which poverty-based factors may be exacerbating the client's symptoms. In addition, this measure can be helpful in identifying which specific resources may be most appropriate to help clients find well-being. Furthermore, the information obtained from such a multifaceted measure can be useful not only in clinical settings, but also in social work, medical, chiropractic, optometric, and other health-related settings as a means to better understand clients and the stressors that may be contributing to or affecting their difficulties.

### *Definition of Terms*



*Poverty.* The most widely used dimension in terms of defining and measuring poverty is economic well-being (Wagle, 2002). The International Labour Organization (ILO) defines poverty in terms of the minimum requirements for food, shelter, clothing, and other fundamental services including but not limited to transportation, sanitation, health, and education (Wagle, 2002). According to this definition absolute poverty is divided into two categories: extreme poverty and overall poverty. Extreme poverty is characterized by the lack of income necessary to meet basic food needs, while overall poverty is characterized by the lack of income needed to meet both food and non-food necessities (Wagle, 2002). In the current study, poverty was measured by income, which determined who could participate in the study.

*Poverty-Based Stressors.* Poverty-based stressors encompass multiple categories of risk including physical, psychosocial, and financial risks (Evans & Cassells, 2014; Evans & Kim, 2013). Physical risks associated with poverty may include substandard environmental conditions including toxins, water pollution, and poor neighborhood sanitation, noise, crowding, and poor housing (Evans & Cassells, 2014; Evans & Kim, 2013; Evans, Brooks-Gunn, & Klebanov, 2011). Psychosocial risks may include family turmoil, disconnectedness and separation from loved ones, and violence (Evans & Cassells, 2014; Evans & Kim, 2013; Evans, Brooks-Gunn, & Klebanov, 2011). Examples of financial risks include reduced income, job loss, disability, and illness (Grable & Joo, 2001; Archuleta, Britt, Tonn, & Grable, 2011). Identifying meaningful dimensions of poverty-based stressors was the major thrust of this project.

*Depression.* Depression is a mood disorder characterized primarily by low mood or loss of interest or pleasure (American Psychiatric Association, 2013). Individuals diagnosed with depressive difficulties commonly experience significant emotional dysfunction and some physical symptoms. These symptoms may include insomnia or hypersomnia, changes in appetite,

difficulty concentrating, and thoughts of death or dying by suicide. Within the current study, depression was measured to establish convergent validity.

*Anxiety.* According to the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5), anxiety is a category of mental health diagnoses characterized by varying degrees and presentations of worry and fear (American Psychiatric Association, 2013).

According to the available literature, anxiety is a future-oriented mood state associated with fear as an alarm response to present or imminent danger, either real or perceived (Craske et. al., 2011). In the current study, anxiety was measured to establish convergent validity.

*Resilience.* Resilience is characterized by flexible and positive adaptations to the changing demands of stressful experiences, as well as the ability to bounce back from negative emotional experiences despite experiences of adversity (Tugade & Fredrickson, 2007; Herman et. al., 2011). At its core, resilience refers to one's ability to maintain or regain good health in the context of cumulative and interactive risk, which can be found within the family, peer group, or community contexts (Peterson & Seligman, 2004). Within this study, resilience was measured to establish convergent validity.

*Flourishing.* Flourishing is defined as processes of optimal functioning for people, groups, and institutions; it is a level of functioning that indicates growth, generativity, and resilience (Fredrickson & Losada, 2005; Gable & Haidt, 2005). Flourishing is a measure of health grounded in positive terms, rather than a measure of health based on the absence of illness (Fredrickson & Losada, 2005). In the current study, flourishing was measured to establish convergent validity.

## CHAPTER 2: LITERATURE REVIEW

### DEVELOPMENT OF A NEW MEASURE TO ASSESS FOR POVERTY-BASED STRESS: THE POVERTY-BASED STRESSOR SCALE (PBSS)

In terms of psychological health, poverty and poverty-based stress are associated with a number of negative outcomes. From a wellness perspective, poverty is associated with a number of long-term difficulties such as poor health and increased mortality, school failure, crime, and substance misuse (Murali & Oyebode, 2004). Specifically, research indicates that poverty is associated with higher rates of poor health and chronic health conditions in children. Children with fewer resources are admitted to the hospital at increased rates, require more disability days, and have increased death rates. Furthermore, children and their families living in poverty generally possess inadequate access to preventive, curative, and emergency care and are negatively affected more frequently by poor nutrition, dysfunctional family environments, and poor housing (Wood, 2003).

Moreover, the specific stressors that disproportionately affect low-SES individuals are likely to contribute to heightened risk for cardiovascular disease (APA, 2017). For example, aspects of poverty including environmental pollution, financial strain, job insecurity, and unemployment are associated with an increased risk for hypertension (Braveman, Egerter, & Williams, 2011). Financial strain is associated with recurrent cardiovascular events among women, childhood maltreatment, and exposure to violence (Georgiades et al., 2009; Ford & Browning, 2014; Gooding et al., 2015). These stressors may also influence the onset and course of cardiovascular disease and other significant ailments through their effect on health care and access to adequate preventative, screening, and treatment resources (Mozaffarian et al., 2016). Sleep researchers examining the impact of losing sleep on the cognitive functioning of low-SES

individuals consistently find that inducing financial concerns has a cognitive impact comparable with losing a full night of sleep (Mani, Mullainathan, Shafir, & Zhao, 2013).

Youth residing in disadvantaged neighborhoods are more likely to be exposed to community violence, have decreased access to services, and are more likely to present with internalizing disorders such as anxiety and depression (Beidas et. al., 2012). Disadvantaged neighborhoods are characterized by lower percentages of owner-occupied housing, lower percentages of occupants who are educated, higher percentages of occupants who are living below the poverty level, and lower median home values (Beidas et. al., 2012). The lack of neighborhood social organizations can also negatively affect health and behavioral functioning. Neighborhood social organization refers to the formal and informal mechanisms that are present in a neighborhood, and the extent to which common values and norms, such as mutual trust, willingness to intervene for the common good, and child rearing, are effectively articulated and portrayed (Kohen, Leventhal, Dahinten, & McIntosh, 2008). Poor neighborhood social organization is associated with the presence of problematic behaviors such as public drinking, drug use and misuse, crime, and destruction of property (Kohen et al., 2008). Furthermore, poor social organization is an important mechanism for transferring the effects of neighborhood poverty to adolescents' developmental outcomes. Of importance, low-SES communities lacking informal control or institutional mechanisms necessary to supervise and monitor children and youth often report higher rates of adolescent delinquency (Kohen et al., 2008).

The relationship between low economic status and increased incidence and prevalence of mental illness is also quite apparent within the literature. Research indicates that there is a direct relationship between the experience of poverty and a high rate of emotional disturbance as marked by psychotic symptoms, mood disorders, alcohol and substance use difficulties,

personality dysfunction, and suicide (Murali & Oyeboode, 2004). Poverty-related stress is also directly related to anxious and depressed symptoms, and social problems (Santiago, Wadsworth, & Stump, 2011). Furthermore, the odds of an individual experiencing major depression are greater among individuals residing in poor neighborhoods (Galea et al., 2007). Specifically, researchers indicate that among those without a history of depression, residents of poorer neighborhoods are two times more likely to experience depression when compared to residents of neighborhoods of higher SES (Galea et. al., 2007).

The effect of poverty and poverty-based stressors can present in early childhood through internalizing symptoms. Studies show consistent patterns whereby children residing in poverty from 0 to 5 years report higher levels of internalizing symptoms when compared to those who never resided in poverty (Wadsworth, Evans, Grant, Carter, & Duffy, 2016). Furthermore, research indicates youth ages 2 to 19 years residing in distressed neighborhoods report higher levels of overall anxiety, social anxiety, somatic anxiety symptoms, and comorbid depressive symptoms compared to same-age counterparts who do not live in distressing neighborhoods (Wadsworth et. al., 2016). Finally, children residing in poverty show higher levels of social problems, attention problems, and anxiety- and depression-related symptoms (Santiago, Wadsworth, & Stump, 2011).

Externalizing symptoms are also significantly related to poverty and poverty-based stressors. Researchers highlight behavioral problems among toddler- and preschool-aged children occur at significantly higher rates among low-income samples (Yoshikawa, Aber, & Beardslee, 2012). The association between externalizing symptoms and low-income early childhood-age samples exist in studies that use more broad terms (e.g., conduct problems, behavior problems, under-controlled behavior) as well as studies that utilize more specific

language and examine more direct behaviors (e.g., aggression, noncompliance, hyperactivity, oppositionality; Wadsworth et. al., 2016). Poverty-based stress also predicts engagement in high levels of aggressive and antisocial behaviors (Keller, Spieker, & Gilchrist, 2005). Moreover, higher levels of adverse socioemotional outcomes, including psychological distress, learned helplessness, and self-regulatory behavior are consistently linked to low-income households (Evans, Eckenrode, & Marcynyszyn, 2010).

When considering the cognitive functioning of low-income individuals, it is important to consider how poverty affects information processing. Preoccupations with pressing budgetary concerns and financial limitations allow for fewer cognitive resources to guide choice and action (Mani, Mullainathan, Shafir, & Zhao, 2013). Persistent preoccupations with financial concerns can be distracting, which can negatively impact cognitive resources (Mani et al., 2013). Given the human cognitive system has a limited capacity, an amplified preoccupation with poverty-related stressors can increase the load on and can impede upon cognitive capacity (Mani et al., 2013).

According to APA (2017), individuals of low socioeconomic status (SES) live and work in social and physical environments that increase the likelihood of them being exposed to threats, which results in decreased availability of material and social resources necessary to address such threats and mitigate the effects of these threats on their mental and physical health. When examining the relationship between socioeconomic status, neighborhood disadvantage, poverty-related stress, and psychological functioning in a sample of poor families, research indicates that neighborhood disadvantage, poverty-related stress, and income clearly contribute to psychological problems among poor children and adults (Santiago, Wadsworth, & Stump, 2011)

Children growing up in low-SES families are more likely to experience specific, related stressors including family conflict, separation, household crowding, and neighborhood disorder (Mani et al., 2013). Children raised in poverty are more likely to experience inconsistent and harsh discipline from their parents, as well as less nurturing care and less responsiveness (Johnson, Riis, & Noble, 2016). Research also shows that stress may impact parents' emotional, behavioral, and relational functioning, including their parenting behaviors, which could possibly explain the treatment low-SES children receive (Johnson, Riis, & Noble, 2016). Childhood poverty is also related to increased risk of psychopathology and physical illness in adulthood, is linked to emotion dysregulation which is further associated with negative physical and psychological health in adulthood, and predicts adult morbidity regardless of adult poverty (Kim et. al., 2013).

Chronic exposure to poverty-specific stressors generates long-term negative effects on physiological stress regulatory systems, eventually resulting in pathology (Kim et. al., 2013). Researchers consistently find evidence for associations between childhood poverty and adult neural activity during effortful attempts to regulate negative emotion; adults with lower family income during childhood exhibit reduced ventrolateral and dorsolateral prefrontal cortex activity and failure to suppress amygdala activation during early adulthood (Kim et. al., 2013). As such, adults with lower family income during childhood may exhibit difficulties regulating stress and emotions, detecting and responding to threats from the environment, activating physiological stress responses, and implementing cognitive strategies such as cognitive reappraisal involved in emotion regulation in adulthood (Kim et. al., 2013). Similar dysregulations are present among individuals who present with mood dysregulation, including depression, anxiety disorders

including posttraumatic stress disorder, impulsive aggression, and substance abuse (Kim et. al., 2013).

Economic disadvantage also negatively impacts the formation of marriages, a union which plays a crucial role in the financial stability and social support of families and individuals (APA, 2017). Poverty-related stress plays a key role in placing low-SES adults at risk for marital conflict, with experiences of long-term poverty being linked to family dysfunction and stress among caregivers (Santiago, Wadsworth, & Stump, 2011; Ahmed & Kingsolver, 2005). Furthermore, when compared to children in married homes, children raised by single parents are more likely to have emotional and behavioral problems, be physically abused, smoke, drink, and use drugs, be aggressive, engage in violent, delinquent, and criminal behavior, have poor school performance, be expelled from school, and drop out of high school (Rector, 2010).

Clearly, poverty and poverty-based stressors contribute greatly to a wide range of poor psychosocial, behavioral, cognitive, and emotional outcomes. However, these studies paint an incomplete picture. By measuring for poverty and general stressors associated with poverty, there is no specificity to help guide prevention, intervention, or policy changes. Instead, the literature broadly cites poverty as a destructive force. There is no indication of whether certain elements of poverty and poverty-based stressors contribute uniquely to the development of different health-related outcomes. The development of multifaceted and scientifically rigorous measures is needed to clarify the effects of different poverty-based stressors on unique outcomes.

### *Measuring Poverty-Based Stress*

Poverty and related constructs are evaluated through the use of different measures. However, these measures are limited in their scope, reductionist in their focus, lack empirical rigor, appear dated, and lack the extensive coverage necessary to analyze the specific and general



stressors faced by individuals residing in poverty. In the following section, I will review common measures of poverty and poverty-based stressors and highlight their limitations.

*Hollingshead Four-Factor Index of Social Status.* One common measure of poverty is the Hollingshead Four-Factor Index of Social Status (Hollingshead, 1975). This index measures the social status of individuals by examining four specific multidimensional concepts: education, occupation, sex, and marital status. This index contains the following assumptions: (1) that a discernable, unequal status structure exists in our society, (2) that the primary factors indicative of status are occupation and years of schooling completed, with other salient factors being sex and marital status, and (3) that these factors may be combined so that researchers can quickly, reliably, and meaningfully estimate the social status positions that individuals and members of nuclear families occupy within society (Hollingshead, 1975). While this measure is widely used, it does possess a number of limitations.

As with many measures of poverty, the Hollingshead Four-Factor index of Social Status lacks a significant emphasis on stressors related to living in poverty. It does not capture the significant relationship between poverty and stress, specifically how poverty can increase stress in four categories of risk: physical, psychosocial, financial, and general risks (Hollingshead, 1975). As such, it is unable to identify the impact of domain-specific stressors on low-SES individuals, a process that can be helpful in informing treatment and improving access to resources.

*Hollingshead Four-Factor Index of Socioeconomic Status.* The Hollingshead Four-Factor Index of SES is one of the most frequently used measures of SES (Cirino et. al., 2002). This index is considered useful in using income as a predictor of health and well-being, and as an outcome measure in studies of adult dyslexia, premature infants, and psychological disorder such

as major depression (Cirino et. al., 2002; Wadsworth et. al., 2016). It does, however, possess some limitations.

The Hollingshead Four-Factor Index of Socioeconomic Status does not account for unique stressors associated with stress. Since this measure focuses primarily on income as a predictor of health and well-being, it completely overlooks other distinct characteristics that can negatively impact health and well-being, including poverty-based stressors presented in the form of physical, psychosocial, financial, and general stressors.

*Indices of Family Material Deprivation and Hardship.* Indices of family material deprivation and hardship are used in research to study the basic needs of life among those residing in poverty: food, shelter, clothing, or a lack thereof. These indices are developed to examine pathways between family income and material hardship, stress, parenting behaviors, children's competencies, and common manifestations of stress (i.e., depressive symptoms, marital conflict, and stress specific to the parenting role; Gershoff, Aber, Raver, & Lennon, 2007). Measures such as these are helpful in identifying mediators within samples of individuals residing in poverty including parent's ability to provide rich educational experiences and intellectually stimulating environments for their children (Wadsworth et. al., 2016), however it also presents with some limitations.

Indices of family material deprivation and hardship do not provide the opportunity to explore unique stressors commonly associated with poverty. These include physical stressors such as community-based stress, including crime, psychosocial stressors such as family turmoil, financial stressors such as serious medical bills and disability, and general stressors such as a lack of social support, labor decisions, and access to inadequate resources. Since these indices are unable to identify specific, poverty-based stressors among low-SES individuals, they are

unable to account for and provide critical information related to the depth and intensity of the stressors that impact these individuals' experiences.

*General Stress Indices.* General stress indices are assessments that are commonly used to provide professionals with more information about the way an individual perceives stress, reacts to stress, or the impact of stress on overall health (Cohen, Kamarck, & Mermelstein, 1983). Many studies use general stress indices to measure stress among low-SES individuals and those residing in poverty (Middlemiss, 2003; Wolff, Santiago, & Wadsworth, 2009; Brown et. al., 2016; Hustedt et. al., 2017), and while general measures of stress may be useful in certain situations, they have a number of limitations.

General stress indices are typically broad, focusing on the impact of stress on a global scale. One downfall of such an approach is that these measures do not include a specific focus on relevant domains related to poverty. For example, one common stress index is the Perceived Stress Scale (Cohen, Kamarck, & Mermelstein, 1983). This scale was designed to assess for current levels of experienced stress, as well as measure the degree to which respondents find their lives to be unpredictable, uncontrollable, and overloading (Cohen et al., 1983). While this stress scale can be used to evaluate unique stress processes among lower-SES samples, the items associated with these measures do not account for specific, poverty-based stressors (e.g., physical, psychosocial, financial). An inability to focus on the specific stressors faced by those who make up lower-SES populations can hinder the accuracy with which professionals address their concerns.

At present, we have access to a multitude of measures that assess for poverty, as well as those which examine the relationship between poverty and overall health and well-being. These measures are shortsighted in that they do not include a specific focus on the unique stressors

associated with poverty. What we need currently is a robust measure that can capture the multifaceted presentation of poverty-based stress, which can be done by identifying multiple, internally consistent dimensions of poverty-based stress in the form of physical, psychosocial, financial, and general risk factors.

### *Scientific Rigor in Developing Surveys*

In constructing self-report surveys, it is important researchers take cautious steps in following best scientific practices. Developing surveys is a multifaceted and complex endeavor, requiring scientists to be competent in the construction and implementation of different research designs and statistical analyses. In the current study, the development of the poverty-based stressor survey is guided by best theoretical and scientific practices (Clark & Watson, 2016; DeVellis, 2012; Johnson & Morgan, 2016). Before jumping into the process of scientifically developing a survey, there are a few important terms worth reviewing.

*Latent Variables.* A latent variable is defined as the underlying construct that a scale is intended to reflect (DeVellis, 2012). It is not directly observed, but rather is inferred from other variables that are directly observed and measured. A latent variable is considered to be the cause of an item score, and the strength or the quantity of the latent variable is assumed to cause an item, or set of items, to take on a specific value (DeVellis, 2012). A scale developed to measure a latent variable is meant to estimate its magnitude at the time and place of measurement for each entity measured (DeVellis, 2012). As such, the score obtained on a specific item is caused by the strength or quantity of the latent variable for that specific person at that particular time (DeVellis, 2012).

*Reliability.* Reliability examines the consistency of scores and the numerous forms of error that can contribute to inconsistency among scores (Johnson & Morgan, 2016). A reliable

assessment measure is one that performs in consistent and predictable ways (DeVellis, 2012). A scale is considered to be reliable if the score obtained represents the true score of the variable of interest, and no other extraneous or inessential factors. Essentially, scale reliability is the proportion of variance caused by the true score of the latent variable (DeVellis, 2012).

*Factor Structure and Factor Analysis.* Factor analysis is one of the most commonly used procedures in the development and evaluation of psychological measures (Floyd & Widaman, 1995). Factor analysis allows for the identification of the underlying dimensions of a domain of functioning representing theoretical constructs within the domain, as assessed by a particular measuring instrument (Floyd & Widaman, 1995).

There are many different forms of factor structure. Hierarchical factor structures consist of one or more general factors that underlie and account for the majority of variance in scores on the measured variables (Floyd & Widaman, 1995; DeVellis, 2012). Unidimensional factor structures are expected to have a single underlying construct, whereas multidimensional factor structures are expected to be comprised of several facets or constructs (DeVellis, 2012; Clark & Watson, 2016; Haynes, Smith, & Hunsley, 2018). Bimodal factor structures have two underlying constructs that both generate peaks within the data distribution (Schilling, Watkins, & Watkins, 2002). Exploratory and confirmatory factor analysis are commonly used to identify the underlying dimensions of clinical variables.

*Establishing Convergent Validity.* Validity refers to the degree to which variation in scores on an assessment measure are attributed to the variable, construct, or phenomenon of interest (DeVellis, 2012). Validity is important in ensuring that the items that comprise an instrument are stable, and the scores that are produced are repeatable, reproducible, constant, and internally consistent (Haynes, Smith, & Hunsley, 2018).

Convergent validity is defined as the extent to which the data obtained from an assessment measure are related to other measures of the same construct, as well as to other variables that they are theoretically expected to be related to (Haynes, Smith, & Hunsley, 2018). Convergent validity is important in demonstrating that assessment items measure the appropriate construct effectively, and in demonstrating the extent to which an assessment correlates with other assessments measuring the same construct (Worthington & Whittaker, 2006; Haynes, Smith, & Hunsley, 2018).

*Establishing Predictive Validity.* Predictive validity is defined as the degree to which one measure can predict another measure, typically taken at a later time (Haynes, Smith, & Hunsley, 2018). The time frame between measures can be real (e.g., respondents take a measure of depression at the beginning of treatment, and then again at the end of treatment 6 months later), or implied (e.g., the degree to which a measure of IQ predicts grades; Haynes, Smith, & Hunsley, 2018).

*Scientific Rigor in Developing Surveys.* The first step in scale development is generate a robust item pool consisting of diverse item candidates for inclusion in the scale. Specifically, it is important researchers develop an initial pool broader and more comprehensive in scope than the theoretical view of the target construct to incorporate all content that is potentially relevant to the target construct (Clark & Watson, 2016). In order to protect against poor internal consistency, researchers need to include a large number of items in the initial item pool. Items should be developed based on their relation to the construct of interest and the extent to which they reflect the scale's purpose (Clark & Watson, 2016). Essentially, items are developed and considered based on their overt expressions of the common latent variable.

With regard to item construction and selection, redundancy with respect to content needs to be considered. Specifically, items should be correlated to one another given the theoretical knowledge associated with the variable of interest (DeVellis, 2012). However, it is important that items do not measure the exact same content element. The overall quality of the items should also be considered. Items that are considerably lengthy should be re-evaluated or revised, as such items may increase complexity and decrease clarity (DeVellis, 2012). Furthermore, double-barreled items, or items that express two or more ideas, need to be excluded from the item pool.

The second step needed in scale development is to determine the format or anchor system for the measurement of the item pool. Researchers generally consider the two most common response formats: dichotomous responding format (e.g., true–false; yes–no) and Likert-type responding format (e.g., often–sometimes–seldom–never; Clark & Watson, 2016). When considering a dichotomous responding format, researchers need to evaluate the scientific criticisms and limitations. Specifically, dichotomous response formats are not as reliable as multiple-choice item formats; they provide less stable results and less effective scales (Clark & Watson, 2016). In addition, employing dichotomous response formats increase risk for distorted correlational results due to unbalanced response distributions by eliminating scale items with extreme response rates during scale development (Clark & Watson, 2016).

When considering a Likert-type responding format, researchers need to consider the number of response options to offer and how to label the response options. Specifically, researchers need to be wary of choosing a Likert-type response set that restrains on item content. For example, utilizing an odd number of response options requires researchers to develop a middle option which, depending on the wording, may present as uncertain (e.g., *cannot say*;

*undecided*) or as an inability or unwillingness to endorse an item (e.g., *neutral*; *neither*; Clark & Watson, 2016).

Once the item pool is developed and the response format is chosen, researchers need to have the initial draft of the item pool reviewed by colleagues (step 3). A review of the scale aids researchers in confirming or invalidating whether the item pool reflects the content of the construct of interest (DeVellis, 2012). Peer reviewers can also check the items for issues associated with clarity, conciseness, quality of the items, and quality of the response scale. Finally, knowledgeable peer reviewers may offer valuable insights into content of the items, particularly if all theoretical elements associated with a construct are accounted for by the item pool.

In the fourth step, researchers administer the items to a development sample. A large, heterogeneous group of people should participate in the administration of the survey. Existing evidence regarding the stability and replicability of structural analyses posits that a minimum of 300 respondents be assessed (Clark & Watson, 2016). In addition, researchers should make efforts to ensure that the survey is administered to a diverse group of people underlying the population of interest to maximize the generalizability of the findings.

After data is collected from the development sample, researchers need to evaluate basic psychometric properties of the item set (step 5). Specifically, researchers need to conduct multiple sets of analyses to determine which items need to be excluded from the assessment tool moving forward. For instance, researchers commonly evaluate structural analyses (e.g., exploratory factor analysis) to evaluate item fit and item overlap. Researchers also examine the response distributions of the individual items in order to identify and eliminate items that possess unbalanced distributions. Retained items should possess a high correlation with the true score of



the latent variable. The higher the correlations among items, the higher the reliabilities are for the individual items (Clark & Watson, 2016). If the individual items are high in reliability, then the scale will be more reliable as well (Clark & Watson, 2016).

After evaluating the basic psychometric properties of the items that comprise the measure, researchers need to validate the factor structure (step 6). Researchers should use confirmatory factor analysis to accomplish this goal. Confirmatory factor analysis is important because it allows an explicit, hypothesized factor structure to be tested for its fit with the measured variables (Floyd & Widaman, 1995). This provides strategies for model modification, a process that can suggest alterations in proposed factor structures and which can be used to revise and refine instruments and their factorial structure (Floyd & Widaman, 1995; Suhr, 2006).

The last step researchers should take is to generate evidence for validity within the scale (step 7). Validity is defined as the degree to which the variability of assessment scores is a result of the variable, construct, or phenomenon of interest (DeVellis, 2012). Specifically, are researchers measuring the variable they intended to measure. Validity is important in ensuring that the variable is the underlying cause of item covariation (how much two random variables change together) which ensures that the items that comprise the instrument are stable and the scores that are produced are repeatable (DeVellis, 2012). As much as possible, researchers should evaluate multiple indices of validity (e.g., convergent, discriminant, concurrent). Moreover, if the variable of interest is clinical in nature, it is important researchers make attempts to examine predictive validity. Overall, validity is most commonly estimated by examining correlations between the scale under examination and theoretical related constructs with established means of measurement (Clark & Watson, 2016; Haynes, Smith, & Hunsley, 2018).

### *Multiple Factors Underlying Poverty-Based Stress*

In the current literature, poverty-based stress is vaguely defined. However, researchers agree there are multiple dimensions underlying the construct. Therefore, I expect to develop a survey that can measure for these dimensions under the umbrella construct of poverty-based stress.

*Physical Stressors.* Physical stressors are physical risks commonly faced by and as a result of residing in poverty. These risks include substandard environmental conditions including toxins, water pollution, and poor neighborhood sanitation, noise, crowding, and substandard housing including housing with structural problems, poor maintenance or cleanliness, clutter, physical hazards, or poor climatic conditions (Evans, Brooks-Gunn, & Klebanov, 2011; Evans & Kim, 2013; Evans & Cassells, 2014). Individuals residing in structurally disadvantaged neighborhoods have access to substandard education, healthcare, and fewer resources related to safety and security, all of which have direct implications for health (Kwate, 2008; Thorpe, Brandon, & LaVeist, 2008).

*Psychosocial Stressors.* Psychosocial stressors are the related social factors or conditions that are negative as a result of residing in poverty. These risks include family turmoil and disruption, separation from loved ones, maternal depression, violence, elevated parental harshness, and diminished parental responsiveness (Evans, Brooks-Gunn, & Klebanov, 2011; Evans & Kim, 2013; Evans & Cassells, 2014; Sripada et. al., 2014). Such conditions produce toxic stress that can damage areas of the brain related to attention, memory, and language, all of which combine to form the foundation of academic success (Evans, Brooks-Gunn, & Klebanov, 2011).

*Financial Stressors.* Financial stressors are financial risks and hardships that are commonly endured by low-SES individuals. These risks include reduced income, job change or loss, injury, disability, illness, marriage, separation or divorce, child birth, vehicle repair, house repair, and legal problems (Joo, 2008; Grable & Joo, 2001; Archuleta, Britt, Tonn, & Grable, 2011). Financial stressors predict increased risk of functional limitations, are associated with elevated risk of chronic conditions, are significant predictors of poor self-related health which is predictive of mortality and other health outcomes, and are consistently predictive of increasing risk of poor health even after adjusting for co-occurring stressors and the number of stressors (Sternthal, Slopen, & Williams, 2011).

*Importance of Physical, Psychosocial, and Financial Stressors.* Physical, psychosocial, and financial stressors are important given the goal of developing a robust and multifaceted assessment of poverty-based stress. In order to do this, it is imperative that the measure is able to adequately assess each specific dimension of poverty-based stress that has been consistently identified as significantly impacting individuals residing in poverty (Evans & Kim, 2013; Sripada et. al., 2014). The severe and chronic exposure to poverty and accompanying, uncontrollable stressors, have been linked to a number of negative outcomes, including detriments in physical, psychosocial, behavioral, cognitive, emotional, and mental health outcomes. In order to better understand these outcomes, their impact on those residing in poverty, and how resources can be developed and utilized, it is crucial that each specific dimension of poverty-based stress be appropriately analyzed and measured.

#### *Proposed Convergent Estimates of Validity for Poverty-Based Stress*

The current study outlines four prospective indices of convergent validity for poverty-based stress. Based on the proposed literature, any valid measure of poverty-based stress should

reveal significant positive relationships with self-reported estimates of depression and anxiety and significant inverse relationships with self-reported estimates of resilience and flourishing.

*Depression.* Theorists suggest that individuals who identify as low-SES may be at increased risk of depression (Everson, Maty, Lynch, & Kaplan, 2002). Inadequate housing, burdensome responsibilities, and other enduring conditions are even more stressful than acute crises events among low-income individuals and are correlated with depression (Belle & Doucet, 2003). A link between job loss, a poverty-based stressor related to financial risk, and subsequent increase in depressive symptoms is also supported by research (Frese & Mohr, 1987; Ginexi et. al., 1999). Neighborhoods with poor-quality housing, few resources, and unsafe conditions, all of which are poverty-based stressors related to physical risk, impose stress, which leads to depression (Cutrona, Wallace, & Wesner, 2006). Adverse neighborhoods also interfere with the formation of bonds between people, an example of a poverty-based stressor related to psychosocial risk, which increases the risk for depression (Cutrona, Wallace, & Wesner, 2006). Overall, researchers posit that the stress of poverty is causally related to depression (Murali & Oyebode, 2004).

A number of studies support a strong link between poverty-based stress and depression. Specifically, researchers indicate that poverty-related stress directly predicts internalizing symptoms, such as depression, across different age groups (Santiago, Wadsworth, & Stump, 2011). Similarly, depressive symptoms are more common among children living in poverty (Costello, Compton, Keeler, & Angold, 2003). Children and adolescents residing in disadvantaged neighborhoods are more likely to present with internalizing disorders such as depression (Beidas et. al., 2012). Numerous studies also highlight a link between perceived stigma and depression, showing that if an individual is simply aware of the social stereotypes

associated with poverty, and if they have actual or anticipated experiences with discrimination, they are more likely to present with increased symptoms of depression (Mickelson & Williams, 2008).

*Anxiety.* Poverty, a multifaceted concept that acts through economic stressors such as unemployment and lack of affordable housing, is more likely to precede mental illnesses such as anxiety, thus making it an important risk factor for mental illness (Kuruville & Jacob, 2007). Exposure to multiple stressors is a signature feature of childhood poverty, with cumulative risk exposure facilitating the link between poverty and anxiety (Evans & Kim, 2013). Deprivation poverty, or an inability to consume goods and services resulting from poverty, coincides with different anxiety symptoms (Halleröd & Larsson, 2008). Theorists also posit that long-term exposure to poverty affects an individual's susceptibility to developing anxiety disorders (Eysenck, 2004).

Once again, research supports a strong link between poverty-based stress and anxiety symptoms. SES is a direct and stable predictor for certain mental illnesses, including anxious disorders (Santiago, Wadsworth, & Stump, 2011). Increased cumulative risk exposure facilitates the link between poverty and multiple markers of psychological well-being, including anxiety (Evans & Kim, 2013). Research indicates that symptoms of anxiety are more numerous among children living in poverty (Costello, Compton, Keeler, & Angold, 2003). Moreover, children and adolescents between the ages of 2 to 19 residing in distressed neighborhoods report higher levels of overall anxiety, social anxiety, and somatic anxiety symptoms compared to same-age counterparts who do not live in distressing neighborhoods (Wadsworth et al., 2016). Among adults, those with lower family income during childhood exhibit difficulties regulating stress and emotions, detecting and responding to threats from the environment, activating physiological

stress responses, and implementing cognitive strategies such as cognitive reappraisal involved in emotion regulation in adulthood (Kim et. al., 2013), all of which are key in different anxiety disorders.

*Resilience.* According to researchers, adverse life events can cause negative physical and mental health outcomes (Plichta, 1996), especially among those residing in poverty. Researchers note that symptoms commonly experienced by individuals in lower-SES status might decrease personal resources (Dolbier, Jaggars, & Steinhardt, 2010). The dynamic model of affect (DMA; Zautra et. al., 2001) predicts that individuals more vulnerable to the effects of stress, like those who are in poverty, are also likely to report deficits in the emotional-based features of resilience (Ong et. al., 2006). Essentially, stress vulnerability negatively impacts physiological and emotional recovery from stress (Tugade & Fredrickson, 2007).

Available literature shows a connection between lower-SES individuals and decreased personal resources. Individuals residing in poverty experience more severe daily stressors (Grzywacz, Almeida, Neupert, & Ettner, 2004) and report higher levels of perceived stress (Cohen & Janicki-Deverts, 2012), which impairs coping and other personal resources (Blair & Raver, 2012). This relationship contributes to emotion dysregulation in childhood, which is associated with negative physical and psychological health, as well as other personal resource deficits in adulthood (Kim et. al., 2013). Low-SES individuals also report experiencing more adverse events during childhood (Topitzes, Pate, Berman, & Medina-Kirchner, 2016) and more intense stress across life domains (Hatch & Dohrenwend, 2007). Personal resources are negatively impacted by exposure to these poverty-based stressors because they impair the development of self-regulation skills and increase the risk for learned helplessness, both of which contribute to disengagement (e.g., inaction) and avoidance coping behaviors among poor

children (Blair, Raver, Granger, Mills-Koonce, & Hibel, 2011). Chronic exposure to high stress as a result of poverty causes impairment in specific brain regions among adolescents, a process that results in these individuals relying more on disengagement coping strategies which is associated with more emotional and behavioral problems (Taylor, Eisenberger, Saxbe, Lehman, & Lieberman, 2006; Finkelstein, Kubzansky, Capitman, & Goodman, 2007). Overall, in combination, these studies suggest that individuals who experience significant poverty-based stressors will have a difficult time marshalling resilience resources to overcome adversity.

*Flourishing.* According to researchers, flourishing contrasts with pathology and risk to pathology (e.g., stress; Fredrickson & Losada, 2005). Among lower-SES subpopulations, flourishing is difficult to achieve; these individuals are unable to rise above their circumstances and experience growth within their personal sense of well-being (Martin & Paul, 2011). Specifically, individuals residing in poverty report difficulties building a sense of flourishing because they experience significant social and economic stressors that impact the way they view themselves, others, and external threats. Moreover, these stressors undermine the personal resources they need to respond to these threats in a way that will increase well-being (Brondolo, Ng, Pierre, & Lane, 2016).

Low-income individuals are disproportionately exposed to stress across life domains and face greater threats to health, safety, and economic advancement (Sternthal, Slopen, & Williams, 2011). On a neurobiological level, poverty-based stressors negatively impact the development of specific brain structures and processes necessary to support effective self-regulation and stress recovery, which negatively impacts flourishing (Hofmann, Schmeichel, & Baddeley, 2012). On a physiological level, threat evaluations trigger the activation of neuroendocrine, immune, and autonomic systems throughout the body (Gianaros & Wager, 2015). Recurrent, intense, or

persistent activation of these systems alters their self-regulatory abilities, leading to impairments in stress recovery, including notable disruptions to sleep (Faraut et. al., 2012; Kim et. al., 2013; Kim et. al., 2016; Dich, Doan, & Evans, 2017). On a behavioral level, stressors and their ensuing effects on psychobiological stress systems also shape health behaviors, driving obesity and substance use in particular, which can negatively impact flourishing (Li, Mustillo, & Anderson, 2018).

In terms of social forms of flourishing, children growing up in low-SES families are more likely to experience poverty-based stressors that negatively impact family functioning and cohesion (Mani et al., 2013). Neighborhood disadvantage (i.e., low levels of economic and social resources across multiple domains; Ross & Mirowsky, 2001) is associated with lower levels of family cohesion (Caughy et al., 2012). Children raised in low-SES households experience fewer supportive interactions with their parents and are more likely to be exposed to harsh parenting and interpersonal conflict within the household (Evans & Kim, 2013; Johnson, Riis, & Noble, 2016). Furthermore, when compared to parents with high SES, low-SES parents are less involved in their young children's education (Hornby & Lafaele, 2011), and their parental involvement is more likely to decrease over time (Wang, Hill, & Hofkens, 2014). The overall support network available to individuals residing in poverty is also more limited in regards to social and economic resources (Havranek et al., 2015). In comparison to higher SES individuals, lower-SES individuals are more likely to depend on family members for social connection (Jackson, Kennedy, Bradbury, & Karney, 2014). In combination, these studies suggest poverty-based stress is consistently and inversely related to different indices of flourishing.

### *Current Study*



The primary purpose of the current study was to construct a psychometrically sound measure of poverty-based stress. The first step I took in developing the measure was to generate a robust item pool consisting of a relatively large number of items. Next, I determined the format or anchor system for the measurement of the item pool. Once the item pool was developed and the response format was chosen, I had the initial draft of the item pool reviewed by colleagues. Following this review, I administered the items to a development sample. After data was collected from the development sample, I evaluated the basic psychometric properties of the item set including internal consistency and factor structure. Once the basic psychometric properties of the items that comprise the measure were evaluated, I validated the factor structure. The last step I took was to generate evidence for validity within the scale.

Three hypotheses and one exploratory inquiry were proposed from the current study. First, I expected that items would hold together in an internally consistent manner ( $\alpha > .70$ ). Next, I hypothesized that there would be a clear multidimensional factor structure associated with the evaluation of the items as research indicates that poverty stress is a culmination of general stress, financial stress, physical stress, and psychosocial stress. Relatedly, I hypothesized that these factors would be positively related to anxiety and depression and inversely related to resilience and flourishing. Finally, as an exploratory element, I sought to determine if poverty-based dimensions vary as a function of ethnicity and rurality.

## CHAPTER 3

### METHODOLOGY STUDY 1

#### *Participants*

Individuals who reported lower-SES statuses were recruited using MTurk, a crowdsourcing system developed by Amazon that allows workers from across the country the opportunity to complete research tasks. All participants self-reported an annual income of \$25,000 or less. In order to ensure adequate power, the number of participants needed to detect small, medium, and large effects was calculated using an established formula for regression statistics. In accordance with Green's formula (1991),  $104 + k$ , where  $k$  represents the number of predictors in the model, is the minimum amount of data required to detect large effects. This number was doubled to accurately detect small to moderate effects. To this end, 286 lower-SES participants were recruited. However, in order to protect the quality of the data, 80 participants' responses were removed because of validity concerns. Validity concerns were defined as participants who did not answer validity check questions correctly, did not answer 20% or more of the survey items, and completed the survey in less than two minutes. Thus, the final sample consisted of 206 lower-SES adults with an average age of 35.97 years ( $SD = 10.73$ ).

Demographic information is provided on Table 1 and Social-Environment information is provided in Table 2.

#### *Measures*

*Demographic Survey.* All participants were asked to report their age, gender, race/ethnicity, marital status, socioeconomic status, financial resource status, current place of residence, and rural status. The characteristics of their current place of residence and the town in which they were reared are measured through three separate items asking participants to report

on the region of their hometown (rural vs. urban), region of the town in which they were reared (rural vs. urban), and the approximate number of residents in their current city/town.

An additional 27 demographic questions were added to further illustrate the nature of their lower-SES status, circumstance, and environment. These questions include information about the participants' highest level of formal education, current employment status, overall household income, the number of people residing in the home, the number of bedrooms utilized in the home, how often they feel safe in their home, the condition of their home, the cleanliness of their community, the extent to which they have access to health-related resources, if they have ever engaged in any unlawful or criminal acts, if they have ever experienced unemployment, as well as other specific questions relevant to the stressors faced by individuals residing in poverty.

*Poverty-Based Stress.* The items were developed to measure the extent to which individuals residing in poverty experience general and specific stressors. The items were developed by Brianna N. Allen and Jeff Klibert. Brianna N. Allen initiated the process of searching available literature for references investigating the unique stressors faced by individuals living in poverty. Initially, 18 items were developed to measure whether participants were exposed to poverty and its associated stressors. Following continued review of the literature, 12 items were added to further measure the extent to which individuals experienced poverty-based stressors. The remaining items were evaluated by 6 other professional colleagues who were asked to examine the items for clarity and consistency with the defined construct. Following the aforementioned review, the authors further evaluated the items for intelligibility and consistency with the defined construct, resulting in the end product of 30 items. Each item is measured on a scale from 0 (never) to 4 (very often). See Appendix 1 for a full list of the items.

### *Procedure*

The participants were recruited through Amazon's Mechanical Turk, a platform that allows individuals from across the country the opportunity to perform different types of tasks or work within a virtual format. Upon completion of the identified tasks, individuals received compensation for their participation. Each participant received \$1.00 and they were paid through the Mechanical Turk website. In order to ensure anonymity, identifying information was not collected during the study. In order to participate, individuals were required to give their informed consent by checking a box on the Mechanical Turk website, which then transferred them to Qualtrics where the surveys were administered. Individuals were then required to give their informed consent a second time in Qualtrics before being able to complete and submit the surveys. Individuals took approximately 15 minutes to complete the surveys, after which they were thanked for their participation and compensated.

*Data storage.* All of the participant responses were stored in Qualtrics. After the initial data collection was complete, the data were transferred to SPSS for analysis and then removed from Qualtrics. The transferred data will be stored and secured on a password-protected hard drive and will remain there for 5 years following completion of the study.

#### *Proposed Analysis*

The first step in the analytical process was to run a maximum likelihood exploratory factor analysis (EFA) in order to determine the structure of the measure and to identify the underlying relationships between the identified factors. In case multiple factors were identified, the data were rotated using an oblique rotation strategy, specifically the promax rotation method, which allows factors to be correlated. The next step of the analytical process was to examine the Kaiser-Meyer-Olkin (KMO) test and Bartlett's test of sphericity as measures of sampling adequacy. These tests determine the adequacy of the data to be analyzed through a factor

analysis. Data are considered adequate if the KMO value is over 0.90 and the Bartlett test is significant (less than 0.05). Next, in order to determine the number of factors that should be included in the measure, eigenvalues were analyzed as a means to identify meaningful factors. Factors were considered meaningful if they possessed an eigenvalue of 1 or above. The combined effect of the identified factors should account for 60% or more of variance in the latent construct. Cross-loadings were managed by removing all items that loaded onto multiple factors. Furthermore, items were kept in the model only if their factor loadings exceeded 0.50. In each factor, the average inter-relationship among each item's factor loading should equate to or exceed 0.70.

Next, I evaluated sample normalcy by examining indices of skewness and kurtosis. I used the KMO test of normality to detect violations within the normal distribution. Histograms were created to depict how the distribution of the factors compare with a normal distribution.

In order to maximize internal consistency, I evaluated reliability coefficients and excluded all items that decrease overall internal consistency of a factor. According to the available literature, internal consistencies above .70 are typically deemed acceptable and internal consistencies around .90 are deemed as exceptional (Hooper, Coughlan, & Mullen, 2008). Additionally, I examined estimates of the items' communalities, or the extent to which specific items share variance with other items included in the pool. Items with communalities below 0.30 were excluded from the analysis.

Lastly, I examined demographic differences (e.g., ethnicity, rural status) on factor scores derived from the EFA. In order to accomplish this goal, a series of ANOVAs were used to analyze the data.

Table 1

*Table 1. Demographic Characteristics of the Sample, Data Set 1*

Demographic Variable	<i>n</i> (%)
Gender	
Male or Men	97 (47.1%)
Female or Woman	107 (51.9%)
Genderqueer or Nonbinary	2 (1%)
Ethnicity	
White/Caucasian	125 (60.7%)
Black/African American	48 (23.3%)
Asian/Asian American	18 (8.7%)
Mexican American/Latino(a)	7 (3.3%)
American Indian/Native American	3 (1.5%)
Multiracial/Multiethnic	4 (1.9%)
Other	1 (0.5%)
Marital Status	
Single	77 (37.4%)
Married/Partnered/Common Law	109 (52.9%)
Separated	1 (0.5%)
Divorced	16 (7.8%)
Widowed	1 (0.5%)
Rural/Urban Status	
Rural	91 (44.2%)
Urban	114 (55.3%)
Highest Level of Formal Education	
Some high school	4 (1.9%)
High school diploma or GED	37 (18%)
Some college or vocational school	56 (27.2%)
Vocational Degree	8 (3.9%)
College Degree	72 (35%)
Master's degree	26 (12.6%)
Doctoral Degree	1 (0.5%)

Table 2

*Table 2. Social-Environmental Characteristics of the Sample, Data Set 1*

Demographic Variable	<i>n</i> (%)
What type of structure do you live?	
Single family home	103 (50%)
Two family home	13 (6.3%)
Condominium	8 (3.9%)
Apartment	49 (23.8%)
Three family home	9 (4.4%)
Four or more family home	5 (2.4%)
Trailer	15 (7.3%)
Other	4 (1.9%)
In what condition is your home?	
Substandard or poor condition	44 (21.4%)
Average condition	135 (65.5%)
Above average condition	26 (12.6%)
How would you rate the condition of the buildings in your community? (schools, town hall, courthouse, etc.)	
Very poor	6 (2.9%)
Below average	35 (17%)
Average	118 (57.3%)
Above average	40 (19.4%)
Excellent	7 (3.4%)
How much visible waste is there in your town of residence?	
An extreme amount	11 (5.3%)
A moderate amount	57 (27.7%)
A slight amount	89 (43.2%)
Almost none	39 (18.9%)
None	7 (3.4%)
How much crime occurs in your town of residence?	
An extreme amount	12 (5.8%)
A moderate amount	68 (33%)
A slight amount	92 (44.7%)
Almost none	31 (15%)
None	1 (0.5%)

## CHAPTER 4

### RESULTS STUDY 1

#### *Primary Analyses*

A set of Exploratory Factor Analyses (EFAs) were run to evaluate the dispersion of items into distinct factors. All items were included in the initial analysis. To determine the adequacy of the data to run a factor analysis, KMO and Bartlett's Test of Sphericity were analyzed. Because any identified factors were expected to be correlated, Promax was chosen as the rotation strategy. Promax is robust and creates clear, delineating lines for factor rotation. Next, a factor loading threshold for inclusion was set at 0.5 and above (Stevens, 2012). Finally, the option to suppress small coefficients was selected; coefficients less than 0.3 were suppressed.

In evaluating KMO and Bartlett's Test of sphericity, data were appropriate to be evaluated by a factor analysis (KMO = 0.953; Bartlett's Test,  $p < .05$ ; Hutcheson & Sofroniou, 1999). The initial EFA produced four factors, however items with cross-loadings needed to be removed from the EFA model. These items included 3, 7, 9, 16, 17, 21, 26, and 27.

After removing cross-loaded items, the second EFA produced three factors. However, items with cross-loadings were still present. As such, they needed to be removed from the EFA model. The items that were removed were 6 and 11. After running the third EFA with the removed items, three factors were produced. However, item 19 (.375) needed to be removed because of a low factor loading ( $< 0.5$ ). After running the fourth EFA, 3 factors were produced. Within this model, 1 item with cross-loadings was still present and thus, needed to be removed from the model. The item that was removed was item 4. In the next (fifth) EFA model, 3 factors were generated. In this model, 1 item (item 8) with a low factor loading ( $< 0.5$ ) was removed. In the sixth and final model, 3 factors were generated. All items produced adequate factor loading



scores with no cross-loadings. Overall, of the 30 items that were initially evaluated, 17 items were retained in the final model (see Appendix 2 for final list of items).

The retained items loaded onto 3 distinct factors (see Figure 1), which accounted for 67.69% of the variance in the latent construct (see Table 3). The retained items' communalities are depicted in Table 4. Factor 1 contained nine items (items 12, 13, 14, 18, 20, 23, 24, 28, and 29). Factor 2 contained five items (items 10, 15, 22, 25, and 30). Factor 3 contained three items (items 1, 2, and 5). Factor loading scores for each item are depicted in Table 5. Each factor is a strong fit to the overarching latent construct as the average factor loadings fell above 0.7. As expected, the factors were correlated with one another. The association between the factors are as follows: 1 and 2 ( $r = .56$ ), 1 and 3 ( $r = .59$ ), and 2 and 3 ( $r = .56$ ). These correlations are strong (Cohen, 1992) yet are considered acceptable because each correlation coefficient fell below .8 (Field, 2013).

The first factor captured content related to inadequate housing, including structural problems, poor maintenance, physical hazards, housing insecurity including eviction or homelessness, food insecurity within the home, poor relations among individuals residing in the home, and conflict between those residing in the home. For example, the items "*Maintenance workers have condemned or threatened to condemn my home due to structural problems, poor maintenance, or other physical hazards associated with the building itself*," "*I have stayed in a homeless shelter, church, other public place, or another person's home because my home was not suitable to live in*," "*My family and I have been threatened with eviction*," "*I avoid people living in my home as much as possible*," "*I have been forced to stay in a homeless shelter, church, other public place, or another person's home*," "*I had to take advantage of available garbage bins, charities, soup kitchens, or free events in order to eat*," "*I encountered physical*

*confrontations (i.e., fighting) in my home,*” and *“Conflicts in my home make me feel disconnected from loved ones”* are included in this factor. Because of the item content, the label Housing Dysfunction was used to characterize this factor.

The second factor that emerged was associated with financial-based stress, sacrifice, or loss, specifically to lower-SES individuals. Specific themes included having to engage in personal sacrifices, experiencing financial stress, and the negative impacts of financial stress on close relationships. For instance, the items *“I had to let go of some hopes and dreams to meet my most basic needs (shelter, food, clothing, etc.),”* *“I had to sacrifice or make tough decisions because of lack of money,”* *“I have worried about how difficult it would be to move if I had to move suddenly,”* *“Financial stress has negatively impacted my family's relationship,”* and *“I have experienced a family member or family friend pass away before their time”* are all incorporated in this factor. Therefore, Financial Dysfunction appears to be an adequate label to characterize the items within this factor.

The third factor was smaller in terms of the number of items. Reflection on the item content led to themed clusters related to noise disturbances, including feeling stressed, irritable or fatigued by noise within the home, as well as difficulty sleeping or doing other important things as a result of noise disturbances both inside and outside the home. For example, the items *“I have felt stressed, irritable, or fatigued by the noise in my home,”* *“I had difficulty sleeping or doing other important things due to noise disturbances inside my home (e.g., crying infants, loud family members),”* and *“I had difficulty sleeping or doing other important things due to noise disturbances outside my home (e.g., loud neighbors, construction, neighborhood violence, public transportation, car alarms)”* are included in this factor. As such, Noise Dysfunction appears to be a viable label to characterize items that fall underneath this factor.

### *Internal Consistency*

After evaluating and naming each of the factors, internal consistency was assessed. The internal consistency was strong for Housing Dysfunction ( $\alpha = .93$ ). The internal consistency was good for Financial Dysfunction ( $\alpha = .84$ ) and for Noise Dysfunction ( $\alpha = .81$ ). In total, the scores indicate that the items hold together well for each identified factor.

### *Assessment of Normalcy*

The data were examined in order to determine the distribution of scores for the Housing Dysfunction factor ( $M = 16.4, SE = 0.51$ ). The skewness of the data was .8 with a standard error of .17, and a kurtosis of -.55 with a standard error of .34. To evaluate whether these effects violated the normal distribution, the Kolmogorov-Smirnov test was analyzed. Results were significant,  $D(206) = .16, p < .01$ , which indicates that the data are non-normally distributed. Specifically, the Housing Dysfunction scores depict a positively skewed pattern as illustrated in the histogram (see Figure 2).

Next, the same procedures were used to evaluate normal distribution for the Financial Dysfunction factor ( $M = 12.53, SE = .28$ ). Analyses revealed that the skewness of the data was -.13 with a standard error of .17, and the kurtosis was -0.84 with a standard error of 0.34. To deconstruct these figures further the Kolmogorov-Smirnov test was employed. Results were significant,  $D(206) = .08, p < .01$ . This indicates that the data are non-normally distributed. An examination of the histogram for Financial Dysfunction (see Figure 3) shows that the data are negatively skewed.

Finally, the Noise Dysfunction factor was evaluated for normal distribution ( $M = 6.64, SE = .16$ ). The skewness of the data was .09 with a standard error of .17, and the kurtosis was -.79 with a standard error of 0.34. To evaluate whether these effects violated the normal curve, the

Kolmogorov-Smirnov test was employed. Results were significant,  $D(206) = .09, p < .01$ , which indicates a non-normal distribution. An examination of the histogram for Noise Dysfunction (see Figure 4) shows that the data are positively skewed.

### *Demographic Differences*

A 2 (ethnicity) x 2 (rurality) Factorial MANOVA was evaluated to determine the ethnicity and rurality differences on the identified poverty-based stress factor scores. Because of low representation in the sample, individuals who self-identified as Asian/Asian American ( $n = 18$ ), Mexican American/Latino(a) ( $n = 7$ ), American Indian/Native American ( $n = 3$ ), Multiracial/Multiethnic ( $n = 4$ ), and Other ( $n = 1$ ) were not included in the analysis. Instead, ethnicity was split into 2 groups: White/Caucasian ( $n = 125$ ) and Black/African American ( $n = 48$ ). Rurality was divided into 2 groups based on self-reported labels of rural and non-rural.

The means and standard deviations for ethnicity and rurality cells on the 3 poverty-based stress factors are reported in Table 6. Results revealed a multivariate main effect for ethnicity,  $\lambda = .88, F(3,167) = 7.7, p < .01, \eta^2 = .12$ , and for rurality,  $\lambda = .93, F(3,167) = 4.2, p < .01, \eta^2 = .07$ . However, there was a non-significant interaction effect,  $\lambda = .99, F(3,167) = .66, p > .05, \eta^2 = .01$ .

Because there were significant main effects for ethnicity and rurality, follow-up ANOVAs were run. The univariate test for Housing Dysfunction revealed a significant main effect for ethnicity,  $F(1,169) = 22.77, p < .01, \eta^2 = .12$ . In evaluating mean scores, individuals who identify as Black/African American ( $M = 20.79$ ) reported substantially higher scores on the Housing Dysfunction factor when compared to individuals who identify as White/Caucasian ( $M = 14.81$ ). Similarly, there was a significant effect for ethnicity on the Financial Dysfunction score,  $F(1,169) = 8.48, p < .01, \eta^2 = .05$ . Participants who identified as Black/African American ( $M = 13.79$ ) reported slightly higher scores when compared to participants who self-identified as

White/Caucasian ( $M = 12.13$ ). Finally, there was a significant effect for ethnicity on the Noise Dysfunction score,  $F(1,169) = 6.55, p < .05, \eta^2 = 0.04$ . Participants who identified as Black/African American ( $M = 7.42$ ) reported slightly higher scores when compared to participants who identified as White/Caucasian ( $M = 6.36$ ).

The univariate test for Housing Dysfunction did not reveal a significant effect for rurality,  $F(1,169) = 1.27, p > .05, \eta^2 = .01$ . Similarly, the univariate test for Noise Dysfunction did not reveal a significant effect for rurality,  $F(1,169) = .003, p > .05, \eta^2 = .00$ . However, the univariate test for Financial Dysfunction did reveal a significant effect for rurality,  $F(1,169) = 4.12, p < .05, \eta^2 = .02$ . In evaluating mean scores, participants who reported residing in a rural area ( $M = 13.1$ ) reported higher scores than those who reported residing in an urban area ( $M = 12.2$ ).

An examination of the data revealed a non-significant interaction between ethnicity and rurality for Housing Dysfunction,  $F(1,169) = .35, p > .05, \eta^2 < .00$ , Financial Dysfunction,  $F(1,169) = .45, p > .05, \eta^2 < .00$ , and for Noise Dysfunction  $F(1,169) = .04, p > .05, \eta^2 < .00$ .

Table 3

*Table 3. Regression Statistics Total Variance Explained by the Identified Factors*

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	8.746	51.447	51.447	8.746	51.447	51.447
2	1.753	10.311	61.758	1.753	10.311	61.758
3	1.008	5.928	67.686	1.008	5.928	67.686

Table 4

*Table 4. Communalities for Retained Items in Final EFA*

	Initial	Extraction
PBSS1	1.000	.786
PBSS2	1.000	.732
PBSS5	1.000	.658
PBSS10	1.000	.643
PBSS12	1.000	.765
PBSS13	1.000	.792
PBSS14	1.000	.728
PBSS15	1.000	.599
PBSS18	1.000	.593
PBSS20	1.000	.660
PBSS22	1.000	.520
PBSS23	1.000	.671
PBSS24	1.000	.642
PBSS25	1.000	.662
PBSS28	1.000	.721
PBSS29	1.000	.668
PBSS30	1.000	.668

Table 5

*Table 5. Factor Loading Scores by Identified Factor.*

	Housing Dysfunction	Financial Dysfunction	Noise Dysfunction
PBSS13	.976		
PBSS12	.912		
PBSS14	.839		
PBSS23	.812		
PBSS18	.793		
PBSS28	.791		
PBSS29	.779		
PBSS20	.629		
PBSS24	.597		
PBSS10		.855	
PBSS30		.788	
PBSS15		.777	
PBSS25		.761	
PBSS22		.639	
PBSS1			.902
PBSS2			.851
PBSS5			.660



Table 6

*Table 6. Means and Standard Deviations by Ethnicity and Rurality, Data Set 1*

	Ethnicity	
	White/Caucasian (n = 125)	Black/African American (n = 48)
<b>Housing Dysfunction</b>		
Rural (n = 79)		
	<i>Mean</i>	14.48
	<i>SD</i>	5.72
	<i>n</i>	62
Non-Rural (n = 94)		
	<i>Mean</i>	15.13
	<i>SD</i>	6.46
	<i>n</i>	63
<b>Financial Dysfunction</b>		
Rural (n = 79)		
	<i>Mean</i>	12.58
	<i>SD</i>	3.70
	<i>n</i>	62
Non-Rural (n = 94)		
	<i>Mean</i>	11.68
	<i>SD</i>	3.84
	<i>n</i>	63
<b>Noise Dysfunction</b>		
Rural (n = 79)		
	<i>Mean</i>	6.39
	<i>SD</i>	2.21
	<i>n</i>	62
Non-Rural (n = 94)		
	<i>Mean</i>	6.33
	<i>SD</i>	2.20
	<i>n</i>	63

FIGURE 1

## Scree Plot of Final Exploratory Analysis

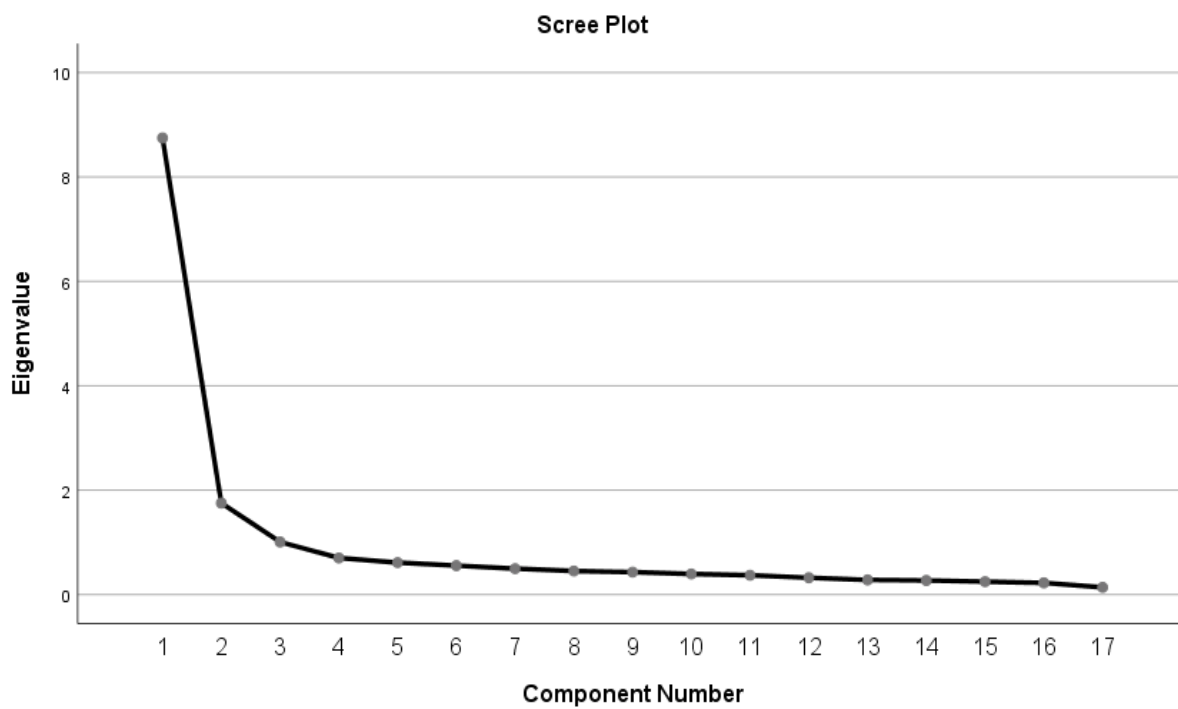


FIGURE 2

Distribution of Factor 1, Data Set 1: Housing Dysfunction

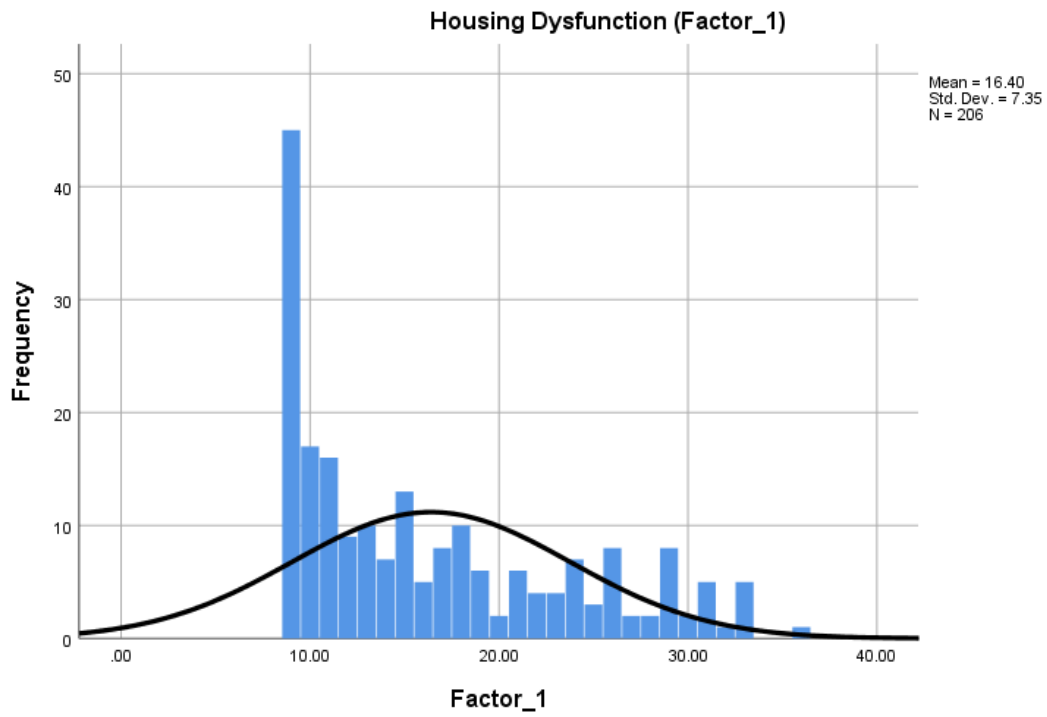


FIGURE 3

Distribution of Factor 2, Data Set 1: Financial Dysfunction

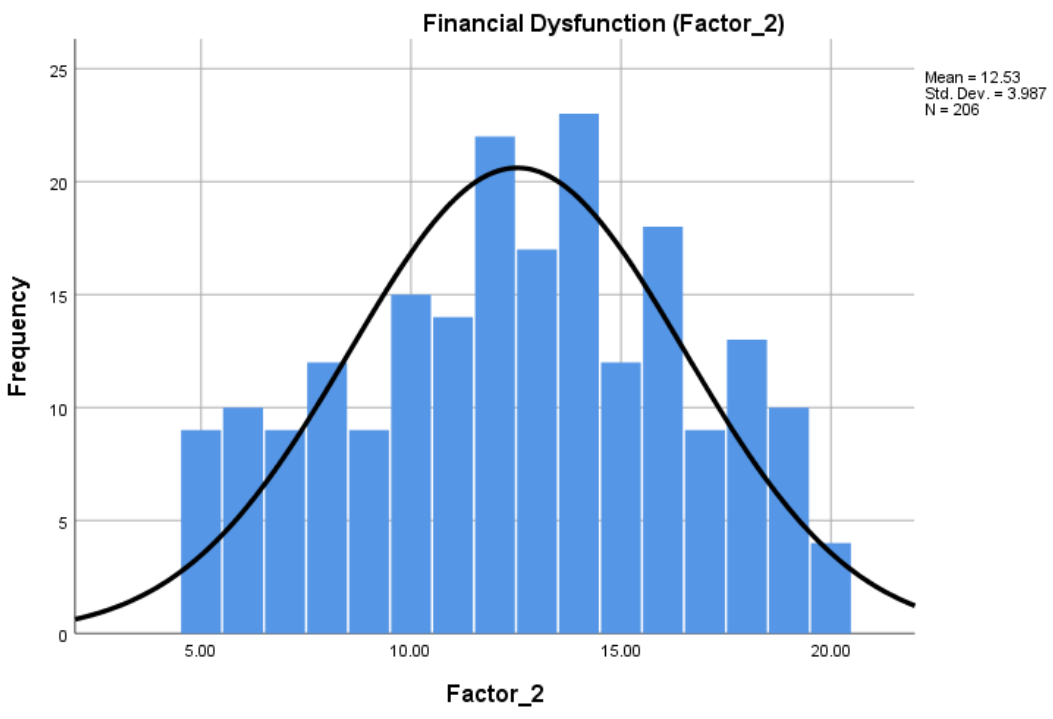
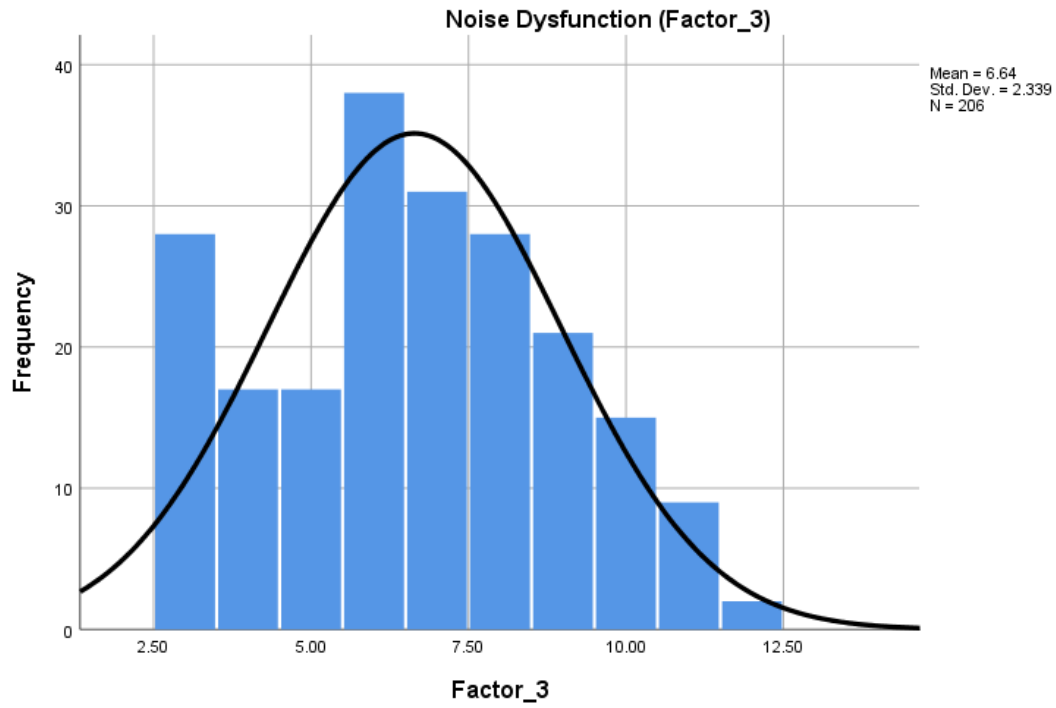


FIGURE 4

Distribution of Factor 3, Data Set 1: Noise Dysfunction



## CHAPTER 5

### METHODOLOGY STUDY 2

#### *Participants*

Individuals who reported lower-SES statuses were recruited using MTurk. All participants self-reported an annual income of \$25,000 or less. In order to ensure adequate power to run a Confirmatory Factor Analysis (CFA), I needed to recruit a large number of people (i.e., 350+). To this end, 556 lower-SES participants were recruited. However, in order to ensure the quality of the data, 156 participants' responses were removed because of validity concerns. Validity concerns were defined as participants who did not answer validity check questions correctly, did not answer 20% or more of the survey items, and completed the survey in less than two minutes. Thus, the final sample consisted of 400 lower-SES adults with an average age of 35.62 years ( $SD = 10.51$ ). Demographic information is provided on Table 7 and Social-Environment information is provided in Table 8.

#### *Measures*

The measures that were administered during Study 2 were identical to the measures administered in Study 1 (see Chapter 3).

#### *Procedure*

To collect data for this study, the participants were recruited through the same procedures outlined in Chapter 3. Each participant received \$1.00 and they were paid through the MTurk website. No identifying information was collected in order to ensure the anonymity of the sample. Participants gave their informed consent by checking a box and completed self-report surveys on Qualtrics. Individuals took about 19 minutes to complete the surveys, after which they were thanked for their participation and given payment.

*Data storage.* All of the responses were stored on Qualtrics. Once initial data collection was complete, the data were transferred to SPSS for analysis and removed from Qualtrics. The transferred data will be secured on a password-protected hard drive for 5 years following completion of the study.

### *Proposed Analysis*

I first evaluated the factor structure identified in Study 1 (Chapter 4) through a CFA, using structural equation modeling software (Mplus 8). The purpose behind examining a CFA is to a) confirm the model as outlined in Chapter 4, and b) evaluate other factor models (e.g., hierarchical, unidimensional) to determine best fit of the factor structure (Hooper, Coughlan, & Mullen, 2008).

I evaluated model fit using different absolute and relative fit indices. With regard to absolute fit, I evaluated factor structures using the Chi-squared ( $\chi^2$ ), root mean square error of approximation (RMSEA), and standardized root mean square residual (SRMR). In addition, I examined relative fit through the comparative fit index (CFI). Acceptable threshold levels of fit by indices are as follows:  $\chi^2$  with a non-significant  $p$ -value ( $p > .05$ ), RMSEA with a value less than .08, SRMR with a value less than 1, and CFI with a value greater than .90 (Hooper, Coughlan, & Mullen, 2008).

In addition, I evaluated whether factor scores are normally distributed in the sample by examining indices of skewness and kurtosis. The KMO test of normality was used to detect violations of the normal distribution. Histograms were created to depict how the distribution of the factors compare with a normal distribution.

In order to ensure optimal internal consistency, I evaluated reliability coefficients and all items that decreased overall internal consistency of a factor were excluded. Additionally, I

examined estimates of the items' communalities, or the extent to which specific items shared variance with other items included in the pool. Items with communalities below 0.30 were excluded from the analysis. A 2 (ethnicity) x 2 (rural) Factorial MANOVA was analyzed to examine potential gender and rural differences on identified factor scores.



Table 7

*Table 7. Demographic Characteristics of the Sample, Data Set 2*


---

Demographic Variable	<i>n</i> (%)
Gender	
Male or Men	182 (45.5%)
Female or Woman	211 (52.8%)
Genderqueer or Nonbinary	7 (1.8%)
Ethnicity	
White/Caucasian	263 (65.8%)
Black/African American	68 (17%)
Asian/Asian American	34 (8.5%)
Mexican American/Latino(a)	17 (4.3%)
Multiracial/Multiethnic	13 (3.3%)
Other	5 (1.3%)
Marital Status	
Single	175 (43.8%)
Married/Partnered/Common Law	188 (47%)
Separated	3 (0.8%)
Divorced	28 (7%)
Widowed	5 (1.3%)
Rural/Urban Status	
Rural	174 (43.5%)
Urban	221 (55.3%)
Highest Level of Formal Education	
Less than high school	5 (1.3%)
Some high school	14 (3.5%)
High school diploma or GED	58 (14.5%)
Some college or vocational school	101 (25.3%)
Vocational Degree	24 (6%)
College Degree	152 (38%)
Master's degree	43 (10.8%)
Doctoral Degree	3 (0.8%)

---

Table 8

*Table 8. Social-Environmental Characteristics of the Sample, Data Set 2*

Demographic Variable	n (%)
What type of structure do you live?	
Single family home	192 (48%)
Two family home	24 (6%)
Condominium	9 (2.3%)
Apartment	122 (30.5)
Three family home	14 (3.5%)
Four or more family home	14 (3.5%)
Trailer	18 (4.5%)
Other	7 (1.8%)
In what condition is your home?	
Substandard or poor condition	84 (21%)
Average condition	272 (68%)
Above average condition	42 (10.5%)
How would you rate the condition of the buildings in your community? (schools, town hall, courthouse, etc.)	
Very poor	9 (2.3%)
Below average	71 (17.8%)
Average	229 (57.3%)
Above average	64 (16%)
Excellent	25(6.3%)
How much visible waste is there in your town of residence?	
An extreme amount	15 (3.8%)
A moderate amount	109 (27.3%)
A slight amount	174 (43.5%)
Almost none	91 (22.8%)
None	9 (2.3%)
How much crime occurs in your town of residence?	
An extreme amount	26 (6.5%)
A moderate amount	173 (43.3%)
A slight amount	142 (35.5%)
Almost none	47 (11.8%)
None	9 (2.3%)

## CHAPTER 6

### RESULTS STUDY 2

#### *Primary Analyses*

A confirmatory factor analysis (CFA) was analyzed to determine the fit between the data and the poverty-based stressor 3-factor structure identified in Chapter 4. The analysis was conducted using Mplus 8.0. The CFA was evaluated through a wide range of descriptive and model fit statistics. The results of the analysis are presented in Figure 5. For the 3-factor model, the composite goodness-of-fit statistical decision indicates a solid fit,  $\chi^2(333.46/116) = .00, p < .01$ ; RMSEA .07; CFI = .94; SRMR = .05. In relation to field standards, the  $\chi^2$  effect was significant which can suggest poor fit. However, interpreting the  $\chi^2$  is a complicated challenge. It fails to adequately consider assumptions of multivariate normality and sensitivity to sample size, which may negatively impair its ability to discriminate between poor and good fit. To correct for these significant limitations, other fit indices should be considered. A RMSEA value falling between the range of 0.05 and 0.08 indicates a good fit (Cangur & Ercan, 2015). Results indicate that the RMSEA fit index (.07) for the 3-factor solution falls within this range. The CFI analyzes model fit and performs well regardless of the sample size. Professional standards suggest a CFI value above .95 constitutes excellent fit, whereas a value that falls between .90 and .95 constitutes solid fit (Hu & Bentler, 1999). Results revealed a CFI index fit of .94, which suggests solid fit (borderline good fit). This further characterizes that the 3-factor solution generates solid overall fit. The final fit index that was analyzed was the SRMR. Consistent with the available literature, effects below .05 represent well-fitting models, and effects between .05 and .08 represent acceptable fitting models (Hu & Bentler, 1999). The SRMR index generated a score of .05, further suggesting the 3-factor solution is within the upper limit of good fit. In summation, a

cumulative interpretation of the data indicate that the 3-factor solution provides solid fit, approaching good fit to the data.

#### *Internal Consistency*

The internal consistency was assessed for each of the factors. The internal consistency was strong for Housing Dysfunction ( $\alpha = .92$ ). The internal consistency was good for Financial Dysfunction ( $\alpha = .80$ ) and adequate for Noise Dysfunction ( $\alpha = .75$ ). In total, the scores indicate that the items hold together well for each identified factor.

#### *Assessment of Normalcy*

The data were examined in order to determine the distribution of scores for the Housing Dysfunction factor ( $M = 15.5, SE = .33$ ). The skewness of the data was .99 with a standard error of .12 and a kurtosis of -.03 with a standard error of .24. To evaluate whether these effects violated the normal distribution, the Kolmogorov-Smirnov test was analyzed. Results were significant,  $D(400) = .18, p < .01$ , which indicates that the data are non-normally distributed. Specifically, the Housing Dysfunction scores depict a positively skewed pattern as illustrated in the histogram (see Figure 6).

Next, the same procedures were used to evaluate normal distribution for the Financial Dysfunction factor ( $M = 12.17, SE = .19$ ). Analyses revealed that the skewness of the data was -.02 with a standard error of .12 and the kurtosis was -.83 with a standard error of .24. To deconstruct these figures further the Kolmogorov-Smirnov test was employed. Results were significant,  $D(400) = .08, p < .01$ . This indicates that the data are non-normally distributed. An examination of the histogram for Financial Dysfunction (see Figure 7) shows that the data are slightly skewed in the negative direction.

Finally, the Noise Dysfunction factor was evaluated for normal distribution ( $M = 6.37$ ,  $SE = .11$ ). The skewness of the data was .25 with a standard error of .12, and the kurtosis was -.6 with a standard error of 0.24. To evaluate whether these effects violated the normal curve, the Kolmogorov-Smirnov test was employed. Results were significant,  $D(400) = .12$ ,  $p < .01$ , which indicates a non-normal distribution. An examination of the histogram for Noise Dysfunction (see Figure 8) shows that the data are positively skewed.

### *Demographic Differences*

A 2 (ethnicity) x 2 (rurality) Factorial MANOVA was evaluated to determine ethnicity and rurality differences on the identified poverty-based stress factor scores. Similar to Study 1, ethnicity was split into 2 groups: White/Caucasian ( $n = 263$ ) and Black/African American ( $n = 68$ ). Rurality was divided into 2 groups based on self-reported labels of rural and non-rural.

The means and standard deviations for ethnicity and rurality cells on the 3 poverty-based stress factors are reported in Table 9. Results revealed a multivariate main effect for ethnicity,  $\lambda = .9$ ,  $F(3,322) = 12.1$ ,  $p < .01$ ,  $\eta^2 = .1$ , and for rurality,  $\lambda = .97$ ,  $F(3,322) = 3.5$ ,  $p < .05$ ,  $\eta^2 = .03$ . However, there was a non-significant interaction effect,  $\lambda = .99$ ,  $F(3,322) = 1.67$ ,  $p > .05$ ,  $\eta^2 = .02$ .

Because there were significant main effects for ethnicity and rurality, follow-up ANOVAs were run. The univariate test for Housing Dysfunction revealed a significant main effect for ethnicity,  $F(1,324) = 34.18$ ,  $p < .01$ ,  $\eta^2 = .1$ . In evaluating mean scores, individuals who identify as Black/African American ( $M = 19.34$ ) reported substantially higher scores on the Housing Dysfunction factor when compared to individuals who identify as White/Caucasian ( $M = 14.77$ ). Similarly, there was a significant effect for ethnicity on the Financial Dysfunction score,  $F(1,324) = 4.05$ ,  $p < .05$ ,  $\eta^2 = .01$ . Participants who identified as Black/African American

( $M = 13$ ) reported slightly higher scores when compared to participants who self-identified as White/Caucasian ( $M = 12.15$ ). Finally, there was a significant effect for ethnicity on the Noise Dysfunction score,  $F(1,324) = 17.43, p < .01, \eta^2 = 0.05$ . Participants who identified as Black/African American ( $M = 7.31$ ) reported slightly higher scores when compared to participants who identified as White/Caucasian ( $M = 6.2$ ).

The univariate test for Housing Dysfunction did reveal a significant effect for rurality,  $F(1,324) = 10.22, p < .01, \eta^2 = .03$ . In evaluating mean scores, participants who reported residing in a rural area ( $M = 16.4$ ) reported higher scores than those who reported residing in an urban area ( $M = 15.1$ ). The univariate test for Financial Dysfunction, however, did not reveal a significant effect for rurality,  $F(1,324) = 1.26, p > .05, \eta^2 < .01$ . Similarly, the univariate test for Noise Dysfunction also did not reveal a significant effect for rurality,  $F(1,324) = 3.48, p > .05, \eta^2 = .01$ .

Interestingly, an examination of the follow-up data revealed a significant interaction effect between ethnicity and rurality for Housing Dysfunction,  $F(1,324) = 4.85, p < .05, \eta^2 < .02$ . In evaluating mean scores, participants who identified as Black/African American and reported residing in a rural area ( $M = 22.57$ ) reported higher scores than those who identified as White/Caucasian and reported residing in a rural area ( $M = 15.25$ ). In fact, individuals who identified as Black/African American reported substantially higher scores on stress with housing dysfunction compared to any other subgroup of people. There was not, however, a significant interaction between ethnicity and rurality for Financial Dysfunction,  $F(1,324) = 2.19, p > .05, \eta^2 < .01$ , or for Noise Dysfunction  $F(1,324) = 1.85, p > .05, \eta^2 < .01$ .

Table 9

*Table 9. Means and Standard Deviations by Ethnicity and Rurality, Data Set 2*

	Ethnicity	
	White/Caucasian ( <i>n</i> = 261)	Black/African American ( <i>n</i> = 67)
<b>Housing Dysfunction</b>		
Rural ( <i>n</i> = 146)		
	<i>Mean</i>	15.25
	<i>SD</i>	6.44
	<i>n</i>	123
Non-Rural ( <i>n</i> = 182)		
	<i>Mean</i>	22.57
	<i>SD</i>	7.94
	<i>n</i>	23
	<i>Mean</i>	14.35
	<i>SD</i>	5.42
	<i>n</i>	138
<b>Financial Dysfunction</b>		
Rural ( <i>n</i> = 146)		
	<i>Mean</i>	12.05
	<i>SD</i>	3.39
	<i>n</i>	123
Non-Rural ( <i>n</i> = 182)		
	<i>Mean</i>	13.91
	<i>SD</i>	3.7
	<i>n</i>	23
	<i>Mean</i>	12.24
	<i>SD</i>	3.93
	<i>n</i>	138
<b>Noise Dysfunction</b>		
Rural ( <i>n</i> = 146)		
	<i>Mean</i>	6.28
	<i>SD</i>	2.22
	<i>n</i>	123
Non-Rural ( <i>n</i> = 182)		
	<i>Mean</i>	7.96
	<i>SD</i>	1.87
	<i>n</i>	23
	<i>Mean</i>	6.12
	<i>SD</i>	1.96
	<i>n</i>	138

FIGURE 5

CFA 3-Factor Structure Goodness-of-Fit Model

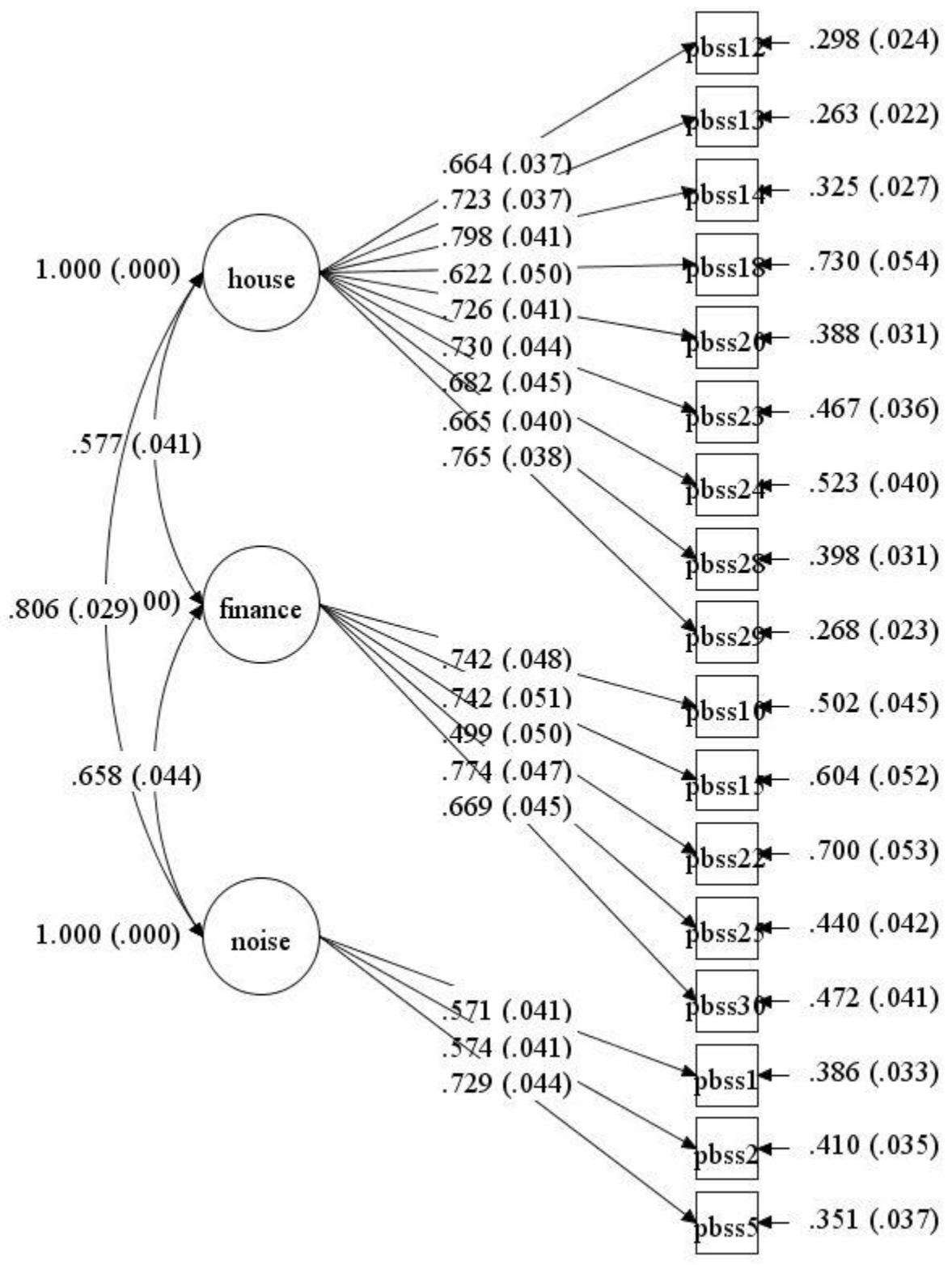




FIGURE 6

Distribution of Factor 1, Data Set 2: Housing Dysfunction

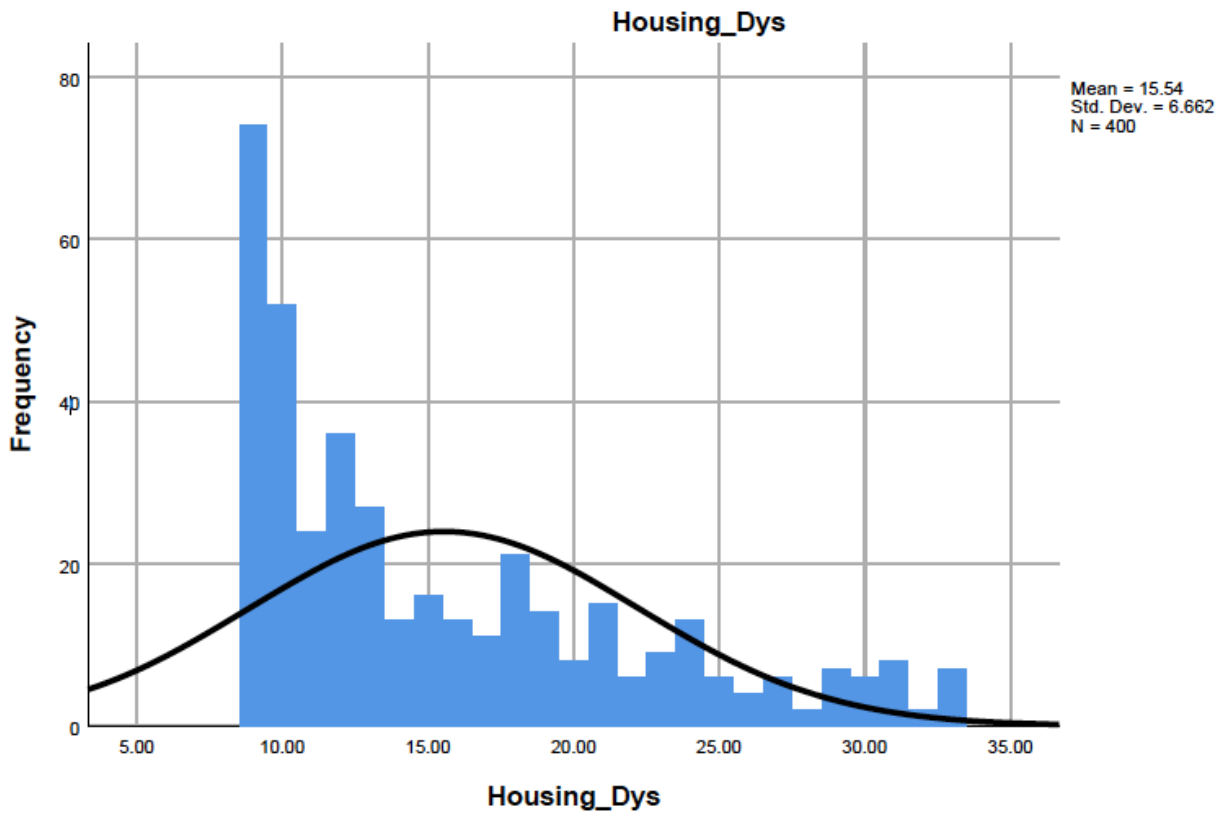


FIGURE 7

Distribution of Factor 2, Data Set 2: Financial Dysfunction

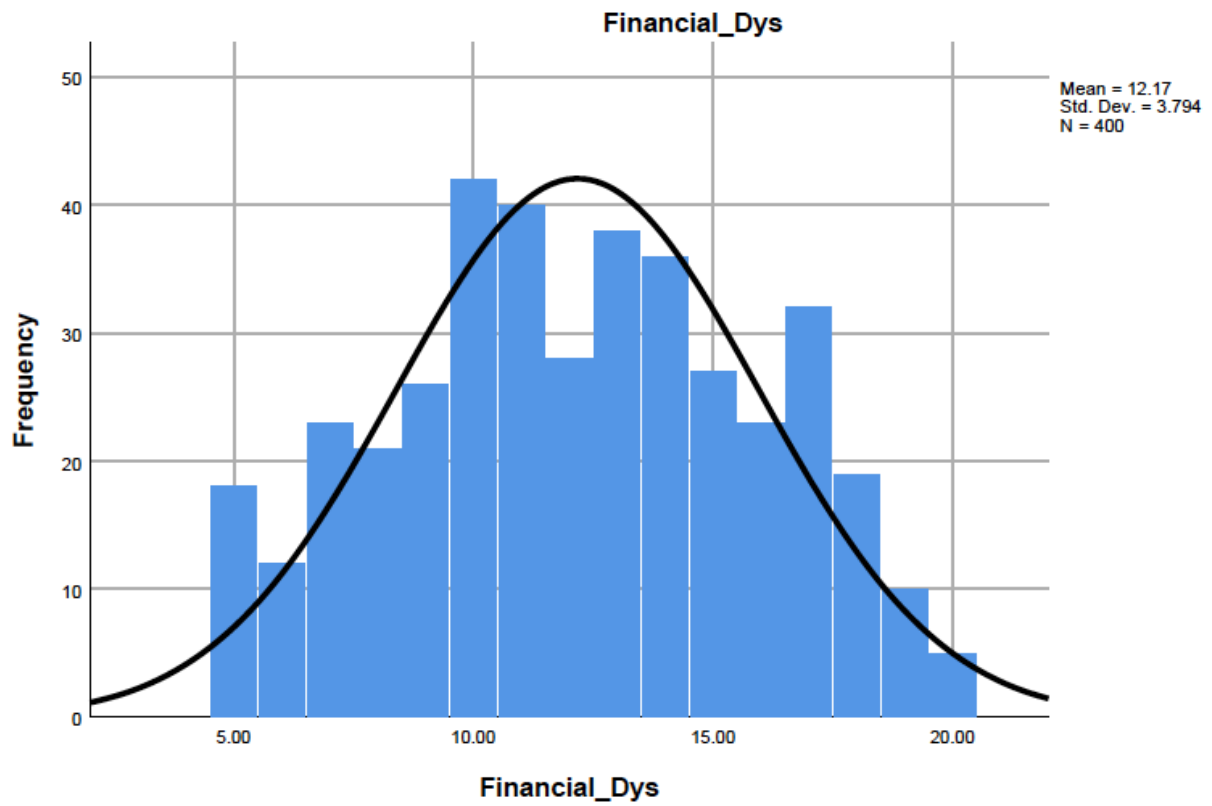
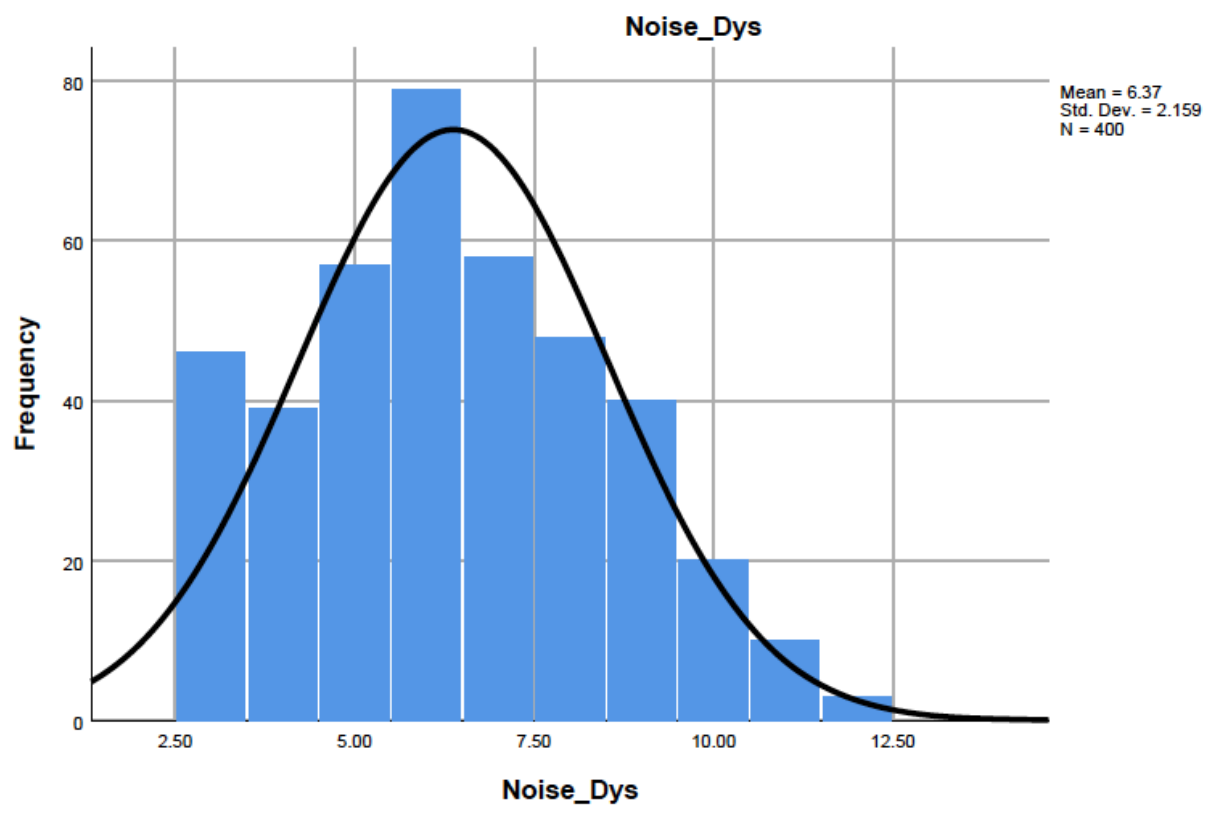


FIGURE 8

Distribution of Factor 3, Data Set 2: Noise Dysfunction



## CHAPTER 7

### METHODOLOGY STUDY 3

#### *Participants*

Individuals who reported lower-SES statuses were recruited using MTurk. All participants self-reported an annual income of \$25,000 or less. In order to ensure adequate power to run a Confirmatory Factor Analysis (CFA), I needed to recruit a large number of people (i.e., 350+). To this end, at Time 1, 508 lower-SES participants were recruited. However, in order to ensure the quality of the data, 38 participants' responses were removed because of validity concerns. Validity concerns were defined as participants who did not answer validity check questions correctly, did not answer 20% or more of the survey items, and completed the survey in less than two minutes. Thus, the final sample consisted of 470 lower-SES adults with an average age of 35.62 years ( $SD = 10.51$ ). Demographic information for participants at Time 1 is provided in Table 10.

Only 236 of the participants who completed the survey at Time 1 volunteered to participate in Time 2. Of those 236 participants, 17 reported questionable data and were subsequently removed from the final data set at Time 2. In total, 219 participants were retained in the final sample. The participants who comprised the second sample ranged in age from 19 to 78 years ( $M = 39.69$ ,  $SD = 12.32$ ). Demographic information for participants at Time 2 is provided in Table 11.

#### *Measures*

The measures were identical to the measures outlined in Chapter 3. In addition, a number of other measures were given in order to explore convergent and predictive validity.

*Depression.* Depression was measured using the Center for Epidemiological Studies Depression Scale (CES-D). The CES-D is a 20-item self-report scale designed to measure depressive symptoms experienced in the past week. The CES-D is designed to measure depressive symptomatology with an emphasis on the affective component of depressed mood (Radloff, 1977). All items are measured on a scale ranging from 0 (Rarely or none of the time [less than 1 day]) to 3 (Most or all of the time [5-7 days]). Total scores can range from 0 to 60, with higher scores indicating greater levels of depressive symptoms.

The CES-D is a reliable assessment of the number, types, and duration of depressive symptoms across race, gender, and age categories (Radloff, 1977). The CES-D demonstrates high internal consistency with Cronbach's alpha coefficients ranging from .85 to .90 (Radloff, 1977). The CES-D also demonstrates adequate test-retest stability, excellent concurrent validity by clinical and self-report criteria, and excellent construct validity (Radloff, 1977). In the current study, the CES-D demonstrated excellent internal consistency ( $\alpha = .96 - .97$ ).

*Anxiety.* Anxiety was measured using the Burns Anxiety Inventory (BAI). The BAI is a 33-item measure designed to assess for anxious feelings, anxious thoughts, and somatic symptoms associated with anxiety. Individuals indicate the extent to which anxiety symptoms cause them distress over the past week on a scale ranging from 0 (not at all) to 3 (a lot). Total scores can range from 0 to 99, with higher scores indicating more extreme anxiety symptoms. The BAI demonstrates high internal consistency ( $\alpha = .95$ , Burns, 1989). The measure is strongly correlated with the anxiety subscale of the Symptom Checklist-90 (SCL-90) indicating high convergent validity (Burns, 1989). In the current study, the BAI demonstrated excellent internal consistency ( $\alpha = .97 - .98$ ).

*Flourishing.* Flourishing was measured by the Flourishing Scale (FS). The FS is an 8-item scale designed to measure social-psychological prosperity. Specifically, the FS evaluates a respondent's self-perceived success in important areas like relationships, self-esteem, competency, purpose, and optimism. The FS is rated on a scale from 1 (strongly disagree) to 7 (strongly agree). Scores can range from 8 to 56, with higher scores signifying greater levels of flourishing (Diener et al., 2010). In terms of psychometric properties, the FS demonstrates high internal consistency ( $\alpha = .87$ ) and temporal reliability (Diener et al., 2010). The FS is also strongly associated with other psychological well-being scales (Diener et al., 2010). In the current study, the FS demonstrated excellent internal consistency ( $\alpha = .94 - .95$ ).

*Resilience.* Resilience was measured using the Brief Resilience Scale (BRS). The BRS is a 6-item scale that assess a respondent's ability to bounce back or recover from stress. Items are rated on a scale from 1 (strongly disagree) to 5 (strongly agree). Scores can range from 6 to 30, with higher scores indicating greater resilience tendencies. The BRS demonstrates solid to excellent internal consistency ( $\alpha = .80$  to  $.91$ , Smith et. al., 2008). The BRS also demonstrates good convergent validity with other measures of resilience, optimism, and purpose in life (Smith et. al., 2008). In the current study, the BRS demonstrated very good internal consistency ( $\alpha = .87 - .93$ ).

### *Procedure*

The participants were recruited using Amazon's Mechanical Turk website. Each participant received \$1.00 for completing the first set of surveys through the Mechanical Turk website for his/her participation. No identifying information was collected. Participants gave their informed consent by checking a box on the Mechanical Turk website, which then transferred them to Qualtrics where the surveys were administered. Individuals took about 35

minutes to complete the surveys, after which they were thanked for their participation and given payment. Following receipt of payment, participants were invited to volunteer for the second series of assessments. Participants were prompted to click a button that indicated their willingness to participate in the second series of assessments. Regardless of their response, participants were provided with low-cost resources and payment.

The second administration of assessments occurred 2 months after the first administration. Individuals who indicated a willingness to participate in the second series of assessments were contacted through the MTurk website and notified that the second series of assessments was available for them to take part in. Each participant received \$2.00 for completing the second administration of the surveys through the Mechanical Turk website. No identifying information was collected. Participants gave their informed consent by checking a box on the Mechanical Turk website, which then transferred them to Qualtrics where the surveys were administered. Individuals took about 35 minutes to complete the surveys, after which they were thanked for their participation and given payment.

*Data storage.* All of the responses were stored on Qualtrics. Once initial data collection was complete, the data were transferred to SPSS for analysis and removed from Qualtrics. The transferred data will be secured on a password-protected hard drive for 5 years following completion of the study.

#### *Proposed Analysis*

To confirm the factor structure evaluated in Study 1 and Study 2, I ran another CFA on the Time 1 participants. It is important to validate the factor structure of the measures across as many studies as possible.

As a way to maximize internal consistency, I evaluated reliability coefficients and excluded all items that decreased overall internal consistency of a factor. According to the available literature, internal consistencies above .70 are typically considered acceptable and internal consistencies around .90 are considered exceptional (Hooper, Coughlan, & Mullen, 2008). In order to examine the stability and reliability of the scale domain scores over time, I evaluated temporal consistency and test-retest reliability. Temporal consistency and test-retest reliability were measured by examining the correlation between poverty-based stressors at Time 1 and Time 2. It was expected that correlations would be greater than .60.

Next, I evaluated sample normalcy by examining indices of skewness and kurtosis. I used the KMO test of normality to detect violations within the normal distribution. Histograms were created to depict how the distribution of the factors compared with a normal distribution. Similar to other studies in this document, I examined demographic differences (e.g., ethnicity, rural status) on factor scores derived from the EFA. In order to accomplish this goal, a series of ANOVAs were used to analyze the data.

Next, convergent validity and discriminant validity were assessed by evaluating the correlation matrix to determine if poverty-based stressors were associated with theoretically consistent constructs (i.e., depression, anxiety, flourishing, and resilience). Lastly, predictive validity was evaluated through a series of multiple regression models. In these multiple regression models, I determined if Time 1 estimates of poverty-based stress domain scores account for the variation in Time 2 estimates of positive and negative emotional and behavioral outcomes (i.e., depression, anxiety, flourishing, and resilience).



Table 10

*Table 10. Demographic Characteristics of the Sample, Time Point 1*


---

Demographic Variable	<i>n</i> (%)
Gender	
Male or Men	252 (53.6%)
Female or Woman	212 (45.1%)
Genderqueer or Nonbinary	3 (0.6%)
Ethnicity	
White/Caucasian	352 (74.9%)
Black/African American	61 (13%)
Asian/Asian American	27 (5.7%)
Mexican American/Latino(a)	17 (3.6%)
American Indian/Native American	4 (0.9%)
Multiracial/Multiethnic	7 (1.5%)
Other	1 (0.2%)
Marital Status	
Single	172 (36.6%)
Married/Partnered/Common Law	265 (56.4%)
Divorced	26 (5.5%)
Widowed	7 (1.5%)
Rural/Urban Status	
Rural	176 (37.4%)
Urban	287 (61.1%)
Highest Level of Formal Education	
Some high school	3 (0.6%)
High school diploma or GED	38 (8.1%)
Some college or vocational school	85 (18.1%)
Vocational Degree	38 (8.1%)
College Degree	230 (48.9%)
Master's degree	72 (15.3%)
Doctoral Degree	3 (0.6%)

---

Table 11

*Table 11. Demographic Characteristics of the Sample, Time Point 2*

Demographic Variable	<i>n</i> (%)
Gender	
Male or Men	108 (22.6%)
Female or Woman	111 (23.6%)
Genderqueer or Nonbinary	2 (0.4%)
Ethnicity	
White/Caucasian	175 (37.2%)
Black/African American	18 (3.8%)
Asian/Asian American	14 (3.0%)
Mexican American/Latino(a)	6 (1.3%)
American Indian/Native American	1 (0.2%)
Multiracial/Multiethnic	5 (1.1%)
Marital Status	
Single	77 (16.4%)
Married/Partnered/Common Law	118 (25.1%)
Divorced	17 (3.6%)
Widowed	6 (1.3%)
Rural/Urban Status	
Rural	70 (14.9%)
Urban	147 (31.3%)
Highest Level of Formal Education	
Some high school	1 (0.2%)
High school diploma or GED	17 (3.6%)
Some college or vocational school	43 (9.1%)
Vocational Degree	15 (3.2%)
College Degree	113 (24%)
Master's degree	27 (5.7%)
Doctoral Degree	3 (0.6%)

## CHAPTER 8

### RESULTS STUDY 3

#### *Secondary CFA*

A confirmatory factor analysis (CFA) was analyzed using participants from the first wave of data collection in order to determine the fit between the data and the poverty-based stressor 3-factor structure identified in Chapter 4 and validated in Chapter 6. The analysis was conducted using Mplus 8.0. The results of the analysis are presented in Figure 9. For the 3-factor model, the composite goodness-of-fit statistical decision indicates a good fit,  $\chi^2(319.25/116) = .00, p < .01$ ; RMSEA .06; CFI = .97; SRMR = .03. In relation to field standards, the  $\chi^2$  effect was significant which can suggest poor fit. However, as noted previously interpreting the  $\chi^2$  is a complicated challenge. Results indicate that the RMSEA fit index (.06) for the 3-factor solution falls within a good fit range. Results revealed a CFI index fit of .97, which suggests an excellent fit. The final fit index that was analyzed was the SRMR. The SRMR index generated a score of .03, further suggesting the 3-factor solution is of good fit. In summation, a cumulative interpretation of the data indicate that the 3-factor solution provides good fit to the data.

#### *Assessment of Normalcy*

The data were examined in order to determine the distribution of scores for the Housing Dysfunction factor ( $M = 14.65, SE = 0.35$ ). The skewness of the data was 1.04 with a standard error of .11, and a kurtosis of -.44 with a standard error of .22. To evaluate whether these effects violated the normal distribution, the Kolmogorov-Smirnov test was analyzed. Results were significant,  $D(470) = .27, p < .01$ , which indicates that the data are non-normally distributed. Specifically, the Housing Dysfunction scores depict a positively skewed pattern as illustrated is the histogram (see Figure 10).

Next, the same procedures were used to evaluate normal distribution for the Financial Dysfunction factor ( $M = 9.77$ ,  $SE = .19$ ). Analyses revealed that the skewness of the data was .53 with a standard error of .11, and the kurtosis was -.80 with a standard error of .23. To deconstruct these figures further the Kolmogorov-Smirnov test was employed. Results were significant,  $D(470) = .15$ ,  $p < .01$ . This indicates that the data are non-normally distributed. An examination of the histogram for Financial Dysfunction (see Figure 11) shows that the data are positively skewed.

Finally, the Noise Dysfunction factor was evaluated for normal distribution ( $M = 5.64$ ,  $SE = .11$ ). The skewness of the data was .63 with a standard error of .11, and the kurtosis was -.5 with a standard error of .23. To evaluate whether these effects violated the normal curve, the Kolmogorov-Smirnov test was employed. Results were significant,  $D(470) = .09$ ,  $p < .14$ , which indicates a non-normal distribution. An examination of the histogram for Noise Dysfunction (see Figure 12) shows that the data are positively skewed.

#### *Internal and Temporal Consistency*

The internal consistency for each factor score was evaluated for both administrations of the survey. The internal consistency for Housing Dysfunction factor score for both time points was .95, which is considered excellent. The internal consistency for Financial Dysfunction factor score ranged from .84 to .87, and the internal consistency for Noise Dysfunction factor score ranged from .83 to .85, all of which are considered good.

Correlations between the constructs across time were also evaluated, resulting in temporal consistency scores of  $r = .87$ ,  $p < .01$  for the Housing Dysfunction score,  $r = .68$ ,  $p < .01$  for the Financial Dysfunction score, and  $r = .65$ ,  $p < .01$  for the Noise Dysfunction score, all

of which are adequate given field standards; these correlations indicate high levels of test-retest reliability.

### *Demographic Differences*

A 2 (ethnicity) x 2 (rurality) Factorial MANOVA was evaluated to determine the ethnicity and rurality differences on the identified poverty-based stress factor scores. Because of low representation in the sample, individuals who self-identified as Asian/Asian American ( $n = 27$ ), Mexican American/Latino(a) ( $n = 17$ ), American Indian/Native American ( $n = 4$ ), Multiracial/Multiethnic ( $n = 7$ ), and Other ( $n = 1$ ) were not included in the analysis. Instead, ethnicity was split into 2 groups: White/Caucasian ( $n = 352$ ) and Black/African American ( $n = 61$ ). Rurality was divided into 2 groups based on self-reported labels of rural and non-rural.

The means and standard deviations for ethnicity and rurality cells on the 3 poverty-based stress factors are reported in Table 12. Results revealed a significant multivariate main effect for ethnicity,  $\lambda = .95$ ,  $F(3,401) = 6.92$ ,  $p < .01$ ,  $\eta^2 = .05$ , and for rurality,  $\lambda = .98$ ,  $F(3,401) = 3.11$ ,  $p < .05$ ,  $\eta^2 = .02$ . There was also a significant interaction effect,  $\lambda = .98$ ,  $F(3,401) = 3.49$ ,  $p < .05$ ,  $\eta^2 = .03$ .

Because there were significant main effects for ethnicity and rurality, follow-up ANOVAs were run. The univariate test for Housing Dysfunction revealed a significant main effect for ethnicity,  $F(1,403) = 16.15$ ,  $p < .01$ ,  $\eta^2 = .04$ . In evaluating mean scores, individuals who identify as Black/African American ( $M = 17.92$ ) reported substantially higher scores on the Housing Dysfunction factor when compared to individuals who identify as White/Caucasian ( $M = 14.33$ ). Similarly, there was a significant effect for ethnicity on the Financial Dysfunction score,  $F(1,403) = 6.81$ ,  $p < .01$ ,  $\eta^2 = .02$ . Participants who identified as Black/African American ( $M = 11.05$ ) reported higher scores when compared to participants who self-identified as

White/Caucasian ( $M = 9.71$ ). Finally, there was a significant effect for ethnicity on the Noise Dysfunction score,  $F(1,403) = 18.8, p < .01, \eta^2 = .05$ . Participants who identified as Black/African American ( $M = 6.82$ ) reported slightly higher scores when compared to participants who identified as White/Caucasian ( $M = 5.52$ ).

The univariate test for Housing Dysfunction revealed a significant effect for rurality,  $F(1,403) = 9.26, p < .01, \eta^2 = .02$ . In evaluating scores, individuals residing in a rural area ( $M = 15.51$ ) reported slightly higher scores than those residing in an urban area ( $M = 14.44$ ). Similarly, the univariate test for Financial Dysfunction revealed a significant main effect for rurality,  $F(1,403) = 4.46, p < .05, \eta^2 = .01$ . Participants residing in a rural area ( $M = 10.35$ ) reported slightly higher scores than those residing in an urban area ( $M = 9.62$ ). In addition, the test for Noise Dysfunction revealed a significant effect for rurality,  $F(1,403) = 6.33, p < .05, \eta^2 = .02$ . In evaluating mean scores, participants residing in a rural area ( $M = 5.98$ ) reported slightly higher scores than those residing in an urban area ( $M = 5.53$ ).

An examination of the data revealed a significant interaction between ethnicity and rurality for Housing Dysfunction,  $F(1,403) = 8.22, p < .01, \eta^2 = .02$ . Results indicate that individuals who identify as Black/African American and residing in a rural area ( $M = 21.83$ ) recorded substantially higher scores compared to individuals in any other group. There was a non-significant interaction between ethnicity and rurality for Financial Dysfunction,  $F(1,403) = 1.37, p > .05, \eta^2 < .01$ , and for Noise Dysfunction  $F(1,403) = 2.57, p > .05, \eta^2 < .01$ .

### *Convergent Validity*

To examine convergent validity, I conducted a series of cross-sectional and longitudinal bivariate correlations. Specifically, I examined the relationships between the three identified poverty-based stressor factors (Housing Dysfunction, Financial Dysfunction, and Noise

Dysfunction) and theoretically relevant constructs (Depression, Anxiety, Flourishing, and Resilience). Table 13 depicts a correlation matrix of the analyzed bivariate correlations across the two time points.

As expected, all three poverty-based stressor factors were positively associated with depression and anxiety. This indicates that individuals who report experiencing higher levels of Housing, Financial, and Noise Dysfunction also report higher levels of depression and anxiety. In addition, all three poverty-based stressor factors were inversely associated with flourishing and resilience, though the strength of these associations fluctuated slightly for different poverty-based stressor factors. Interestingly, the relationships between Financial Dysfunction and the two positive psychological outcomes (flourishing, resilience) were slightly stronger when compared to the relationships associated Housing and Noise Dysfunction. Overall, these findings indicate that individuals who report higher levels of poverty-based stressors related to Housing, Financial, and Noise Dysfunction also reported lower levels of flourishing and resilience. When combined, these findings suggest that the measure is a valid measure of poverty-based stress.

#### *Predictive Validity*

It is important to examine the connection between poverty-based stressor factors and commonly associated clinical and positive psychological outcomes. As such, I ran a series of multiple regression models to determine whether poverty-based stressor factors could account for variation in 4 different outcomes including depression, anxiety, resilience, and flourishing.

*Depression.* Poverty-based stressor factors at Time 1 were entered as predictors to account for variation in depression scores at Time 2. Results indicated that the combined poverty-based stressor factors accounted for 68.8% of the variance in depression scores,  $F(3,466) = 342.756, p < .01$ . When examining the unique contributions of each predictor, the

Housing Dysfunction ( $b = .612, p < .01$ ), Financial Dysfunction ( $b = 1.538, p < .01$ ), and Noise Dysfunction ( $b = 1.368, p < .01$ ) factors all uniquely accounted for variance in depression (see Table 14). Consistent with the literature, poverty-based stressors related to Housing, Financial, and Noise Dysfunction appear to serve as risk factors to clinically significant symptoms of depression.

*Generalized Anxiety.* The next series of multiple regression models I ran were used to determine whether poverty-based stressor factors could account for variation in anxiety. First, the poverty-based stressor factors at Time 1 were entered as predictors to account for variation in anxiety scores at Time 2. The results indicated that the combined poverty-based stressor factors accounted for 51.5% of the variance in anxiety scores,  $F(3,215) = 76.044, p < .01$ . Uniquely, the Housing Dysfunction ( $b = 1.713, p < .01$ ), Financial Dysfunction ( $b = 1.427, p < .01$ ), and Noise Dysfunction ( $b = 1.459, p < .05$ ) factors all accounted for variance in anxiety (see Table 15). Consistent with the literature, poverty-based stressors related to Housing, Financial, and Noise Dysfunction appear to serve as risk factors to clinically significant symptoms of generalized anxiety.

*Resilience.* The next series of multiple regression models I ran were used to determine whether poverty-based stressor factors could account for variation in resilience. The poverty-based stressor factors at Time 1 were entered as predictors to account for variation in resilience scores at Time 2. The results indicated that the combined poverty-based stressor factors accounted for 19% of the variance in resilience scores,  $F(3,215) = 16.803, p < .01$ . When examining the unique contributions of each factor, only the Financial Dysfunction ( $b = -.627, p < .01$ ; see Table 16) factor accounted for variance in resilience. The Housing Dysfunction ( $b = .014, p > .05$ ) and Noise Dysfunction ( $b = -.485, p > .05$ ) factors did not uniquely contribute to



the variance in resilience (see Table 16). These findings suggest that poverty-based stressors related to Financial Dysfunction serve as significant impediments to building resilience.

*Flourishing.* The final series of multiple regression models I ran were used to determine whether poverty-based stressor factors could account for variation in flourishing. The poverty-based stressor factors at Time 1 were entered as predictors to account for variation in flourishing scores at Time 2. The results indicated that the combined poverty-based stressor factors accounted for 7.6% of the variance in flourishing scores,  $F(3,215) = 5.907, p < .01$ . When examining the unique contributions of each factor, only the Financial Dysfunction scores ( $b = -.692, p < .01$ ; see Table 17) accounted for variance in flourishing. The Housing Dysfunction ( $b = .169, p > .05$ ) and Noise Dysfunction ( $b = -.637, p > .05$ ) factors did not uniquely contribute to the variance in flourishing (see Table 17). These findings suggest that poverty-based stressors related to Financial Dysfunction serve as significant impediments to flourishing efforts.

Table 12

*Table 12. Means and Standard Deviations by Ethnicity and Rurality, Data Set 3*

		Ethnicity	
		White/Caucasian ( <i>n</i> = 347)	Black/African American ( <i>n</i> = 60)
<b>Housing Dysfunction</b>			
Rural ( <i>n</i> = 159)			
	<i>Mean</i>	14.44	21.83
	<i>SD</i>	7.23	9.63
	<i>n</i>	136	23
Non-Rural ( <i>n</i> = 248)			
	<i>Mean</i>	14.25	15.49
	<i>SD</i>	7.14	8.61
	<i>n</i>	211	37
<b>Financial Dysfunction</b>			
Rural ( <i>n</i> = 159)			
	<i>Mean</i>	10.04	12.22
	<i>SD</i>	3.93	4.68
	<i>n</i>	136	23
Non-Rural ( <i>n</i> = 248)			
	<i>Mean</i>	9.49	10.32
	<i>SD</i>	3.87	4.69
	<i>n</i>	211	37
<b>Noise Dysfunction</b>			
Rural ( <i>n</i> = 159)			
	<i>Mean</i>	5.7	7.65
	<i>SD</i>	2.38	2.64
	<i>n</i>	136	23
Non-Rural ( <i>n</i> = 248)			
	<i>Mean</i>	5.4	6.3
	<i>SD</i>	2.2	2.23
	<i>n</i>	211	37

Table 13

*Table 13. Cross-Sectional and Longitudinal Relationships between the Poverty-Based Stressor Factors and Theoretically Related Constructs*

Variables	Housing Dysfunction Time 1	Housing Dysfunction Time 2	Financial Dysfunction Time 1	Financial Dysfunction Time 2	Noise Dysfunction Time 1	Noise Dysfunction Time 1
Depression Time 1	.762**	.539**	.769**	.578**	.720**	.498**
Depression Time 2	.534**	.622**	.543**	.650**	.479**	.579**
Anxiety Time 1	.826**	.689**	.772**	.650**	.761**	.619**
Anxiety Time 2	.669**	.758**	.590**	.714**	.560**	.684**
Flourishing Time 1	-.093*	-.250**	-.155**	-.275**	-.112*	-.319**
Flourishing Time 2	-.138*	-.09	-.261**	-.176**	-.204**	-.208**
Resilience Time 1	-.308**	-.213**	-.414**	-.338**	-.328**	-.289**
Resilience Time 2	-.287**	-.270**	-.421**	-.391**	-.333**	-.305**

Note: \* =  $p < .05$ , \*\* =  $p < .01$ .

Table 14

*Table 14. Poverty-Based Stressor Factors as Predictors of Depression*

	Unstandardized Coefficients		Standardized Coefficients	t	Significance
	B	Standard Error	Beta		
<b>Constant</b>	4.000	1.135		3.523	.000
<b>Housing Dysfunction</b>	.612	.095	.300	6.438	.000
<b>Financial Dysfunction</b>	1.538	.152	.404	10.132	.000
<b>Noise Dysfunction</b>	1.368	.285	.207	4.804	.000

Table 15

*Table 15. Poverty-Based Stressor Factors as Predictors of Anxiety*

	Unstandardized Coefficients		Standardized Coefficients	t	Significance
	B	Standard Error	Beta		
<b>Constant</b>	9.461	2.866		3.301	.001
<b>Housing Dysfunction</b>	1.713	.267	.427	6.427	.000
<b>Financial Dysfunction</b>	1.427	.347	.256	4.114	.000
<b>Noise Dysfunction</b>	1.459	.680	.140	2.145	.033

Table 16

*Table 16. Poverty-Based Stressor Factors as Predictors of Flourishing*

	Unstandardized Coefficients		Standardized Coefficients	t	Significance
	B	Standard Error	Beta		
<b>Constant</b>	49.931	2.026		24.639	.000
<b>Housing Dysfunction</b>	.169	.188	.082	.894	.372
<b>Financial Dysfunction</b>	-.692	.245	-.242	-2.823	.005
<b>Noise Dysfunction</b>	-.637	.481	-.119	-1.323	.187

Table 17

*Table 17. Poverty-Based Stressor Factors as Predictors of Resilience*

	Unstandardized Coefficients		Standardized Coefficients	t	Significance
	B	Standard Error	Beta		
<b>Constant</b>	28.967	1.204		24.061	.000
<b>Housing Dysfunction</b>	.014	.112	.011	.124	.901
<b>Financial Dysfunction</b>	-.627	.146	-.346	-4.304	.000
<b>Noise Dysfunction</b>	-.485	.286	-.143	-1.698	.091

FIGURE 9

CFA 3-Factor Structure Goodness-of-Fit Model

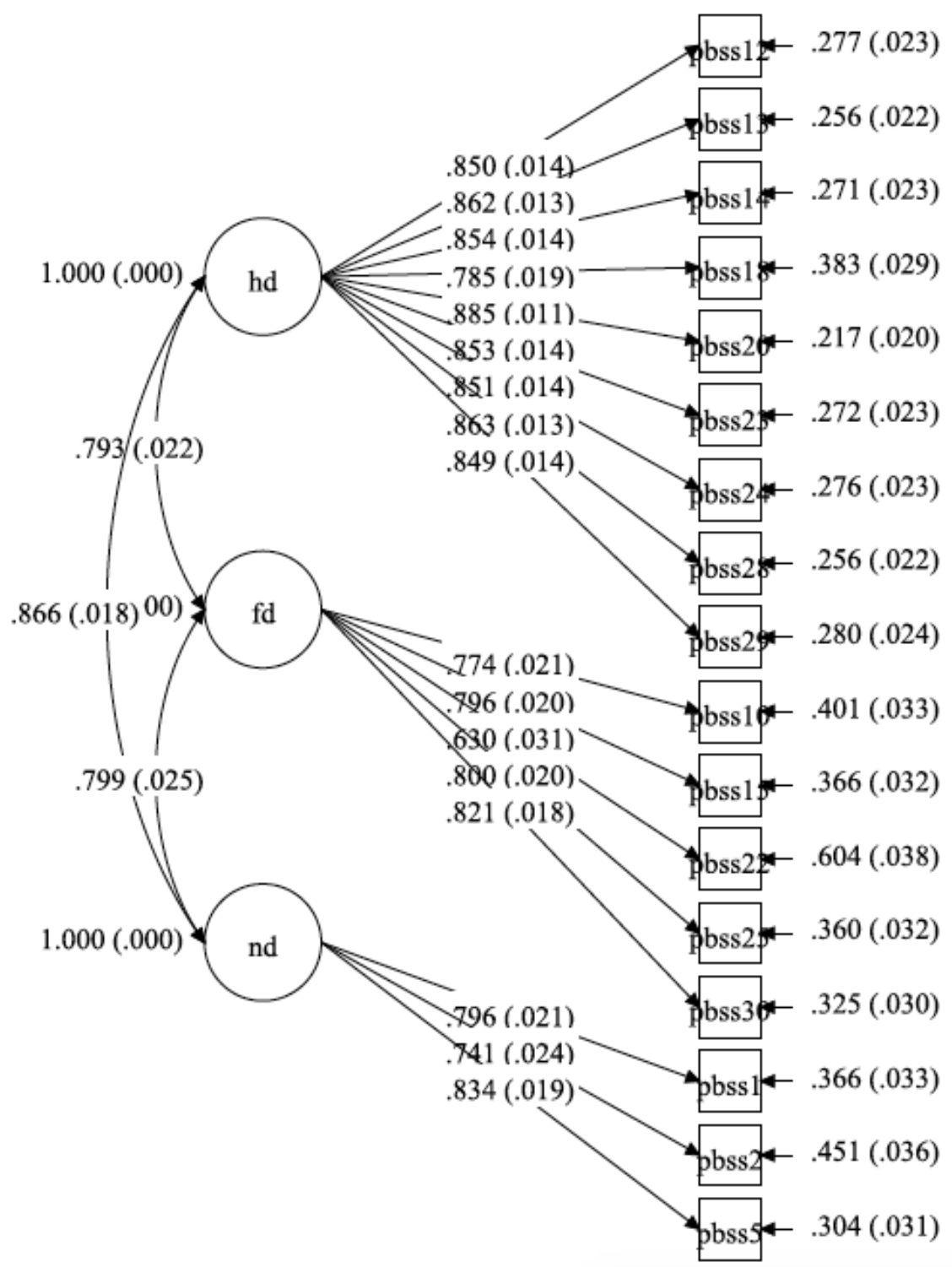




FIGURE 10

Distribution of Factor 1, Data Set 3: Housing Dysfunction

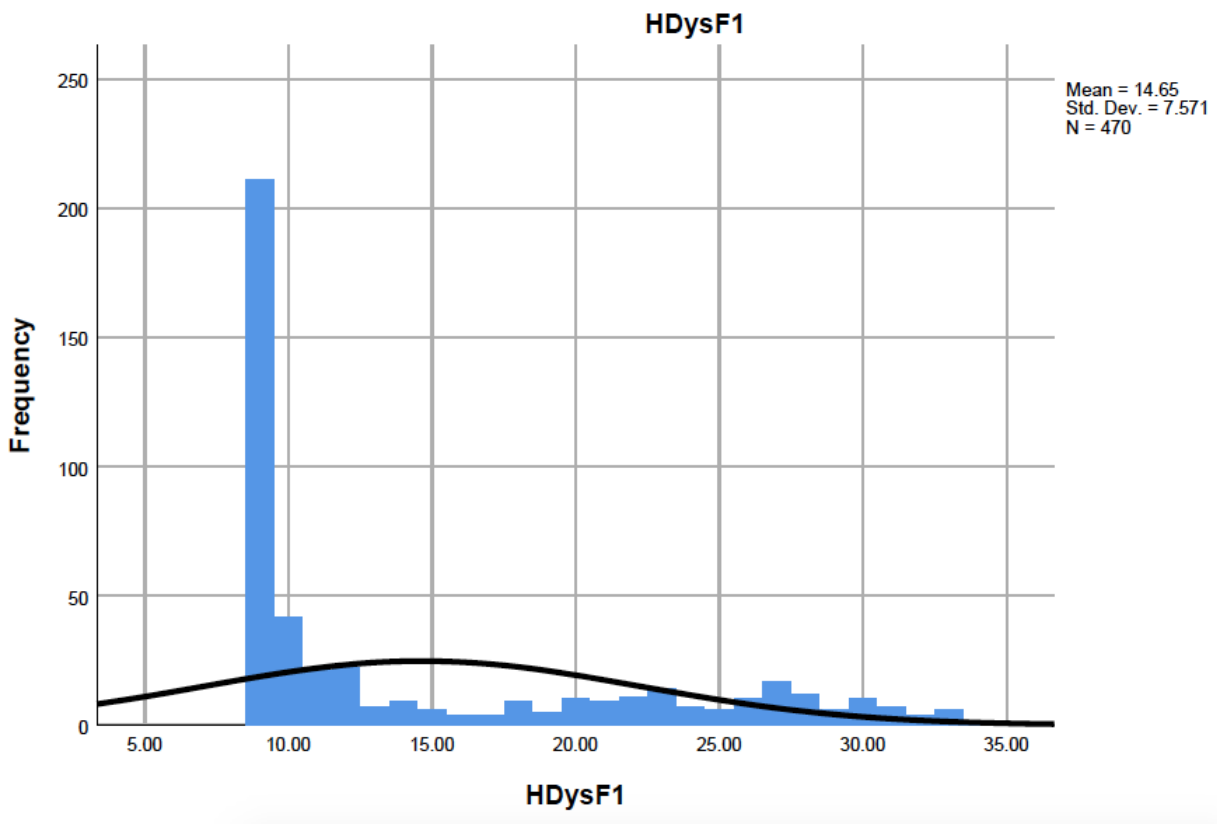


FIGURE 11

Distribution of Factor 2, Data Set 3: Financial Dysfunction

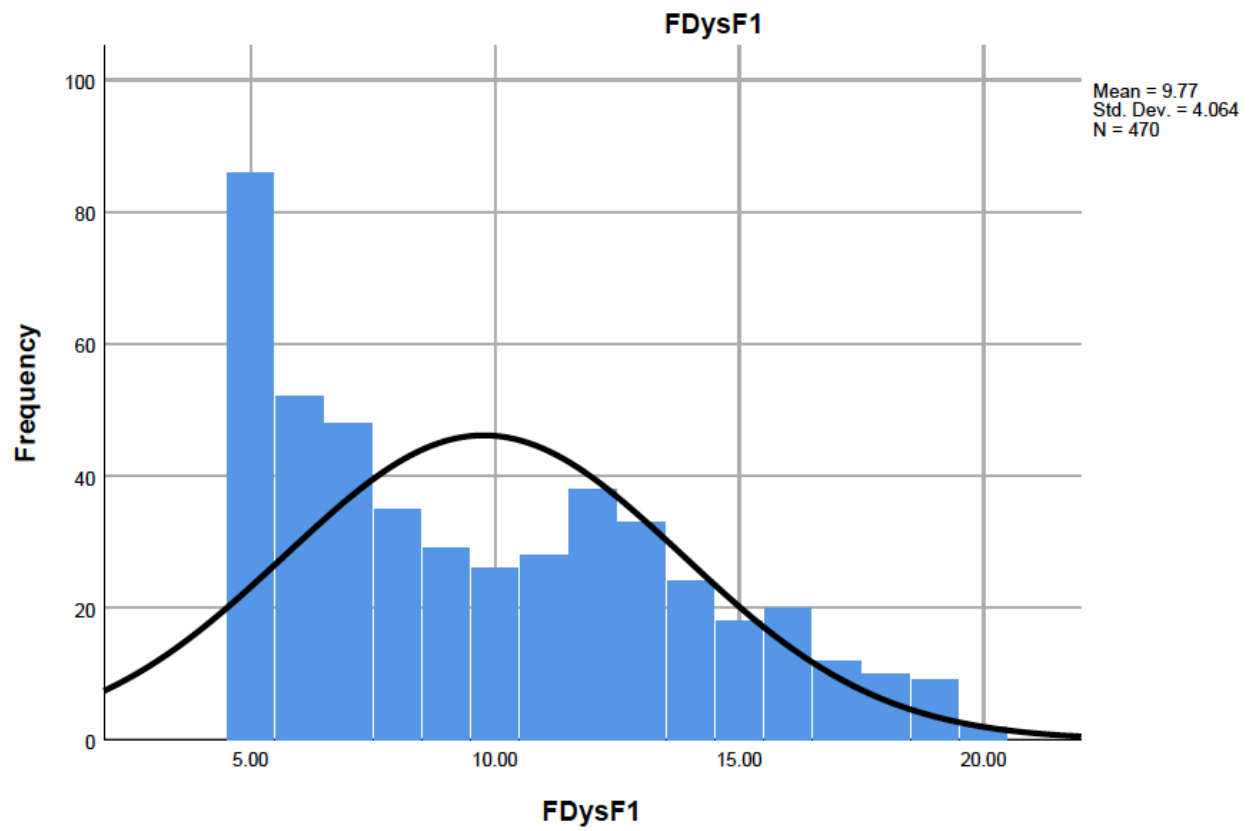
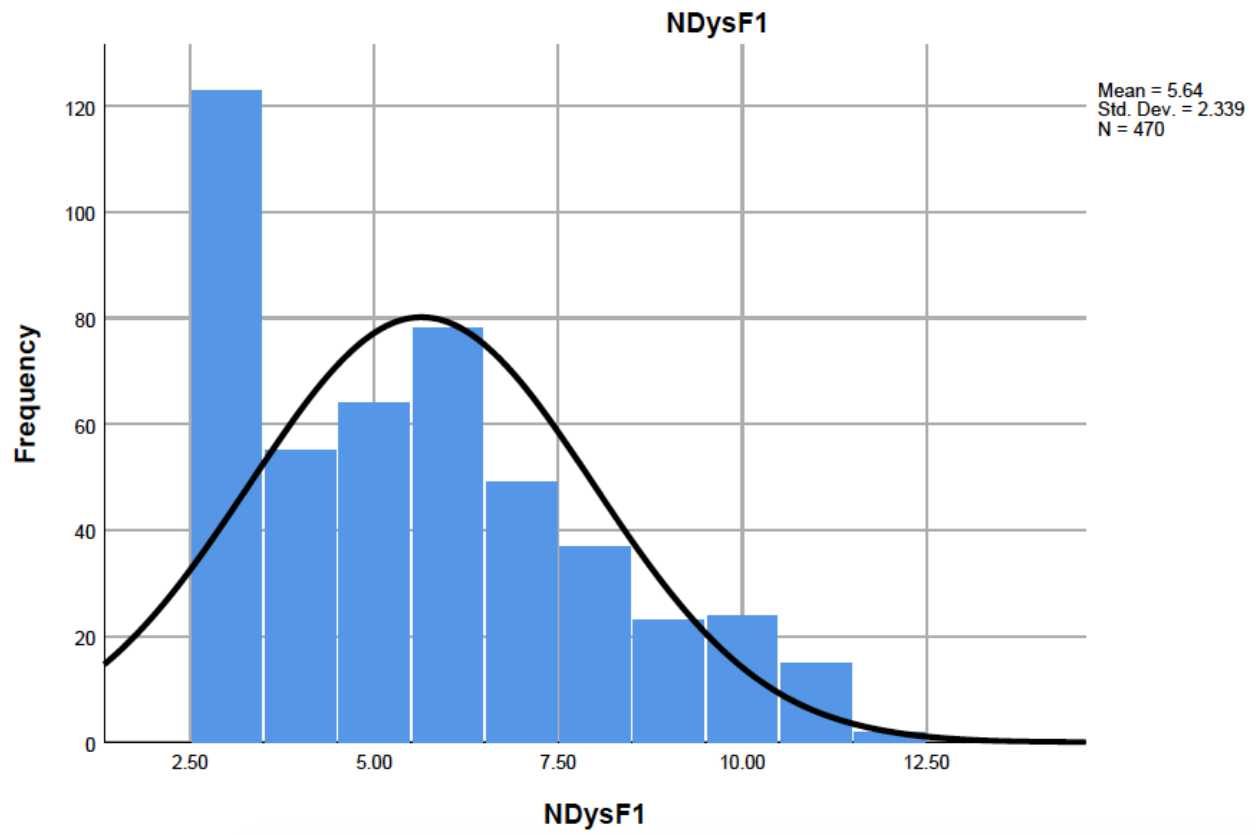


FIGURE 12

Distribution of Factor 3, Data Set 3: Noise Dysfunction



## CHAPTER 9

### DISCUSSION

#### *Review of Purpose*

The purpose of this study was to develop a robust and multifaceted measure of poverty-based stress. Given this primary goal, I worked to complete the following: (1) identify multiple, internally consistent dimensions of poverty-based stress (e.g., physical, psychosocial, financial, and general risk factors); (2) determine and verify an adequate factor structure for the measure; (3) validate poverty-based dimensions against theoretically relevant measures of distress (anxiety, depression) and well-being (resilience, flourishing); and (4) determine whether poverty-based dimension scores vary by ethnic and rural status.

#### *Adequacy of Measure*

*Structure and Goodness of Fit.* A set of Exploratory Factor Analyses (EFAs) were run to evaluate the dispersion of items into distinct factors. The initial EFA produced four factors though a significant number of items contained cross-loadings. These items were removed in subsequent analyses. The second EFA produced three factors. Again, some items produced cross-loadings. These items were removed. The third EFA produced three factors with a small number of items with cross-loadings. Once again, these items were removed. The fourth EFA produced 3 factors with a few items with cross-loadings, which were removed. In the fifth EFA model, 3 factors were generated. However, one item produced a factor loading score below the minimal threshold; it was removed. In the sixth and final model, 3 factors were generated. All items produced adequate factor loading scores with no cross-loadings, resulting in 17 items being retained in the final model. The retained items loaded onto 3 distinct factors: Housing

Dysfunction, Financial Dysfunction, and Noise Dysfunction. These findings offer preliminary evidence for the robust nature of the measure.

To validate the structure of the measure, a CFA was analyzed to evaluate the goodness of fit for the 3-factor structure identified in Chapter 4 (Housing Dysfunction, Financial Dysfunction, and Noise Dysfunction). For the 3-factor model, the composite goodness-of-fit statistical decision indicates a good fit. Because some of the fit indices were borderline, I decided to analyze another CFA model with a greater number of participants (see Chapter 8). The final CFA revealed good fit across the board. In summation, a cumulative interpretation of the data indicate that the 3-factor solution provides good fit to the data.

My measure is the first to evaluate specific poverty-based stressors reported by a diverse sample of adults residing in the U.S. This is significant because currently, there are no other measures that assess for specific poverty-based stressors. When considering future directions, it is important to extend my measure to capture poverty-based stressors that were not well represented by the original set of items. For example, more items can be generated to evaluate whether or not lower-SES individuals experience poverty-based stress through social discrimination, acquisition of resources and employment, and education. Furthermore, this measure should be evaluated with different samples to increase generalizability. For instance, it will be important to evaluate the invariance of the measure by ethnic identity status, geographic location, and family structure.

*Reliability.* Next, I examined whether the final set of items were internally consistent. I was able to obtain evidence for reliability through a cross-sectional and a brief longitudinal design.

*Internal Consistency.* In order to examine internal consistency, the reliability for each factor score was evaluated for all administrations of the survey. The internal consistency factor scores at the first administration were strong for Housing Dysfunction ( $\alpha = .93$ ), and good for Financial Dysfunction ( $\alpha = .84$ ) and Noise Dysfunction ( $\alpha = .81$ ). The internal consistency scores at the second administration were strong for Housing Dysfunction ( $\alpha = .92$ ), good for Financial Dysfunction ( $\alpha = .80$ ), and adequate for Noise Dysfunction ( $\alpha = .75$ ). At the third and fourth administrations, the internal consistency scores were the same for Housing Dysfunction and evaluated as excellent ( $\alpha = .95$ ). The internal consistency for Financial Dysfunction factor score ranged from .84 to .87, and the internal consistency for Noise Dysfunction factor score ranged from .83 to .85, all of which are considered good.

*Test-Retest Reliability.* In order to examine the stability and reliability of the scale domain scores over time, test-retest reliability was evaluated. The temporal consistency scores for Housing Dysfunction ( $r = .87, p < .01$ ), Financial Dysfunction ( $r = .68, p < .01$ ), and Noise Dysfunction ( $r = .65, p < .01$ ) were all adequate given field standards. These correlations indicate high levels of test-retest reliability. This is a promising finding because poverty-based stressors are consistent and persistent concerns among lower-SES individuals and families (Evans, Brooks-Gunn, & Klebanov, 2011; APA, 2017; Silverman, Holtyn, & Subramaniam, 2018). Overall, my findings reveal good to excellent metrics in evaluating item cohesion. It will be important to continue to evaluate different metrics for reliability in the future. For instance, it will be important to evaluate test-retest estimates using a multiple wave prospective study with longer time periods (e.g., 6, 12, 18 months) between administrations.

*Validity.* In order to evaluate whether the items measured the construct I intended to measure, I evaluated multiple forms of validity. Specifically, I measured convergent validity

through a correlation matrix. I also evaluated the predicted effect of my poverty-based stressor scales on psychological outcomes theoretically related to the experience of poverty-based stress using a prospective two-wave design.

*Convergent Validity.* As expected, the data revealed good convergent validity. All three poverty-based stressor factors (Housing Dysfunction, Financial Dysfunction, and Noise Dysfunction) were positively associated with depression and anxiety. In addition, all three poverty-based stressor factors were inversely associated with flourishing and resilience, though the strength of these associations fluctuated slightly for different poverty-based stressor factors. Overall, these findings suggest that the measure is a valid assessment of poverty-based stress and is theoretically consistent with the current available literature (Sternthal, Slopen, & Williams, 2011; Evans & Kim, 2013; Evans, & Cassells, 2014; APA 2017).

*Predictive Validity.* As expected, poverty-based stress factors accounted for variation in all four outcomes measured in this study. Results indicated that the combined poverty-based stressor factors accounted for 68.8% of the variance in depression scores, 51.5% of the variance in anxiety scores, 19% of the variance in resilience scores, and 7.6% of the variance in flourishing scores. When examining the unique contributions of each predictor, the Housing Dysfunction, Financial Dysfunction, and Noise Dysfunction factors all uniquely accounted for variance in depression and anxiety and appear to serve as risk factors to clinically significant symptoms of psychopathology related to depression and anxiety. Alternatively, only the Financial Dysfunction factor accounted for variance in resilience and flourishing. These findings suggest that poverty-based stressors related to Financial Dysfunction serve as significant impediments to the development of resilience, as well as flourishing efforts.

The results of this study support the literature suggesting that low-SES individuals experience specific poverty-based stressors which appear to put them at an increased risk of depression (Everson, Maty, Lynch, & Kaplan, 2002) and anxiety (Santiago, Wadsworth, & Stump, 2011; Wadsworth et al., 2016). Overall, my study supports the position that poverty-based stressors are a risk factor for depression and anxiety among lower-SES community adults. In the future, it is important that researchers continue to evaluate the relationship between poverty-based stressors and psychopathological outcomes. For instance, it is important to determine if different domains of poverty-based stress causally contribute to the development and maintenance of depression and anxiety. Although my results indicate that all three domains account for unique variance in depression and anxiety scores, there is also a strong possibility that one poverty-based stressor may differentially impact the experience and course of these conditions over the others. Considering the multi-dimensional nature of my study, it is important researchers conduct longer-term (e.g., 6, 12, and 18 months) prospective studies to evaluate the individual effects of poverty-based stress dimensions on changes in depression and anxiety symptoms. Such research can help inform early intervention and prevention programs designed to mitigate the effects of poverty-based stress on these clinical conditions.

Relatedly, the results of this study support research that argues specific, severe poverty-based stressors experienced by low-SES individuals (Grzywacz, Almeida, Neupert, & Ettner, 2004) negatively impact resilience (Blair & Raver, 2012) and flourishing (Sternthal, Slopen, & Williams, 2011). In this study, poverty-based stressors related to Financial Dysfunction specifically were related to individuals' reports of lower resilience and flourishing scores. It is unknown why Financial Dysfunction, as a stressor, would confer a greater effect on resilience and flourishing scores compared to other poverty-stress dimensions. It is possible that a lack of



financial resources results in disproportionate stress exposure across a multitude of life domains, which can negatively impact physical, psychological, emotional, and social health and advancement (Sternthal, Slopen, & Williams, 2011; Evans & Kim, 2013; APA, 2017). Some research suggests that within lower-SES communities, difficulties bouncing back and thriving are directly linked to substandard financial resources and result in short- and long-term difficulties including poor health, chronic health conditions, increased mortality, exposure to violence, psychological and emotional disturbances including mood disorders, alcohol and substance use difficulties, personality dysfunction, and suicide, and decreased cognitive functioning (Murali & Oyebode, 2004; Galea et. al., 2007; Rector, 2010; Beidas et. al., 2012; Kim et. al., 2013; Mani et al., 2013; Wadsworth et. al., 2016). As such, future research and clinical work should continue to examine the relationship between poverty-based stressors and positive health outcomes. It is important to determine if the relationships between poverty-based stress and lower levels of resilience and flourishing are causal in nature. Therefore, experimental designs inducing poverty-based stress may be fruitful platforms to better appreciate how lower-SES adults vary in their ability to marshal and sustain resilience and flourishing resources.

At the individual level, the development and utilization of specific clinical strategies designed to enhance and promote resilience and flourishing can be useful in strengthening overall mental and physical health and well-being. At a systemic level, prevention can occur by identifying structural deficiencies within society as a means to develop and implement sustainable economic policies (Seccombe, 2002). Such policies will help in building upon resilience and flourishing resources in a way that will allow individuals to better function, and essentially thrive. Furthermore, research that focuses on the development and utilization of resources that decrease stress (Cohen & Janicki-Deverts, 2012), improve coping and personal

resources (Blair & Raver, 2012), and decreases exposure to threats to health, safety, and economic advancement (Sternthal, Slopen, & Williams, 2011) could be crucial in both prevention and intervention efforts.

### *Poverty Stress Dimensions*

The current measure does well in identifying and assessing specific poverty-based stressors related to Housing, Financial, and Noise dysfunction. However, there are a number of dimensions related to poverty-based stress that are not captured in the measure. For example, the relationship between poverty and poor health is well documented (Lustig & Strauser, 2007; Callander, Schofield, & Shrestha, 2013), yet few items capture stressors related to the acquisition of healthcare resources. Social-class discrimination is another important mechanism in the influence of poverty on health and well-being (Fuller-Rowell, Evans, & Ong, 2012) as is racial discrimination (Miller, Rote, & Keith, 2013), housing discrimination (Galster, & Carr, 1991; Schill & Wachter, 1995), employment discrimination (Kabeer, 2000), and economic discrimination (Piazza, 2011). Again, few themes associated with social-class and racial discrimination are accounted within the final item set of the measures. Accounting for the effects of these poverty-based stress dimensions is important in evaluating how lower-SES individuals, especially persons of color, contributes to healthcare disparities. Future research should focus on developing and evaluating a newer, longer measure with more items as a means to capture such dimensions. Moreover, research should evaluate how the inclusion of these new items alters the structure of the measure.

### *Demographic Differences in Poverty Stress*

I examined the ethnic and rural differences on reports of each poverty-based stressor dimension. The purpose of doing this was to evaluate preliminary evidence for whether poverty-based stress disproportionately impacts individuals based on race/ethnicity or rural status.

*Ethnicity.* A MANOVA was run in order to determine if there were significant main effects for ethnicity. This analysis was utilized three times with three different samples. Consistent across all three studies, Black/African American individuals reported higher levels of Housing, Financial, and Noise-based stressors when compared to White/Caucasian individuals. This is consistent with the available literature that asserts poverty and its effects is more prevalent among Black individuals when compared to their White counterparts (Barnard & Turner, 2011; Kaba, 2011; Milner IV, 2013). These findings indicate the importance of advocating for Black/African American individuals by reducing disparities in public health and safety outcomes. Policies that focus on ensuring access to affordable preventative medicine and healthcare, high-quality education, employment opportunities, and overall social change could be essential in minimizing the effects of poverty-based stress on Black community wellness and well-being.

*Rurality.* A MANOVA was run in order to determine if there were significant main effects for rurality. This analysis was employed three times with three different samples. While there were some mixed findings across studies, the more methodologically powerful studies (those with an increased sample size) indicated that there are slight differences in reports between rural and non-rural participants on Housing Dysfunction. This is consistent with the available literature that inadequate housing conditions impact low-income individuals in rural areas more often than in non-rural areas (Morton, Allen, & Li, 2004; Cloke, Marsden, & Mooney, 2006). In order to minimize housing-based distress among lower-SES individuals in

rural areas, it is imperative that social scientists ban together to create policies to address inadequate living conditions (e.g., development and maintenance of adequate and affordable housing) for lower-SES individuals residing in rural and isolated areas.

*Intersection of Ethnicity and Rurality.* In two of the studies, results revealed a significant interaction effect between ethnicity and rurality in accounting for differences in Housing Dysfunction. Specifically, Black/African American individuals who resided in rural areas reported the most difficulties with Housing Dysfunction-based stressors when compared to all other groups. Again, this pattern of findings is consistent with available literature positing Black individuals residing in rural areas are more likely to experience housing poverty when compared to their White counterparts (Whitener, 2000). With regard to advocacy, institutional, economic, and societal changes are needed. Successful policy efforts focused on improving access to, as well as the affordability and maintenance of, adequate housing in areas that are accessible to low-income Black/African American individuals may help decrease housing-based stress within rural and isolated areas.

#### *Clinical Significance*

This measure is a robust assessment of poverty-based stress that can be implemented within a multitude of healthcare settings. It is the first of its kind, and as such, can be used as the foundation from which future researchers expand upon research related to poverty and stress. This measure helps to further establish the specific stressors most commonly experienced by those residing in poverty. This is particularly important given the multifaceted ways in which poverty impacts individuals' health and well-being. Healthcare professionals can use this measure to better understand the specific stressors that contribute to client/patient psychopathology or illness presentation. However, it is important to note that this measure

should not be used for diagnostic purposes. The future goal for this measure is to be utilized in a wide array of healthcare settings as a means to further inform client/patient symptomatology or illness presentation, which can provide a basis for treatment.

### *Social Significance*

Poverty is the result of larger, systemic flaws and insufficiencies built into the structure of society that generate adverse effects on multiple dimensions of health and well-being (Hawkins & Maurer, 2012). Specifically, individuals of color, and in particular, Black/African American individuals, are more likely to live in poverty, resulting in reduced access to the economic and societal benefits granted to those who are of economic privilege (Barnard & Turner, 2011; Kaba, 2011; Milner IV, 2013). For low-SES, Black/African American individuals, “race and class are inextricably linked and function as a structural barrier to accessing wealth, resources, and opportunities” (Hawkins & Maurer, 2012). My findings support these positions.

This is evident given the current climate with the resurgence of the Black Lives Matter movement. The results of this study reinforce the need for full on society-based advocacy, as well as interventions at both the policy and practice levels that are holistic in nature, with an even greater focus on race and cultural factors. Specifically, a focus on structural barriers including investing in low-SES Black/African American communities can help reduce unemployment and underemployment, increase access to educational resources, and reduce crime. Relatedly, divesting funds from police departments and reallocating them to more appropriate forms of public safety and community support within Black/African American communities can be beneficial in reducing crime and developing strong, resource-rich communities, as funds will go toward directly addressing social issues (e.g., poverty, homelessness, education, health and well-being, housing) rather than funding a policing system founded in White supremacy and fueled by

racism (Reichel, 1998; Turner, Giacomassi, & Vandiver, 2006; Durr, 2015; Brown, 2019; Go, 2020). Furthermore, addressing the significance and intersectionality of race and poverty can be monumental in progressing social movements like Black Lives Matter, whose focus is on sustainable transformations within communities and the development of social, economic, and political flourishing.

Sustainable transformation can start by addressing property lining, or the systemic, discriminatory practice that places specific housing services (i.e., mortgages, loans, lending, insurance, etc.) out of reach for residents of certain areas based on race or ethnicity. This federally created, locally implemented, prejudicial practice contributes to blatant and persistent racial disparities with regard to wealth and financial well-being, and negatively impacts mental and physical health (Richardson et al., 2020). The results of this study inform fairer practices, which include restoring the Affirmatively Further Fair Housing (AFFH) rule which would identify and reduce concentrated areas of poverty, supporting inclusionary zoning that adds affordable housing options outside of redlined areas, encourage local solutions such as expanding Section 8 and rent control/vouchers in order to protect public housing, and exploring the interconnectedness of reparations, housing, and desegregation (Richardson et al., 2020).

### *Limitations*

While this measure was a valid and reliable assessment of poverty-based stress, there are some limitations worth noting. The demographics of the participants that comprised the sample were restricted, especially in terms of ethnicity, gender and sexual identity, and religious orientation. As such, to further bolster the generalizability of our results, it is important that the study questions be reanalyzed with more diverse samples of lower-SES individuals. Relatedly, there were difficulties ensuring that all of the participants were of lower-SES status. Lower-SES

was reported by participants and researchers had no way of confirming whether this status accurately reflected their living and financial situation. In addition, a significant number of participants were removed from the study due to validity concerns. In the third study at Time 1, 508 lower-SES participants were recruited. After removing participant responses that threatened the quality of the data due to validity concerns, 470 lower-SES adults remained. Only 236 of the participants who completed the survey at Time 1 volunteered to participate in Time 2. Of those 236 participants, 17 reported questionable data and were subsequently removed from the final data set at Time 2. In total, 219 participants were retained in the final sample. Such a significant reduction in participants can result in reduced power, which can minimize the magnitude of effects that are able to be detected. It is also important to consider how the people who were removed from the study differed from those who were retained. Such differences could have a significant impact on the results of the study.

With regard to design, the longitudinal aspect of the study presented some difficulties. The intervals between administrations were short. This could have important clinical implications. Specifically, it is possible that such short intervals between administrations minimized the accounted variation in clinical outcomes by poverty-based dimensions. Future research could focus on re-conducting the study with longer intervals between administrations (i.e., 6 months) in order to evaluate the individual effects of poverty-based stress dimensions on important clinical outcomes. Another important consideration to consider is the Coronavirus-19 (COVID-19). Data collection occurred in March, 2020, when COVID-19 was declared a national emergency, and in May, 2020, when COVID-19 rates began to peak. Responses to the questionnaires that comprised this study may have been impacted in a number of ways. First, respondents already living in poverty may have been experiencing increased levels of distress as a

result of COVID-19-related financial insecurity, which may have caused them to inflate the level of poverty-based stressors they experienced. Also, some respondents may have been experiencing poverty and financial-related distress for the first time, which could have caused them to report more extreme levels of poverty-based stress. Moving forward it is important to evaluate these data in the context of the COVID-19 pandemic. Furthermore, because correlations between constructs were examined, causation cannot be inferred. It cannot be said with guaranteed certainty that poverty-based stress causes emotional health difficulties. In response, future research should utilize experimental studies in order to identify a causal relationship between poverty-based stress and emotional health difficulties. Finally, given that the measures given were self-reported, it is possible that demand characteristics or social desirability impacted how participants responded. Participants may not have responded to all of the questions truthfully. Future research should focus on reevaluating poverty-based stress through observational and behavioral measures.

### *General Conclusions*

The goal of these studies was to develop a psychometrically sound assessment of poverty-based stress. This measure was designed to fill a significant gap in the literature related to poverty and stress, including the absence of a broad and multifaceted measure of poverty stress. Through the examination of the results, my measure appears to be well-suited to measure different dimensions of poverty-based stress. Firstly, multiple internally consistent dimensions of poverty-based stress (e.g., physical, psychosocial, financial, and general risk factors) were identified. Through the use of factor analytic procedures, I was able to find a factor structure that fit the data well. Next, poverty-based dimensions were validated against theoretically relevant measures of distress (anxiety, depression) and well-being (resilience, flourishing). As expected,



all three poverty-based stressor factors were positively associated with depression and anxiety, and inversely associated with flourishing and resilience, though the strength of these associations fluctuated slightly for different poverty-based stressor factors. Lastly, poverty-based dimension scores were analyzed to determine whether they varied by ethnicity and rural status. Consistent with the available literature, Black/African American individuals reported higher levels of each of the poverty-based stressor dimensions (i.e., Housing-, Financial-, and Noise-based stressors) when compared to White/Caucasian individuals. Furthermore, low-SES individuals residing in rural areas reported more difficulties related to Housing Dysfunction when compared to low-SES individuals residing in urban areas. Overall, these findings suggest that this measure is a robust, psychometrically sound measure of poverty-based stress among low-SES adults.

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## APPENDIX A

## POVERTY-BASED STRESSOR SCALE

To the left of each item, please indicate the extent to which you have experienced these statements within the last five (5) years. *Distinctly* indicate the choice that best corresponds with what you have experienced in the last five (5) years.

Never	Sometimes	Often	Always
0	1	2	3

- \_\_\_ 1. I had difficulty sleeping or doing other important things due to noise disturbances inside my home (e.g., crying infants, loud family members).
- \_\_\_ 2. I had difficulty sleeping or doing other important things due to noise disturbances outside my home (e.g., loud neighbors, construction, neighborhood violence, public transportation, car alarms).
- \_\_\_ 3. I was reluctant to go home or return home because the noise in my house was uncomfortably loud.
- \_\_\_ 4. I felt the need to get up and leave when it became noisy in my house.
- \_\_\_ 5. I have felt stressed, irritable, or fatigued by the noise in my home.
- \_\_\_ 6. I have felt overwhelmed by the amount of people living in my home.
- \_\_\_ 7. I was prone to sickness because of the amount of people living in my home.
- \_\_\_ 8. I had difficulty finding time to be alone because of the number of people in my home.
- \_\_\_ 9. I have difficulty accessing the toilet, showers, laundry, or other resources due to the amount of people in my home.
- \_\_\_ 10. I had to let go of some hopes and dreams to meet my most basic needs (shelter, food, clothing, etc.)
- \_\_\_ 11. I have been without water, heating, electricity, or another basic necessity because there was not enough money.
- \_\_\_ 12. Maintenance workers have condemned or threatened to condemn my home due to structural problems, poor maintenance, or other physical hazards associated with the building itself.
- \_\_\_ 13. I have stayed in a homeless shelter, church, other public place, or another person's home because my home was not suitable to live in.
- \_\_\_ 14. My family and I have been threatened with eviction.
- \_\_\_ 15. I have worried about how difficult it would be to move if I had to move suddenly.
- \_\_\_ 16. Relationships with family members end on bad terms.
- \_\_\_ 17. Disagreements in my family often lead to violent actions (e.g., loud arguments, physical confrontations).
- \_\_\_ 18. I avoid people living in my home as much as possible.
- \_\_\_ 19. Two or more people in my family have chosen not to communicate with one another.
- \_\_\_ 20. I encountered physical confrontations (i.e., fighting) in my home.
- \_\_\_ 21. A family member or family friend moved away because they couldn't afford to stay in their home.
- \_\_\_ 22. I have experienced a family member or family friend pass away before their time.
- \_\_\_ 23. I have not felt as close to a family member or family friend because they are in jail.



- \_\_\_ 24. Conflicts in my home make me feel disconnected from loved ones.
- \_\_\_ 25. Financial stress has negatively impacted my family's relationship.
- \_\_\_ 26. I have been concerned with my appearance because my clothing appears torn, tattered, patched, was received secondhand, or is one or more years old.
- \_\_\_ 27. I have gone hungry because there was not enough food to eat.
- \_\_\_ 28. I had to take advantage of available garbage bins, charities, soup kitchens, or free events in order to eat.
- \_\_\_ 29. I have been forced to stay in a homeless shelter, church, other public place, or another person's home.
- \_\_\_ 30. I had to sacrifice or make tough decisions because of lack of money.

APPENDIX B  
REVISED PBSS ITEMS

		Never	Sometimes	Often	Always
1.	I had difficulty sleeping or doing other important things due to noise disturbances inside my home (e.g., crying infants, loud family members).	0	1	2	3
2.	I had difficulty sleeping or doing other important things due to noise disturbances outside my home (e.g., loud neighbors, construction, neighborhood violence, public transportation, car alarms).	0	1	2	3
5.	I have felt stressed, irritable, or fatigued by the noise in my home.	0	1	2	3
10.	I had to let go of some hopes and dreams to meet my most basic needs (shelter, food, clothing, etc.)	0	1	2	3
12.	Maintenance workers have condemned or threatened to condemn my home due to structural problems, poor maintenance, or other physical hazards associated with the building itself.	0	1	2	3
13.	I have stayed in a homeless shelter, church, other public place, or another person's home because my home was not suitable to live in.	0	1	2	3
14.	My family and I have been threatened with eviction.	0	1	2	3
15.	I have worried about how difficult it would be to move if I had to move suddenly.	0	1	2	3
18.	I avoid people living in my home as much as possible.	0	1	2	3
20.	I encountered physical confrontations (i.e., fighting) in my home.	0	1	2	3
22.	I have experienced a family member or family friend pass away before their time.	0	1	2	3
23.	I have not felt as close to a family member or family friend because they are in jail.	0	1	2	3
24.	Conflicts in my home make me feel disconnected from loved ones.	0	1	2	3
25.	Financial stress has negatively impacted my family's relationship.	0	1	2	3
28.	I had to take advantage of available garbage bins, charities, soup kitchens, or free events in order to eat.	0	1	2	3
29.	I have been forced to stay in a homeless shelter, church, other public place, or another person's home.	0	1	2	3
30.	I had to sacrifice or make tough decisions because of lack of money.	0	1	2	3