2018

Locus of Control, Poverty and Health Promoting Lifestyles

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Walden University
2018

Abstract

Locus of Control, Poverty and Health-Promoting Lifestyles

by

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Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Health Psychology

Walden University

January 2018

Abstract

Despite increased access to care and interventions aimed to change health behavior, socioeconomic health disparities have remained unchanged, even for preventable illness and disease. Health behavior theories and interventions heavily rely on perceptions of control over one's fate and thus ignore populations with low perceptions of personal control. Poverty is associated with an external locus of control (LOC), while both poverty and external LOC are associated with less health protective behavior. The purpose of this quantitative study was to explore the role of LOC as an adaptive response to poverty and to discover the risks and benefits to physical and psychological health associated with LOC orientation. Using cross-sectional survey methodology, 136 adult participants from the United States were recruited through snowball sampling to anonymously complete measures of the Multidimensional Locus of Control (MLOC), the Health Promoting Lifestyles II (LPII), the Kessler Psychological Distress Scale (KP10), and a demographic questionnaire. Hierarchical regression and bivariate analyses were used to test the hypotheses. According to the study findings, chance LOC mediated the relationship between socioeconomics and health lifestyles, while external-chance was associated with less healthy lifestyle choices than external-powerful others. Internality did not offer any psychological protections from anxiety and depression for low socioeconomic populations. Implications for social change are to further the understanding of the role of perceived control on health beliefs, behavior and psychological well-being for marginalized populations to promote the development of appropriately targeted, culturally sensitive health interventions.

Locus of Control Mediating the Relationship between Poverty, and Health-promoting Lifestyles

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Chapter 1: Introduction to the Study

Introduction

Poverty is a large determinant of health worldwide, however attempts to address health disparities associated with poverty in the United States (U.S.) have not been successful at reducing the health gap between the middle and upper class and populations of low socioeconomic status (SES); in fact, informational health campaigns have successfully influenced behavioral change among more affluent populations, increasing the current health disparities between low and higher SES populations (Adler, 2009; McGinnis, Williams-Russo & Knickman, 2002). According to the U.S. government, poverty is defined as living at or above the poverty line, which, as of 2016 is a family income of 24,400 dollars or less for a family of four. As of 2016, over 40 million Americans were living in poverty (census.gov, 2016). The Center for Disease Control (CDC) defines poverty as "A person or group of people who lack human needs because they cannot afford them" (CDC, 2015). Poverty is associated with poorer mental and physical health and lower academic achievement, among other disparities, and those living in poverty are more susceptible to premature death and illness than their wealthier counterparts (Yoshikawa, Aber, & Beardslee, 2012).

Braveman, Cubbin, Egeter, Williams and Pamuk, (2010) found that childhood obesity and asthma symptom severity followed a socioeconomic gradient, which could not be solely explained by access to care, genetic predispositions, or physical environment; these researchers noted that health practices accounted for a significant amount of the socioeconomic health disparities. Moreover, approaches to health

behavior interventions that are heavily reliant on personal agency may require that one has the belief that events and circumstances are a consequence of one's own behavior, as defined as an internal locus of control (LOC) (Goldberg, 2009). It is well documented that for people with low SES, events and circumstances are largely perceived as being controlled by fate, destiny, or powerful others, defined as an external LOC (Bandura, 1997; Lachman & Weaver, 1998; Kraus, Piff, & Keltner, 2009). Given what is known about the influence of poverty on health and control beliefs, a further understanding of the relationships between SES, LOC, and health behavior is needed to address the psychological and physical health of low-SES populations.

Background

The increased incidence of poor health for those living in poverty (Yoshikawa et al., 2012) calls for social change initiatives to address the risk in order to improve health outcomes for the low-SES population. Although the physical and social aspects of poverty and trauma need to be addressed as barriers to health through policy such as improving physical environments and increasing the quality of and access to care, education and resources, these factors only represent part of the determinants of health. Another powerful health determinant is health behavior. Health behavior, defined by Gotchman, (1997) refers to the actions, practices, and habits that contribute to health maintenance, health restoration, and health improvement. Therefore, receiving an annual mammogram would be considered a practice contributing to health maintenance, namely, early cancer screening. Coupled with increased risk from genetic and environmental factors, low SES populations engage in less health protective behavior and more health

risky behavior than the general population, including less healthy dietary choices, less exercise, fewer dental and medical check-ups, higher rates of unprotected sex, and less health information seeking (Nettle, 2010). While acknowledging that there are many factors that influence poor health, I chose to focus on the psychosocial pathways to health-promoting lifestyles, since up to two-thirds of the existing SES health disparities can be explained by health behavior (CDC, 2015). This can include engaging in activities that increase health risks like smoking and consuming sugary beverages, as well as failing to engage in health promoting behavior such as exercising and health screenings (, 2009).

One psychosocial factor influenced by poverty is the perception of control, in that conditions associated with low SES and poverty are believed to create perceptions of powerlessness and decrease one's motivation to act to prevent negative events or circumstances (Lachman & Weaver, 1998; Kraus, Piff, & Keltner, 2009). . As explained by the theory of learned helplessness (Hiroto & Seligman, 1975; Seligman & Maier, 1974), the inability to escape negative conditions results in decreased motivation to do so. Learned helplessness illustrates adaptation in negative environments in that neither humans nor animals continue to exert effort to escape negative conditions when their previous attempts to escape such conditions were continuously thwarted (Zhou, He, Lao & Baumeister, 2012). Succumbing to negative conditions becomes a form of passive coping, such as the person living in poverty who finds the negative conditions associated with poverty largely uncontrollable (Zhou, et al., 2012). The relinquishing of one's personal responsibility to act may prevent psychological distress and therefore be

psychologically protective when perceptions of personal agency are low (Hiroto & Seligman, 1975; Seligman & Maier, 1974) . These results indicate that inaction of the helpless, in the face of seemingly avoidable outcomes may be more adaptive than maladaptive.

Problem Statement

The current investigation focuses on whether repeated exposure to negative circumstances and conditions that one cannot change over long periods causes one to accept one's overall fate, including one's health status, as unchangeable or controlled by others. Rotter (1996) proposed that LOC externality and internality is adaptive and an external LOC is more prevalent for those with low-SES and/or persons who have experienced numerous adverse life events. Therefore, this study is intended to examine how LOC orientation helps these populations adapt to their environments and whether or not health interventionists should aim to increase perceptions of control for persons who have limited control over their environments. Through the theoretical framework I sought to explain how poverty influences control perceptions and health behavior as well as the psychological benefits associated with an external LOC for persons living in poverty. According to Rotter's expansion of the social learning theory, LOC refers to the extent to which one attributes the cause of events and circumstances that affect him to internal or external factors; the theory was later expanded to include chance as a subcategory of external factors, representing spiritual beliefs, luck, and powerful others within the external category (Rotter, 1966; Levenson, 1973). Persons with a predominately internal LOC believe in their ability to affect events and circumstances in their lives, both

negatively and positively, while persons with an external locus believe that events and circumstances in their lives are largely determined by outside forces or others with more power than themselves (Mearns, 2009). Within externality, the belief that powerful others control events and circumstances of one's life may be illustrated by a patient who believes that her doctors control her health outcomes. A person with predominately external-chance beliefs feels that he should continue smoking because not everyone who smokes has health complications, therefore lung cancer is largely caused by being unlucky. Further, low-income, minority patients with predominately external-powerful others orientation were more likely to report trust with their medical providers than those with predominately external-chance orientation (Brincks, Feaster, Burns, & Mitrani, 2010). LOC is not believed to be a biological or genetic personality trait, but rather a set of beliefs and worldviews that are learned and adapted (Frazier et al., 2011). The poverty experience creates both perceptions of lack of control as well as actual limits on control in terms of resources needed for survival, such as food and the ability to escape unsafe and undesirable conditions (Ward, 2013). Therefore, an external LOC formed in response to such an unpredictable environment is an appropriate psychosocial response, according to the social learning theories created by Bandura (1965) and Rotter. The social learning theory indicates how the extent to which one perceives one's own ability to control or influence circumstances and events is influenced and reinforced by one's experiences within that environment which directly and indirectly reinforce perceptions of control (Bandura, 1986, 1965). Individuals also attribute responsibility for events and circumstances in their lives to their own actions, the will of others more powerful than

themselves or chance, based on beliefs about their own power to influence change (Bandura, 2004; 1997; 1965).

Multidimensional Locus of Control

Levenson (1973) made a distinction within the domain of external LOC to differentiate between the belief that powerful others or chance exerted the most control over one's life. Therefore, within the external domain, the subdomains *powerful others* and *chance* describe who or what is believed to exert most control over the circumstances of one's life (Levenson, 1973). A person with a predominately external/powerful others orientation believes that his life is controlled by others in positions of power, while a person with predominately external/chance believes that forces such as luck or spiritual forces exert more control over his condition and circumstances than one's own actions or the actions of others (Levenson, 1973). This distinction within externality is integral to the understanding of perceptions of control and health since powerful others and chance domains are associated with different health behavior and outcomes (Brinks et al., 2010; Helmes, Bowen & Bengel, 2002; Wallston & Wallston, 1989). Brinks et al., (2010) found that for low-income minority patients a predominately external/powerful others orientation exhibited a direct positive effect on physician trust, while external/chance was negatively associated with physician trust. While an internal LOC orientation is associated with positive health outcomes due to an individual's personal agency, external/powerful others, which refers to authority figures, may include physicians and medical professionals and therefore increase perceptions of trust of health professionals (Wallston & Wallston, 1989). Helmes, Bowen and Bengel, (2002) found that

external/powerful others was associated with increased provider trust for women electing for genetic breast cancer screening. Because of the dearth of research on the dimensions within externality on health behavior, chance and powerful others are included in the analysis to better understand the adaptability of LOC for low-SES populations and how the dimensions relate to health behavior. Individuals living in poverty or negative environments may subconsciously remove themselves in terms of control and responsibility in many areas of their lives, including health behavior as a form of psychological protection from distress and as a way to reserve psychological resources for use in other areas (Grotz, Hapke, Lampert, & Baumeister, 2011; Nettle 2010). Therefore, increasing perceptions of control as a prerequisite to health interventions may not be the answer to addressing SES health disparities. Further, waiting for perceptions of personal agency to develop in an environment that is not conducive to feelings of control and power may not decrease the SES gradient health disparities. It is important to understand how poverty contributes to perceptions of control and the overall risks and benefits of shifting one's control beliefs as opposed to shifting intervention approaches from those that rely on internal control to be effective (Greene and Murdock, 2013; Grotz, Hapke, Lampert, & Baumeister, 2011; Nettle, 2010). Understanding whether LOC orientation for low-SES populations is maladaptive or if it serves as psychological protection from the factors associated with poverty can inform health intervention approaches.

Control, SES, and Health Behavior

Low-SES may undermine self-control and self-regulation in childhood and adulthood through both environmental and physiological influences (Hostinar, Ross, Chen & Miller, 2014). Specifically, unpredictable environments, inconsistent parenting, and abuse, all common within low-SES populations, effect self-control directly or through the dysregulation of the hypothalamic-pituitary-adrenal axis, inhibiting the self-regulating function of the prefrontal cortex (Hostinar et al., 2014). The combination of adverse experiences may cause physiological changes that decrease one's ability to exercise self-control across many domains, including those that influence health, namely initiating and sustaining positive health behavior change (Barile, Edwards, Dhingra & Thompson, 2015). The effects of poverty and/or race and ethnicity on the formation of worldviews may create a population that is destined to poor health, both due to the societal limitations experienced by the disadvantaged, and by the psychological limitations due to belief patterns. In a society where public health models of behavioral change are based on personal responsibility and initiative (Goldberg, 2009; 2012), there is a need to acknowledge that, in some populations, perception of limited control may be the most important barrier to overcome in order to reduce health disparities (Goldberg, 2009; Hostinar et al., 2014). Further, there is a need to understand how control beliefs are related to psychological well-being or distress for diverse populations. According to the reserve capacity model both personal and social factors associated with low-SES have an effect on health by either providing protection against psychological stress or influencing psychological distress (Gallo & Mathews, 2003).

Purpose of the Study

This quantitative study examined the relationship between SES and health-promoting lifestyles (HPL) and whether LOC is a mediator of the relationship between SES and HPL, and the differences in the relationship between LOC external domains, powerful others/chance on HPL. Further, I intended to determine if an internal LOC orientation is associated with increased psychological distress for those with low SES.

Although levels of self-efficacy and the adaptation of new health behavior have been studied numerous times, these studies do not examine the mediating role of LOC orientation, influenced by poverty, as prerequisites to health beliefs and behavior (Judge, Erez, Bono, & Thoresen, 2002). Previous studies compare *health locus of control* (HLOC) to health behavior and found that HLOC effectively predicted health behavior and health status for low-income populations. However, there are no studies, to my knowledge, on the relationship between general SES, LOC, and HPL to assess whether poverty predicts LOC orientation across all life domains and if an external LOC is psychologically protective for those living in poverty, where control over one's environment is limited compared to those in higher SES. Greene and Murdock (2013) noted in their study on the relationship between multidimensional control beliefs, SES and health, that there is a need to examine both the general and health specific control beliefs in order to improve health outcomes for low-SES populations.

Research Questions and Hypotheses

The following research questions are the focus of this study**:**

1. Does LOC mediate the relationship between SES and HPL, above and beyond demographic factors?
2. Do different dimensions of external control beliefs (powerful others; chance) influence HPL?
3. Is an internal LOC, rather than an external LOC, associated with more psychological distress symptoms for lower SES populations?

$H_0$1: LOC does not mediate the relationship between SES and HPL above and beyond race/ethnicity, sex, and age.

H_a1*:* LOC will mediate the relationship between SES and HPL above and beyond the effects of race/ethnicity, sex, and age.

$H_0$2: The strength of the relationship between powerful others and HPL and chance and HPL will not differ across external subdomains.

H_a2: The strength of the relationship between the variables powerful others and HPL and chance and HPL will differ across external subdomains, with chance orientation being associated with less health promoting behavior.

$H_0$3: For persons with low SES higher levels of internality will not be associated with higher psychological distress.

H_a3: For persons with low SES, higher levels of internality will be associated with higher psychological distress scores.

Theoretical Framework for the Study

Theoretical Foundation

Bandura, explained that behaviors are formed by interactions between personal factors, environmental factors and behavioral attributes (Bandura, 1986; 1965). Social-cognitive theory (SCT) includes the social learning theory (SLT), which challenged the simplicity of the behaviorist theories of learning and reinforcement caused by interactions with one's environment. SCT indicated that learning occurs through a reciprocal interaction between behavior, cognitive factors, and situational factors defined as reciprocal determinism (Bandura, 1966).

Rotter (1966) expanded upon Bandura's SLT of reciprocal determinism when he created the LOC theory to explain personality development (Rotter, 1966). Rotter's LOC theory explained how one makes sense of both positive and negative events based on beliefs about events being caused by one's behavior or actions (internal) or people or forces outside of oneself (external). Individuals who externalize most of the positive and negative events that affect them are categorized as have an external LOC, and therefore do not see the power in their own action (Rotter, 1966; Levenson, 1973). Factors that limit actual and perceived control such as illness and societal structures, can influence a person to be more external on the control spectrum (Frazier et al., 2011; Levenson, 1973; Rotter, 1966). Socially disempowered individuals are therefore more likely to be external in orientation and less likely to act due to the belief that their efforts will be futile (Nettle, 2010). Further, in a nonresponsive or powerless environment an external LOC may offer greater psychological well-being. An external LOC may be adaptive and psychologically

beneficial for those who are socially disempowered since having an internal LOC in circumstances where one's power is low may be psychologically harmful (Bandura, 1965; Kunzman, Little & Smith, 2002). . The perception of responsibility for one's condition may be too large of a psychological burden when one's environment offers little opportunity to exercise control. Understanding how experiences shape perceptions of control may explain the pathology between SES and health and how to best design health interventions for persons living in poverty. To address health disparities, poverty-informed approaches to health promotion that address the psychosocial influences on behavior are vital.

Conceptual Framework

To establish the role of each variable as they relate to poverty and health promoting behavior, a theoretical model that includes the psychosocial factors related to control perceptions, the conditions that predict their orientation and their relationships to health behavior and beliefs is proposed. SES predicts the level of actual and perceived controllability of one's environment and circumstances and thus influences the development of internal or external belief patterns (Adler, 2009; Ward, 2013). Persons who have the lowest SES will form an external LOC as an adaptive response to living in a negative and unresponsive environment (Bandura, 1965; Rotter; 1966; Levenson, 1973). An external LOC serves as a psychological buffer to the negative and uncontrollable experiences, such as with learned helplessness, while also decreasing the chances that an individual will initiate health protective and promoting behavior (Levenson, 1973; Seligman & Maier, 1974). However, if a person with low SES develops

an internal LOC they may be at increased risk for negative psychological effects, such as distress, if they are living in an unresponsive environment where they perceive a high responsibility for their circumstances and environment (Bandura, 1965; Kunzman, Little & Smith, 2002). Both Bandura's (1965) and Rotter's (1966) theories explain control perceptions and expectancy while indicating that the most socially beneficial orientation is internal control and that perceptions of personal power are associated with positive psychological and physical outcomes (Bandura, 1986; 1965; Rotter 1966). Although Bandura discussed the adaptive nature of learned expectancies, the psychological benefits of low-control beliefs in nonresponsive environments have yet to be discovered and the psychological effects of having an internal control orientation in an unresponsive environment is also unknown. Further, subdomains within Rotter's external control domain, (chance/powerful others) and their associated health benefits and risks for those living in poverty should be demonstrated. The overall SLT could be strengthened if these propositions were tested. Applying what is learned about SES and LOC as well as the additions to SCL theories can inform health behavior theories.

The inability to reduce negative conditions, or to improve one's current conditions such as financial and living conditions, may cause one to perceive his own power as low as compared to others who may exert more control over their lives such as governments, social services, and other powerfully perceived persons or institutions (Nettle, 2010; Sheffer, et al., 2012). In environments where control is limited, and conditions are undesirable an external or chance LOC may form as an adaptive response to those inescapable experiences, resulting in a perception of generalized incoherence regarding

events that affect one's health and life (Johnson & Krueger, 2005; Lachman & Weaver, 1998). Further, the possibility for better outcomes may be attributed to chance when one does not see a direct, attainable path to one's own betterment (Levenson, 1973) . An external LOC formed in response to poverty or social injustice, through decreased opportunities and police brutality can influence the development of learned helplessness, a condition caused by multiple exposures to adverse conditions that influence a person to remain resigned to his present negative conditions rather than seek or acknowledge opportunities to improve them (Morling & Evered, 2006). Therefore, the results of such beliefs may impact one's behavior, lessening persistence, and motivation across many life domains, including health-promoting behavior.

An external LOC may also prevent those living in poverty from effectively coping with adverse events. The ability to cope with and recover from adverse or negative life events, such as death, divorce, and financial changes were found to be predicted by LOC orientation; externals with a history of numerous adverse life events are more likely to display lingering mood disturbances years after the event, than internals (Leftcourt, Miller, Ware & Sherk, 1981). LOC affects the way people respond to environmental stressors, namely through their choice of coping and problem-solving mechanisms. Externals may be more likely to engage in passive coping, such as smoking, alcohol consumption, and emotional eating, while internals may employ more active coping, such as exercising, information seeking, and problem solving (Infurna, Ram & Gerstorf, 2013).

While an external LOC may affect behavior across many domains, including school, career, and general worldview, the effect of LOC orientation on health is well documented(Levenson, 1973; Infurna, Ram & Gerstorf, 2013; Rotter, 1966) . An external LOC is negatively correlated with health protective behavior, while an internal LOC is a strong predictor of adherence to health behavior change, suggesting that those who perceive themselves as being largely in control of their own fate show more persistence when adapting a health behavior change (Bödecs et al., 2011; Grotz et al., 2011).

Examining the relationship between poverty and health-promoting behavior as well as the role of one's LOC may help to identify the barriers to the adaptation of health behavior and improve poverty-informed health interventions. The influence of poverty and adversity on control perceptions can lead to feelings of powerlessness and helplessness, thus decreasing motivation, even in the face of a threat (Frazier et al., 2011; Grotz, Hapke, Lampert, & Baumeister, 201; Mittal & Griskevicius, 2014; Nettle, 2010). Studies also indicate a strong relationship between adverse life experiences, common for those living in poverty, and poor health outcomes (Petersen et al., 2012; Krause, Shaw, & Cairney, 2004). According to the SLT, people gain perceptions of self-power through interactions within their environment; therefore, if a person is faced with numerous adversities which are out of his immediate control and/or lacks the means to live comfortably, the person may learn to attribute all present and future circumstances or conditions to forces outside of himself (Bandura, 1965).

Sense of control is a learned expectancy, in which inconsistencies between actions and outcomes decrease one's perception of sense of control, with contingency and

competence being the two dimensions that form a sense of control (Bandura, 1965; Ward, 2013). Contingency is when a person believes that the means to change an outcome exists, while competence is the belief in one's ability to access the means needed for change (Bandura, 1965). Both contingency and competence are needed to perceive a sense of control, while perceptions of power and authority are learned through personal experience and observation (Bandura, 1965; Levenson, 1973; Rotter, 1966). Persons who exact power over one's life and well-being are categorized as powerful others (Levenson, 1973). A person with predominately powerful other, external control beliefs, should respond best to directive approaches to health behavior counseling from a health provider, and frequent encounters to check on progress (Bandura, 2005). However, if a person has predominately external/chance, control beliefs, efforts to increase control beliefs through orienting him or her towards his own areas of power may be useful in creating lasting positive health behavior change (Nettle, 2010; Sheffer, et al., 2012).

Social Determinants of Health

The social determinants of health are defined as factors that influence one's access to optimal health and longevity; they include neighborhood and built environment, economic stability, health and health care, education, and social and community context (Barile, Edwards, Dhingra & Thompson, 2015). According to Carter-Pokras and Baquet (2002), health disparity is a term used to describe the unequal incidences of disease and death across different groups. Low SES is considered a socially defined group in which numerous health disparities are observed (Adler, 2009; CDC, 2017). While sex, race, and ethnicity are fair predictors of some health outcomes, SES accounts for the largest disease

and mortality discrepancies across the sexes, races and ethnicities within developed countries (Carter-Pokras & Baquet, 2002). SES and health status share a marked gradient relationship, where persons with higher SES experience better health and increased life expectancy in the United States (Adler, 2009). Persons living in poverty experience higher rates of heart disease, diabetes, obesity, and asthma than their wealthier counterparts; while this may be partly due to physical environmental hazards, many of these health risks exist and are increased due to health behavior, including lack of preventative health behavior such as screening and engaging in health risky behavior (Kershaw, et al., 2010). A longitudinal study on social health disparities found that occupational grade or rank, even within the same organization, predicted health, and mortality, and increasing sense of control by moving higher in occupational grade improved health outcomes (Marmot, Bosma, Hemmingway, Brunner, & Stansfeld, 1997). These studies suggest that one's social standing can influence sense of control by increasing perceptions of power, however the mechanisms to either address or shift this paradigm have yet to be employed to improve the health of populations experiencing poverty.

Health Behavior and Belief Models

Health behavior and beliefs continue to be the largest determinants of health for persons living in developed countries, and are responsible for approximately 40% of premature deaths in the United States (McGinnis, Williams-Russo, & Knickman, 2002). Further, unhealthy dietary and lifestyle choices, such as smoking, infrequency of physical activity, lower fruit and vegetable consumption, and poor medication adherence show the

same gradients as SES and health, which may explain why increasing access to healthcare fails to reduce health disparities within developed countries (Adler, 2009). Health behavior is one facet of a person's behavioral patterns, which according to Bandura's (1977) SLT, forms through interactions with one's environment.

Theory-based interventions are the foundation of public health, since they provide systematic explanations of human behavior and cognition based on the principles outlined by social psychology theory (Hochbaum,1958; Glanz, Rimer, & Viswanath, 2008; Ward, 2013). The integrated behavioral model (IBM), which contains both the theory of reasoned action (TRA) and the theory of planned behavior (TPB), are the basis of most public health intervention designs. TRA and TPB are based on the belief that perception, motivation, and knowledge regarding health and health risks vary across cultures, time, and conditions even within the same person (Glanz, Rimer, & Viswanath, 2008). Therefore, addressing health behavior change without considerations of the individual, including perceptions and beliefs may do more harm than good. The transtheoretical model explains the process of behavioral change through a series of ordered steps based on the person's readiness to change a behavior (Glanz et al., 2008). Glanz et al., posit that when an intervention approach does not match a person's readiness to change, not only may it fail to illicit change, but it may possibly alienate, thus reducing the propensity to adapt the behavior in the future.

Health behavior models may need to address general perceptions of control in addition to health beliefs as barriers to health behavior change. The usual approach, including raising awareness of risks and providing tools to increase positive health

behavior, will not result in improved health when inherent contingency and competence are low based on beliefs that support a low sense of control (Bandura, 1965; Levenson, 1973; Rotter, 1966). However, the most popular health behavior models heavily rely on increasing perceptions of both the risks and benefits of making the health behavior changes (Ward, 2013).

The health belief model (HBM) is the one of the most commonly used psychosocial theories in health behavior change models (Glanz et al., 2008). Hochbaum (1958) created the HBM to explain the factors that caused the United States Public Health's tuberculosis screening intervention to be ineffective. The HBM is intended to predict health behavior based on interpersonal factors and is the basis of numerous public health interventions (Glanz et al., 2008). The original domains within the HBM included perceived severity, perceived susceptibility, perceived benefits, perceived barriers, modifying variables, and cues to action; self-efficacy was eventually added as one of the vital determinants to the adaptation of health behavior change (Glanz et al., 2008). Self-efficacy in the HBM refers to the confidence a person has in his ability to perform or sustain a behavior (Glanz et al., 2008). According to the HBM, knowledge about the dangers of not performing a health behavior, along with the necessary resources to perform it will produce a sustainable health behavior change if a person lacks confidence in his ability to adopt the new behavior (Clemow, 2004). The role of self-efficacy in predicting health behavior has been illustrated in smoking cessation, weight loss, diabetes control, and cancer screening (Barclay et al., 2007; Montanaro & Bryan, 2013). In

populations where perceptions of helplessness are increased, self-efficacy regarding health behavior change may be unattainable.

The HBM requires that the perceived benefits of a behavior change be realized in order to weigh the decisional balance in favor of changing one's health behavior (Glanz et al., 2008). In populations where the perception of power is low, such as those with an external LOC, benefits to a health behavior change may seem elusive, since health and illness are perceived to be determined by chance or external factors (Levenson, 1973; Rotter, 1966). Therefore, interventions based on such control beliefs may miss or alienate those who need them the most. However, interventions that accentuate power over one's health and well-being may help to shift the balance of power perception from other or chance to internal LOC (Hamarta et al., 2013). It is important to discover what the psychological effects of shifting control perceptions for those living in poverty are.

Poverty Informed Models of Health Behavior

Effective interventions for persons with external or chance LOC may be ones that address underlying control perceptions before addressing specific health behavior (Goldberg, 2009). Hamarta et al. (2013) found significant shifts from chance and powerful other LOC to internal LOC, after a mind/body intervention for older adults with chronic illness. The interventions included mindfulness, which is the practice of becoming aware of one's present state in an effort to create synchrony of the mind and body through relaxation training, cognitive restructuring, and problem solving. In addition to decreasing the prevalence of chance and powerful other LOC perspectives, health status and health behavior both improved following the mind/body intervention

(Hamarta et al., 2013). However, these interventions are less commonly used within low SES and the continued use of health initiatives and campaigns that rely on control perceptions continue to exacerbate the existing health disparities. Further, the psychological risks and benefits of an internal control perception must be identified before attempting to change control perceptions for those living in poverty whose experiences are characterized as unresponsive environments.

Agentic Health Models and Low-SES Populations

Goldberg (2012) explained that the dominant models of health promotion in the U.S. favor methodological individualism, leading to the increased prevalence of health promotion interventions that are reliant on individual agency. While methodological individualism approaches to health promotion have successfully increased positive health and health outcome among the more affluent, they have failed to alter the health behavior of persons within low-SES populations (Goldberg, 2009). Understanding the psychosocial pathways that affect health behavior choices, as well as the conditions that act on those pathways, may provide valuable information to the field of health promotion.

Nature of the Study

This study attempts to examine the relationship between SES and health behavior as well as identify variables: LOC, internal and external orientations and external subdomains, powerful others/chance that may mediate the relationship between SES and health behavior as well as to understand the relationship between SES, LOC dimensions, and psychological distress. The study design is quantitative, and participants were administered the Multidimensional Locus of Control survey, the Lifestyle Profile II, and

the Kessler Psychological Distress scale. In addition, participants' self-reported demographic data including age, sex, race/ethnicity, family size, annual income, current or most recent occupation, and educational level were collected. The variables of interest include SES, LOC, HPL, and psychological distress and a quantitative analysis was conducted to determine the relationships between the variables.

Definitions

Health Lifestyle Profile (HPL): HPL is defined as an individual's health behavior and practices that are related to health and longevity, quantified by the Lifestyle Profile II (LPII) (Pender, 1987). The LPII is a 52-item tool that measures self-initiated health and wellness improvement or maintenance actions and beliefs across 7 domains, chosen based on the Health Promotion Model (Pender, 1987). The domains are health responsibility, physical activity, nutrition, spiritual growth, interpersonal relations, and stress management.

Health Promoting Behavior (HPB): HPB includes any activities and practices performed by a person in an attempt to prevent or detect disease such as, wearing a seatbelt, practicing safer sex, or obtaining regular health screenings (Gochman, 1997).

Locus of Control (LOC): LOC is part of the SCL of personality referring to the degree to which an individual perceives outcomes as a result of his own behavior (internal) or being controlled by powerful others or chance (external) (Levenson, 1973; Rotter, 1966).

Internal LOC: The belief that most events and circumstances in one's life are under one's control (Levenson, 1973; Rotter, 1966).

External Powerful Others: A subdomain within LOC externality referring to the belief that others in positions of power control most of the events and circumstances of one's life (Levenson, 1973)

External Chance: A subdomain within LOC externality, defined as the belief that most of the events and circumstances within one's life are controlled by luck or chance (Levenson, 1973).

Perception of Control (POC): POC is a measure based on contingency and refers to the degree to which an individual believes a situation or outcome is controllable or avoidable and competence, the belief that one has the skills and tools necessary to produce a desired outcome or to avoid an undesired one (Bandura, 1965; Infurna, Ram & Gerstorf, 2013; Levenson, 1973; Mearns, 2009; Rotter, 1966).

Socioeconomic Status (SES): SES is defined as a measure of social class or standing of an individual or population often measured by income, education, or occupation (APA, 2007).

Kessler Psychological Distress Scale (KP10): The KP10 is a 10-item self-report measure of depressive symptoms using a 5-point Likert scale to report frequency of affective states (Kessler, 2002).

Assumptions

One assumption of this study is the existence of a relationship between SES and one's perceptions of power. However, the literature indicates a strong relationship exists between the two variables, in that SES predicts control and perceptions of power (Mittal & Griskevicius, 2014; Nettle, 2010). Moreover, poverty is associated with many possible

confounding phenomena, such as experience with and exposure to violence and trauma, marginalization due to income, race, and citizenship as well as other hazardous physical and psychological conditions (Adler, 2009; Klest, 2012). These factors may affect worldviews, including perceptions of power and control. However, this study assumes that these experiences exist under the greater umbrella of the poverty experience, and therefore SES is the chosen measure for poverty. No other direct measure of the poverty experience can quantify all the experiences associated with the limitation of resources and opportunities caused by low-SES (Adler, 2009; Klest, 2012; Nettle, 2010).

Scope and Delimitations

The present study addresses the existing factors that contribute to the existing health disparities to understand the relationship between poverty and health. This research attempts to discover if the relationship between SES and HPL is mediated by LOC, in order to contribute to the understanding of how poverty influences health directly and indirectly through perceptions of control to influence health behavior, as well as to discover the relationship between LOC, and LOC external subdomains (powerful others/chance) and psychological distress for low SES populations. This study attempts to discover one of the pathways between poverty and health, although many factors not addressed in this study may contribute to the relationship such as environmental factors, access to health care and educational attainment (Adler, 2009; Nettle, 2010). Further, LOC may also be influenced by social factors such as race, ethnicity, and adverse experiences in addition to or independent of the poverty experience (Mittal & Griskevicius, 2014).

The goal of this study was to discover relationships that influence healthy lifestyles, and to add to the existing knowledge regarding poverty and health. A random sample was used to assure that the results of the study are generalizable for English speaking populations in the U.S. who are over 18 years of age.

Limitations

The factors within the poverty experience which may lead to an external LOC have yet to be defined, since there are many commonalties shared by those with low-SES, as well as individual experiences in terms of the physical features of one's environment, one's experiences and resource availability (Adler, 2009; Hostina et al., 2014). Research indicates that poverty is associated with an external or chance LOC, while they also indicate a positive relationship between adverse experiences and an external LOC (Frazier et al., 2011; Grotz, Hapke, Lampert, & Baumeister, 2011). Presently, it is not known which factors within the poverty experience predict LOC orientation, such as the lack and unpredictability of resources, trauma and adverse experiences, discrimination, or a combination of experiences that shape power perceptions. While acknowledging the many shared and individual experiences among those living in poverty that shape and define the poverty experience, SES remains the least subjective measure of the poverty experience and can serve as a predictor of psychosocial and physical health outcomes (Adler, 2009; Diemer, et al., 2013).

Significance

It appears that the bulk of the responsibility to improve the health of those living in poverty lies within the field of public health and health psychology, rather than within

the agency of those who lack the real and self-perceived power to exert meaningful change. Effective interventions should be designed and implemented for the populations they intend to serve, rather than created based on the beliefs and behavior of the majority. Agentic health behavior theories and interventions only serve to perpetuate the existing health disparities by excluding those who lack actual or perceived personal agency. Further, increasing perceptions of control for persons living in poverty may serve as a psychological buffer for this marginalized and resource deprived group, thus improving overall mental health outcomes. The need to design culturally sensitive poverty-informed interventions can lead to the potential reduction or eradication of many health disparities, as well as a decreased financial burden caused by the treatment of preventable diseases. Further, understanding the effects of increasing perceptions of control for persons living in poverty when those beliefs may serve as a psychological buffer for this marginalized group may prevent psychological harm. Poverty-informed health care should include approaches that are based on the psychosocial pathways from SES to health beliefs and behavior. Therefore, the risks and benefits of the method used within this environment should be weighed when designing and planning a health intervention.

Summary

The gradient relationship between poverty and health is well documented and health disparities in the U.S. continue to increase among those with the lowest SES (Nettle, 2010). While health behavior is only one of the factors influencing health, it remains a large determinant of health and life expectancy (Adler, 2009). Health behavior follows the same gradient relationship with SES, as poverty and lower SES is associated

with less health protective behavior along with an increased propensity towards risky health behavior (Shreider & Chen, 2009). Further, the poverty experience places one at an increased risk for poor health due to physiological changes that cause poverty-influenced health vulnerabilities (Hostina et al., 2014). Therefore, it is vital that the health psychology and health promotion field understand the factors and relationships that influence the health lifestyles and behavior of one of the most health vulnerable populations.

To reduce health disparities, a fundamental understanding of the relationship between SES, beliefs, and health must be achieved. A comprehensive review of social psychology and health behavior theories may explain why such disparities still exist and help to determine how to eliminate them.

Chapter 2: Literature Review

Introduction

The relationship between poverty and poor health may be caused by many factors such as geographic location, access to resources, and health literacy. Research suggests that poverty and poverty-related stress is associated with poorer physical and mental health (Adler, 2009; Krause et al., 2004; Yoshikawa, et al., 2012). However, within populations experiencing poverty, health behavior continues to increase the risk of illness and premature death (McGinnis, Williams-Russo, & Knickman, 2002). Health protective and preventative behaviors remain low, while risky health behaviors are high compared to wealthier populations (Nettle, 2010). Further, populations who are among the lowest socioeconomic groups may be more vulnerable to disease and mortality than their more affluent or less stressed counterparts, thus increasing the importance of health behavior for disease prevention and longevity (Adler & Steward, 2010).

Literature Search Strategy

A review of the literature was conducted using Walden University's library databases, including EBSCO host, Academic Search Complete, and PsycArticles using key words related to the topic in various orders and combinations, such as *locus of control (LOC), perceptions of control, health disparities, SES, poverty and control, health behavior,* and *health promoting lifestyles*. Many of the older theories referenced in this study were obtained through Thoreau, and articles written over 30 years ago were obtained through Walden's Library Document Delivery Service and Google Scholar. The literature search for peer-reviewed literature related to the topic was conducted for over

12 months, and many new articles covering health, poverty, and control were introduced as they became available. Based on this literature review, no articles exist that address LOC as a mediator of health behavior for person's living in poverty.

Theoretical Foundation

The fundamental principles within the LOC theory are that perceptions of control are formed through the evaluation of one's personal agency over his environment, including the expectations based on beliefs about the world's predictability and controllability (Rotter, 1966). SCT supports this view regarding the role of the physical and sociostructural environments in the formation of self-efficacy (Bandura, 1977). According to Bandura's (1977) self-efficacy theory personal agency over one's life is dependent upon one's ability to change or control aspects within his environment or through modeling in which he is afforded the opportunity to observe the rewards of exerting control over ones environment. This modeling or observational learning can include children watching the results of their parent's attempts to control aspects of their environments or employees observing the effects of a fellow employee's attempts to exert control over schedules or shifts (Bandura, 1966; 1977). Bandura emphasized the strength of learning through social modeling as a contributor to the formation of worldviews.

Theory of Learned Helplessness

Persons living in poverty experience trauma and adversity at a much higher rate than their wealthier counterparts, and facing numerous adversities and trauma may cause a form of learned helplessness (Zhou et al., 2012). Learned helplessness is a phenomenon coined by Seligman and Maier (1974) which describes what occurs when a person learns

that stimuli or reinforcements are not dependent on his own responses. A person perceives noncontingency and therefore becomes unmotivated to exert any effort in hopes of changing negative conditions. The distinction between personal attributions of one's failure to achieve a desired outcome, such as personal (internal) helplessness, defined as low self-efficacy and high outcome expectation, and global (external) helplessness, defined as low outcome expectation, were later added to explain the noncontingency beliefs in learned helplessness (Abramson, Seligman & Teasdale, 1978). In an experiment by Hiroto and Seligman (1975) in which human subjects were placed in three conditions, (1)uncontrollable noise, (2)controllable noise, and a control group with no pretreatment, subjects placed in the uncontrollable noise group eventually stopped attempting to control the noise even when subsequently placed in the controllable noise condition; subjects in the uncontrollable condition also performed significantly poorer on a cognitive task than those in the other two conditions. The results reinforced previous results from animal studies in which animals were exposed to uncontrollable adverse conditions (Seligman & Maier, 1974), resulting in decreased motivation for initiating a response. The results reflected the latent effects of uncontrollable adverse conditions on future performance in unrelated domains, such as cognitive performance (Hiroto & Seligman, 1975; Seligman & Maier, 1974) . Learned helplessness may explain the effects of adverse experience on perceptions of control since the ability to control experience shapes expectations (Zhou et al., 2012). Adverse experiences associated with poverty may increase the likelihood of developing a worldview characterized by a low sense of control (Mittal & Griskevicius, 2014; Zhou et al., 2012).

According to a study by Zhou et al. (2012), control deprivation was found to influence learned helplessness when opportunities to gain control were continually blocked. Researchers found that primary control, referring to the ability to change one's environment to suit oneself influenced cognitive patterns, resulted in increased motivation and perceptions of internal control, while secondary control (the acceptance and adjustment formed as a reaction to an unresponsive environment) were reactive and adaptive (Zhou et al., 2012) . When researchers manipulated control conditions, participants in brief control deprivation conditions increased motivation to gain control, while participants in prolonged control deprivation conditions showed reduced motivation to control (Zhou et al., 2012). Evans and Stecker (2004), found that prolonged exposure to environmental stressors, such as noise, pollution, and traffic produced symptoms of learned helplessness, which decreased persistence and performance of novel tasks. Therefore, prolonged experiences of blocked control such as poverty or chronic adversity may decrease motivation and internal control perceptions. Further, the experiences associated with low-SES have been shown to fundamentally affect control perceptions across one's lifetime (Evans & Stecker, 2004; Ward, 2013).

Ward (2013), using a nationally representative sample, found parental educational status was able to predict sense of control from childhood throughout adulthood. Educational attainment is often used as a proxy for SES due to the frequency of their co-occurrence, as well as the increased access to financial well-being afforded by educational attainment (Diemer, et al., 2013; Ward, 2013). Ward found lower parental educational attainment was associated with perceived constraints lasting throughout one's

childhood and adulthood, regardless of adult experiences and achievement. These results suggest that the worldview formed in response to one's environment remains largely stable across a lifetime (Ward, 2013). Ward's findings indicated that perceptions of control might be more vulnerable to early experiences than later ones. Therefore, without interventions aimed to address perceptions of control, early experiences may shape a lifetime of perceived helplessness. The resulting perceptions of control may serve as a barrier to the adaptation of a health-promoting lifestyle.

Conceptual Framework

The challenges in addressing health disparities remains a large concern across the world including the U.S., where access to health care and information is high compared to less developed countries (Adler & Steward, 2010). Despite this, attempts to reduce the SES gradient determinants of health have been unsuccessful (Adler & Steward, 2010). Healthy People 2010 (HP2010) was a 10-year plan created by The U.S. Department of Health and Human Services (USDHHS) chosen to eliminate health disparities and increase the quality of life and life expectancy of the U.S. population by addressing 969 quantifiable health objectives within 28 identified focus areas including access to quality health care, nutrition and overweight, oral health and substance abuse (USDHHS, 2010). However, the HP2010 was only marginally successful in meeting its target for the identified objectives; only 733 of the 969 objectives could be assessed due to missing or insufficient data on 236 of the objectives (USDHHS, 2010) Twenty-three percent or 177 of the objectives were achieved, 348 (48%) objectives moved closer to the target, 173 (24%) objectives moved away from the target, and 39 (5%) showed no change

(USDHHS, 2010). USDHHS address the unachieved and worsening target health objectives of HP2010, as well as the newly identified determinants of health, by creating Healthy People 2020 (HP 2020). The objectives within HP2020 were expanded from HP2010 to include 1,200 objectives for 42 health focus areas, as well as a subset of 26 leading health indicators spanning topic areas identified as the highest priority health issues including maternal infant and child health, nutrition and obesity, clinical preventive services such as colorectal screening and diabetes control, as well as social determinants to health, such as educational attainment (USDHHS, 2010). The social determinants of health addressed by HP2020 include economic stability, education, social and cultural context, health and health care, neighborhood, and built environment (USDHHS, 2010). While it is promising that there is a focus on health promotion and disease prevention as well as social determinants of health, there is still more work to be done to address all them, namely in terms of poverty and addressing its direct and indirect effects on health and longevity (Kumanyika, 2014; USDHHS, 2010).

Understanding the effects of poverty on the immune system as one of the health risk factors makes health behavior interventions even more vital. Among other health risks due to health behavior and access, some researchers suggest that childhood poverty itself may have a detrimental effect on immune system development, increasing the propensity of poor health in an already health vulnerable population (Dowd, Palermo, & Aiello, 2012). Dowd et al., used data from the 1999-2004 National Health and Nutrition examination survey to assess differences in children's antibody levels of cytomegalovirus (CMV) based on socioeconomic factors, namely, family poverty status. Dowd et al., posit

that CMV is a mostly asymptomatic form of the herpes virus that is usually acquired in childhood . Once a person becomes infected his adaptive and reactive immune system continues to expend energy attempting to contain and destroy affected cells; the result is chronic inflammation, and immunosuppression, which is why CMV has been linked to depression, cardiovascular disease, and poor cognition (Dowd et al. 2012). When the immune system is deregulated due to chronic stress, the presence of CMV causes the naïve T-cell production to decrease due to the adaptive immune system being overwhelmed with clonal expression, creating a greater risk of infection and disease caused by novel pathogens (Contrada, 2011; Dowd et al., 2012). Researchers hypothesized, based on earlier studies indicating a relationship between poverty and cell-mediated response, that childhood poverty status would predict down-regulated cellular immune response to CMV (Dowd et al., 2012). Using representative sample data obtained from CMV-infected children from varied socioeconomic statuses to assess antibody levels for 2 years, Aiello et al, (2006) confirmed that poverty status was associated with a deregulation of the cell-mediated immune response. The association between poverty and chronic stress remains strong and may be due to confounding negative comorbidities such as trauma, abuse, and neglect (Contrata, 2011; Dowd, Palermo, & Aiello, 2012; Klest, 2012). These results suggest that early life experiences such as poverty may create long-term health issues by way of the psychoimmunological pathways, thus creating a health vulnerable population (Contrata, 2011; Dowd, Palermo, & Aiello, 2012; Klest, 2012).

Hostinar et al. (2014) attempted to identify the pathways between life-course SES to low-grade inflammation, self-control, and health practices, since these are phenomena that appear to have a relationship, although there is no clear explanation of causality or directionality. Life-course SES is defined as childhood and adult SES was measured by occupational status, household income and educational attainment (Hostinar et al., 2014) . Chronic heart disease is more prevalent in low-SES populations, including those with a history of low-SES and those presently experiencing low-SES; the socioeconomic gradients are marked (Braveman et al., 2010; Hostinar et al., 2014). The authors noted that both childhood and adult low-SES were associated with chronic low-grade inflammation, which may explain propensity for abdominal adipose fat accumulation, chronic heart disease, and higher rates of morbidity and mortality within this population (Hostinar, et al., 2014). Hostinar et al. (2014) noted the strong relationship between SES and self-control, noting that self-control is a strong determinant of one's ability to maintain a health behavior; low self-control is associated with negative health behavior, such as smoking, excessive drinking, unhealthy eating patterns, and sedentary behavior. The authors discussed the possible direct and indirect pathways between low-SES and self-control in terms of health, namely if family climate mediates this relationship in childhood, and if daily stressors and life demands undermine self-control in adulthood, leading to chronic inflammation by way of health behavior or stress induced physiological changes (Hostinar, et al., 2014) . They aimed to discover the pathways between life course SES and inflammation and inflammation to self-control to discover the direction of the relationship and found that low-SES in childhood was associated with

less self-regulatory behavior, which is consistent with developmental theories, in that these environments lack predictability and the formation of self-regulatory behavior (Hostinar et al., 2014). Further, low- SES was associated with a depletion of self-control across a lifespan, thus influencing abdominal adiposity, leading to the development of low-grade inflammation (Hostinar et al., 2014). These findings indicate that poverty may be moderated by experience leading to decreased self-control, influencing low-grade inflammation through dietary and sedentary behavior, thus increasing propensity for poor health (Braverman et al., 2010; Hostinar et al., 2014). The bidirectional relationship of self-control with inflammation and poor health is mediated by the poverty experience leading to unhealthy behavior (Braverman et al., 2010; Hostinar et al., 2014) . Although this phenomenon is not conducive to health and longevity, and may be viewed as maladaptive, there are several explanations and theories regarding the adaptive nature of perceptions of control such as how they influence one to shift attention and therefore avoid wasting energy and resources in attempts to avoid seemingly unchangeable conditions (Braverman et al., 2010; Hosinar et al., 2014).

Socioeconomics and Life Strategy

Mittal and Griskevicius (2014) found that sense of control served as a mediator in the relationship between environmental uncertainty and impulsive behavior. The authors proposed that childhood poverty caused a decreased sense of control over one's environment and therefore affected behavioral choices. Low SES during childhood often creates a time full of uncertainty and adversity, which was shown to effect persistence behavior needed to sustain a health behavior change, such as exercise or smoking

cessation (Braverman et al., 2010; Hostinar et al., 2014; Mittal & Griskevicius, 2014). According to Mittal and Griskevicius, SES and adverse life experiences influence a person's life strategy, as explained by the life history theory. Those facing less adversity are more apt to engage in a slow-life strategy, which involves more preparatory and planning behavior, while those facing more adversity tend to adapt a fast-life strategy, characterized by impulsive behavior and short-term goals (Mittal & Griskevicius, 2014). Further, slow-life strategies associated with higher SES include health prevention, such as healthier dietary choices, exercise, and adherence to medical guidelines, while fast-life strategies were associated with less healthy and decreased use of disease preventative behavior (Mittal & Griskevicius, 2014). Mittal and Griskevicius' life history theory may help to explain the ineffectiveness of health behavior interventions within low-SES populations.

Social Gradients & Preventative Health Behavior

Nettle (2010) found marked SES gradients in health behavior, which he proposed were due to attitudinal and psychological personality features associated with SES. Nettle discovered that people of lower SES are generally more pessimistic, rely more heavily on chance for health, and focus on immediate rather than future outcomes due to the adaptive nature of SES deprivation on extrinsic versus intrinsic mortality. Extrinsic mortality refers to mortality that is caused by sources outside of behavioral control, such as being hit by a stray bullet, while intrinsic mortality is mortality that can be reduced by behavior, such as reducing saturated fat intake (Pepper & Nettle, 2014) . According to Pepper and Nettle (2014), when one's extrinsic mortality is great, less energy is spent on

reducing intrinsic mortality, which is more reliant on behavior. Therefore, in populations where life expectancy is low, such as low SES populations and populations with frequent exposures to harm, the incentives to perform preventative health behavior to increase intrinsic mortality risks are low (Hostinar et al., 2014; Kraus, Piff & Keltner, 2009; Mittal & Griskevicius, 2014). According to this theory, a person living in poverty is less likely to expend energy on behavior that reduces risk (such as healthy eating) when they are preoccupied with the extrinsic hazards (Pepper & Nettle, 2014). There is no incentive to decrease risk if one feels that the chance of survival due to extrinsic mortality is greater. This study points to the adaptive nature of poverty and experience, and how it alters perceptions of risk. If populations facing adversity are more reliant on chance, it is difficult to determine whether experience or poverty causes their perceptions of control to become barriers to health behavior change.

Literature Review Related to Key Variables and Concepts

According to Grotz et al. (2011), the health locus of control is a stronger predictor of health for persons of low-socioeconomic and migration backgrounds. Grotz et al. (2011) studied the three domains, internal, chance, and external as they related to protective and other health behavior such as smoking, exercise, health information seeking, and diet on a large representative German adult population, and found that persons with a lower socioeconomic status, those with migrant status, as well as older individuals engaged in more unhealthy behavior, practiced less protective health behavior and exhibited more of a propensity towards a chance LOC. Grotz et al. (2011) postulated that the tendency to adopt a chance locus of control by these groups, compounded by

economic and societal barriers, places them at greater risk for adverse health, due to the perception of health and illness being determined by chance, thus influencing more health risky behavior.

Sheffer et al. (2012) found low SES, an external LOC and cognitive impulsivity were coexisting factors that prevented smoking cessation efforts. Although the interaction between these phenomena remains unknown, Sheffer et al. (2012) found that an external LOC, including powerful other and chance, was associated with greater levels of stress than internal locus of control, and an external LOC was more common in low SES participants (Sheffer et al., 2012). The authors propose that an external LOC may form in response to cultural and environmental factors experienced by individuals with lower SES; further, the feeling that one has little to no control over important events in his or her environment or circumstances may create stress (Sheffer et al., 2012). The resulting stress caused by the perception of a nonresponsive environment may affect decision-making and impulsivity and delay discounting (the ability to delay gratification) in many realms of an individual's life including health such as the ability to abstain from smoking (Sheffer et al., 2012). For smoking or other health risky behavior, delay discounting would refer to the ability to delay the immediate gratification of an unhealthy behavior for future health benefits (Sheffer et al., 2012).

Social Class and Sense of Control

Kraus, Piff and Keltner (2009) found that both objective and subjective social class significantly affected ones perceptions of self- control as well as health status, mood and overall well-being. Kraus, Piff and Kltner, measured subjective social class by asking

participants to rank themselves according to level of power and influence they felt amongst their communities; the use of a rank measurement acknowledges that social status is relative to ones perceived rank within society, based on their available resources, related to actual income. Kraus, Pitt and Keltner (2009), found that both subjective and objective social class predicted an individual's perception of control and explanation of outcomes such as health, poverty, and their ability to exert an effect on their environment. Further, Kraus, Pitt and Keltner (2009) found that lower social classification was associated with a higher tendency to use contextual explanations for social and personal events, while higher social classification was associated with dispositional explanations for such events. These results indicate that social class shapes perceptions of power and powerlessness that may contribute to the existing physical and psychological health disparities associated with poverty (Kraus, Pitt & Keltner, 2009).

According to Bandura (2005) Self-regulation is vital to health promotion in that the individual is the key locus of health promoting behavior and habits; therefore, interventions aimed to improve health must be met with an individual's actual and perceived means to exert the necessary changes. Further, health behavior is reliant on self-monitoring, which is the combination of motivation and self-regulatory skills that facilitate the adoption of goals, the creation of strategies needed to adopt and sustain health related practices (Bandura, 2005).

While sense of control is related to positive health benefits and emotional well-being, there are circumstances for which perceptions of control have negative psychological effects. Kunzman, Little and Smith (2002) studied the relationship between

perceived control and associated negative or positive emotions, in aging adults. The study defined personal control as LOC, examining generalized control beliefs as well as dimensions within the concept of personal control: personal control over desirable outcomes, personal responsibility for undesirable outcomes and others' control over both desirable and undesirable outcomes (Kunzman, Little & Smith, 2002). The pilot results of this longitudinal study revealed that a higher sense of control to be associated with negative emotional consequences when actual ability to exert control are low (Kunzman, Little & Smith, 2002).

Health Behavior Theories

Goldberg (2012) explained the dominant health promotion strategies in the US identify the individual as the locus for the change, placing responsibility for lifestyle and behavioral change to improve and maintain one's health within the individual. The dominance of mainstream agentic health promotion strategies increase socioeconomic gradient health disparities, waste valuable resources, and further stigmatize the already marginalized low-SES population. While agentic health promotion models in the US continue to expend public funds in an effort to address the health of the low-SES populations, they fail to improve the health within low-SES populations. However, they improve the health of the wealthiest members of U.S. society, such as the smoking cessation campaigns that successfully reduced U.S. smoking rates among the middle and upper class while the smoking rates within the low-SES population remained the same (Bell et al., 2010). When health behavior is regarded as an issue of personal agency and choice, without regard to the psychosocial factors determined by socioeconomic

conditions that affect choice, the disadvantaged are blamed for the existing health disparities (Goldberg, 2012).

The most salient health behavior theories, the HBM, developed by Janz & Becker, (1984), the trans-theoretical Model (TTM) (Prochaska & DiClemente, 1983), and the TPB, developed as an extension of Ajzen and Fishbein's (1975) theory of reasoned action, which explains non-motivational determinants of behavior (Ajzen, 1985; Ajzen & Timko, 1983). The HBM, TTM and TPB were created to feed intervention designs intended to decrease disease and health-risky behavior as well to help explain health behavior in terms of the basis of beliefs regarding one's health, including the motivation and barriers to adopting health (Ajzen, 1985; Janz & Becker, 1984; Prochaska & DiClemente, 1983). The theory of planned behavior (TPB) proposes that the basis for health behavior change includes attitudes, normative beliefs, and perception of control over the behavior (Ajzen, 1983). Perception of control is at the core of the TPB in that perceptions of behavioral control create intentions to change, which influences action (Ajzen, 1983). According to the TPB, if a person perceives himself as having little to no control over their behavior, health behavior change is unlikely (Ajzen, 1985; 1983).

According to the HBM, health behavior change occurs when the benefits of adopting a health behavior outweigh the barriers on five predefined dimensions (Janz & Becker, 1984). The five dimensions are perceived susceptibility which is the perception of vulnerability to a particular health threat; perception of the severity of the health threat; perception of the benefits associated with the new health behavior (likelihood that the behavior will prevent illness); perceived barriers to implementing a health behavior; self-

efficacy, which refers to a person's confidence in their ability to successfully perform the new health behavior (Finfgeld, 2003; Montanaro & Bryan, 2014).

The transtheoretical model (TTM), also referred to as the stages of change model, was created by Prochaska and DiClemente (1983) to explain the social and cognitive processes involved in making health behavior changes. TTM is an integration of Janis and Mann's (1977) decisional balance theory, which is used to illustrate the process of decision making in which an individual weighs the potential gains and potential losses associated with a choice before arriving at a decision and Bandura's social cognitive theory (1977) concept of self-efficacy which refers to the level of confidence an individual has in his ability to succeed in a given situation or at a specific task (Prochaska & DiClemente 1983). Both the decisional balance and self-efficacy are central to the TTM and are used to explain the approach to change through cognitive, behavioral (reward) and social aspects that influence readiness and motivation to change (Prochaska & DiClemente 1983). TTM is defined by a progression of stages used to categorize readiness to make health behavior changes such as smoking cessation, healthy dietary modifications, condom use, mammography as well as many other health promoting behavior (Herzog, 2008). The hierarchical stages are the precontemplation stage, the contemplation stage, preparation, action, maintenance, and termination. According to the TTM model, during the precontemplation stage a person has no intention of changing a behavior, while a person in the contemplation stage has considered making the change, although remaining mostly ambivalent (Prochaska & DiClemente 1983). The planning stage is marked by the intention to change a behavior within 6 months. Maintenance

refers to an adapted behavior change lasting for over 6 months, while termination refers to the permanence of the health behavior change, defined by the absence of relapse to the pre-intervention health behavior (Prochaska & DiClementine, 1983).

TTM influenced the development of Motivational Interviewing (MI), a client centered counseling approach created by Miller and Rollnick (1991) originally intended for use with problem drinkers and later expanded for use in other fields, such as nutrition and asthma self-care to increase a person's readiness to engage in and sustain a positive behavior change by increasing motivation (Borrello et al., 2015; Lavoie et al., 2014; Miller, 1983). MI was influenced by Carl Rodgers' humanistic theories (1961) and is often used in conjunction with TTM stages of change, in that the interviewer assesses the clients readiness to change, and then facilitates the client's self-exploration of motivational barriers in order to help him make the progression towards a positive behavior change, such as moving from the pre-contemplation stage to the contemplation stage of smoking cessation (Miller & Rollnick, 1991; Miller & Rose, 2009; Rogers, 1961). MI calls for an initial assessment of an individual's stage of change to guide the stage specific intervention in which the motivational interviewer must express empathy and reflective listening for his client by directing questions and statements intended to elicit self-motivational statements as well as make a client aware of the discrepancies between their current actions and their goals in order to increase motivation for positive behavior change (Miller & Rollnick, 1991; Miller & Rose, 2009)(cite). The MI model is used in many variations, such the Brief Motivational Interview created by Rollnick, Heather and Bell (1992) with the intention to elicit health behavior change within one to

two sessions lasting less than an hour; motivation interview groups, in which facilitators use MI principals enhanced by peer support to motivate positive behavior changes and motivational enhancement therapy, which employs the principals of MI combined with personal feedback, including computer generated messages to increase motivation to change (Carey, 2012; Miller & Rose, 2009). MI can be practiced in many variations by mental health professionals, physicians, as well as peer and health educators trained in the MI technique and treatment effectiveness can be evaluated due to the development of a Motivational Interviewing Treatment Integrity coding system and the Motivational Interviewing Skills code, however it is often not used for health behavior change due to the specific skill requirements and session duration outlined by the MI model (Miller & Rose, 2009; Mullin, Forsberg, Savageau & Saver, 2015).

The HBM, TTM and TPB call for perception of control as a prerequisite to health behavior change (Goldberg, 2012). In the HBM, the perception of the benefits associated with the health behavior change requires one to believe in his or her inherent power to prevent an illness or negative health outcome with a behavior, while TPB includes perception of control as a central component for health behavior change (Montanaro & Bryan, 2014). Further, persons who do not perceive the potential value of their actions may never move past the second contemplation stage of the TTM. Therefore assessing the beliefs of control for those experiencing poverty may help us understand one possible psychosocial variable that hinders healthy lifestyles and increase the SES gradients of health. Further, understanding the factors that predict or affect LOC orientation can guide the development of interventions for low-SES populations that are not heavily reliant on

high internal LOC orientation, as well as the need for social-cognitive interventions that increase perceptions of power and therefore improve factors associated with LOC internality, such as self-regulation, over-all health and well-being (Hamarta et al., 2013).

Although LOC is defined by Rotter (1966) as a personality trait, cognitive interventions such as mindfulness training have been shown to shift the direction of one's LOC from external to internal (Hamarta 2013; Wolinsky et al 2010). Further, direct interventions from provider to patient rather than public campaigns can increase adherence to diet and other regimen based therapies for those with external LOC's (Infurna, Ram & Gerstorf, 2013). However, the risks and benefits of shifting control perceptions or designing health interventions for those with low perceptions of control are unknown.

One bio-behavioral explanation of the pathway between SES and health is the Reserve Capacity (RC) model described as the mediational link that explains the personal and societal factors that are related to SES and physical health gradients (Gallo & Mathews, 2003). The RC model identifies the personal and social factors related to SES that affect health status and resiliency through emotional and physical stress responses such as social support and social integration and intrapersonal resources, such as perceived control, optimism, and self-esteem. These interpersonal and intrapersonal resources affect health behavior through increasing biological risks, such as physiological disease susceptibility and decreased adaptive coping ability, thus influencing unhealthy behavior (Gallo & Mathews, 2003). According to Gallo and Mathews (2003) the lack of financial resources has the ability to undermine one's physiological stress responses thus

making one susceptible to illness and disease, while the availability of such resources attenuates perceptions of stress, increases positive outcome expectancies and promotes adaptive coping. Further, Gallo and Mathews (2003) explain that interventions created to address SES related health disparities should focus on building psychosocial resiliency, such as interventions that facilitate community advocacy and resource building in low SES populations which can foster an increased sense control. Interventions aimed to change the trajectory of perceptions of control by building resiliency may be even more effective when introduced during childhood due to the age related negative trajectory of control, which refers to the decline in perceptions of control that occurs with aging (Mittal & Griskevicius, 2014).

Summary and Conclusions

Knowledge of the health risks associated with poverty as well as the role of SES in the development of one's worldview can guide public health's attempt to reduce health disparities. Informed research can show the factors, such as LOC, that may mediate the relationship between poverty and health lifestyles. The present study aimed to discover the psychological pathway between poverty and health as well as the psychologically adaptive role of LOC orientation in low SES populations, using quantitative methodology.

Chapter 3: Research Methods

Introduction

This cross-sectional quantitative study was designed to discover the relationship between SES and health-promoting lifestyles, specifically whether LOC mediates the relationship between SES and HPL and if an internal LOC is associated with psychological distress for low-income populations. The purpose of this study is to add to the understanding of how poverty influences health both directly through one's environment and indirectly through psychological barriers to adopting and leading a healthy lifestyle, as well as how LOC orientation relates to psychological distress for low SES populations.

The design of the study, including participant selection, tools used to measure study constructs, and analysis procedures were chosen to measure the relationships between the variables SES, LOC, HPL and psychological distress. A review of the methodology allows interpretation of the study results, including generalizability, as well as allowing for future study replication.

Research Design and Rationale

The research questions, hypotheses and associated null hypotheses addressed by the present study are as follows:

1. Does LOC mediate the relationship between SES and HPL, above and beyond demographic factors?
2. Do different dimensions of external control beliefs (powerful others; chance) influence HPL?

3. Is an internal LOC, rather than an external LOC, associated with more psychological distress symptoms for lower SES populations?

$H_0$1: LOC does not mediate the relationship between SES and HPL above and beyond race/ethnicity, sex, and age.

H_a1*:* LOC will mediate the relationship between SES and HPL above and beyond the effects of race/ethnicity, sex, and age.

$H_0$2: The strength of the relationship between powerful others and HPL and chance and HPL will not differ across external subdomains.

H_a2: The strength of the relationship between the variables powerful others and HPL and chance and HPL will differ across external subdomains, with chance orientation being associated with less health promoting behavior.

$H_0$3: For persons with low SES higher levels of internality will not be associated with higher psychological distress.

H_a3: For persons with low SES, higher levels of internality will be associated with higher psychological distress scores.

The present study was conducted using cross-sectional quantitative survey design to answer the research questions. This research design was chosen to identify one factor within the existing relationship between SES and health as well as which factors affect LOC and its relationship to health behavior and psychological distress. Further, there are no studies to my knowledge on the relationship between general LOC, SES, and HPL to assess whether poverty predicts LOC orientation across all life domains.

The variables were analyzed using a hierarchical multiple regression, designed to test mediational relationships between variables (Baron & Kenny, 1986). The hierarchical multiple regression measured whether the predictor variable, SES, worked indirectly though the mediating variable, LOC, to predict the outcome variable, HPL. This analysis was intended to determine if LOC explains why SES and HPL are positively related, independent of demographic variables. This analysis also measured the effects of SES in the relationship between LOC orientations and psychological distress.

The use of existing, validated surveys eliminated the need for survey design and piloting, including reliability, and validity testing for constructs. The use of full, rather than abbreviated, surveys allowed for more internal reliability checks when measuring constructs. However, the total number of questions, due to the use of combined surveys (95) was prohibitive and therefore become a barrier to recruitment and completion rates. Therefore, time constraints caused by the present study design included recruitment, survey completion time, completion rate, and data entry.

The present study is intended to expand upon current research in the Health Behavior and Psychology field. Therefore, the design, including the constructs were chosen based on prior research within the field in an effort to explain possible mediators to the most documented determinant of health, SES. Greene & Murdock (2013) studied the relationship between control beliefs, SES, and health by measuring self-reported SES, contingency and competency beliefs, and subjective health ratings for 200 undergraduate students revealing that although contingency and competency were closely interrelated, only a strong relationship between competence and SES was noted; these results may be

due to participants age and educational attainment, since subjects were college students, and health ratings were the chosen outcome.

The use of self-reported SES, as it relates to health, was chosen since it is well supported by epidemiologists and follows the same health gradients as objective measures of SES (Deimer et al., 2013). Further, previous studies have measured the relationship between SES and health, as well as SES and LOC, indicating a positive relationship (Breet, Myburgh & Poggenpoel, 2010; Berglund, Lytsy & Westerling, 2014; Johnson & Krueger, 2005); the present research design was intended to show the factor (LOC) which may explain the relationship between SES and health status.

Methodology

Population

The target population for this study included adult males and females, 18 years of age and older, residing within the United Sates. Exclusion criteria included non-United States residence, less than 18 years of age, and those who were non-English proficient, since the tools used are written in English and nonproficiency of the dominant language may present as construct in this study, as it may be associated with further marginalization, earning and educational potential in the United States. Participants were required to meet the inclusion criteria to be considered as a study participant.

Sampling and Sampling Procedures

For this quantitative study, snowball sampling was used and there was no randomization for study sampling. All participants who meet both inclusion criteria were included in the sample. To determine sample size needed to test the hypotheses for a

linear multiple regression analysis G*Power 3.1.9.2 software was used recommended by Faul, Erdfelder, Lang, & Buchner (2007). The recommended sample size required was determined to be 119 for a moderate effect size of 0.15, an alpha level of 0.05, a power level of 0.95, and three tested predictors. To detect variability in the dependent variable that can be accounted for by each predictor variable in the hierarchical multiple regression, approximately 119 participants needed to be recruited for the study.

Recruitment

Upon approval by the University Review Board (URR) and the Institutional Review Board (IRB) participants were recruited for the study using two study environments, online and paper surveys. Electronic surveys were used to facilitate data collection and allow for the most efficient survey sharing and dissemination. However, paper surveys were administered to gain the most representative sample, including the noncomputer literate and those without online or computer access. The study was advertised as a study intended to learn about beliefs behavior and health. Participants were informed of their rights to discontinue participation in the research study at any time in absence of any recourse, as well as be assured that any information obtained would be kept anonymous. Every safeguard to protect participant identities was employed. Participants were also provided with mental health resources and mental crisis hotline information.

Participation

Participants for online surveys were recruited through emailed and Facebook study advertisements, which were shared by the researcher and the researcher's

colleagues (See Appendix B for online study advertisement). The email and Facebook study advertisements included a link to a Survey Monkey cover page, which contained the study details, inclusion requirements and informed consent. Participants were required to consent to both inclusion criteria and consent to participate by clicking "yes," on the Survey Monkey cover page to gain access to the survey located on the proceeding pages.

Paper surveys were administered in person in public areas, throughout the New York metropolitan area, where access to a table and privacy were available. The researcher gave study details and inclusion criteria to interested potential participants (See Appendix A for recruitment script) Paper surveys, including an informed consent document, were administered to persons who expressed interest in participating and confirmed they met the inclusion criteria. Participants were informed that surveys would be collected in a drop-box, using proxy informed consent, and no signature was required for informed consent. Participants were informed that their completed survey, returned to the drop-box, would serve as their consent to participate.

Data Collection

The survey instrument was created using Survey Monkey for online administration and paper surveys for in person administration. The surveys contained the SES and demographic questions (see Appendix C), Levenson's 24-item MLOC tool (see Appendix D) , The HPL-II (see Appendix F) and the KP-10 tool (see Appendix H), presented in random order, with the exception of the socioeconomic and demographic questions, which remained on the last page of the survey for the online and paper

versions. Every attempt to minimize risk of harm to participants was taken, during and after the study. Participants who completed the informed consent process were administered the survey intended to measure the constructs, LOC, health beliefs and behavior, and psychological distress. In addition to the questionnaires, demographic information was collected, including age, self-reported SES, current occupation, and race/ethnicity on the survey. Data collected from paper surveys was anonymous, while data collected from online surveys recorded the IP addresses of respondents to prevent participants from completing multiple surveys. For data export from Survey Monkey, participants' IP addresses were removed, and each participant was assigned a unique subject identification number. Subject identification numbers were additionally assigned to paper surveys and used to match questionnaires to raw data during and after data entry. Participants were provided with a debriefing, in which the intent and findings of the study were explained in a two page, lay-summary posted in areas where participants were recruited and on Facebook. No follow-up was required after participants exited the study. This study used participant's questionnaire responses to determine a relationship between the study variables.

Instrumentation and Operational Definitions of Constructs

SES and demographic information collected include self-reported age, sex, gender, race/ethnicity, number of individuals in the household, occupation, and household income. The variables used to answer the research questions are SES, LOC, HPL, and Kessler Psychological Distress Scale. SES is a composite measure of distance to U.S federal poverty guidelines (USDHHS, 2017). To obtain the composite score,

participants' self-reported 12-month, combined family income, number of children and adults in the household were matched to the federal guidelines according to family size (USDHHS, 2017) . The formula used to calculate the percentage of federal poverty guideline is income divided by U.S. federal poverty guidelines for household size. Therefore, to calculate the poverty guideline for a single person, with a combined family income of $20,000, one would divide the income by the 2106 federal poverty guideline for a family of one is $11,880 for the outcome of 1.68 or 168% of the federal poverty guidelines (USDHHS, 2017). Additional information collected included educational attainment, occupation, home ownership category, sex, and race/ethnicity. LOC was measured by the Multidimensional Locus of Control MLOC tool, the HPL by the Lifestyles Profile II, and Psychological distress by Kessler's Psychological Distress tool. Permissions to use these existing scales were obtained from the developers, where applicable. The hypothesized relationships in this study include (a) LOC as a mediator of the relationship between SES and HPL, (b) the strength of the relationship between external LOC and HPL will differ based on external subdomains, powerful others or chance, and (c) higher internal LOC orientation will be associated with higher and psychological distress for low-SES groups.

LOC was measured using the Multidimensional LOC tool. Since the development of Rotter's LOC scale (1966), there have been numerous scales purporting to measure LOC in various domains, including workplace, school and health (Judge et al., 2002). Health LOC measures do not measure the general perceptions of control, and were shown to be poor predictors of health behavior, (Groetz et al., 2011). However, general Locus of

Control (LOC) was measured using the 24-item Multidimensional Locus of Control (MLOC) tool, developed by Levenson (1974) which expands on Rotter's original Internal-External (I-E) measure of LOC by adding Chance as a subdomain of externality (See appendix E for letter of permission to use Levenson's MLOC). The MLOC tool includes three domains, Internal, Powerful Others and Chance (I-P-C) to measure one's LOC since Rotter's I-E measures often fail to provide consistent results when used to explain behavior (Furnhan & Steele, 1993). The MLOC contains 24 Likert format questions, 8 for each of the three categories I-P-C. Responses within in category are scored using a 0-6 point scale, with the possible total score within each category being ranging between 0-48; a higher score within a category indicates the respondent's dominant LOC orientation. Therefore, a respondent's score for I-P-C could be 6, 12, 30, respectively, indicating an external-chance orientation. The MLOC tool is considered a valid and reliable measure of LOC in numerous populations and has been found to be a more reliable and valid measure than Rotter's original LOC, with test, retest reliability correlational coefficient for the MLOC domains, Internal, Powerful Others and Chance, r= - .64, .74, .78, respectively (Levenson, 1974). For the purposes of this study LOC scores for Internal,(I) Chance,(C) and Powerful Others (P), were included in the analysis, separately, to measure their effects on the criterion variable.

Health-promoting lifestyles was assessed using The Lifestyle Profile II (LP2), the revised version of the Lifestyle Profile scale, used to measure self-initiated, health-promoting behavior and beliefs based on the Health Promotion Model (Pender, 1987) (See appendix G for letter of permission to use the LP2). This tool has been validated and

approved for use in multiple clinical and non-clinical settings as well as across age ranges and cultures. Reliability coefficients are reported as follows: Health Responsibility (.86), Physical Activity (.85), Nutrition (.89), Spiritual Growth (.86), Interpersonal Relations (.87), Stress Management (.79), and Total HPLPII (.94) (Walker, Sechrist, & Pender, 1987).The LP2 measures the frequency of self-reported, health-promoting behavior using 52 questions, covering six domains: health responsibility (9 questions), physical activity (8 questions), nutrition (9 questions), spiritual growth (9 questions), interpersonal relations (9 questions) and stress management (8 questions). The LP2's response format for each question is a Likert 4-point scale, ranging from, 1= Never, 2=Sometimes, 3=Often, 4=Routinely. A total score on the LP2 is obtained by calculating the mean score of the summated responses; a higher score reflects more health-promoting behavior. A score for each of the six subscales can be obtained by calculating the mean score of summated responses in each domain category.(Walker, Sechrist & Pender, 1987).

The Kessler Psychological Distress scale is a 10- question, self-report inventory of affective symptoms (See appendix J for letter of permission to use the KP10). The range of possible scores is between 10 and 50, with higher scores indicting higher risk of psychological distress and/or depression. The K10 questions include, "During the past month, about how often did you feel: 1) tired out for no good reason; 2) nervous; 3) so nervous that nothing could calm you down; 4) hopeless; 5) restless or fidgety; 6) so restless you could not sit still; 7) sad or depressed; 8)that everything was an effort 9) so sad that nothing could cheer you up; 10) worthless." Items were rated on a five-point ordinal scale— all of the time (score 5), most of the time (score 4), some of the time

(score 3), a little of the time (score 2), and none of the time (score 1). Consistent with established guidelines, (Andrew & Slade, 2010; Kessler, 2002) questions 3 and 6, are not asked if the response to the preceding question is "none of the time." These items were scored 0. The total K10 score for each respondent was calculated by summing all 10 items. K10 scores could range from 10 to 50, with higher scores indicating higher levels of psychological distress. The cut-off points, indicating level of anxiety or depressive symptoms for the KP10 scale are 10-15: low or no risk, 16-29: medium risk, and 30-50, high risk. Respondents are directed to rate statements about their affective states in the last 30 days using the 5-point Likert frequency scale.

Data Analysis Plan

The Statistical Package for Social Sciences (SPSS) version 21 (Chicago, IL, USA) was used to analyze the data. Descriptive statistics were performed for demographics of the participants, including age, race/ethnicity, SES and educational level. To test Hypothesis 1, that LOC mediates the relationship between SES and HPL, a hierarchical multiple regression analysis was performed in accordance with the Baron and Kenny approach to analyzing mediational relationships (Baron & Kenny, 1986). A hierarchical multiple regression is a method of linear regression that allows one to examine the effects of a predictor variable, independent of the influence of other variables, by entering predictors in hierarchical order. Before proceeding to test the hypotheses, the assumptions required for a multiple hierarchical regressions were tested during the preliminary analysis phase. Assumption tests included diagnostics for normality, linearity, multicollinearity and heteroscedasticity. Once all of the assumptions

were addressed, the steps outlined in the Barron Kenny's method to test a meditational relationship were performed in order.

The first step of the Barron and Kenny method is to establish that there is a relationship between the predictor variables and the criterion variable. Therefore, a linear regression including the criterion variable, HPL and predictor variable, SES was performed. Once a relationship was determined between the predictor and criterion variable step 2 of the Barron and Kenny method was started, which requires determining a relationship between the mediator and the predictor. Once step 2 was met, the 3rd step, determining a relationship between the mediator and the criterion variable was performed. Upon meeting all 3 of the Baron and Kenny steps, the hierarchical, multiple regression was performed by including entering the variables in blocks as determined by research hypothesis 1. For the hierarchical multiple regression, demographic and predictor variables were entered into the linear regression as separate blocks to determine the extent to which they may account for variability in the criterion variable. For the first block, HPL was entered as the criterion variable in the linear regression, with age, sex, and race/ethnicity entered together as predictors. For the second block, the mediating variables, LOC, was entered as the predictor, keeping HPL as the criterion. For the third block of the regression, SES was entered as the predictor variable, with HPL remaining the criterion variable. The resulting r^2 associated with each block indicates the degree of variability in the criterion variable that can be accounted for by each predictor variable within each block. The change in r^2 is a way to evaluate how much predictive power was added to the model by the addition of the variables within each block. Criterion required

to fail to reject the null hypothesis is if LOC fails to account for significant variance in the criterion variable (HPL), as determined by a r^2 change that is significant at p= < .05.

To test Hypothesis 2, involving the strength and direction of the relationship between the external domains of LOC P/C and HPL, a Pearson correlation analysis was conducted, including the HPL scores, the LOC-P/O and LOC-C variables. The Meng z-test of correlated correlations was performed to determine if the correlations between LOC-C scores and HPL were significantly different than the correlation between LOC-P and HPL, by transforming the r scores to z sores, computing the difference. A significant difference is determined by a p-value < .05 (Meng, 1996). For Hypothesis 2, the null hypothesis will fail to be rejected if the external C score is not negatively correlated with the HPL, as indicated by the correlation coefficient and difference between the correlations for LOC-P/HPL and LOC-C/HPL that is significant at the <. 05 p-value.

The analysis to test the relationships in hypothesis 3, SES, LOC, and Psychological distress (KP10) were analyzed using Pearson correlations. First, the median for the SES variable was obtained using descriptive statistics. The median was used to split the variable into two categories, coded dichotomously to indicate high (at or above the median) and low (below the median) SES categories. A one-tailed Pearson Correlation analysis was conducted with LOC-I score and the KP10 score to determine the degree of correlation between LOC-I and KP10 scores for the high and low SES groups. The null hypothesis for hypothesis 3 will fail to be rejected if the LOC-I scores are not positively correlated with KP10 scores for the low SES group as indicated by a correlation coefficient with p= <. 05 significance.

Threats to Validity

Possible threats to internal validity include reactive or interactive effects of testing. The study involves three instruments, containing a total of 95 items, and, therefore, participants may have experienced fatigue or exposure to one instrument, affecting their responses on another. Participants may have learned the purpose of the study or experience the effects of social desirability or response bias with the LP2 tool, since it contains questions about behavior. In order to control for social desirability response biases, the instruments were self-administered and participants were given the option to submit the surveys anonymously using on-line Survey Monkey or completing a paper survey, submitted anonymously to a sealed drop box. Demographic questions were placed at the end of the survey to reduce the effects of stereotype threat, which can occur when participants answer questions related to their race/ethnicity, educational or income status which primes them to respond differently to corresponding questions (Gillovich, Keltner and Nisbett, 2011). Further, researchers from the Pew Research Center (2016) suggest demographic questions are easiest to answer at the end of the survey when the participant is likely to experience survey fatigue. The LOC, LP2, and the K10 tools, were presented on separate pages for the on-line and paper surveys and their order was randomized for administration. Survey monkey page randomization was used for all pages, with the exception of the cover/informed consent page, which was always presented first, and the demographics page, which was always presented last. The order of the paper survey pages was randomized with the exception of the demographics page, which remained the last. Demographics such as age, sex and race/ethnicity, employment,

and educational status were included in the analysis in order to control for their effects on the dependent variables, HPL and psychological stress. Since self-administered surveys provide some anonymity for participants, this method is preferred over researcher-administered surveys. However self-administered surveys present possible threats to internal validity by increasing the likelihood of obtaining incomplete or missing data. Incomplete data and skipped survey responses were recorded to make note of any patterns or systematic bias in survey responses. The risk of context dependent mediation may pose a threat to external validity as it may indicate that a mediator explaining a causal relationship in a specific context may not mediate a causal relationship in a different context. Every attempt was made to include a representative sample, given the limited resources available for this study. Constraints and factors that affected my ability to recruit a representative sample included the limited time frame to recruit and collect data, and the inability to provide incentives for participation and survey length. I included detailed report on the specific demographics of my sample, along with my results.

Ethical Procedures

Informed consent was provided on the first page of the on-line survey and paper survey administered to each potential participant, along with contact information for both modes of survey administration and opportunities to ask questions regarding the procedures in person for paper survey administration, and by email for on-line and paper survey completers. As part of the informed consent, it was explained that participation in the study was entirely voluntary and participants can stop at any time. Participants were encouraged to answer all study questions to the best of their ability and were assured of

no negative recourse for their responses to any questions or decision not to participate. Participants were allowed to skip any questions or pages of the survey. There were minimal risks associated with participating in the online and paper survey research. Participants were informed of the minimal risks, which included experiencing emotional distress due survey questions involving sensitive and mental health topics, risks of their responses being viewed by others in close proximity (paper surveys) or others who may have access to their online survey if using a shared computer. The research procedures ensured that participants completed paper surveys in spaces where their responses were not in view by others, including the researcher. Participants were also advised to fully close their online survey when complete and to avoid leaving incomplete surveys open when unattended. Dissemination of the study results was accomplished using anonymous data, assuring that information shared would not pose a risk to participants' anonymity. The dissemination plan assured that the benefits to the community outweighed the risks of publically negative portrayals of study participants or their communities.

Summary

This study and its design were intended to examine the connection between SES and health, through exploring LOC as a mediating variable as well as the relationships between LOC, SES, and psychological distress. This chapter presented the methodology for the study. The quantitative methodology used in this study allowed for testing the strength of the relationships among the variables, SES, LOC, HPL, and psychological distress. A hierarchical regression was conducted to determine if LOC mediated the relationship between SES and HPL. Bivariate analyses were conducted to determine

differences in the direction and strength of the relationships between chance LOC, powerful others LOC and HPL. Bivariate analyses were also used to examine the relationship between internal LOC orientation and psychological distress for low-SES populations. Chapter 4 will include the study results, a description of the sample and discussion of the results as they relate to the research questions and hypotheses.

Chapter 4: Results

Introduction

The purpose of this research was to test if LOC orientation (internal, external-powerful others/chance) mediates the relationship between SES and health lifestyles. This research was also intended to discover if the subdomain within external LOC orientation, chance, is associated with less health promoting lifestyles, as well as to discover if external LOC orientation is associated with increased psychological distress symptoms for low-SES populations. This chapter describes the data collection, recruitment methods, description of the study population, and quantitative analysis of the data along with the research findings related to each of the study hypotheses.

Data Collection

The data collection phase lasted for 60 days. A total of 167 respondents were recruited using snowball sampling by email and in-person, random recruitment methods. Respondents with incomplete data were excluded. Thirty respondents were missing data from one or more of the scales needed to address the research questions and hypotheses (LOC, HPL, KP10, SES) and their data were excluded from the analyses. Data was obtained through self-administered surveys completed by participants online (*N*=163) and by paper (*N*=4). The sampling frame included females and males, 18 years and older, residing in the United States, who could understand and read in English. Nonprobability, snowball sampling was used to gain a large sample with limited resources. The electronic survey was shared online and on Facebook and the paper surveys were administered on 5

occasions between April 1, 2017 through May 31, 2017 to obtain an adequate sample. The use of snowballing does not allow for the calculation of a response rate.

Results

Thirty-one respondents were excluded from the final study sample because of missing survey responses. Participants who did not provide responses on the LOC, HPL, KP10, and/or SES pages of the survey were considered incomplete and therefore excluded from the study, resulting in a final sample size of 136. Thirty-nine percent of all respondents were between the ages of 35-44 and 81% were female. Forty-seven percent were Black/African American and 23% were White/Caucasian. Forty-three percent reported a combined annual, family income of over $100,000 and 43% achieved a Master's Degree, PhD, or MD (see Table 1 for demographic results). The restricted range in income and race as well as the small sample size make the results of this study less generalizable to the United States population.

Table 1

Frequencies: Demographics N= 136

	N	%
Age		
18-24	9	7%
25-34	28	21%
35-44	53	39%
45-54	24	18%
55-54	16	12%
65 or older	6	4%
Race/Ethnicity		
Asian	4	3%
Black or African American	63	47%
Hispanic/Latino	26	19%
White	31	23%
Mixed/Other	11	8%
Combined Family Income		
Less than $5,000	2	2%
$5,000-$11,999	4	3%
$12,000-$15,999	3	2%
$16,000-$24,999	3	2%
$25,000-$34,999	8	6%
$35,000-$49,999	11	8%
$75,000-$99,999	47	35%
$100,000, or greater	58	43%
Latest Degree Achieved		
High school diploma/GED	25	18%
Associates degree	19	24%
Bachelors degree	33	13%
Graduate degree (Master's/PhD/MD)	58	43%

Preliminary Analysis Assumption Testing

RQ1. Does LOC mediate the relationship between SES and HPL, above and beyond demographic factors?

H_a1*:* LOC will mediate the relationship between SES and HPL above and beyond the effects of race/ethnicity, sex, and age.

Preliminary analyses involved testing assumptions for the multiple hierarchical regression used to test Hypothesis 1. Assumptions, including normality, linearity, multicollinearity, and homoscedacity were analyzed and the results are explained below.

Normality

The criterion variable in a linear regression must be normally distributed, in that most scores are clustered around the mean and taper on both the left (lower) and right (upper) tails, forming a bell-shaped curve. Results indicated that the criterion variable, (HPL) was normally distributed as the histogram followed the bell-shaped curve, indicating no violation of normality (see Figure 1). Further, the result of the Shapiro-Wilk test of normality was not significant, (S-W= .993, *df*= 136, *p* = .750). A nonsignificant *p* value on the Shapiro-Wilk's test indicates that no violation of normality exists in distribution of the criterion variable.

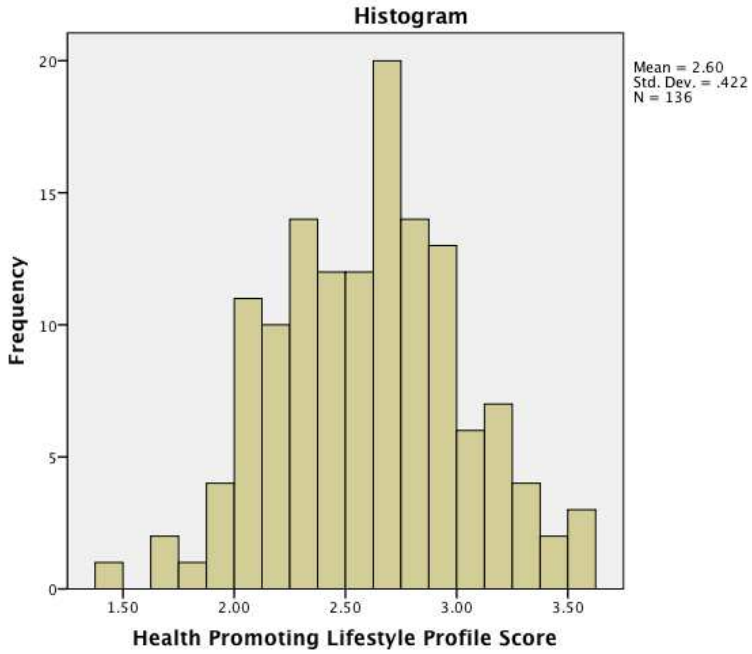

Figure 1. Normal distribution of the HPL scores

Linearity

The assumption for a linear regression requires the relationship between the predictor and criterion variables follows a linear path, rather than a curvilinear or other type of path (Field, 2013; Tabachnick & Fidell, 2012). The results of the Deviation from Linearity analysis including the predictors, LOC-I, C and P and criterion, HPL was insignificant, (0.610> 0.05). Therefore, the assumption of linearity was met.

Homoscedasticity

Homoscedasticity is an assumption that must be met to analyze and interpret the results of a linear regression or any other parametric analyses (Field, 2013; Tabachnick & Fidell, 2012). Homoscedasticity refers to the consistency in the predictive power of a regression model across all the DV values (Field, 2013; Tabachnick & Fidell, 2012) .

When the predictive power of a model is inconsistent across values of the DV, heteroscedasticity has occurred, and the results of a regression cannot be accurately interpreted (Field, 2013; Tabachnick & Fidell, 2012) . A plot of the standardized residuals regressed onto the standardized predicted values was produced to provide a visual representation of homoscedasticity, where the residuals appear to be evenly scattered in a rectangular shape, rather than a triangular, or cone, shape (see Figure 2). Therefore, it is concluded that the assumption of homoscedasticity has been met.

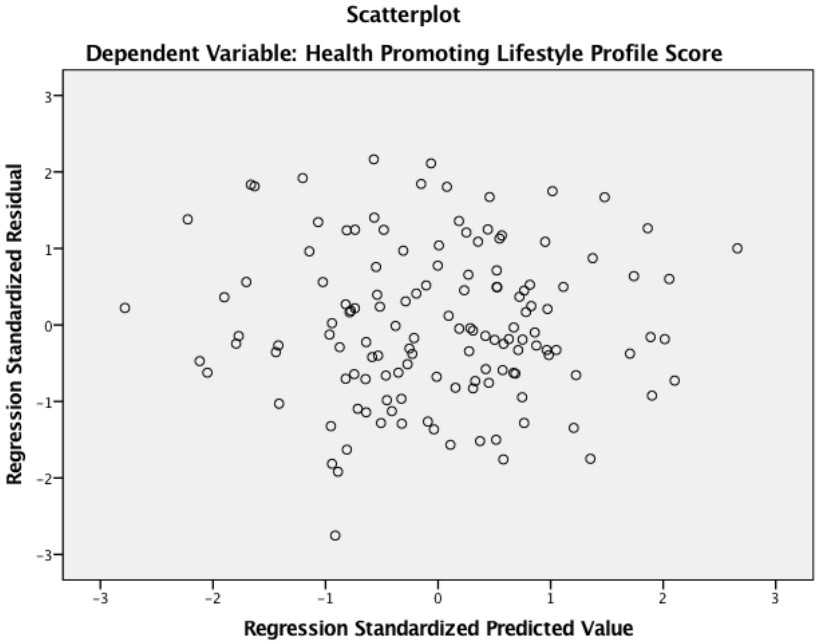

Figure 2. Plots of the standardized residuals and the standardized predicted values..

Multicollinearity

Multicollinearity refers to the degree to which two or more of the predictor variables are highly intercorrelated, causing the regression coefficients produced in a regression to be inflated and unreliable (Field, 2013; Tabachnick & Fidell, 2012) .

Multicollinearity is tested by obtaining a variance inflation (VIF) statistic. A VIF that is more than 3 for any of the predictor variables indicates that there may be an instance of multicollinearity, while a VIF of 10 is a strong indicator that multicollinearity has occurred. The VIF for the following predictor variables were well below 10: SES= 1.142, LOC/C =1.556, LOC/I = 1.016, LOC-P = 1.400.

Primary Analyses

The predictor variables included SES, LOC-C, LOC-I, and LOC-I. The criterion variable is HPL. The mean score on the LOC-I was 33.10 (*SD*=6.2) and the range was 13-45, with higher scores corresponding to higher level of internality of LOC beliefs. The mean scores on LOC-P, was 16.42 (*SD*= 7.26), and ranged from 2 to 41, with higher scores corresponding to a higher external/powerful others LOC beliefs. The mean score for LOC-C was 16.43 (*SD*= 6.97), and ranged between 1 and 33, with higher scores corresponding to higher external/chance LOC beliefs. SES, as measured by percent of federal poverty guidelines had a mean of 357%, and ranged from 15.35% to 826.40%; the median percent of federal poverty guideline for income was 312%. The mean HPL score was 2.6 (*SD*=.42) and ranged from 1.4 to 3.5, with higher scores indicating more health preventative behavior.

Mediational Hypothesis Analysis

Prior to conducting a multiple hierarchical regression to test for mediation, a regression analysis was conducted to determine if there was a relationship between the criterion variable, HPL, and the predictor variable, SES, in accordance with Step 1 of Barron and Kenny's (1986) method to test for meditation. SES proved to be a significant

predictor of HPL, with a standardized beta coefficient of .28 ($p < .001$), revealing a strong positive linear relationship. Step 2 and 3 of the Baron and Kenny method require determining a significant relationship between the mediator and the predictor variable (2) and a significant relationship between the mediator and the criterion variable (3). Since no significant relationship was observed between LOC-I and SES, ($\beta = -.124$, $p = .151$) or LOC-P and SES, ($\beta = -.091$, $p = .290$), LOC-I and LOC-P were dropped from the path analysis. There was a significant relationship between LOC-C and SES ($\beta = -.319$ $p = .000$) and LOC-C and HPL ($\beta = -.412$, $p = .000$), therefore the three steps required to test a meditational relationship were met using LOC-C as the mediator. LOC-C was analyzed as the sole mediator in the hierarchical multiple regression model.

As all three of the steps required to test a meditational hypothesis were met, the next step was to test whether or not LOC-C mediated the relationship between SES and HPL, using a hierarchical multiple regression model. HPL was entered as the criterion in the regression, while race, ethnicity and sex (demographics) were entered as predictor variables in Block 1 of the regression model. Results of the multiple regression indicated that Block 1 (demographics combined) was a significant predictor of HPL, $F (3,131) = 5.661$, $p <. 001$, where age, sex, and race/ethnicity predicted 11.5% ($r^2 = .115$) of the variability in HPL scores (see Table 2). In Block 2 of the regression model, LOC-C was added as a predictor and accounted for 13% ($r^2 = .245$) of the variance in HPL scores, above the predictors in Block 1, $F (1, 130) = 22.418$, $p = < .000$. For Block 3, SES was entered into the regression model and only accounted for 1% ($r^2 = .253$, of the variance in HPL scores, above the demographic variables and LOC-C, $F (1, 129) = 1.420$, $p = .236$.

SES failed to make a significant contribution to the regression model (Beta=.097, p= .236) Based on the results of the hierarchical multiple regression analysis, I reject the null hypothesis, as SES, was not a significant predictor of HPL scores, when LOC-C was included in the model. Therefore, LOC-C served as a mediator in the relationship between SES and HPL.

Table 2.

Summary of Hierarchical Regression Analysis for Variables Predicting Health Promoting Lifestyles

N=136

	Block 1			Block 2			Block 3		
Variable	B	SE B	β	B	SE B	β	B	SE B	B
Sex	.082	.086	.078	.113	.080	.108	.105	.081	.100
Age	.115	.029	.332**	.070	.070*	.028	.068	.028	.194
Race/Ethnicity	-.005	.031	-.013	-.019	-.024	-.029	-.021	.029	-.057
LOC-C				-.023	.005	-.389**	-.021	.005	-.357**
SES							.000	.000	.097
R^2		.115			.245			.253	
ΔR^2					.130			.008	
F for change in R^2		5.66**			22.41**			1.42	

**p ≤ .001, *p ≤ .002

RQ2. Do different dimensions of external control beliefs (powerful others; chance) influence HPL?

H_a2: The strength of the relationship between the variables powerful others and HPL and chance and HPL will differ across external subdomains, with chance orientation being associated with less health promoting behavior.

To test the relationship between the dimensions of external control beliefs (LOC-P/C) a Pearson correlation analysis was conducted with the HPL total score, the Chance (LOC-C) and Powerful Others (LOC-P) score. The Pearson correlation coefficient for the total HPL score with the LOC-C score r (135) = - 41, p < .001, (one-tailed), was stronger and more significant than the HPL and the LOC-P score, r (135) = -23, p = .008 (one-tailed) A significance test to determine if the difference in the strength of the correlation between LOC-C and HPL and LOC-P and HPL was performed using Mengs z test for correlated correlations (Meng, 1992), which transformed the correlation scores to z scores to calculate the difference between z score values along with the statistical significance observed, based expected variability in a given sample size. The difference between these correlations was statistically significant, Z= 2.364, p< .01, therefore the null hypothesis was rejected.

Exploratory Analysis

A post-hoc analysis was performed to further examine the relationships between Chance, Powerful Others, and the subcategories of the HPL scale, Health Responsibility, Physical Activity, Nutrition, Spiritual Growth, Interpersonal Relations and Stress Management. The results of the Pearson Correlation indicate that HPL had an inverse relationship with LOC P and C scores, with LOC-C scores having the stronger inverse relationship with HPL across all HPL domains. The strongest negative correlation within the HPL subcategories was observed for the relationship between LOC-C and spiritual growth, r (135) = - 44, p < .001, (one-tailed). While the strongest inverse relationship for

LOC-P was also with spiritual growth, r (135) = - 30, p < .001, (one-tailed) (see table 2 for correlation results)

Table 3.

Pearson Product Moment Correlations of the Health Promoting Lifestyle with External Sub-Domains

Variable	Mean	SD	Chance	Powerful Others
LOC Chance	16.43	6.97	-	-
LOC Powerful Others	16.42	7.26	-	-
Health Promoting Lifestyle (total)	2.60	0.42	-.41**	-.23*
Health Responsibility	2.34	0.55	-.26**	-.07
Physical Activity	2.26	0.66	-.23**	-.14
Nutrition	2.54	0.56	-.30**	-.12
Spiritual Growth	2.99	0.57	-.44**	-.30**
Interpersonal Relations	3.00	0.52	-.36**	-.21*
Stress Management	2.39	0.52	-.29**	-.18*

**p< .001, *p< .05 one tailed. N=136 for all analyses

RQ3. Is an Internal LOC, rather than an External LOC, associated with more psychological distress symptoms for lower SES populations?

H_a3: For persons with low SES, higher levels of internality will be associated with higher psychological distress scores

To test the relationship between LOC-Internal (I), SES, and psychological distress, measured by the KP10 scale the KP10 and SES and LOC-I were analyzed. SES was categorized using a median split method to create high and low SES. The median SES, as measured by percentage of federal poverty guidelines (FPL), was 312%. The low-SES group were participants with FPL under 310% (n=63) and the high-SES group were those with FPL of 311% and over (n=73). KP10 is a measure of psychological distress. Higher scores on the KP10 are associated with more psychological distress symptoms. Using the split file function in SPSS, two separate one-tailed, Pearson's

correlations were conducted (1) for the low-SES group and (2) for the high-SES group with KP10 and LOC-I scores. The mean KP10 score was 19.5 (SD= 8.0) For the low-SES group in the median split, the mean score on the KP10 was 20.8 (SD= 8.0); LOC-I mean was 33.7 (6.0). For the high- SES group, the mean KP10 score was 18.4 (SD= 8.0); LOC-I score was 32.6 (SD= 6.5). The results indicated that for the low-SES group, LOC-Internal shared an inverse relationship with KP10 scores, r (62)= -.22, p = .04, while for higher SES, LOC-I was also, negatively correlated with KP10 scores, r (72)= -.27, p = .01. The results of the correlational analysis indicate that as LOC- I increases, psychological distress scores decrease, for both low and high SES groups. However, the negative correlation between LOC-I and psychological distress is stronger and more significant for the higher SES group. The hypothesized relationship proposed was a positive relationship between LOC-I and KP10 for the low- SES group. Therefore, for low-SES groups, higher levels of internality would be associated with higher psychological distress. The predicted relationship between LOC-I, SES and KP10 was not supported and therefore, I fail to reject the null hypothesis for hypothesis 3.

Summary

Descriptions and results of the study methods and data analyses for hypotheses 1, 2 and 3, were discussed. The prediction made for hypothesis one was confirmed by the results of the hierarchical multiple regression used to test for mediation. LOC-Chance served as a mediator in the relationship between SES and HPL. The prediction made in hypothesis 2 was confirmed based on the results of the Pearson correlation and significance test. LOC-Chance was associated with lower HPL scores than LOC-

Powerful Others. Hypothesis 3 predictions were not confirmed. LOC-Internal was not positively related to psychological distress symptoms for the low-SES group. The following chapter, chapter 5, includes the conclusion of the research study. Chapter 5 will serve as a review of the study and an interpretation of the findings in the context of the theoretical framework and previous literature. The resulting implications of these study findings for health interventions and poverty research will be presented along with the limitations associated with this study in the following chapter.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

This study was intended to understand the relationship between LOC, SES, and health promoting behavior using quantitative methodology. The purpose of this study was to discover the mediating role of LOC orientation in the relationship between SES and health promoting behavior, as well as to explore the relationship between LOC orientation and psychological distress in low- SES populations. The following discussion will present the findings of this study and interpretations of them in the context of the theoretical framework and previous literature. Implications of the results, limitations to this study and recommendations for future research are also addressed.

The primary objective of this study was to determine if LOC mediates the relationship between SES and health promoting lifestyles. A secondary objective was to discover if the subdomain of external LOC, chance, was associated with a less health promoting lifestyle than the external, powerful others subdomain. A tertiary objective was to determine if an internal LOC was associated with increased psychological distress for low-SES populations, as compared to higher-SES populations. Quantitative survey methodology was utilized to determine the relationships outlined in the research questions using the variables, LOC, HPL, KP10, and SES. Demographic variables included were sex, age, and race/ethnicity. The study sample included 136 participants, of which 110 were female and were 26 male. Forty-seven percent of the sample was Black/African American and 43% reported an annual family income of at or over $100,000. All participants lived in the United States. These factors related to the

demographic makeup of this study's participants might make the results of this study less generalizable.

Summary of Findings Related to Research Questions and Hypotheses

Research Question 1. Does LOC mediate the relationship between SES and HPL, above and beyond demographic factors?

H_a1*:* LOC will mediate the relationship between SES and HPL above and beyond the effects of race/ethnicity, sex, and age.

$H_0$1*:* LOC does not mediate the relationship between SES and HPL above and beyond race/ethnicity, sex, and age.

The predictions made in Hypothesis 1were supported. The results of the analyses for Hypothesis 1 indicated that LOC-C is a significant mediator in the relationship between SES and HPL. LOC-C accounted for significant variance in the HPL scores, above and beyond SES and demographic factors, including age, sex, and race/ethnicity. The results of this study revealed that LOC-C served as a mediator in the relationship between SES and health promoting lifestyles. Of the three LOC scales, internal, external, and chance, chance met the criteria to test for mediation, using Baron and Kenny's (1986) approach to mediation testing using a multiple hierarchical regression. Findings from the multiple hierarchical regression indicated that LOC-C had significant predictive power on HPL, when added to the model including demographic factors (age, sex, race/ethnicity) and SES. LOC- C accounted for significant variance above SES, therefore serving as a mediating variable within the relationship between SES and HPL. Based on these findings, the null hypothesis was rejected. Findings should be interpreted with caution

since only one domain within LOC, chance, served as a mediator, while powerful others did not.

Research Question 2. Do different dimensions of external control beliefs (powerful others; chance) influence HPL?

H_a2*:* The negative correlation between chance and HPL will be significantly greater than the negative correlation between powerful others and HPL.

$H_0$2: The strength of the relationship between powerful others and HPL and chance and HPL will not differ across external subdomains.

In summary, the Pearson's correlational analysis and significance test supported Hypothesis 2. The correlation between LOC- C orientation and HPL was significant in the direction predicted and a statistically significant difference between the correlations for LOC-C and HPL and LOC-P and HPL was found using a Meng *z* test of significance. The results indicate that there is a stronger negative relationship between chance orientation and health promoting lifestyle scores, as compared to the relationship between powerful others and HPL, as determined by a $p < .05$. Therefore, the null hypothesis was rejected.

Research Question 3: Is an internal LOC, rather than an external LOC, associated with more psychological distress symptoms for lower SES populations?

H_a3: For persons with low SES, higher levels of internality will be associated with higher psychological distress scores.

$H_0$3: For persons with low socioeconomic status higher levels of internality will not be associated with higher psychological distress.

The results for Hypothesis 3 were inconsistent with the predictions. The findings based on the Pearson's correlation results revealed that a LOC internal orientation shared a negative relationship with psychological distress symptoms for the low-SES group and the high-SES group. These findings do not support the positive relationship between internality and psychological distress symptoms, as predicted in Hypothesis 3. Based on these results, the null hypothesis failed to be rejected.

Interpretation of the Findings

Hypothesis 1

Previous studies used domain specific measures of LOC, such as the health locus of control (HLOC), and reported findings similar to the ones of this study. Legander and Kroft, (2003) found that HLOC chance, served as a mediator within the relationship between education (SES measure), and intentions/health beliefs and behavior. Grotz et al. (2011), found the HLOC to be a strong predictor of health behavior for low SES populations and chance-HLOC to be associated with low-SES and older populations. Kraus, Piff, and Keltner (2009) found that social class was a significant predictor of self-control, health status, and psychological well-being. Further, an internal LOC was found to be associated with more positive health behavior and less health risky passive coping activities than an external LOC (Infurna, Ram, & Gerstorf, 2013). The findings that supported the meditational role of LOC between SES and HPL were consistent with the literature and presented new information on the relationships between general LOC and health behavior. The present study demonstrates the role of general chance LOC orientation as a mediator in the relationship between SES and health beliefs and behavior,

thus illustrating how general control expectancies predict outcomes across all life domains, including health. The implications are that those who perceive most life circumstances to be controlled by luck or happenstance may be less likely to engage in healthy behavior. According to Ward (2013), poverty is associated with decreased perceptions of control. Low-SES was found to be associated with an external LOC (Sheffer, et al., 2012). Nettle (2010) found that low SES was more consistent with chance LOC and less health promoting behavior. These findings are consistent with the findings associated with Hypothesis 1 and 2. Further, since lower SES participants were more likely to perceive events and circumstances in their lives as being controlled by chance than those with higher SES, further exploration is needed to discover how poverty or low-SES influences these beliefs. SES presents opportunities to obtain resources and choices, such as access to food, clothing, and housing, and therefore creates real limits on personal and environmental control (Chetty et al., 2016; Diemer et al., 2013; Gallo & Matthews, 2003) . Further research on the factors and critical periods during which they influence the formation of control perceptions is needed.

Hypothesis 2

As predicted, there was a significant difference in the relationship between health promoting lifestyle score for the two external LOC domains: chance and powerful others. Chance orientation's inverse relationship with HPL scores was stronger and significant. This was also supported in the literature (Legander & Kroft, 2003; Nettle, 2010). These results indicate that having a higher chance orientation is associated with a lower health promoting lifestyle than having a higher powerful others orientation. Therefore, within

externality, there are differences in the level of health behaviors between the subdomains. An implication for this finding is that health risks associated with chance may be greater than those associated with powerful others. Therefore, among external LOC beliefs, powerful others may present a smaller risk to health through health behavior. Further, the results of the posthoc analysis to testing the relationships between chance, powerful others, and the subcategories of the HPL scale indicated that chance shared an inverse relationship with all domains of HPL including health responsibility, physical activity, nutrition, spiritual growth, interpersonal relations, and stress management. The strongest effect was observed with chance and spiritual growth. Higher chance orientation was associated with lower levels of reported spiritual growth. Spiritual growth was measured as believing that one's life has a purpose, being aware of what's important in one's life and feeling connected with a force greater than oneself. Of note, high chance and powerful others orientation was significantly associated with lower spiritual growth scores, although the relationship was stronger for chance. Similar findings were noted for chance and powerful others LOC and relationships with HPL's interpersonal relations and stress management subcategories, where significant inverse relationships were found, although these relationships were stronger for chance across all domains. Health responsibility, physical activity, and nutrition were not found to be significantly associated with powerful others, although a significant negative relationship existed between these domains and chance. These findings suggest that while externality is associated with lower measures of spiritual and mental well-being, chance presents a

greater risk to spiritual and mental well-being along with physical health than powerful others.

Hypothesis 3

The prediction that internal LOC would be associated with negative psychological symptoms for low-SES groups was not confirmed. Although previous research confirmed that incongruences between control beliefs and environmental control were associated with negative psychological health outcomes (Agrigoroaei et al., 2013), the present study did not support this association. Further, not consistent with current study findings, the results of a longitudinal study by Kunzman, Little, and Smith (2002) found a higher sense of personal control to be associated with negative emotional consequences when actual environmental or situational control was low. The present study did not find internal LOC orientations to be associated with psychological distress symptoms for low-SES populations. Internal orientation shared an inverse relationship with psychological distress symptoms, for both low and high SES groups. However, the relationship was stronger and more significant for the high SES group. Sheffer et al. (2012) found that an external LOC orientation, including powerful others and chance was associated with more psychological stress symptoms than internal LOC orientations, which was more consistent with this study's findings. These findings suggest that external control beliefs may be associated with higher levels of depression and anxiety. Therefore, shifting LOC beliefs from external to internal may be of greater benefit to overall health and well-being for all SES populations.

Findings based on Theoretical Framework

The theorists of SLT proposed that learning occurs through a reciprocal interaction between behavior, cognitive factors, and situational factors defined as reciprocal determinism (Bandura, 1965). Through reciprocal determinism, LOC is formed as a set of beliefs to help individual identify the source of control over events and circumstances as being internally controlled or controlled by forces outside of oneself, such as a powerful others or chance (Levenson, 1973, Rotter, 1966). In environments where personal control over events and circumstances are low, such as with poverty, individuals are more prone to develop an external LOC orientation (Bandura, 1965; Ward, 2013). This study produced similar findings in the relationship between LOC orientation and SES. Lower SES was associated with an external LOC. According to Bandura's (1965;1977) SLT, behavioral patterns are formed through interactions with one's environment, and health behavior represents one facet of a person's behavioral patterns. The findings for this study support the theory of global beliefs and behavior patterns within which domains such as health beliefs exist. For the present study sample, a significant inverse relationship was observed between SES and general LOC chance, but was not observed between SES and powerful others or internal LOC. Further, LOC chance mediated the relationship between SES and health promoting lifestyles. These findings support the generality of belief patterns, as opposed to the existence of independent, health belief patterns.

Further, Zhou et al. (2012) proposed that learned helplessness was an adaptive, reactive acceptance and adjustment to an unresponsive environment serving as a form of

psychological protection. The results of the present study did not indicate that an internal LOC in low-SES environments was associated with increased psychological stress. Internality was associated with lower psychological distress for high and low SES groups. These findings suggest that while an external LOC may form in response to an unresponsive environment, it is not psychologically protective. In addition to physical health risks, an external LOC presents an increased risk to the mental health in vulnerable communities.

Limitations of the Study

The findings of this study must be considered within the context of its limitations. This study used convenience-sampling methods and the study sample was not representative of the general population in terms of demographics. This study employed a small sample, although the sample size provided adequate power for the statistical analyses (Faul et al., 2007). The lack of diversity among the participants was an additional limitation. There was an overrepresentation of high SES participants and therefore a restricted range of SES. Further, the majority of the sample was from the New York area, limiting external generalizability. These limitations created by recruiting and sampling procedures and sample size this makes the results of this study less generalizable to the general United States population. The range of LOC orientations were also limited in the sample. A majority of this study's participants had higher internal LOC scores, relative to the powerful others and chance scores.

The use of a quantitative study design with existing tools limits the information obtained that may not accurately reflect all study phenomena and may limit the ability to

make sense of the study outcomes. However, the use of quantitative design limited researcher bias. Reliance on self-report also presents a risk to validity and reliability of the results. A cross-sectional method also did not allow for the ability to measure the effects of childhood low SES or poverty on LOC orientation.

Recommendations

Further research recommendations include, increased representation of low-SES participants and larger, more representative sample in terms of demographic factors, such as race, educational achievement and geographic location. This will allow for a more in depth understanding of how other social factors, including race influence the relationships between LOC, SES and HPL. An additional recommendation is to use a mixed-methods approach with the addition of qualitative data to add to the understanding the study factors and their relationships. The use of fixed-response surveys does not allow for a thorough review of the phenomenon and other factors that effect relationships between study variables. The present study uses LOC as to measure control beliefs; the use of other scales that measure various aspects of personal control may increase the understanding of the relationships between SES, health behavior and personal control beliefs. An intervention study could be used to explore possible methods that may be effective in shifting LOC orientation, and the effects of LOC orientation shifts on health beliefs and behavior.

Implications

The findings of this study present a theoretical framework for health behavior theory and interventions for low-SES populations. Implications of the findings are that

Chance LOC mediates the relationship between SES and HPL in U.S. populations. Although this study presents with limitations, it provides novel information about the role of poverty, global perceptions of control and health behavior, as opposed to domain specific aspects such as Health Locus of Control (HLC). The use of a generalized control measure was intended to explore the complex relationship between non-health specific worldviews and health behavior. Further, the finding that a chance orientation presents an increased risk of poor health behavior and psychological distress symptoms as compared to a powerful others orientation, illustrates the differences within the external LOC domains. Further exploration of methods to increase healthy behavior for those with high powerful others orientation should be explored. If health care providers are perceived as trusted, powerful others they may be able to influence change by employing an authoritative approach with closer patient monitoring. Brinks et al., (2010) found that low-income, minority patients with high powerful others LOC reported higher levels of medical provider trust than low-income minority patients with higher external-chance orientation. Further, powerful others was also found to be associated with higher rates of adherence to breast cancer screening recommendations due to increased provider trust among patients with external powerful others orientation (Helmes, Bowen and Bengel, 2002). Further, for patients with high powerful others orientation, more directives from medical professionals and incentives for health positive behavior changes may elicit more healthy behavior for populations and persons with external LOC (Infurna, 2013). However, there are few studies on LOC and health that examine the subdomains within externality to discover associated benefits and risks to health. Therefore, this study adds

to the dearth of research on the dimensions within externality and how they relate to health and health behavior. Study findings also present novel information that may be used to support professional practice for health providers and health interventionists.

The implications of continuing to employ health intervention approaches guided by the HBM, including raising awareness of risks and providing tools to increase positive health behavior, will continue the trend of ill-health and premature death in communities where a low sense of personal agency is common, namely low-SES populations (Clemow, 2004; Hochbaum, 1958; Glanz, et al., 2008). This research was intended to address the SES health disparities through social change in which health behavior theories and interventions are designed to be effective for all populations. Further, this information can lead to positive social change by illustrating the need for poverty informed health and wellness interventions aimed to empower and thus increase the health and well-being of low-SES populations, as well as the importance of a LOC health screen.

The present findings support the need for a methodological shift from agentic health behavior models to models that include approaches compatible with an external orientation and aim to shift LOC orientation towards internality. This study illustrates that chance orientation presents the greatest risk to one's physical and psychological well-being and can be considered a maladaptive response to one's environment or circumstances. Interventions aimed at shifting one's control orientation from chance to powerful others, or powerful others to internal should be studied. While cognitive interventions and mindfulness training techniques have been successful in shifting LOC

from external to internal, these techniques have not been studied in low-SES populations (Wolinsky et al, 2010). Mindfulness training intervention for older, chronically ill, patients was able to successfully shift individuals from chance and powerful other LOC to internal LOC (Hamarta et al, 2013). Mindfulness training and motivational interviewing may shift control beliefs, while also addressing the mental and spiritual health needs of low SES populations (Hamarta et al, 2013; Miller & Rollnick,1991; Wolinsky et al, 2010. In this study's sample, low-SES with higher external chance and powerful others had higher psychological distress scores. Introducing interventions to shift LOC may be more effective for youth, since their worldviews are still in the formative stages. Including parents and families may be of benefit, since they are the primary teachers within the social learning environment. Ahlin and Lobo Antunes, (2015) discovered that parenting style greatly predicted an external LOC in childhood along with socioeconomic factors, while an internal LOC was found to reduce the likelihood of engaging in violence and other negative behavior, in spite of exposure to community violence and low SES. Therefore, addressing LOC for low-SES youth may be of greatest value and protect against a plethora of negative consequences associated with poverty.

Incentive based health interventions may also increase healthy behavior while addressing the psychosocial factors associated with poverty, such as lack of resources and a lack of environmental contingency (Haff et al., 2015). Haff et al., conducted a meta-analysis of several financial incentive based health behavior interventions, and reported the success of this strategy at eliciting health behavior change in areas including smoking cessation, diet, and medication adherence especially for low-income and racial minority

groups. This study presents a rationale for the study and implementation of interventions intended to shift control beliefs. A future study is recommended to explore the efficacy and benefits of these interventions on LOC orientations and the resulting effects on mental and physical health.

Conclusion

In order for health interventions to successfully improve the physical and mental health of vulnerable communities, they must address the psychosocial factors related to health behavior, such as control beliefs. It is important to understand the role of personal control perceptions in the context of one's environment and how they relate to health beliefs and behavior. While life expectancy and health outcomes remain the lowest among low-SES populations in the U.S., health behavior predicts the life expectancy variance over other factors, such as access to care and environmental differences for this population (Chetty et al., 2016). Further, health behavior change interventions and promotions have not been successful in influencing health-promoting behavior in low-income communities (Higgins, 2014). It is well supported in the literature, that SES and health behavior share a positive relationship (Adler, 2009; 2010; Infurna, Ram & Gerstorf, 2013). Moreover, the relationship between LOC and health behavior is also well supported (Sørlie and Sexton, 2003; Sturmer et al., 2006; Chipperfield et al., 2016). However, the relationships between all these factors have yet to be explained. This study is intended to address this gap in the literature and develop a poverty informed, theoretical framework of health behavior.

This quantitative study was intended to discover if LOC mediated the relationship between SES and a healthy lifestyle, as well as to determine if external-chance would be associated with less a healthy lifestyle than external-powerful others. Lastly, this study was intended to discover if an internal LOC was associated with less psychological stress for low-SES populations. The findings were that both hypothesis 1 and 2 were supported, however, only LOC-chance served as a mediator in the relationship between SES and healthy lifestyle. However, hypothesis 3 was not supported by the results. An internal LOC was associated with fewer psychological distress symptoms for the low-SES group, as well as for the high SES-group. The results of this study may be used to create a theoretical framework for LOC and health behavior interventions. LOC orientation can serve as either a risk or a protective factor in health and well-being. SES presents opportunities in terms of tangible resources as well as the ability to exert control over several aspects of one's life (Culpin et al., 2015; Grotz et al., 2011; Hostinar et al., 2014; Mittal & Griskevicius, 2014). In low-SES environments, conditions and circumstances, including health, appear to be determined by luck or people in positions of power (Braverman et al., 2010; Hostinar et al., 2014; Mittal & Griskevicius, 2014). The control beliefs created by SES are pervasive and global, while health beliefs are only one facet of one's overall belief systems. While low-income populations tend to be more externally oriented, an external LOC is associated with fewer healthy lifestyle choices and psychological distress. The risks associated with having an external LOC are great and poverty informed approaches to health must consider the role LOC orientation as it relates to physical and psychological health. It is important to understand LOC as it

relates to the culture and environment created by poverty as opposed to waiting for a shift in their control beliefs that more closely resembles those of the wealthier, dominant culture. The shift needs to occur in the approach to health behavior interventions for low-income populations from agentic models to ones that can address the psychological effects of poverty. Further, anti-poverty, advocacy efforts should highlight the psychological effects of poverty in an effort to promote social change.

The propensity to blame individuals and their communities for their conditions as if they are the sole bearers of responsibility is ingrained in the beliefs and policies of our society. However, this perspective does not account for the systems that influence those conditions and therefore these beliefs perpetuate disadvantage. As a society, it is our collective responsibility to conduct an honest analysis of the conditions and experiences of our most vulnerable communities and work to improve them. While study findings serve as a starting point for understanding the factors related to LOC orientation, SES and health, further study is needed to fully understand the relationships between them. Future studies could inform treatment and screening protocols that address LOC in low SES communities. The results of future studies on SES, LOC and health may inform the practices of health care professionals and health interventionists as well as guide the development of nonagentic health behavior theories. Moreover, studies that center on the poverty experience and psychosocial development can raise awareness of the risks to mental and physical health and interventions that serve to prevent and or address them.

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Appendix A: Recruitment Script

Excuse me, sir/madam, do you have a minute?

My name is Cara Stephenson. I am a PhD student at Walden University in the department of Health Psychology, and I am conducting a research study to learn about factors that affect health beliefs and choices in various communities for my dissertation under the supervision of Dr. Jody Dill and Dr. Kathryn Dardeck.

You may be eligible to participate if you are:

- 18 years of age or older
- Able to read and write in English
- A resident of the U.S.

Participation involves answering anonymous survey. The survey should not take more than 20 minutes to complete. Your participation is voluntary and you may decide not to participate or stop survey at any time without consequence.

Are you interested in hearing some details about the research study?
If not interested: Thank you for your time.

If interested: Confirm eligibility: Are you 18 years of age or older, able to read and write in English, reside in the U.S.

If no to any of the inclusion criteria: Thank them for their time and ask if they would be interested in entering the raffle

If all inclusion criteria met, provide survey with informed consent instructions

Instructions: Please read and complete this survey as accurately as you can. You will not be required to sign or provide your name on the survey. Returning your completed survey to the locked-box provided will serve as your consent to participate. Please remove the first page of the document to keep for your records. Feel free to ask me any questions you may have now or reach me using the information listed on the consent page of your document.

Appendix B: Study Advertisement Online

Adult Male and Female Volunteers Needed for Research Study about Community Health

The purpose of this study is to learn about factors that affect health beliefs and choices in communities. This research study is being conducted by Cara Stephenson, M.S., as part of a PhD dissertation conducted under the supervision of Dr. Jody Dill and Dr. Kathryn Dardeck at Walden University.

You may be eligible to participate if you are:

- 18 years of age or older
- Able to read and write in English
- A resident of the U.S.

Participation involves answering a confidential, on-line survey containing 95 items. The survey should not take more than 20 minutes to complete
Your participation is voluntary and you may decide not to participate or stop the survey at any time without consequence.

Thank you,

For more information contact:
Cara Stephenson, M.S., Researcher
Cara.stephenson@waldenu.edu
Link to survey: https://www.surveymonkey.com/r/Q3YHLVF

Appendix C: Demographic/Socioeconomic Status Survey

The following questions are to help us know more about you. Please complete this form to the best of your ability. Please do not write your name, address or birth date on this survey. Your responses will remain anonymous.
Circle the best answer to the following questions.

Are you a….. (choose one)
Male
Female
Other_____
I prefer not to say

How old are you? (choose one)
Less than 18
18-24
25-34
35-44
45-54
55-64
65 or older
I prefer not to say

Please choose your race/ethnicity (choose all that apply)
American Indian or Alaskan Native
Asian or Pacific Islander
Black or African American
Hispanic/Latino
White
Other _____
I prefer not to answer

What is the highest grade or level of school you have completed or the highest degree you have received? (choose one)
High school diploma or GED
Associates degree
Bachelor's degree
Graduate degree (Master's or PhD, MD)
Did not complete high school or GED

Your current daily responsibility is best described as….

_____Working full time
_____Working part-time
_____Enrolled in school full-time
_____Unemployed or laid off
_____Looking for work
_____Keeping house or raising children full-time
_____Retired

If you are working or retired from working, what kind of work do/did you do:

_____
(For example: home attendant, teacher, cashier)

How many people are currently living in your household, including yourself?

_____Number of people
_____Of these people, how many are children?
_____Of these people, how many are adults?
_____Of the adults, how many bring income into the household?

Is the home where you live:

_____Owned or being bought by you (or someone in the household)?
_____Rented for money?
_____Occupied without payment of money or rent?
_____Other (specify)_____

Which of these categories best describes your total combined family income for the past 12 months?
This should include income (before taxes) from all sources, wages, rent from properties, social security, disability and/or veteran's benefits, unemployment benefits, workman's compensation, help from relatives (including child payments and alimony), and so on.

_____Less than $5,000
_____$5,000 through $11,999
_____$12,000 through $15,999
_____$16,000 through $24,999
_____$25,000 through $34,999

_____$35,000 through $49,999
_____$50,000 through $74,999
_____$75,000 through $99,999
_____$100,000 and greater
_____Don't know
_____No response

Appendix D: LOC Scale-Levenson

Internality, Powerful Others, and Chance Scales

	Strongly Disagree -3	*Disagree -2*	*Slightly Disagree -1*	*Slightly Agree +1*	*Agree +2*	*Strongly Agree +3*
1. Whether or not I get to be a leader depends mostly on my ability.	-3	-2	-1	+1	+2	+3
2. To a great extent my life is controlled by accidental happenings.	-3	-2	-1	+1	+2	+3
3. I feel like what happens in my life is mostly determined by powerful people.	-3	-2	-1	+1	+2	+3
4. Whether or not I get into a car accident depends mostly on how good a driver I am.	-3	-2	-1	+1	+2	+3
5. When I make plans, I am almost certain to make them work.	-3	-2	-1	+1	+2	+3
6. Often there is no chance of protecting my personal interests from bad luck happenings.	-3	-2	-1	+1	+2	+3
7. When I get what I want, it's usually because I'm lucky.	-3	-2	-1	+1	+2	+3
8. Although I might have good ability, I will not be given leadership responsibility without appealing to those in positions of power.	-3	-2	-1	+1	+2	+3
9. How many friends I have depends on how nice a person I am.	-3	-2	-1	+1	+2	+3
10. I have often found that what is going to happen will happen.	-3	-2	-1	+1	+2	+3
11. My life is chiefly controlled by powerful others.	-3	-2	-1	+1	+2	+3
12. Whether or not I get into a car accident is mostly a matter of luck.	-3	-2	-1	+1	+2	+3

13. People like myself have very little chance of protecting our personal interests when they conflict with those of strong pressure groups.	-3	-2	-1	+1	+2	+3
14. It's not always wise for me to plan too far ahead because many things turn out to be a matter of good or bad fortune.	-3	-2	-1	+1	+2	+3
15. Getting what I want requires pleasing those people above me.	-3	-2	-1	+1	+2	+3
16. Whether or not I get to be a leader depends on whether I'm lucky enough to be in the right place at the right time.	-3	-2	-1	+1	+2	+3
17. If important people were to decide they didn't like me, I probably wouldn't make many friends.	-3	-2	-1	+1	+2	+3
18. I can pretty much determine what will happen in my life.	-3	-2	-1	+1	+2	+3
19. I am usually able to protect my personal interests.	-3	-2	-1	+1	+2	+3
20. Whether or not I get into a car accident depends mostly on the other driver.	-3	-2	-1	+1	+2	+3
21. When I get what I want, it's usually because I worked hard for it.	-3	-2	-1	+1	+2	+3
22. In order to have my plans work, I make sure that they fit in with the desires of people who have power over me.	-3	-2	-1	+1	+2	+3
23. My life is determined by my own actions.	-3	-2	-1	+1	+2	+3
24. It's chiefly a matter of fate whether or not I have a few friends or many friends.	-3	-2	-1	+1	+2	+3

Internality Subscale: Items 1, 4, 5, 9, 18, 19, 21, 23

Powerful Others Subscale: Items 3, 8, 11, 13, 15, 17, 20, 22

Chance Subscale: Items 2, 6, 7, 10, 12, 14, 16, 24

Directions for scoring: Add up the eight responses for each scale. Add a constant of 24 to each scale (to eliminate negative sums). Each respondent receives three scores (from 0-48) indicating his/her relative standing on each of the three dimensions.

Appendix E: Permission to use Multidimensional Locus of Control Scale

October 10, 2016

Hanna Levenson, PhD

Dear Dr. Levenson

I am a Health Psychology doctoral candidate at Walden University. I am in the process of completing my dissertation. My research study intends to address the connection between SES and health and psychological distress, through exploring LOC as a mediating variable Therefore, I am seeking permission to include the MLOC survey in my study. Please let me know if you require additional information in order to review this request.

Please let me know if you approve of these terms by replying to me through email:

Very truly yours,

Cara Stephenson

Walden University Health Psychology

Doctoral Candidate

-----Original Message-----

From: Cara Stephenson <

To: hannalevenson <

Sent: Wed, Oct 12, 2016 9:07 am

Subject: Use of the Multicultural Locus of Control Scale

Hanna Levenson < >

to:

da Sat, Dec 31, 2016 at 4:39 PM

te:

You have my permission. Would you please send me a summary of your results? HL

Appendix F: Health-Promoting Lifestyle Profile II

Health-Promoting Lifestyle Profile II

DIRECTIONS: This questionnaire contains statements about you *present* way of life or personal habits. Please respond to each item as accurately as possible, and try not to skip any item.

Indicate the frequency with which you engage in each behavior by circling:

	Never	Sometimes	Often	Routinely
1. Discuss my problems and concerns with people close to me.	N	S	O	R
2. Choose a diet low in fat, saturate fat, and cholesterol.	N	S	O	R
3. Report any unusual signs or symptoms to a physician or other health professional.	N	S	O	R
4. Follow a planned exercise program.	N	S	O	R
5. Get enough sleep.	N	S	O	R
6. Feel I am growing and changing in positive ways.	N	S	O	R
7. Praise other people easily for their achievements.	N	S	O	R
8. Limit use of sugars and food containing sugar (sweets).	N	S	O	R
9. Read or watch TV programs about improving health.	N	S	O	R
10. Exercise vigorously for 20 or more minutes at least three times a week (such as brisk walking, bicycling, aerobic dancing, using a stair climber).	N	S	O	R
11. Take some time for relaxation each day.	N	S	O	R
12. Believe that my life has purpose.	N	S	O	R
13. Maintain meaningful and fulfilling relationships with others.	N	S	O	R
14. Eat 6-11 servings of bread, cereal, rice and pasta each day.	N	S	O	R
15. Question health professionals in order to understand their instructions.	N	S	O	R
16. Take part in light to moderate physical activity (such as sustained walking 30-40 minutes 5 or more times a week).	N	S	O	R
17. Accept those things in my life which I cannot change.	N	S	O	R
18. Look forward to the future.	N	S	O	R
19. Spend time with close friends.	N	S	O	R
20. Eat 2-4 servings of fruit each day.	N	S	O	R

21. Get a second opinion when I question my health care provider's advice.	N	S	O	R
22. Take part in leisure-time (recreational) physical activities (such as swimming, dancing, bicycling).	N	S	O	R
23. Concentrate on pleasant thoughts at bedtime.	N	S	O	R
24. Feel content and at peace with myself.	N	S	O	R
	Never	Sometimes	Often	Routinely
25. Find it easy to show concern, love and warmth to others.	N	S	O	R
26. Eat 3-5 servings of vegetables each day.	N	S	O	R
27. Discuss my health concerns with health professionals.	N	S	O	R
28. Do stretching exercises at least 3 times per week.	N	S	O	R
29. Use specific methods to control my stress.	N	S	O	R
30. Work toward long-term goals in my life.	N	S	O	R
31. Touch and am touched by people I care about.	N	S	O	R
32. Eat 2-3 servings of milk, yogurt or cheese each day.	N	S	O	R
33. Inspect my body at least monthly for physical changes/danger signs.	N	S	O	R
34. Get exercise during usual daily activities (such as walking during lunch, using stairs instead of elevators, parting car away from destination and walking).	N	S	O	R
35. Balance time between work and play.	N	S	O	R
36. Find each day interesting and challenging.	N	S	O	R
37. Find ways to meet my needs for intimacy.	N	S	O	R
38. Eat only 2-3 servings from the meat, poultry, fish, dried beans, eggs, and nuts group each day.	N	S	O	R
39. Ask for information from health professionals about how to take good care of myself.	N	S	O	R
40. Check my pulse rate when exercising.	N	S	O	R
41. Practice relaxation or mediation for 15-20 minutes daily.	N	S	O	R
42. Am aware of what is important to me in life.	N	S	O	R
43. Get support from a network of caring people.	N	S	O	R
44. Read labels to identify nutrients, fats, sodium content in packaged food.	N	S	O	R
45. Attend educational programs on personal health care.	N	S	O	R
46. Reach my target heart rate when exercising.	N	S	O	R
47. Pace myself to prevent tiredness.	N	S	O	R

48. Feel connected with some force greater than myself.	N	S	O	R
49. Settle conflicts with other through discussion and compromise.	N	S	O	R
50. Eat breakfast.	N	S	O	R
51. Seek guidance or counseling when necessary.	N	S	O	R
52. Expose myself to new experiences and challenges.	N	S	O	R

Appendix G: Permission to use Health-Promoting Lifestyle Profile II

University of Nebraska Medical Center

COLLEGE OF NURSING
Community-Based Health Department

Dear Colleague:

Thank you for your interest in the *Health-Promoting Lifestyle Profile II.* The original *Health-Promoting Lifestyle Profile* became available in 1987 and has been used extensively since that time. Based on our own experience and feedback from multiple users, it was revised to more accurately reflect current literature and practice and to achieve balance among the subscales. The *Health-Promoting Lifestyle Profile II* continues to measure health- promoting behavior, conceptualized as a multidimensional pattern of self-initiated actions and perceptions that serve to maintain or enhance the level of wellness, self-actualization and fulfillment of the individual. The 52-item summated behavior rating scale employs a 4-point response format to measure the frequency of self-reported health-promoting behavior in the domains of health responsibility, physical activity, nutrition, spiritual growth, interpersonal relations and stress management. It is appropriate for use in research within the framework of the Health Promotion Model (Pender, 1987), as well as for a variety of other purposes.

The development and psychometric evaluation of the English and Spanish language versions of the original instrument have been reported in:

Walker, S. N., Sechrist, K. R., & Pender, N. J. (1987). The Health-Promoting Lifestyle Profile: Development and psychometric characteristics. Nursing Research, 36(2), 76-81.

Walker, S. N., Volkan, K., Sechrist, K. R., & Pender, N. J. (1988). Health-promoting lifestyles of older adults: Comparisons with young and middle-aged adults, correlates and patterns. Advances in Nursing Science, 11(1), 76-90.

Walker, S. N., Kerr, M. J., Pender, N. J., & Sechrist, K. R. (1990). A Spanish language version of the Health- Promoting Lifestyle Profile. Nursing Research, 39(5), 268-273.

A copy of the instrument (English and Spanish versions), scoring instructions, an abstract of the psychometric findings, and a list of publications reporting research using all versions of the instrument are available for download.

Sincerely,

Susan
Noble
Walker,
EdD, RN,
FAAN
Professor
Emeritus

Appendix H: The Kessler Psychological Distress Scale (K10)

Kessler Psychological Distress Scale (K10)

Please tick the answer that is correct for you:	All of the time (score 5)	Most of the time (score 4)	Some of the time (score 3)	A little of the time (score 2)	None of the time (score 1)
1. In the past 4 weeks, about how often did you feel tired out for no good reason?					
2. In the past 4 weeks, about how often did you feel nervous?					
3. In the past 4 weeks, about how often did you feel so nervous that nothing could calm you down?					
4. In the past 4 weeks, about how often did you feel hopeless?					
5. In the past 4 weeks, about how often did you feel restless or fidgety?					
6. In the past 4 weeks, about how often did you feel so restless you could not sit still?					
7. In the past 4 weeks, about how often did you feel depressed?					
8. In the past 4 weeks, about how often did you feel that everything was an effort?					
9. In the past 4 weeks, about how often did you feel so sad that nothing could cheer you up?					
10. In the past 4 weeks, about how often did you feel worthless?					

The Kessler Psychological Distress Scale (K10)

Appendix I: Permission to use The Kessler Psychological Distress Scale (K10)

October 1, 2016

Ronald Kessler
Harvard Medical School
Department of Health Care Policy

Dear Dr. Ronald Kessler

I am a Health Psychology doctoral candidate at Walden University. I am in the process of completing my dissertation. My research study intends to address the connection between SES and health promoting lifestyles and psychological distress, through exploring LOC as a mediating variable Therefore, I am seeking permission to include the Kessler Psychological Distress (K10) survey in my study. Please let me know if you require additional information in order to review this request.

Please let me know if you approve of these terms by replying to me through email:

Very truly yours,

Cara Stephenson
Walden University Health Psychology
Doctoral Candidate

Kessler, Ronald < >

HMS-RonkAdm

You have my permission to use the K10 in your study. Good luck. Ron Kessler

Ronald C. Kessler, Ph.D.
McNeil Family Professor of Health Care Policy
Department of Health Care Policy
Harvard Medical School