2012

The contribution of three social psychological theories: Fundamental cause theory, stress process model, and social cognitive theory to the understanding of health disparities -- a longitudinal comparison

Natalia Frishman
Iowa State University

The contribution of three social psychological theories: Fundamental cause theory, stress process model, and social cognitive theory to the understanding of health disparities — a longitudinal comparison

by

Natalia Frishman

A dissertation submitted to the graduate faculty

in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

Major: Sociology

Program of Study Committee:
Gloria Jones-Johnson, Major Professor
W. Roy Johnson
David Peters
Stephen G. Sapp
Mack C. Shelley

Iowa State University
Ames, Iowa
2012

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

ABSTRACT

This study examined the contribution of three social psychological theories—fundamental cause theory, stress process model, and social cognitive theory—to understand health disparities. These theories helped reveal causal relationships between the social and economic factors, and their influence on health-related behaviors and health outcomes. The changes of the influence of social and economic factors on health-related behaviors and health outcomes were observed across three time points. This is important because investigation of the ways social and economic conditions influence health is helpful to understand how to support the health of the population.

This research is based on the analysis of Americans' Changing Life (ACL) survey. ACL survey is a multistage area probability sample of the citizens of the United States aged 25 and older. In the current study three waves of the survey were examined, 1986, 1989, and 1994. The baseline survey includes 3,617 participants.
The data have been analyzed using Structural Equation Modeling (SEM).

The results showed the three theories complement each other. Each theory considered the social structural approach, supported by the results of the current study, which show most of the direct effects of socio economic factors for all parts of the models were significant. Consideration of differential stress exposures provides additional explanation to health disparities. The current study revealed significant socioeconomic disparities in chronic stressors and negative life events. Social Cognitive Theory (SCT) suggests that personal determinants may influence health behaviors and outcomes. Results from the current study showed perceived control is an important personal determinant of health.

This dissertation expands knowledge of the development of health disparities among the population by analyzing the problem from the perspective of fundamental cause theory, stress process model, and social cognitive theory.

CHAPTER 1: INTRODUCTION

Health has a significant influence on the quality of a person's life. People with good health are able to work effectively, support their families, and contribute to society. Existence of certain social and economic conditions is necessary to support human health. Consequently, investigation of the ways social and economic conditions influence health is very important to understand how to support the population's health. According to House, "health and illness over the life course could only be understood by combination of social science and biomedical science perspectives" (2001:129). House indicated that social, psychological, and behavioral factors significantly influence people's health. Thus, it is important to understand causal relationships between these factors, their origins, and consequences, because they are especially important in the prevention of disease development. For example, living in a disadvantaged neighborhood with severely polluted air can lead to the development of asthma. If the quality of air in such a neighborhood is significantly improved, the development of asthma among the residents should decrease. At the same time, it is important that people, who already have diseases, are able to receive adequate medical care. House (2001) indicated that achievements of modern medicine provide a possibility to prevent and treat numerous diseases. This phenomena leads to health disparities, because people unable to receive needed medical care have worse health than people who receive adequate medical care.

Social and economic conditions are different for different people. They influence health-related behaviors and health outcomes. Consequently, inequality in social and economic statuses (SES) leads to inequality in health care. Good health of each society member is beneficial for the entire society and its individuals. It is necessary to improve the health of

the most vulnerable groups of the population for the achievement of this goal. Improvement of disadvantaged groups' health will lead to the elimination of health disparities, "a fundamental, though not always explicit, goal of public health research and practice" (Adler & Rehkopf, 2008:235). It is important to understand the meaning of health disparities, and which social and economic factors contribute to health disparities.

In their work, Adler and Rehkopf (2008) examined definitions of health disparities. They focused on differences in health outcomes that occurred as a result of different genders, race, ethnicities, education, income, sexual orientation, geographic location, place of birth, and other social factors. Adler and Rehkopf claimed that health disparities, based on social inequalities, are "avoidable and inherently unjust" (p. 237). However, "The literature lacks a consensually agreed upon definition of health disparities" (p. 236). Krieger et al. also agreed, "to date there exists no consensus or standard "for monitoring U.S. socioeconomic inequalities in health" (2003:1655). Adler and Rehkopf explained that definition of health disparity influences the conclusion about the extent of health disparity. Thus, the definition should suggest "the relevant comparison group for establishing a disparity" (p. 237). For example, if the definitions of racial/ethnic disparities suggest a group's health be compared with the majority of the average population or with healthiest group, it can lead to a different conclusion about the extent of disparity. Carter-Pokras and Baquet (2002:428) claimed, "health disparities can be measured by comparing the health of one group, defined as the reference group, with the health of other groups." Carter-Pokras and Baquet (2002:428) noted, "Alternatively, an internal standard or frame of reference can be used to compare one group with itself."

Krieger et al. (2003) claimed different studies used a plurality of measures for comparison of the impact of SES on health outcomes of different racial and gender groups. However, for health monitoring of different social groups, "such heterogeneity impedes comparing results across studies, outcomes, and regions and over time" (Krieger et al. 2003:1655). Thus, it will be useful to develop standard measures of the influence of different social factors on health by using a comparison between different sociological theories. It will help better understand the mechanism of the occurrence of health disparities, and diminish the inconsistencies in research related to this issue.

Braveman (2006:167) used the terms health disparities/inequalities interchangeably and defined it as, "A health disparity/inequality is a particular type of difference in health (or in the most important influences on health that could potentially be shaped by policies); it is a difference in which disadvantaged social groups—such as the poor, racial/ethnic minorities, women, or other groups who have persistently experienced social disadvantage or discrimination—systematically experience worse health or greater health risks than more advantaged social groups. ('Social advantage' refers to one's relative position in a social hierarchy determined by wealth, power, and/or prestige.)"

Carter-Pokras and Baquet (2002:427) showed the differences in the meanings of terms "health disparity," "health inequality," and "health inequity." They explained inequality defined as "lack of equality as of opportunity, treatment or status." Inequity related to ethical judgment: "an instance of unjustness or unfairness" (Carter-Pokras and Baquet 2002:427). Definition of disparity includes ethical judgment and inequality: "a lack of equality and similarity, esp. in a way that is not fair" (Carter-Pokras and Baquet 2002:427).

Carter-Pokras and Baquet provided eleven definitions of health disparities obtained from different health organizations. The most commonly used in the U.S. are the definitions from Healthy People 2010, National Institute of Health (NIH 2000), and the Health Resources and Services Administration. The Healthy People 2010 provides the following definition of health disparity: "…differences that occur by gender, race or ethnicity, education or income, disability, living in rural location or sexual orientation" (p.430). The definition of health disparities by NIH (2000) is "…differences in the incidence, prevalence, mortality, and burden of diseases and other adverse health conditions that exist among specific population groups in the United States" (p. 430). The definition of health disparity provided by the Health Resources and Services Administration is: "… a population-specific differences in the prevalence of disease, health outcomes, or access to care" (p. 430). The authors claimed to understand the meaning of health disparity; it is necessary to understand the underlying causes of inequality.

Carter-Pokras and Baquet wrote that Margaret Whitehead specified seven determinants of health disparities adopted by EURO/WHO. These determinants include: "1) natural, biological variation; 2) health-damaging behavior that is freely chosen; 3) the transient health advantage of one group over another when one group is first to adopt a health-promoting behavior; 4) health-damaging behavior in which the degree of choice of lifestyle is severely restricted; 5) exposure to unhealthy, stressful living and working conditions; 6) inadequate access to essential health services; 7) natural selection, or health-related social mobility, involving the tendency for sick people to move down the social scale" (p. 427). The determinants of health disparities can be subdivided into unavoidable and avoidable. It is not easy to determine which are avoidable and which are not, because different people have

different opinions concerning this issue. It is important to make this distinction because avoidable determinants are amenable to intervention. Usually health inequalities, based on age, are considered unavoidable. On other hand, determinants of poor health, based on unhealthy work and living conditions, are considered avoidable and unfair. Whitehead considered the first three categories as unavoidable and fair, while the last four categories she considered as avoidable and unfair. Carter-Pokras and Baquet claimed, "health inequities exist largely because people have unequal access to resources such as education, healthcare, clean air, and water or live and work in unhealthy conditions" (2002:428)

Many investigations were conducted with the purpose to reveal the most influential socio-economic factors that affect people's health. For example, Zimmer and House (2003) found higher education influenced the avoidance of the onset of functional limitations, but had no effect on the progression of these problems. Higher income was associated with avoidance of functional limitations and with improvement in patients' conditions with such problems. Herd, Goesling, and House (2007) found education influences the onset of both functional limitations and chronic health problems, while income affects progression of both. Lantz, House, Mero, and Williams (2005) found socioeconomic status (SES) is related to exposure to stress and negative life events, and stress influences poor health outcomes. Lantz et al. (2001) investigated the role of health-risk behaviors on health outcomes of people with different SES. The authors found a higher prevalence of high-risk behaviors among people with lower SES, but low income is not the dominant mechanism that influences health disparities. Bruce et al. (2010) found high income significantly influences the reduction of chronic kidney disease among African Americans living in the Jackson, Mississippi metropolitan area.

The above mentioned works and other literature are dedicated to the investigation of the influence of demographic characteristics, such as education, income, race, ethnicity, age, and neighborhood on health. Different socio-psychological theories were used for this purpose. However, little attention has been paid to the comparison of the robustness of socio-psychological theories to better understand health disparities. Salovey and Rothman (2003:33) emphasized, "despite a large empirical literature, there is still no consensus that certain models of health behavior are more accurate than others."

Also, there are few studies related to the comparison of socio-psychological theories to understand the dynamic process linking socio economic factors and health disparities. This dissertation applied the structural equation modeling to the Americans' Changing Life (ACL) dataset that helped reveal changes in the influence of social and economic factors on health behaviors and outcomes across three time points.

The comparison of Fundamental Cause Theory, Stress Process Model, and Social Cognitive Theory (SCT) has been used to understand causal effects of social factors that lead to health disparities. This investigation was a realization of House's suggestion that "Beyond identifying a more parsimonious set of psychosocial risk factors, we need to better understand the causal relations among them" (2001:132).

According to House (2001:128), "epidemiologists and social scientists of mental health have played a leading role in the development of medical sociology and the other social sciences of health" (Bloom, 2000; Good & Good, 2000). House indicated, "health is a broad state of human functioning and well-being in which mental and physical health are inextricably intertwined" (2001:126). Most of the literature in the area of medical sociology is related to the investigation of the influence of social factors on mental health (Aneshensel,

2009). It is important to understand the ways social factors influence physical health outcomes. The current study examined the impact of social factors on mental and physical health disparities.

Central Objectives

This dissertation has the following specific objectives:

1) Compare the effectiveness of Fundamental Cause Theory, Stress Process Model, and Social Cognitive Theory for an explanation of disparities in physical and mental health outcomes.
2) Reveal causal relationships between the social and economic factors, and their influence on health-related behaviors and health outcomes.
3) Provide more attention to physical health outcomes, because most of the previous works concentrated on mental health outcomes.
4) Observe the changes of the influence of social and economic factors on health-related behaviors and health outcomes for three time points—1986, 1989, and 1994.

CHAPTER 2: LITERATURE REVIEW

Theory, Concepts, and Hypotheses

According to Pescosolido, McLeod, and Alegría (2000), medical sociology contributes to the development of broader sociological discipline, because problems related to health and illnesses are tightly interwoven with society. The contribution of this dissertation is to reveal the ways that help understand "how the social inequality affects individual health and what are the intervening mechanisms" (Pescosolido et al., 2000:413). Existing sociological theories are able to help achieve this goal. Comparison between the following socio psychological theories—Fundamental Cause Theory, Stress Process Model, and Social Cognitive Theory—are useful for the explanation of health disparities.

Fundamental Cause Theory

According to Fundamental Cause Theory developed by Link and Phelan in 1995, socioeconomic status (SES) operates as a fundamental cause of disease for two reasons. The first reason is access to resources that help people avoid diseases. A great variability of such kinds of resources exists, which includes wealth, education, knowledge, social connections, and power, among others. The second reason is it affects multiple risk factors and outcomes of diseases that change over time. Social and economic resources are not equally distributed between members of society and lead to health disparities. House explained "socioeconomic position (and race-ethnicity) are what Link and Phelan (1995) term, extending and greatly developing tentative ideas of House et al., (1990) and, originally, Lieberson (1985), 'fundamental causes' that shape exposure to and experience of most diseases and risk factors for health, even as these diseases and risk factors change over time" (2001:134). House noted

many of the diseases frequently occurring in modern time, such as cardiovascular diseases, and risk factors, such as smoking, sedentary life style, and high fat diet, were more prevalent in the upper socioeconomic level in the past, "but, as their prevalence in the population and their impact on the population health have increased, they have become increasingly more prevalent at lower socioeconomic levels" (p. 134). Consequently, it is important to conduct longitudinal studies and analyze the data at several time points. Observation of the relationships between social factors and health outcomes had been completed across three time periods in this dissertation.

Link and Phelan (2005) indicated behavioral factors, such as smoking and exercising, are "shaped by SES-related resources" (p. 29).

Hypothesis 1: There are positive relationships between SES and physical activity. There are negative relationships between SES and health-related behaviors (smoking and drinking).

SES is directly related to the neighborhood. Wealthier people are able to afford living in better conditions in more comfortable neighborhoods. Gordon-Larsen et al. (2006) analyzed a dataset that contained 20,000 adolescents and 19% of all U.S. census-block groups. They found evidence to suggest that physical activity-related facilities are distributed inequitably, "with high-minority, low-educated neighborhoods at a strong disadvantage. In addition, this inequitable distribution is significantly associated with subsequent disparities in health-related behaviors and obesity measured at the individual level" (p. 421). Williams, Sternthal, and Wright (2009) indicated an unhealthy residential environment increases prevalence of childhood asthma and other diseases. Kirby and Kaneda (2005) explained poorly maintained sidewalks and streets, inadequate public transportation, and high crime affect the ability to access health care centers in disadvantaged neighborhoods. These authors found

neighborhood socioeconomic problems were associated with a decreasing likelihood of having a "usual source of care provider" (Kirby & Kaneda 2005:28), increasing the likelihood of experiencing problems to receive health care services when necessary, and decreasing the likelihood of obtaining preventive health care. Williams et al. (2009) explained the effect of segregation on neighborhood quality, and found a disinvestment of economic resources in segregated residential areas leads to a poor quality of life in multiple dimensions. Segregation leads to "crowding, which may predispose residents to viral infections," to deteriorated houses that "may increase exposure to indoor allergens," to higher rates of air-pollution, "such as ozone and ambient particulate matter, which can exacerbate asthma symptoms," to the lack of recreational facilities and accessible healthy food (Wiliams et al., 2009:S179). The above literature sources strongly indicate the influence of neighborhoods' quality on disparities in health outcomes. However, these sources did not explain which underlying factors within the neighborhoods influence health outcomes. These studies did not show the causal relationships between the social factors within the neighborhoods and health outcomes. Consequently, it is important to use fundamental case theory to explain these relationships.

Cubbin and Wincleby (2005) suggested the neighborhood environment influences health-related behaviors and health outcomes of individuals. They found "adults living in high-deprivation neighborhoods had significantly lower health knowledge and a higher probability of no positive behavior changes than did adults in moderately deprived neighborhoods (i.e., harmful effects)" (p. 559). They also found "Associations with neighborhood deprivation did not vary by individual-level socioeconomic status. These results suggest that focusing exclusively on changing individuals' behaviors will have a limited effect unless contextual

influences at the neighborhood level are also addressed" (p. 559). These findings indicate the investigation of the effect of neighborhood quality on health-related behaviors and health outcomes will be helpful for the explanation of health disparities.

Hypothesis 2: There are positive relationships between neighborhood quality and physical activity. There are negative relationships between neighborhood quality and health-related behaviors (smoking and drinking).

Powell, Slater, and Chaloupka (2004) indicated that communities with higher proportion of minority races are associated with fewer physical activity settings, such as sports areas, parks, public pools, and bike paths. This situation related to relatively low level of physical activity among minority population.

Hypothesis 3: Health-related behaviors (physical activity, smoking, and drinking) vary by race.

Hypothesis 4: Health-related behaviors (physical activity, smoking, and drinking) vary by gender.

SES is associated with development of disease and health status. Veenstra (2001) found that high SES positively related to self-reported health status. Wardle and Griffith (2001) indicated a prevalence of lower body mass index (BMI) among individuals with higher SES.

Hypothesis 5: There are negative relationships between SES and health outcomes (functional limitation, BMI, and depression index). There is a positive relationship between SES and self-rated health.

Hypothesis 6: There are negative relationships between neighborhoods quality and health outcomes (functional limitation, BMI, and depression index). There are positive relationships between neighborhoods quality and self-rated health.

Hypothesis 7: Health outcomes (self-rated health, functional limitation, BMI, and depression index) vary by race.

Hypothesis 8: Health outcomes (self-rated health, functional limitation, BMI, and depression index) vary by gender.

It is important to examine the relationships between health-related behaviors and outcome, taking into consideration social and economic factors. Phelan, Link, and Tehranifar (2010) indicated fundamental social causes of health inequalities affect health through multiple risk factors. These risk factors include health-related behaviors, such as smoking, drinking, and insufficient physical activity.

Health-related behaviors, such as smoking, heavy drinking, overconsumption of high calorie food, and insufficient physical activity are associated with risk factors of numerous diseases. Thus, smoking is one of the risk factors of cardio-vascular diseases, respiratory diseases, different kinds of cancers, and many other diseases. In their study on mortality in relation to smoking, Doll et al. (1994) found "Positive associations with smoking were confirmed for death from cancers of the mouth, esophagus, pharynx, larynx, lung, pancreas, and bladder; from chronic obstructive pulmonary disease and other respiratory diseases; from vascular diseases; from peptic ulcer; and (perhaps because of confounding by personality and alcohol use) from cirrhosis, suicide, and poisoning" (p. 901). Heavy drinking leads to cirrhosis, cancer, and psychiatric disorders. However, literature sources showed that low to moderate alcohol use has a protective effect against the development of several kinds of diseases. Lin, Guerrieri-Bang, and Moore (2011:806) indicated "The beneficial effect of low to moderate alcohol use has been observed in cardiovascular disease (Corrao et al., 2000; Mukamal et al., 2010), myocardial infarction (Beulens et al., 2007; Mukamal et al., 2003),

ischemic stroke (Elkind et al., 2006; Sacco et al., 1999), diabetes (Djousse et al., 2007), cognitive impairment (Mukamal et al., 2003; Stott et al., 2008), and all-cause mortality (Jackson et al., 2003; Thun et al., 1997).” A sedentary lifestyle and diet with high calorie food consumption leads to overweight and obesity. Sturm (2002) wrote that “many behavioral risk factors, chief among them smoking, heavy drinking, and obesity, are known causes of chronic health conditions” (p. 245). Overweight and obesity commonly assessed by BMI. “A higher BMI, beginning in the upper range of the normal weight category, is associated with increased mortality and increased risk for coronary heart disease, osteoarthritis, diabetes mellitus, hypertension, and certain types of cancer” (Strum, 2002:246). Consequently, different health-related behaviors can lead to disparities in health outcomes. Disadvantaged groups of the population have the poorest health outcomes.

By conducting a literature review, Penedo and Dahn (2005) found studies suggested physical activity has beneficial effects on physical and mental health. They claimed participants in randomized clinical trials of physical activity interventions showed better general health, better functional capacity and better mood states. Rasky, Stronegger and Freidl (1996) examined the gender-related association between cigarette smoking and relative weight. They confirmed an association between cigarette smoking and lower BMI in women and men. Klesgess et al. (1998) examined relationships between smoking and weight in young, biracial cohorts. The authors found at least in younger ages, smoking has a minimal impact on body weight. However, they noted, “Adjusted for covariates, male and female smokers weighed less than nonsmokers at baseline, adjusted for age, total energy intake, alcohol intake, and physical fitness” (p. 987).

Hypothesis 9: There are negative relationships between physical activity and health outcomes (functional limitation, BMI, and depression index). There are positive relationships between physical activity and self-rated health.

There are positive relationships between smoking and health outcomes (functional limitation, BMI, and depression index). There are negative relationships between smoking and BMI. There are negative relationships between smoking and self-rated health.

There are positive relationships between drinking and health outcomes (functional limitation, BMI, and depression index). There are negative relationships between drinking and self-rated health.

Stress Process Model

In 1989, Pearlin developed the Stress Process Model and subsequently modified it for different purposes and situations. The model was modified to consider the stress of caring for patients with Alzheimer's disease (Pearlin et al. 1990) and with AIDS (Pearlin et al., 1997; Turner, Pearlin, & Mullan, 1998).

The SPM demonstrates the causal mechanism of transformation of social inequalities into health disparities. According to Pearlin (1989), the SPM includes the following components: stressors or causes of stress, mediators, and health outcomes. Pearlin emphasized that stressors affect individuals in the society. He wrote, "Many stressful experiences, it should be recognized, don't spring out of a vacuum, but typically can be traced back to surrounding social structures and people's locations within them" (p. 242). Disadvantaged social status generates elevated levels of psychological stress. Lantz et al. (2005) emphasized, "due to differential exposure to stressors, adverse biological effects of chronic stress should cumulate

more among those of lower socioeconomic status" (p. 276). Consequently, socio-demographic characteristics should be considered by using the SPM for research. Social stress influences health outcomes. Financial strains used as an indicator of chronic stress in the current dissertation. Social support acts as a moderator of stress in this model.

According to Aneshensel (2009), a neighborhood's characteristics are very important factors of social status that have strong influences on health outcomes. Neighborhood disorders, such as the presence of crime, abandoned buildings, and others, result in a high level of stressors and generate health disparities. Aneshensel did not include neighborhood in her model, but indicated the effect of neighborhood on health can be investigated in the future (2009:389). The model that Aneshensel used for the demonstration of the origin of income-generated disparities in mental health is shown in Figure 1.

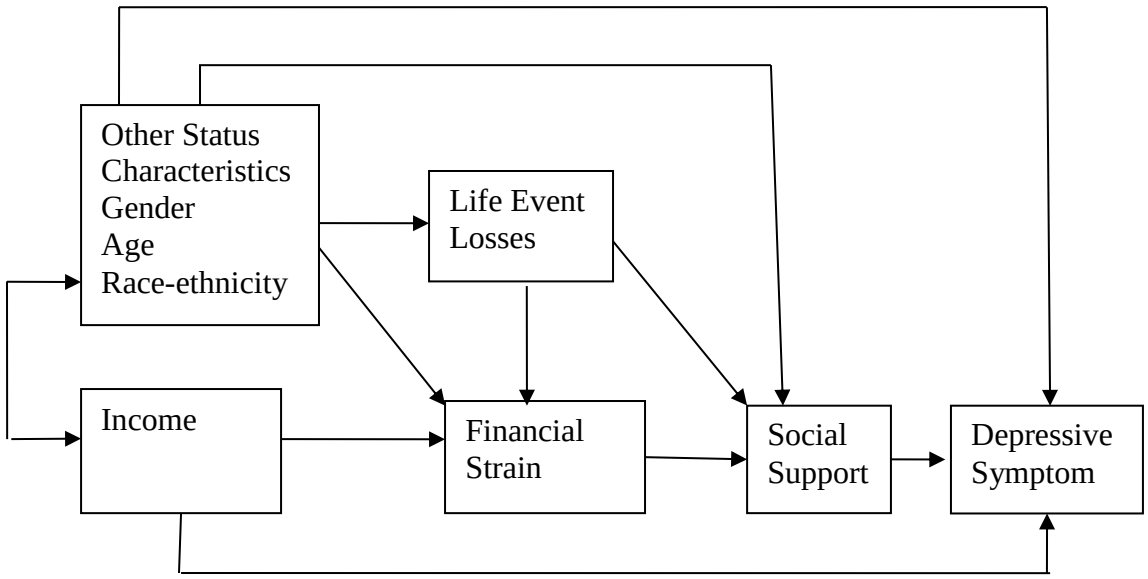

Figure 1. Income-Generated Disparities in Mental Health. (Model used by Aneshensel (2009:385)

The health outcome depressive symptom was an independent variable in this model. Aneshensel (2009) mentioned for ease of explanation, she focused only on income-generated disparities. The author proved a significant direct and negative effect of income on depressive symptoms. Income also influences depressive symptoms indirectly through financial strain and social support. Two types of stressors—life event losses and financial strains—were considered in this model. In addition to income, other demographic characteristics, such as gender, age, and race-ethnicity influence stress exposure. Social support mediates the effect of stress on depressive symptoms. Aneshensel wrote, "disadvantaged social status is seen as limiting access to the mediators and moderators of stress" (p. 380). Figure 1 shows demographic traits indirectly influence depressive symptoms through social support.

The same as Aneshensel's research, most of the other studies used the SPM to explain mental health disparities. This dissertation research will apply the SPM to explain disparities in physical and mental health.

Pearlin (1989) explained social and economic factors, such as socio economic status (SES), race, and gender, related to the "nature and origins of the stressors" as well as stress outcomes (p. 243). Pearlen indicated "socially pattern distribution of components of the stress process: stressors, mediators, and outcomes" (1989:242). For these reasons, it is important to investigate the effects of socioeconomic factors on the components of the SPM.

Hypothesis 1: There are negative relationships between SES and health-related behaviors (smoking and drinking). There is a positive relationship between SES and physical activity.

Williams et al. (2009) indicated neighborhood disadvantage characterized by the presence of numerous community-level stressors can be investigated in relation with health of residents. According to Steptoe and Feldman (2001), health-related behaviors associated with neighborhood may help explain their impacts on health outcomes.

Hypothesis 2: There are negative relationships between neighborhoods quality health-related behaviors (smoking and drinking). There is a positive relationship between neighborhoods quality and physical activity.

Pearlin (1989) claimed the sociological study of stress "can contribute uniquely both to an understanding of social life and to an understanding of how the fates of individuals come to be bound to it," and "it is of considerable importance to study social structures and their effects on individual wellbeing" (pp. 254-255). In her dissertation research, Menne (2006) investigated influence of dementia on an individual's well-being by using the SPM of chronic illness. The SPM of chronic illness is a modification of the stress process model made by Pearlin in 1990. Menne (2006) wrote, "Consideration of illness in stress research identifies unique points for further inquiry, and one point of inquiry is the placement and understanding of illness within a social context. Advancing this line of inquiry allows for the articulation of the relationship between illness-related stressors and outcomes" (p. 22). This can be achieved in the current dissertation for the goal to investigate the influence of social factors on the health of individuals.

Hypothesis 3: There are negative relationships between SES and health outcomes (functional limitation, BMI, and depression index). There is a positive relationship between SES and self-rated health.

Hypothesis 4: There are negative relationships between neighborhood quality and health outcomes (functional limitation, BMI, and depression index). There are positive relationships between neighborhood quality and self-rated health.

Pearlin (1989) and Aneshensel (2009) indicated on inverse association between SES and psychological distress.

Hypothesis 5: There is a negative relationship between SES and stress.

Aneshensel (2009) described race-related stress exposure of Hispanics and African Americans in Los Angeles. She found a high level of depressive symptoms among Hispanics and African Americans. This finding suggested comparison of stress exposure among Mexico-born Mexican Americans, U. S.-born Mexican Americans, and non-Hispanic whites. In the results of her study, Aneshensel summarized "Ethnic differences in exposure to stressors depend importantly upon the type of stressor considered" (p. 381). Aneshensel linked racial and ethnic differences from stress exposure to neighborhoods' problems. She wrote, "between neighborhood variation in poor mental health outcomes is at least partially due to isomorphic differences in neighborhood socioeconomic disadvantages and racial-ethnic segregation" (p. 389).

Hypothesis 6: There is a negative relationship between neighborhood quality and stress.

As can be seen from Pealins (1989) and Menne's (2006) studies, individuals' health and well-being are tightly interwoven with society. According to Pearlin (1989), stress leads to the deterioration of health. Consequently, it is very important to investigate the mechanisms for this effect, because this knowledge will help improve the population's health.

Aneshensel mentioned, “persons of low social status may have less effective psychosocial resources than persons of higher social status” (2009:385).

Hypothesis 7: There is a positive relationship between SES and social support.

Hypothesis 8: There is a positive relationship between neighborhood quality and social support.

Pearlin (1989) provide an explanation about two type of stressors “life events, on the one hand, and more enduring or recurrent life problems, sometimes referred to as chronic strains” (p. 243). Pearlin noted life events and chronic strains are rooted in people’s social and economic circumstances and “events lead to chronic strains” (p. 246).

Hypothesis 9: There is a positive relationship between negative life events and stress. Aneshensel (2009:385) showed financial strains negatively affect social support.

Hypothesis 10: There is a negative relationship between stress and social support.

In her study, Lantz et al. (2005) investigated the influence of stress and negative life events on mortality, functional limitations, and self-rated health on basis of the ACL dataset. The authors showed financial stress was predictive of severe or moderate functional limitation and poor self-rated health. However, this study did not take into consideration the role of the moderators between the stressors and health outcomes.

The mediators’ variables used in the current dissertation are supported by Pearlin’s (1989) stress process model. Pearlin indicated that mediators, such as social support, mitigate the effect of stress on health outcomes.

Thus, the achievements of the current dissertation compared with Lantz’s (2005) study investigated the role of the mediators in the SPM with physical and mental health outcomes. Using BMI as a physical health outcome, a comparison was completed between

the stress process models with physical health outcomes (self-rated health, functional limitation, and BMI) and the stress process models with mental health outcome (depression) to reveal the changes in health outcomes over time.

Menne (2006) used social support as a mediator in the SPM of chronic illness for the prediction of well-being and decision-making involvement of individuals with dementia. Menne mentioned, "Mediators often are only assessed in terms of how much they attenuate or buffer the relationship between the stressors and the outcomes. Mediators also need to be assessed in terms of their direct effects on the stressors and the outcomes" (p. 42). It is important to assess the direct effect of social support on health-related behaviors and health outcomes.

Hypothesis 11: There are negative relationships between social support and health-related behaviors (smoking and drinking). There is a positive relationship between social support and physical activity.

Hypothesis 12: There are negative relationships between social support and health outcomes (functional limitation, BMI, and depression index). There is a positive relationship between social support and self-rated health.

Hypothesis 13: There are negative relationships between physical activity and health outcomes (functional limitation, BMI, and depression index). There is a positive relationship between physical activity and self-rated health.

There are positive relationships between smoking and health outcomes (functional limitation and depression index). There is a negative relationship between smoking and BMI. There is a negative relationship between smoking and self-rated health.

There are positive relationships between drinking and health outcomes (functional limitation, BMI, and depression index). There is a negative relationship between drinking and self-rated health.

The same model Aneshensel used for the explanation of the disparities in mental health has been used for the explanation of the disparities in physical health (Figure 2).

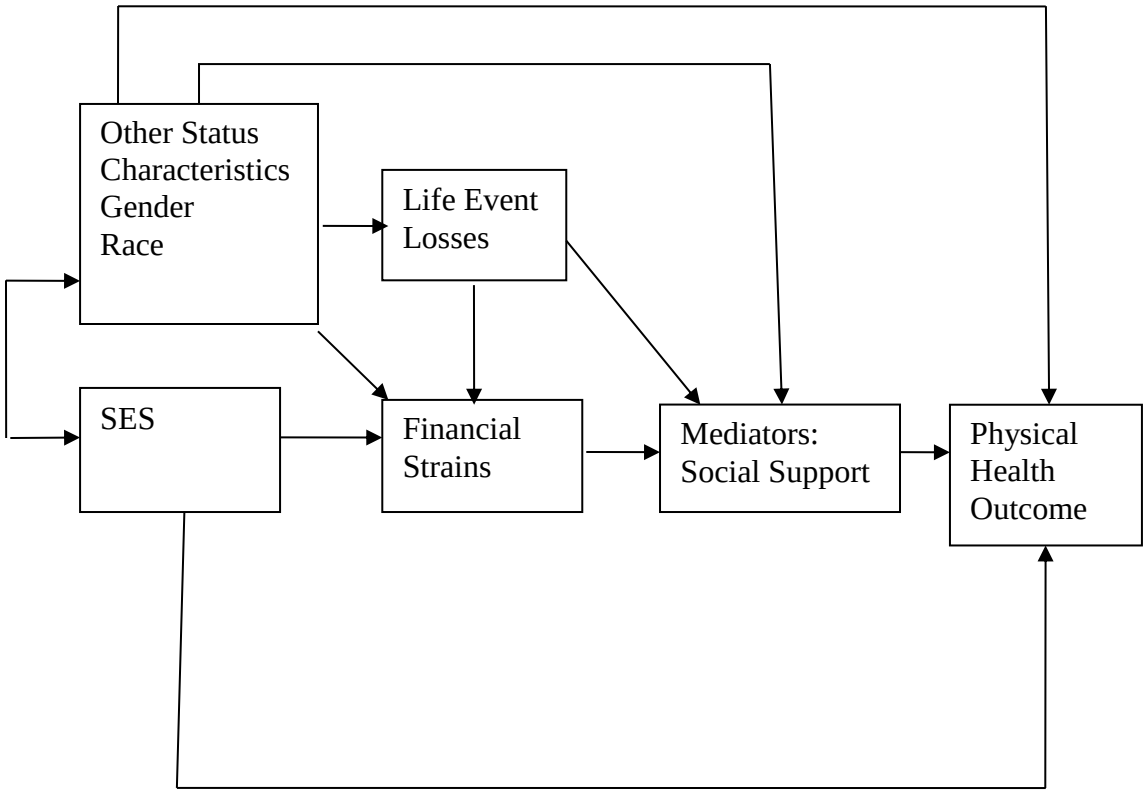

Figure 2. Stress Process Model (SPM) for the explanation of the disparities in physical health

Menne's (2006) work, similar as other previous studies (Aneshensel, 2009; Turner & Avison, 2003), tests the SPM for the assessment of the influence of social factors on mental health. However, there are insufficient literature data that show how the SPM works

regarding the physical health outcome. Besides, the results received from the exploration of the SPM concerning physical health outcomes can be compared with the SPM with mental health outcomes, using the ACL dataset.

This dissertation has the goal of testing the stress process model to assess how negative life events, background, and context (e.g., demographic characteristics), and mediators (e.g., social support, religiosity) are related to health outcomes (self-rated health, function limitations, BMI, and depression).

This investigation included three time points available in the ACL dataset, because Pearlin mentioned "the antecedents of stress need to be understood in terms of process, whereby broad structured and institutional forces, constellations of primary and secondary stressors, and widely shared values converge over time to affect people's well-being" (1989, p. 249).

Social Cognitive Theory

Social Cognitive Theory (SCT) was developed by Bandura to understand human social behaviors. It can be used to understand health-related behaviors, in particular. According to Armitage and Conner (2000), self-efficacy and outcome expectancies are central determinants of behavior in SCT. Self-efficacy is a very important prerequisite for behavior change because it depends upon the degree of the "person's confidence in performing a particular behavior and in overcoming barriers to that behavior" (Glanz et al., 2002, p. 169). These barriers include bad health, fatigue, bad mood, stressful life events, financial instability, and others. Therefore, if a person is confident he or she will be able to invest an

effort in a given task and overcome these barriers, there is a good possibility the goal will be attained.

Outcome expectancies are related to situation and action. Situation-outcome expectancies are related to the perception that behavioral outcomes are dependent upon the environment and not by personal control. Action-outcome expectancies are based on beliefs that personal behavior will lead to a particular outcome. Armitage and Conner (2000) noted, according to SCT, the behavior will be performed, if a person perceives control over the outcome and is confident in his or her own ability to overcome the barriers. Consequently, a social environment significantly influences health-related behavioral outcomes. Bandura (2009) explained that people's behaviors related to social structure. He wrote, "Human self-development, adaptation, and change are embedded in social systems. Therefore, personal agency operates within a broad network of sociostructural influences" (2009:94). This indicates socio-demographic characteristics, such as SES, race, gender, and quality of neighborhood in which a person lives, are able to influence health-related behaviors.

Therefore, it is possible to hypothesize SES, race, gender, and neighborhood conditions can influence health-related behaviors indirectly through perceived control, as well as socio-demographic factors able to directly influence health behaviors.

Hypothesis 1: There are positive relationships between SES and physical activity.

There are negative relationships between SES and health-related behaviors (smoking and drinking).

Hypothesis 2: There are positive relationships between neighborhood quality and physical activity.

There are negative relationships between neighborhood quality and health-related behaviors (smoking and drinking).

Infurna, Gerstorf, and Zarit (2011) examined the links between perceived control and health by using the ACL dataset. They defined perceived control as "the belief that changes in the environment are contingent on one's own actions, efforts, and choices" (Infurna et al. 2011:9). The authors provided evidence from the literature sources that perceived control impacts health. Thus, several studies of older adults showed lower self-efficacy relates to stronger declines in physical functioning (Mendes de Leon, Seeman, Baker, Richardson, & Tinetti, 1996; Seeman, Unger, McAvay, & Mendes de Leon, 1999). This protective effect of perceived control was also seen in samples of the oldest old, where greater levels of mastery were protective of disability (Femia, Zarit, & Johansson, 1997). Infurna et al. (2011) showed "perceived control predicts health changes in old age but not in midlife" (p. 13). They also showed socio-demographic and psychosocial factors mitigated the impact of perceived control on health. However, Infurna et al. did not include barriers in the model. The barriers can be financial or marital strains, disadvantaged social status, or negative life events. Therefore, the following hypotheses are proposed.

Hypothesis 3: There are positive relationships between SES and perceived control.

Hypothesis 4: There are negative relationships between SES and financial strains.

Hypothesis 5: There are positive relationships between neighborhood quality and perceived control.

Hypothesis 6: There are negative relationships between neighborhood quality and financial strains.

Hypothesis 7: There are negative relationships between perceived control and financial strains.

Hypothesis 8: There are negative relationships between barriers (financial strains) and physical activity. There are positive relationships between barriers (financial strains) and health-related behaviors (smoking and drinking).

Hypothesis 9: There are negative relationships between physical activity and health outcomes (functional limitation, BMI, and depression index). There is a positive relationship between physical activity and self-rated health.

There are positive relationships between smoking and health outcomes (functional limitation and depression index). There is a negative relationship between smoking and BMI. There is a negative relationship between smoking and self-rated health.

There are positive relationships between drinking and health outcomes (functional limitation, BMI, and depression index). There is a negative relationship between drinking and self-rated health.

Summary of the Hypothesis

Summary of the Hypotheses for the Fundamental Cause Theory:

Hypothesis 1: There are positive relationships between SES and physical activity. There are negative relationships between SES and health-related behaviors (smoking and drinking).

Hypothesis 2: There are positive relationships between neighborhood quality and physical activity. There are negative relationships between neighborhood quality and health-related behaviors (smoking and drinking).

Hypothesis 3: Health-related behaviors (physical activity, smoking, and drinking) vary by race.

Hypothesis 4: Health-related behaviors (physical activity, smoking, and drinking) vary by gender.

Hypothesis 5: There are negative relationships between SES and health outcomes (functional limitation, BMI, and depression index). There is a positive relationship between SES and self-rated health.

Hypothesis 6: There are negative relationships between neighborhoods quality and health outcomes (functional limitation, BMI, and depression index). There are positive relationships between neighborhoods quality and self-rated health.

Hypothesis 7: Health outcomes (self-rated health, functional limitation, BMI, and depression index) vary by race.

Hypothesis 8: Health outcomes (self-rated health, functional limitation, BMI, and depression index) vary by gender.

Hypothesis 9: There are negative relationships between physical activity and health outcomes (functional limitation, BMI, and depression index). There are positive relationships between physical activity and self-rated health.

There are positive relationships between smoking and health outcomes (functional limitation and depression index). There are negative relationships between smoking and BMI. There are negative relationships between smoking and self-rated health.

There are positive relationships between drinking and health outcomes (functional limitation, BMI, and depression index). There are negative relationships between drinking and self-rated health.

Summary of the Hypotheses for the Stress Process Model:

Hypothesis 1: There are negative relationships between SES and health-related behaviors (smoking and drinking). There is a positive relationship between SES and physical activity.

Hypothesis 2: There are negative relationships between neighborhoods quality and health-related behaviors (smoking and drinking). There is a positive relationship between neighborhoods quality and physical activity.

Hypothesis 3: There are negative relationships between SES and health outcomes (functional limitation, BMI, and depression index). There is a positive relationship between SES and self-rated health.

Hypothesis 4: There are negative relationships between neighborhoods quality and health outcomes (functional limitation, BMI, and depression index). There are positive relationships between neighborhoods quality and self-rated health.

Hypothesis 5: There is a negative relationship between SES and stress.

Hypothesis 6: There is a negative relationship between neighborhoods quality and stress.

Hypothesis 7: There is a positive relationship between SES and social support.

Hypothesis 8: There is a positive relationship between neighborhood quality and social support.

Hypothesis 9: There is a positive relationship between negative life events and stress.

Hypothesis 10: There is a negative relationship between stress and social support.

Hypothesis 11: There are negative relationships between social support and health-related behaviors (smoking and drinking). There is a positive relationship between social support and physical activity.

Hypothesis 12: There are negative relationships between social support and health outcomes (functional limitation, BMI, and depression index). There is a positive relationship between social support and self-rated health.

Hypothesis 13: There are negative relationships between physical activity and health outcomes (functional limitation, BMI, and depression index). There is a positive relationship between physical activity and self-rated health.

There are positive relationships between smoking and health outcomes (functional limitation and depression index). There is a negative relationship between smoking and BMI. There is a negative relationship between smoking and self-rated health.

There are positive relationships between drinking and health outcomes (functional limitation, BMI, and depression index). There is a negative relationship between drinking and self-rated health.

Summary of the Hypotheses for the Social Cognitive Theory:

Hypothesis 1: There are positive relationships between SES and physical activity.

There are negative relationships between SES and health-related behaviors (smoking and drinking).

Hypothesis 2: There are positive relationships between neighborhood quality and physical activity. There are negative relationships between neighborhood quality and health-related behaviors (smoking and drinking).

Hypothesis 3: There are positive relationships between SES and perceived control.

Hypothesis 4: There are negative relationships between SES and financial strains.

Hypothesis 5: There are positive relationships between neighborhood quality and perceived control.

Hypothesis 6: There are negative relationships between neighborhood quality and financial strains.

Hypothesis 7: There are negative relationships between perceived control and financial strains.

Hypothesis 8: There are negative relationships between barriers (financial strains) and physical activity. There are positive relationships between barriers (financial strains) and health-related behaviors (smoking and drinking).

Hypothesis 9: There are negative relationships between physical activity and health outcomes (functional limitation, BMI, and depression index). There is a positive relationship between physical activity and self-rated health.

There are positive relationships between smoking and health outcomes (functional limitation and depression index). There is a negative relationship between smoking and BMI. There is a negative relationship between smoking and self-rated health.

There are positive relationships between drinking and health outcomes (functional limitation, BMI, and depression index). There is a negative relationship between drinking and self-rated health.

CHAPTER 3: RESEARCH DESIGN AND METHODOLOGY

This chapter presents the research design and methodology used to address the hypotheses presented above. This research consists of secondary data analysis of the Americans' Changing Life (ACL) survey. In this part, information about the dataset is presented. Next, the measures used in the analysis are described. Information about the measures includes items or an example of scale items. Finally, the analysis plan for addressing the research questions is presented.

Dataset

According to Herd, Goesling, and House's (2007) description of the Americans' Changing Life (ACL) study, the ACL survey is a multistage area probability sample of the citizens of the United States ages 25 and older, with over sampling of African Americans and people older than 60. Wave 1 of the ACL survey was conducted in 1986 and involved 3,617 interviewed face-to-face respondents. Wave 2 was conducted in 1989 and involved 2,867 face-to-face interviews with the Wave 1 survivors. Wave 3 was conducted in 1994 and involved face-to-face or telephone interviews with 2,398 of Wave 1 survivors and 164 proxies. The ACL survey provides the possibility to "understand the role of a broad range of psychosocial and behavioral factors—ranging from health behaviors to chronic and acute stress, social relationships and supports, productive activities, and personality dispositions" in ability to maintain health and effective functioning across life's course (House, Lantz, & Herd, 2005:16). Also, this survey possesses a broad amount of data helpful in understanding of how social, economic, and psychological factors influence health disparities among the population.

Measures

Dependent variables for the four models: Self-rated health; Functional limitation index; BMI; and Depression index.

Respondents were asked to rate their overall health at the time of the survey with a standard five-category item for self-rated health, with values ranging from excellent (1) to poor (5). Burgard, Brand, and House (2007) used the construct of self-rated health from the ACL dataset in their study of the effect of job loss on health outcome. They wrote, "Self-rated health has been shown to be a reliable, valid measure of health, and it is predictive of subsequent functional decline" (p. 373).

According to Herd, Goesling, and House (2007), the ACL survey measures four levels of functional limitation. "Level 1 is no limitation. Those at level 2 have difficulty with heavy housework or shoveling snow. Those at level 3 have difficulty walking several blocks or climbing several flights of stairs. At level 4, the most severe level, respondents are generally confined to a bed or chair" (p. 227). According to Kim and Miech (2009:720), Cronbach's alpha for this scale is 0.798.

According to Sturm (2002), "Overweight and obesity refer to increased amounts of body fat, commonly assessed by the body-mass index (BMI)" (p. 246). For the ACL dataset, the World Health Organization (WHO) definition of BMI was used to calculate BMI by using "self-reported weight in kilograms/self-reported height in meters^2" (Lantz et al., 2010:1560). The range of BMI in the ACL dataset was 11.50 – 55.07 with mean = 26.02 and standard deviation (s.d.) = 5.10. The current dissertation used a 5-category BMI coded as 1= underweight (lowest 5% of cases), 2 = low normal (next to lowest 25%), 3 = mid-normal (middle 30%), 4 = high normal (next to highest 25%), and 5 = overweight (highest 15%).

BMI can be used as a measure of health, because even "A higher BMI, beginning in the upper range of the normal weight category, is associated with increased mortality and increased risk for coronary heart disease, osteoarthritis, diabetes mellitus, hypertension, and certain types of cancer" (Sturm, 2002, p. 246).

An 11-item subset of the Center for Epidemiological Studies Depression Scale (CES-D) was used for the ACL. "Kohout, Berkman, and Coroni-Huntley (1993) demonstrated this subset well represents the full scale" (Burgard et al., 2007:374). For example, the depression scale included items such as "In the past week I felt that everything I did was an effort" and "In the past week I felt lonely." Responses to each item about how respondents felt during the past week were scored on a three-item Likert-type scale (1 = hardly ever, 2 = some of the time, 3 = most of the time).

Independent Variables:

Demographic and socioeconomic measures:

Gender: in baseline survey (1986) it was male - 1358 (37.5%) and female - 2259 (62.5%).

The same as Lantz (2005), this study took race from Wave 1 baseline survey. The baseline survey included Whites 2,323 (64.2%) and Blacks 1,174 (32.5%).

SES was measured as a four-categorical variable that combines income and education from the Wave 1 baseline survey.

Neighborhood quality measure was constructed from respondents' ratings of their neighborhood and interviewers' ratings of neighborhood. Respondents' ratings of neighborhood: "Satisfaction with Neighborhood" and question "This is a neighborhood where I feel safe from personal attacks. Is this true?" Interviewers' ratings of neighborhood:

"How well Structures Kept" and "How well Yards Kept." These items had the following response scales: "Satisfaction with Neighborhood" 5-point response scale with 1 = completely satisfied and 5 = not at all satisfied; "This is a neighborhood where I feel safe from personal attacks. Is this true?" 4-point response scale with 1 = very true and 4 = not true at all; "How well Structures Kept" 4-point response scale with 1 = very well and 4 = very poorly; and "How well Yards Kept" 4-point response scale with 1 = very well and 4 = very poorly.

Independent Variables for Fundamental Cause Theory:

Gender, race, SES, and neighborhood (See demographic and socioeconomic measures described above).

Independent Variables for Stress Process Model:

Financial stress and the number of major negative events in one's lifetime were used in this dissertation as self-reported measures of chronic stress and negative life events.

In the ACL, the financial chronic stress scale included responses to the following questions: "How satisfied are you with you/your family's present financial situation?" (5-point response scale with 1 = completely satisfied and 5 = not at all satisfied); "How difficult is it for you/your family to meet monthly payments on your bills?" (5-point response scale with 1 = extremely difficult and 5 = not difficult); and "In general, how do your (family's) finances usually work out at the end of the month?" (1 = some money left over, 2 = just enough money, and 3 = not enough money).

Regarding negative lifetime events, respondents were asked if they had ever been widowed, divorced, had a child die, or been the victim of a physical attack at any time in

their life. These four variables were summed into a count of the number of negative lifetime events (ranging from 0 to 4).

According to Pearlin (1989), social support can be used as a mediator between stress and health outcomes. Spouse total support was used as mediator in the current dissertation. The following items were used to construct this index for respondents who were married or living with a partner: "How much does your (husband/wife/partner) make you feel loved, and cared for?" (5-point response scale with 1 = a great deal and 5 = not at all); "How much do you feel (he/she) makes too many demands on you?" (5-point response scale with 1 = a great deal and 5 = not at all); "How much is (he/she) willing to listen to you when you need to talk about your worries or problems?" (5-point response scale with 1 = a great deal and 5 = not at all); and "How much is (he/she) critical of you or what you do?" (5-point response scale with 1 = a great deal and 5 = not at all).

Independent Variables for Social Cognitive Theory

Perceived control: Perceived control was assessed by using a mastery scale from the ACL dataset created from the following items: "Sometimes I feel that I'm being pushed around in life" and "There is really no way to solve the problems I have." To evaluate the extent to which participants believe their life is under their control, a 4-point Likert-type scale ranging from 1 (strongly agree) to 4 (strongly disagree) was utilized.

Barriers include financial stress. This measure is described above in the paragraph related to the stress process model.

Demographic variables: See demographic and socioeconomic measures described above.

Neighborhood Quality: See neighborhood characteristics described above.

Health related behaviors: Behavioral risk factors include smoking, drinking, and physical activity index.

Smoking was assessed by using the question, "On average, how many cigarettes or packs do you usually smoke in a day?" Number of packs was converted in the number of cigarettes per day (1 pack = 20 cigarettes). The number of cigarettes per day was provided in the dataset.

The question "On days that you drink how many cans of beer, glasses of wine, or drinks of liquor do you usually have?" to assess the amount of drinking.

A physical activity standardized index was created from questions regarding how often the respondent did gardening or yard work, engaged in active sports, and took walks.

Analytical Strategy

The analysis proceeded in two stages. First, descriptive characteristics of the components across three time points, which include frequencies, means, standard deviations, and standard errors, were assessed. Then, the data were screened for the assumptions of Structural Equation Modeling technique (SEM). The univariate normality of variables was assessed by testing skewness, kurtosis, histograms, and scatterplots. Skewness and kurtosis for all variables, except of the measures for smoking and drinking, were in the range from (-3) to (+3). Histograms and z-scores checked outliers. Outliers were removed from the variables Smoking W1-W3 and Drinking W1-W3. After the outliers were removed the range of skewness for the variables Smoking W1-W3 and Drinking W1-W3 was from 0.6 to 2.0 and range of kurtosis for the variables Smoking W1-W3 and Drinking W1-W3 was from 0.045 to 3.7.

Using frequencies, each variable was examined to check the number of missing cases. Because of attrition, not all respondents answered the questions at Wave 2 (1989) and at Wave 3 (1994). To determine if differences exist between the respondents who answered the survey questions during the three time points in 1986, 1989, and 1994 (2,185 respondents) and remainder of the respondents (1,432 respondents), the respondents were divided into two groups accordingly. The paired sample t-test was used for the comparison of continuous variables between these two groups of respondents. A difference was revealed in 22 of 32 pairs of variables. The difference in categorical variables, race and gender, by the two groups was revealed using the Chi-squared test.

Logistic regression analysis helped prove ACL data are missing at random (MAR). According to Rubin (1976), MAR occurs if the distributions for missing values depend upon observed values. Consequently, it is possible to use observed values to estimate missing values. Logistic regression was conducted with variable BMI W2, where observed values were coded as 1 and missing values were coded as 0 (Table 1), so the logistic regression is modeling the probability to be non-missing.

Table 1. Estimated Coefficients of Logistic Regression

	B	S.E.	Sig.	Exp(B)
V2057 Black Race	.081	0.221	0.714	1.084
V2059 White Race	.395	0.217	0.068	1.485
V2064 SES	.267	0.048	0.000	1.306
V2203 Physical Activity W1	.231	0.042	0.000	1.260
V2307 Financial Stress	.026	0.044	0.550	1.026
V2614 Perceived Control	.076	0.044	0.084	1.079
V2618 Depression Index W1	-.054	0.045	0.226	.947
V2625 BMI W1	.195	0.037	0.000	1.215
Gender	-.416	0.088	0.000	.659
Constant	.126	0.264	0.634	1.134

The overall fit of the logistic model is very good (the chi-squared statistic is 166.3 with a p-value less than .0001), meaning the missing value process can be explained by at least some of the covariates. In particular, Table 1 shows the variables SES, Physical Activity, BMI, and Gender have significant effects on the probability of having a non-missing value.

Logistic regression shows the increase in one unit of SES produces an increase in the odds of non-missing data by 30% (answering the question about the BMI in Wave 2 by 30% more).

Increase in one unit of Physical Activity at Wave 1 produces an increase in the odds of non-missing by 26% (answering the question about the BMI in Wave 2 by 26% more).

An increase in one unit of BMI at Wave 1 produces an increase in the odds of non-missing by 22% (answering the question about the BMI in Wave 2 by 22% more).

Being a male increase the odds of no answer for question about BMI in Wave 2 by 1.52 times (1/0.659 = 1.52). This indicates males did not answer the question about the BMI in Wave 2 by 52% more than females.

This dependency of missing values on non-missing values is evidence that ACL data are MAR. Literature sources (Little and Rubin 1989; Twisk and de Vente 2002; He 2010) suggest that using modern missing data imputation approaches are reasonable, if the data are MAR. Bayesian imputation was utilized for the missing data in the ACL survey. Bayesian imputation used observed values for the estimation of missing values in the dataset. Bayesian imputation “takes into account the fact that the parameter values are only estimated and not known” (explanations provided by the help for AMOS software). Multiple runs create a conditional distribution of the unobserved values given the observed values. Each run produces different imputed values. Five datasets created with the help of Bayesian

imputation were assessed for their quality in the current study. The model "Physical Activity and BMI" for Fundamental Cause Theory, was calculated five times with each of the created datasets. Each calculation shows a good model fit (CFA > 0.95 and RMSEA < 0.06). The regression weights for each calculation were almost identical. These results indicate all datasets with imputed values are statistically equivalent and any of them can be used for subsequent data analysis.

Bivariate correlations between the components for each model were conducted. Bivariate correlations provide information about the strength of association between components for each model. Correct model specification helped prevent multicollinearity. All correlations between the variables in the models are in the range of -0.4 to +0.4, except of the autocorrelations of the same variable in subsequent time points (Appendix A).

Subsequently, the data have been analyzed by using structural equation modeling (SEM). Previous studies exploring the relationship between socio-economic factors and health-related behaviors and outcomes have used multiple regression analysis and multinomial logistic regression analysis (Ferraro & Koch 1994; Lantz et al. 2001; Lantz et al. 2005; Herd, Goesling, & House 2007; Bruce et al. 2010). However, SEM able to provide greater information about the processes through which social and economic factors influence health-related behaviors and outcomes. SEM provides the possibility to analyze direct, indirect, and total effects of variables that help reveal a comprehensive picture of the relationships among the model's components. Furthermore, numerous investigations of the relationships among socio-economic characteristics, and health-related behaviors and outcomes have been completed cross-sectional. SEM allows a chronological ordering of variables that can help

observe the changes in the influence of social and economic factors on health-related behaviors and outcomes during the three time points.

Structural equation models were constructed for each of three social psychological theories: Fundamental Cause Theory, Stress Process Model, and Social Cognitive Theory. The models that poorly fit the data were adjusted. The best models were selected. Then, causal relationships between the parameters for each of the selected models were described and effects of individual parameters were interpreted.

The comparative fit index (CFI) and root mean square of approximation (RMSEA) were used to evaluate the goodness of model fit in this study, according to recommendations by Hu and Bentler (1999), Barret (2007), Steiger (2007), and Hooper, Coughlan, and Mullen (2008).

The RMSEA "estimates the lack of fit in the model compared to a saturated model" (Dragan and Akhtar-Danesh, 2007:19; Tabachnick and Fidell, 2007:717). According to Hooper, Coughlan, and Mullen (2008), up until the early 1990s, a RMSEA below 0.08 was considered to indicate a good fit. More recently a cut-off value for RMSEA is considered "close to .06" (Hu and Bentler, 1999; Hooper, Coughlan, and Mullen, 2008: 55).

The CFI compares the sample covariance matrix with the null model. The null/independence model assumes all measured variables are uncorrelated (Hooper, Coughlan, and Mullen, 2008: 55; Tabachnick and Fidell, 2007). "A value of CFI $\geq$ 0.95 is presently recognized as indicative of good fit" (Hooper, Coughlan, and Mullen, 2008: 55; Hu and Bentler, 1999).

The SPSS and AMOS software packages were used to conduct the data analysis.

CHAPTER 4: RESULTS

This chapter presents the results for the analysis of the ACL survey and follows the Analysis Plan described in Chapter 3. The results are organized around each of the social psychological theories. These results serve to address central objectives of this research (see Chapter 1):

1) Reveal causal relationships between the social and economic factors, and their influence on health-related behaviors and health outcomes.
2) Observe the changes in influence of social and economic factors on health-related behaviors and on health outcomes across the three time points.
3) Provide more attention to physical health outcomes, because most of the previous works concentrated on mental health outcomes.
4) Compare the effectiveness of Fundamental Cause Theory, Stress Process Model, and Social Cognitive Theory for an explanation of disparities in physical and mental health outcomes—1986, 1989, and 1994.

Descriptive Analysis

Construct Validity and Internal Consistency

Validity of the constructs was assessed by using correlations among items included in the constructs. Campbell and Fiske (1959) suggested using correlation matrices for the assessment of convergent validity. Neighborhood Quality is the construct created for the current study. Highly significant and positive correlations among the items included in the

scale designed to measure neighborhood quality are evidence to support convergent validity (Table 2).

Table 2. Correlations among items included in Neighborhood Quality scale

	Satisfaction with neighborhood	Safe from personal attack	How well structures kept	How well yards kept
Satisfaction with neighborhood	1	0.472***	0.180***	0.216***
Safe from personal attack	0.472***	1	0.182***	0.222***
How well structures kept	0.180***	0.182***	1	0.822***
How well yards kept	0.216***	0.222***	0.822***	1

Cronbach's alpha for Neighborhood Quality equals 0.676.

Descriptive Statistics for variables in the analysis

The measures listed in Table 3 were used for the data analysis. All Cronbach's alphas were in acceptable range, except of physical activity measures with low Cronbach's alpha (Table 3).

Table 3. Measures Available in Testing the Conceptual Models

Variables	Coding/Theoretical Range	Alpha	Mean (St. Dev.)
Health Outcomes			
Self-Rated Health	1 = poor 5 = excellent		W1: 3.49 (1.14) W2: 3.36 (1.09) W3: 3.37 (10.9)
Functional Limitation Index	1 = no functional impairment 4 = most severe functional impairment	0.798	W1: 1.42 (0.85) W2:1.43 (0.87) W3: 1.55 (1.01)
BMI	1 = underweight 5 = overweight		W1: 3.32 (1.16) W2: 3.39 (1.14) W3: 3.48 (1.15)
Depression Index	W1: (- 1.18) = less depressed (4.47) = more depressed W2: (- 1.14) = less depressed (4.25) = more depressed W3: (- 1.15) = less depressed (4.74) = more depressed	W1: α=0.830 W2: α= 0.817 W3: α= 0.826	W1: 0.11 (1.06) W2: 0.02 (1.02) W3: - 0.14 (0.99)
Health-Related Behaviors			
Physical Activity Index	W1: (-2.47) = low level of physical activity (1.50) = high level of physical activity; W2: (-2.36) = low level of physical activity (1.50) = high level of physical activity; W3: (-2.47) = low level of physical activity (1.50) = high level of physical activity	W1: α = 0.455 W2: α = 0.443 W3: α = 0.436	W1: - 0.19 (1.06) W2: - 0.33 (1.01) W3: - 0.03 (1.01)
Number of cigarettes per day	W1: from 1 to 60; W2: from 1to 50; W3: from 1 to 30		W1: 18.65 (11.29); W2: 18.02 (10.60); W3: 6.06 (7.47)
Number of drinks per day	W1: from 1 to 9; W2: from 1 to 8; W3: from 1 to 6		W1: 2.17 (1.38) W2: 2.08 (1.36) W3: 1.78 (1.17)

Table 3. (continued)

Variables	Coding/Theoretical Range	Alpha	Mean (St. Dev.)
Demographic and Socioeconomic Measures			
Gender	0 = female; 1 = male		W1: 0.38 (0.48) W2: 0.36 (0.48) W3: 0.37 (0.48)
White Race	0 = other; 1 = White		0.64 (0.48)
Black Race	0 = other; 1 = Black		0.32 (0.47)
SES	1 = low SES 4 = high SES	0.621	2.17 (0.995)
Neighborhood Quality	1 = low quality 14 = high quality	0.676	10.47 (2.55)
Respondents' rating of neighborhood:			
Satisfaction with neighborhood	1 = not at all satisfied 5 = completely satisfied		3.77 (1.025)
Safe from personal attack	1 = not true at all (not safe) 4 = very true (safe)		3.28 (0.911)
Interviewers' rating of neighborhood:			
How well structures kept	1 = very poorly 4 = very well		3.40 (0.719)
How well yards kept	1 = very poorly 4 = very well		3.31 (0.733)
Stress Process Model			
Financial Stress	(- 1.50) = less stress (2.79) = more stress	α=0.790	W1: 0.09 (1.07)
Negative Life Event	0 - 4		0.81 (0.83)
Spousal Support	(- 4.41) = less support (1.37) = more support	α = 0.668	- 0.01 (1.04)
Social Cognitive Theory			
Perceived Control	(-3.14) = low level of perceived control (1.30) = high level of perceived control	α=0.502	- 0.07 (1.05)

Fundamental Cause Theory

The data analysis began with the assessment of the Fundamental Cause Theory baseline model (Figure 3). To evaluate the Fundamental Cause Theory, four exogenous variables were used: neighborhood quality, gender, race (White or Black), and SES; three health-related behaviors: physical activity, smoking, and drinking; and four health outcomes: BMI, functional limitation, depression index, and self-rated health. Twelve models were constructed in total (3 health-related behaviors x 4 health outcomes = 12). Then, each model was repeated with variable White Race and variable Black Race separately with the purpose to analyze the effect of race on health-related behaviors and health outcomes.

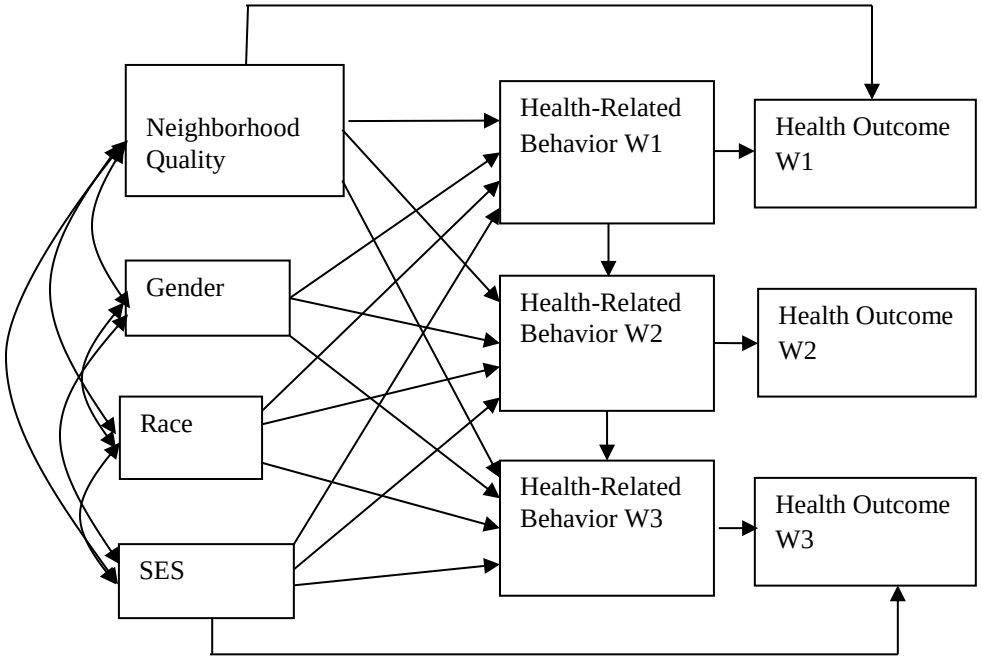

Figure 3. Fundamental Cause Theory (W1 = Wave 1, W2 = Wave 2, W3 = Wave 3)

Model 1 "Physical Activity and BMI"

Model 1 is the baseline model for Fundamental Cause Theory, using physical activity as a health-related behavior and BMI as a health outcome.

CFI $\geq$ 0.95 and RMSEA $\leq$ 0.06 indicate the models fit the data well (Table 4).

A large part of the variance explained in physical activity W2 was attributed to influence of physical activity W1. A big part of the variance explained in physical activity W3 was attributed to influence of physical activity W2.

In this model, variances were explained in physical activity W1-W3, but very little variance was explained in BMI W1-W3 (Table 4).

Table 4. Fundamental Cause Theory: Evaluation for Physical Activity and BMI

	Model that includes variable White Race	Model that includes variable Black Race
CFI	0.999	0.999
RMSEA	0.026	0.025
Squared Multiple Correlations (R^2):		
Physical Activity W1	0.103	0.103
Physical Activity W2	0.442	0.441
Physical Activity W3	0.398	0.398
BMI W1	0.033	0.037
BMI W2	0.021	0.024
BMI W3	0.021	0.024

The results presented in the Table 5 support Hypotheses 1-5 and Hypotheses 7-9, but did not support Hypothesis 6.

Table 5. Fundamental Cause Theory: Model 1 "Physical Activity and BMI" Regression Weights

			Model that includes variable White race	Model that includes variable Black race
Physical Activity W1	<-	Race	0.057***	-0.058***
Physical Activity W1	<-	SES	0.249***	0.248***
Physical Activity W1	<-	gender	0.111***	0.110***
Physical Activity W1	<-	Neighborhood Quality	0.050**	0.050**
Physical Activity W2	<-	Race	0.052***	-0.043**
Physical Activity W2	<-	SES	0.103***	0.105***
Physical Activity W2	<-	gender	0.053***	0.053***
Physical Activity W2	<-	Neighborhood Quality	0.016	0.019
Physical Activity W2	<-	Physical Activity W1	0.602***	0.603***
Physical Activity W3	<-	Race	-0.003	-0.006
Physical Activity W3	<-	SES	0.099***	0.097***
Physical Activity W3	<-	gender	0.071***	0.071***
Physical Activity W3	<-	Neighborhood Quality	0.008	0.005
Physical Activity W3	<-	Physical Activity W2	0.459***	0.458***
BMI W1	<-	Race	-0.103***	0.124***
BMI W2	<-	Race	-0.112***	0.124***
BMI W3	<-	Race	-0.129***	0.144***
BMI W1	<-	SES	-0.068***	-0.064***
BMI W2	<-	SES	-0.040*	-0.037*
BMI W3	<-	SES	0.025	0.028
BMI W1	<-	gender	-0.074***	-0.072***
BMI W2	<-	gender	-0.061***	-0.059***
BMI W3	<-	gender	-0.049**	-0.047**
BMI W1	<-	Neighborhood Quality	0.023	0.028
BMI W2	<-	Neighborhood Quality	0.015	0.018
BMI W3	<-	Neighborhood Quality	-0.019	-0.015
BMI W1	<-	Physical Activity W1	-0.064***	-0.063***
BMI W2	<-	Physical Activity W1	-0.036	-0.035
BMI W3	<-	Physical Activity W1	-0.026	-0.025
BMI W2	<-	Physical Activity W2	0.02	0.02
BMI W3	<-	Physical Activity W2	0.005	0.004
BMI W3	<-	Physical Activity W3	0.019	0.019

*p<0.05, **p<0.01, ***p<0.001

Model 2 "Physical Activity and Functional Limitation"

Model 2 is a baseline model of Fundamental Cause Theory using physical activity as a health-related behavior and functional limitation as a health outcome.

CFI $\geq$ 0.95 and RMSEA = 0.089 indicate the models fit the data moderately well (Table 6). In this model, twice as much variance was explained in physical activity W2-W3 compared with functional limitations W1-W3.

Table 6. Fundamental Cause Theory: Evaluation for Physical Activity and Functional Limitation

	Model that includes variable White Race	Model that includes variable Black Race
CFI	0.991	0.991
RMSEA	0.089	0.089
Squared Multiple Correlations (R^2):		
Physical Activity W1	.103	.103
Physical Activity W2	.442	.441
Physical Activity W3	.398	.398
Functional Limitation W1	.196	.195
Functional Limitation W2	.197	.196
Functional Limitation W3	.214	.214

The results presented in the Table 7 supported Hypotheses 1-5, Hypothesis 7, and Hypothesis 9; but did not support Hypothesis 6 and Hypothesis 8.

Table 7. Fundamental Cause Theory: Model 2 "Physical Activity and Functional Limitation" Regression Weights

			Model that includes variable White race	Model that includes variable Black race
Physical Activity W1	<-	Race	0.057***	-0.058***
Physical Activity W1	<-	SES	0.249***	0.248***
Physical Activity W1	<-	gender	0.111***	0.110***
Physical Activity W1	<-	Neighborhood Quality	0.050**	0.050**
Physical Activity W2	<-	Race	0.052***	-0.043**
Physical Activity W2	<-	SES	0.103***	0.105***
Physical Activity W2	<-	gender	0.053***	0.053***
Physical Activity W2	<-	Neighborhood Quality	0.016	0.019
Physical Activity W2	<-	Physical Activity W1	0.602***	0.603***
Physical Activity W3	<-	Race	-0.003	-0.006
Physical Activity W3	<-	SES	0.099***	0.097***
Physical Activity W3	<-	gender	0.071***	0.071***
Physical Activity W3	<-	Neighborhood Quality	0.008	0.005
Physical Activity W3	<-	Physical Activity W2	0.459***	0.458***
Functional Limitation W1	<-	Race	0.056***	-0.043**
Functional Limitation W2	<-	Race	0.049**	-0.042*
Functional Limitation W3	<-	Race	0.002	-0.002
Functional Limitation W1	<-	SES	-0.221***	-0.219***
Functional LimitationW2	<-	SES	-0.214***	-0.214***
Functional Limitation W3	<-	SES	-0.249***	-0.248***
Functional Limitation W1	<-	gender	-0.027	-0.027
Functional Limitation W2	<-	gender	-0.024	-0.024
Functional Limitation W3	<-	gender	-0.026	-0.026
Functional Limitation W1	<-	Neighborhood Quality	0.013	0.018
Functional Limitation W2	<-	Neighborhood Quality	0.023	0.026
Functional Limitation W3	<-	Neighborhood Quality	0.056**	0.056**
Functional Limitation W1	<-	Physical Activity W1	-0.332***	-0.331***
Functional Limitation W2	<-	Physical Activity W1	-0.182***	-0.182***
Functional Limitation W3	<-	Physical Activity W1	-0.127***	-0.127***
Functional Limitation W2	<-	Physical Activity W2	-0.184***	-0.184***
Functional Limitation W3	<-	Physical Activity W2	-0.082***	-0.083***
Functional Limitation W3	<-	Physical Activity W3	-0.163***	-0.162***

*p<0.05, **p<0.01, ***p<0.001

Hypothesis 7, functional limitation varies by race, was supported by the results.

However, SEM showed being White significantly and positively influenced functional limitation at Wave 1 and at Wave 2, and being African American significantly and negatively influenced functional limitation at Wave 1 and at Wave 2. The effect of race on functional limitation was not significant at Wave 3 (Table 7). At the same time, bivariate correlations between being White and functional limitation W1-W3 were significant and negative. Bivariate correlations between being Black and functional limitationW1-W3 were significant and positive (Appendix A).

A regression analysis was conducted to reveal factors that influenced change in the direction of effects of race on functional limitation.

Confounding effect of SES and mediating effect of physical activity:

Regression coefficient of being White on dependent variable Functional Limitation W1 was significant and negative. However, regression coefficient of being White on dependent variable Functional Limitation W1, controlling by physical activity W1 and SES, became significant and positive (Table 8).

Regression coefficient of being White on dependent variable Functional Limitation W2 was significant and negative. However, regression coefficient of being White on dependent variable Functional Limitation W2, controlling by physical activity W2 and SES, became significant and positive.

Regression coefficient of being White on dependent variable Functional Limitation W3 was significant and negative. However, regression coefficient of being White on dependent variable Functional Limitation W3, controlling by physical activity W3 and SES, became non-significant (Table 8).

Regression coefficient of being Black on dependent variable Functional Limitation W1 was significant and positive. However, regression coefficient of being Black on dependent variable Functional Limitation W1, controlling by physical activity W1 and SES, became significant and negative (Table 9).

Regression coefficient of being Black on dependent variable Functional Limitation W2 was significant and positive. However, regression coefficient of being Black on dependent variable Functional Limitation W2, controlling by physical activity W2 and SES, became significant and negative.

Regression coefficient of being Black on dependent variable Functional Limitation W3 was significant and positive. However, regression coefficient of being Black on dependent variable Functional Limitation W3, controlling by physical activity W3 and SES, became non-significant (Table 9).

According to DeMaris (2004), the effect of X on Y is confounded with Z if "part of X's effect on Y is realized via X's connection (correlation) with Z" (p. 98). In the current model, race correlated with SES. Thus, the effect of race on functional limitation is confounded with SES. The effect of X on Y is mediated by Z, if "X causes Z, and Z, in turn, causes Y" (DeMaris, 2004:101). In the current model, physical activity mediated the effect of race on functional limitation (Figure 3). Consequently, the mediating effect of physical activity and confounding effect of SES lead to change signs of the effects of race on functional limitation.

Table 8. Regression analysis demonstrated mediating effect of physical activity and confounding effect of SES on functional limitation (White race)

	Dependent Variable Functional Limitation W1	Dependent Variable Functional Limitation W1	Dependent Variable Functional Limitation W2	Dependent Variable Functional Limitation W2	Dependent Variable Functional Limitation W3	Dependent Variable Functional Limitation W3
White Race	-0.040*	0.060***	-0.075***	0.047**	-0.094***	-0.004
Physical Activity W1		- 0.334***				
Physical Activity W2				-0.339***		
Physical Activity W3						-0.323***
SES		-0.222***		-0.213***		-0.240***
SSR	4.117	512.77	12.228	415.555	22.82	504.322
MSE	0.725	0.585	0.745	0.605	1.009	0.821
F	5.678*	292.290***	16.407***	228.967***	22.627***	204.735***
R^2	0.002	0.195	0.006	0.193	0.009	0.194

*p<0.05, **p<0.01, ***p<0.001

Table 9. Regression analysis demonstrated mediating effect of physical activity and confounding effect of SES on functional limitation (Black race)

	Dependent Variable Functional Limitation W1	Dependent Variable Functional Limitation W1	Dependent Variable Functional Limitation W2	Dependent Variable Functional Limitation W2	Dependent Variable Functional Limitation W3	Dependent Variable Functional Limitation W3
Black Race	0.053**	-0.048**	0.084***	-0.040*	0.099***	0.002
Physical Activity W1		-0.334***				
Physical Activity W2				-0.338***		
Physical Activity W3						-0.323***
SES		-0.219***		-0.212***		-0.240***
SSR	7.476	509.427	15.03	414.408	25.726	504.289
MSE	0.724	0.586	0.744	0.605	1.007	0.821
F	10.322**	289.926***	20.193***	228.184***	25.537***	204.718***
R^2	0.003	0.194	0.007	0.193	0.010	0.194

*p<0.05, **p<0.01, ***p<0.001

Model 3 "Physical Activity and Depression"

Model 3 is a baseline model of Fundamental Cause Theory using physical activity as a health-related behavior and depression as a health outcome.

CFI $\geq$ 0.95 and RMSEA $\leq$ 0.06 indicate the models fit the data well (Table 10).

More than twice the variance was explained in physical activity W2-W3 compared to the depression index W1-W3.

Table 10. Fundamental Cause Theory: Evaluation for Physical Activity and Depression

	Model that includes variable White Race	Model that includes variable Black Race
CFI	0.998	0.998
RMSEA	0.040	0.040
Squared Multiple Correlations (R^2):		
Physical Activity W1	.103	.103
Physical Activity W2	.442	.441
Physical Activity W3	.398	.398
Depression Index W1	.116	.115
Depression Index W2	.121	.119
Depression Index W3	.139	.135

The results presented in the Table 11 support Hypotheses 1-9.

Table 11. Fundamental Cause Theory: Model 3 "Physical Activity and Depression" Regression Weights

			Model that includes variable White Race	Model that includes variable Black Race
Physical Activity W1	<---	Race	0.057***	-0.058***
Physical Activity W1	<---	SES	0.249***	0.248***
Physical Activity W1	<---	gender	0.111***	0.110***
Physical Activity W1	<---	Neighborhood Quality	0.050**	0.050**
Physical Activity W2	<---	Race	0.052***	-0.043**
Physical Activity W2	<---	SES	0.103***	0.105***
Physical Activity W2	<---	gender	0.053***	0.053***
Physical Activity W2	<---	Neighborhood Quality	0.016	0.019
Physical Activity W2	<---	Physical Activity W1	0.602***	0.603***
Physical Activity W3	<---	Race	-0.003	-0.006
Physical Activity W3	<---	SES	0.099***	0.097***
Physical Activity W3	<---	gender	0.071***	0.071***
Physical Activity W3	<---	Neighborhood Quality	0.008	0.005
Physical Activity W3	<---	Physical Activity W2	0.459***	0.458***
Depression Index W1	<---	Race	-0.050**	0.032
Depression Index W2	<---	Race	-0.058**	0.040**
Depression Index W3	<---	Race	-0.116***	0.096***
Depression Index W1	<---	SES	-0.114***	-0.117***
Depression Index W2	<---	SES	-0.152***	-0.155***
Depression Index W3	<---	SES	-0.172***	-0.173***
Depression Index W1	<---	gender	-0.056***	-0.055***
Depression Index W2	<---	gender	-0.032	-0.031
Depression Index W3	<---	gender	-0.003	-0.002
Depression Index W1	<---	Neighborhood Quality	-0.203***	-0.209***
Depression Index W2	<---	Neighborhood Quality	-0.144***	-0.151***
Depression Index W3	<---	Neighborhood Quality	-0.109***	-0.116***
Depression Index W1	<---	Physical Activity W1	-0.121***	-0.122***
Depression Index W2	<---	Physical Activity W1	-0.045*	-0.045*
Depression Index W3	<---	Physical Activity W1	-0.091***	-0.091***
Depression Index W2	<---	Physical Activity W2	-0.123***	-0.124***
Depression Index W3	<---	Physical Activity W2	-0.048	-0.050*
Depression Index W3	<---	Physical Activity W3	-0.053*	-0.052*

*p<0.05, **p<0.01, ***p<0.001

Model 4 "Physical Activity and Self-Rated Health"

Model 4 is a baseline model of Fundamental Cause Theory, using physical activity as a health-related behavior and self-rated health as a health outcome.

CFI $\geq$ 0.95 and RMSEA = 0.077 indicate the models fit the data moderately well (Table 12). In this model twice as much variance was explained in physical activity W2-W3 compared with self-rated health W1-W3.

Table 12. Fundamental Cause Theory: Evaluation for Physical Activity and Self-Rated Health

	Model that includes variable White Race	Model that includes variable Black Race
CFI	0.993	0.993
RMSEA	0.077	0.077
Squared Multiple Correlations (R^2):		
Physical Activity W1	.103	.103
Physical Activity W2	.442	.441
Physical Activity W3	.398	.398
Self-Rated Health W1	.175	.175
Self-Rated Health W2	.151	.152
Self-Rated Health W3	.153	.153

The results presented in the Table 13 support Hypotheses 1-6 and Hypothesis 9, but did not support Hypothesis 7 and Hypothesis 8.

Table 13. Fundamental Cause Theory: Model 4 "Physical Activity and Self-Rated Health" Regression Weights

			Model that includes variable White Race	Model that includes variable Black Race
Physical Activity W1	<---	Race	0.057***	-0.058***
Physical Activity W1	<---	SES	0.249***	0.248***
Physical Activity W1	<---	gender	0.111***	0.110***
Physical Activity W1	<---	Neighborhood Quality	0.050**	0.050**
Physical Activity W2	<---	Race	0.052***	-0.043**
Physical Activity W2	<---	SES	0.103***	0.105***
Physical Activity W2	<---	gender	0.053***	0.053***
Physical Activity W2	<---	Neighborhood Quality	0.016	0.019
Physical Activity W2	<---	Physical Activity W1	0.602***	0.603***
Physical Activity W3	<---	Race	-0.003	-0.006
Physical Activity W3	<---	SES	0.099***	0.097***
Physical Activity W3	<---	gender	0.071***	0.071***
Physical Activity W3	<---	Neighborhood Quality	0.008	0.005
Physical Activity W3	<---	Physical Activity W2	0.459***	0.458***
Self-Rated Health W1	<---	Race	-0.032	0.029
Self-Rated Health W2	<---	Race	-0.025	0.032
Self-Rated Health W3	<---	Race	-0.003	0.000
Self-Rated Health W1	<---	SES	0.282***	0.281***
Self-Rated Health W2	<---	SES	0.250***	0.251***
Self-Rated Health W3	<---	SES	0.245***	0.244***
Self-Rated Health W1	<---	gender	0.008	0.009
Self-Rated Health W2	<---	gender	0.026	0.026
Self-Rated Health W3	<---	gender	-0.011	-0.011
Self-Rated Health W1	<---	Neighborhood Quality	0.074***	0.073***
Self-Rated Health W2	<---	Neighborhood Quality	0.061***	0.063***
Self-Rated Health W3	<---	Neighborhood Quality	0.047*	0.046*
Self-Rated Health W1	<---	Physical Activity W1	0.218***	0.218***
Self-Rated Health W2	<---	Physical Activity W1	0.101***	0.101***
Self-Rated Health W3	<---	Physical Activity W1	0.054*	0.053*
Self-Rated Health W2	<---	Physical Activity W2	0.125***	0.125***
Self-Rated Health W3	<---	Physical Activity W2	0.081***	0.081***
Self-Rated Health W3	<---	Physical Activity W3	0.124***	0.123***

*p<0.05, **p<0.01, ***p<0.001

Model 5 "Smoking and BMI"

Model 5 is a baseline model of Fundamental Cause Theory using smoking as a health-related behavior and BMI as a health outcome.

CFI $\geq$ 0.95 and RMSEA $\leq$ 0.06 indicate the models fit the data well (Table 14).

A large part of the variance explained in smoking W2 was attributed to the influence of smoking W1; only about 2% of the variance was explained in BMI W1- W3.

Table 14. Fundamental Cause Theory: Evaluation for Smoking and BMI

	Model that includes variable White Race	Model that includes variable Black Race
CFI	0.999	0.999
RMSEA	0.022	0.022
Squared Multiple Correlations (R^2):		
Smoking W1	.082	.076
Smoking W2	.529	.527
Smoking W3	.023	.020
BMI W1	.032	.037
BMI W2	.023	.026
BMI W3	.022	.026

The results presented in the Table 15 support Hypotheses 2-5, Hypothesis 7, and Hypothesis 8; but do not support Hypothesis 1, Hypothesis 6, and Hypothesis 9.

Table 15. Fundamental Cause Theory: Model 5 "Smoking and BMI" Regression Weights

			Model that includes variable White Race	Model that includes variable Black Race
Smoking W1	<---	Race	0.245***	-0.232***
Smoking W1	<---	SES	0.030	0.031
Smoking W1	<---	gender	0.153***	0.146***
Smoking W1	<---	Neighborhood Quality	-0.094**	-0.086**
Smoking W2	<---	Race	0.063*	-0.048
Smoking W2	<---	SES	0.038	0.041
Smoking W2	<---	gender	0.021	0.020
Smoking W2	<---	Neighborhood Quality	-0.033	-0.029
Smoking W2	<---	Smoking W1	0.702***	0.706***
Smoking W3	<---	Race	0.108*	-0.097
Smoking W3	<---	SES	-0.013	-0.009
Smoking W3	<---	gender	-0.028	-0.031
Smoking W3	<---	Neighborhood Quality	-0.010	-0.007
Smoking W3	<---	Smoking W2	0.186*	0.188*
BMI W1	<---	Race	-0.119***	0.140***
BMI W2	<---	Race	-0.124***	0.137***
BMI W3	<---	Race	-0.136***	0.151***
BMI W1	<---	SES	-0.085***	-0.081***
BMI W2	<---	SES	-0.046*	-0.044*
BMI W3	<---	SES	0.022	0.025
BMI W1	<---	gender	-0.089***	-0.087***
BMI W2	<---	gender	-0.070***	-0.068***
BMI W3	<---	gender	-0.053**	-0.052**
BMI W1	<---	Neighborhood Quality	0.024	0.030
BMI W2	<---	Neighborhood Quality	0.019	0.022
BMI W3	<---	Neighborhood Quality	-0.017	-0.014
BMI W1	<---	Smoking W1	0.051	0.056
BMI W2	<---	Smoking W1	0.039	0.043
BMI W3	<---	Smoking W1	0.051	0.055
BMI W2	<---	Smoking W2	0.015	0.015
BMI W3	<---	Smoking W2	-0.021	-0.02
BMI W3	<---	Smoking W3	-0.009	-0.011

*p<0.05, **p<0.01, ***p<0.001

Model 6 "Smoking and Functional Limitation"

Model 6 is a baseline model of Fundamental Cause Theory using smoking as a health-related behavior and functional limitation as a health outcome.

CFI = 1.000 and RMSEA ≤ 0.06 indicate the models fit the data well (Table 16).

A large part of the variance explained in smoking W2 was attributed to the influence of smoking W1; 10% or more of the variance was explained in functional limitation W1-W3.

Table 16. Fundamental Cause Theory: Evaluation for Smoking and Functional Limitation

	Model that includes variable White Race	Model that includes variable Black Race
CFI	1.000	1.000
RMSEA	0.004	0.004
Squared Multiple Correlations (R^2):		
Smoking W1	.081	.075
Smoking W2	.528	.527
Smoking W3	.030	.026
Functional Limitation W1	.098	.098
Functional Limitation W2	.102	.102
Functional Limitation W3	.121	.121

The results presented in the Table 17 support Hypotheses 2-5 and Hypothesis 8; but did not support Hypothesis 1, Hypothesis 6, Hypothesis 7, and Hypothesis 9.

Table 17. Fundamental Cause Theory: Model 6 “Smoking and Functional Limitation” Regression Weights

			Model that includes variable White Race	Model that includes variable Black Race
Smoking W1	<---	Race	0.244***	-0.231***
Smoking W1	<---	SES	0.030	0.032
Smoking W1	<---	gender	0.151***	0.144***
Smoking W1	<---	Neighborhood Quality	-0.093**	-0.085**
Smoking W2	<---	Race	0.064*	-0.049
Smoking W2	<---	SES	0.04	0.042
Smoking W2	<---	gender	0.025	0.023
Smoking W2	<---	Neighborhood Quality	-0.033	-0.028
Smoking W2	<---	Smoking W1	0.701***	0.704***
Smoking W3	<---	Race	0.128*	-0.113*
Smoking W3	<---	SES	-0.004	0.002
Smoking W3	<---	gender	-0.014	-0.017
Smoking W3	<---	Neighborhood Quality	-0.019	-0.015
Smoking W3	<---	Smoking W2	0.098*	0.100*
Functional Limitation W1	<---	Race	0.030	-0.015
Functional Limitation W2	<---	Race	0.015	-0.007
Functional Limitation W3	<---	Race	-0.025	0.026
Functional Limitation W1	<---	SES	-0.304***	-0.302***
Functional Limitation W2	<---	SES	-0.303***	-0.302***
Functional Limitation W3	<---	SES	-0.331***	-0.330***
Functional Limitation W1	<---	gender	-0.068***	-0.069***
Functional Limitation W2	<---	gender	-0.072***	-0.073***
Functional Limitation W3	<---	gender	-0.078***	-0.078***
Functional Limitation W1	<---	Neighborhood Quality	0.000	0.004
Functional Limitation W2	<---	Neighborhood Quality	0.008	0.01
Functional Limitation W3	<---	Neighborhood Quality	0.045*	0.045*
Functional Limitation W1	<---	Smoking W1	0.031	0.035
Functional Limitation W2	<---	Smoking W1	0.069	0.072
Functional Limitation W3	<---	Smoking W1	0.040	0.042
Functional Limitation W2	<---	Smoking W2	-0.050	-0.05
Functional Limitation W3	<---	Smoking W2	-0.008	-0.011
Functional Limitation W3	<---	Smoking W3	-0.006	-0.011

*p<0.05, **p<0.01, ***p<0.001

Model 7 "Smoking and Depression"

Model 7 is a baseline model of Fundamental Cause Theory, using smoking as a health-related behavior and depression as a health outcome.

CFI = 1.000 and RMSEA ≤ 0.06 indicate the models fit the data well (Table 18).

A large part of the variance explained in smoking W2 was attributed to the influence of smoking W1; more than 10% of the variance was explained in the depression index W1-W3.

Table 18. Fundamental Cause Theory: Evaluation for Smoking and Depression

	Model that includes variable White Race	Model that includes variable Black Race
CFI	1.000	1.000
RMSEA	0.012	0.012
Squared Multiple Correlations (R^2):		
Smoking W1	.083	.077
Smoking W2	.528	.526
Smoking W3	.023	.020
Depression Index W1	.108	.106
Depression Index W2	.107	.104
Depression Index W3	.121	.117

The results presented in Table 19 support Hypotheses 2-9, but do not support Hypothesis 1.

Table 19. Fundamental Cause Theory: Model 7 “Smoking and Depression” Regression Weights

			Model that includes variable White Race	Model that includes variable Black Race
Smoking W1	<---	Race	0.245***	-0.232***
Smoking W1	<---	SES	0.033	0.035
Smoking W1	<---	gender	0.155***	0.148***
Smoking W1	<---	Neighborhood Quality	-0.097**	-0.088**
Smoking W2	<---	Race	0.066*	-0.051
Smoking W2	<---	SES	0.037	0.039
Smoking W2	<---	gender	0.021	0.02
Smoking W2	<---	Neighborhood Quality	-0.036	-0.032
Smoking W2	<---	Smoking W1	0.701***	0.704***
Smoking W3	<---	Race	0.103*	-0.092
Smoking W3	<---	SES	-0.013	-0.009
Smoking W3	<---	gender	-0.034	-0.037
Smoking W3	<---	Neighborhood Quality	0.006	0.009
Smoking W3	<---	Smoking W2	0.187*	0.189*
Depression Index W1	<---	Race	-0.075***	0.055**
Depression Index W2	<---	Race	-0.098***	0.075***
Depression Index W3	<---	Race	-0.129***	0.108***
Depression Index W1	<---	SES	-0.147***	-0.149***
Depression Index W2	<---	SES	-0.198***	-0.201***
Depression Index W3	<---	SES	-0.215***	-0.217***
Depression Index W1	<---	gender	-0.081***	-0.079***
Depression Index W2	<---	gender	-0.067***	-0.065***
Depression Index W3	<---	gender	-0.034	-0.032
Depression Index W1	<---	Neighborhood Quality	-0.202***	-0.209***
Depression Index W2	<---	Neighborhood Quality	-0.141***	-0.150***
Depression Index W3	<---	Neighborhood Quality	-0.111***	-0.119***
Depression Index W1	<---	Smoking W1	0.075*	0.068*
Depression Index W2	<---	Smoking W1	0.057	0.050
Depression Index W3	<---	Smoking W1	-0.030	-0.037
Depression Index W2	<---	Smoking W2	0.040	0.039
Depression Index W3	<---	Smoking W2	0.089	0.087
Depression Index W3	<---	Smoking W3	-0.082*	-0.084*

*p<0.05, **p<0.01, ***p<0.001

Model 8 "Smoking and Self-Rated Health"

Model 8 is a baseline model of Fundamental Cause Theory using smoking as a health-related behavior and self-rated health as a health outcome.

This model was modified. The path from neighborhood quality to smoking W1 was removed from the models, because the baseline models overfit the data (TLI was 1.001).

CFI $\geq$ 0.95 and RMSEA $\leq$ 0.06 indicate that the modified models fit the data well (Table 20).

A large part of the variance explained in smoking W2 was attributed to the influence of smoking W1; 12% or more of the variance was explained in self-rated health W1-W3.

Table 20. Fundamental Cause Theory: Evaluation for Smoking and Self-Rated Health

	Modified model that includes variable White Race	Modified model that includes variable Black Race
CFI	0.998	0.998
RMSEA	0.021	0.019
Squared Multiple Correlations (R^2):		
Smoking W1	.070	.066
Smoking W2	.526	.525
Smoking W3	.029	.026
Self-Rated Health W1	.147	.147
Self-Rated Health W2	.120	.120
Self-Rated Health W3	.117	.118

The results presented in Table 21 support Hypotheses 2-6, Hypothesis 8, and Hypothesis 9; but do not support Hypothesis 1 and Hypothesis 7.

Table 21. Fundamental Cause Theory: Model 8 "Smoking and Self-Rated Health" Regression Weights

			Model that includes variable White Race	Model that includes variable Black Race
Smoking W1	<---	Race	0.215***	-0.207***
Smoking W1	<---	SES	0.009	0.011
Smoking W1	<---	gender	0.142***	0.137***
Smoking W2	<---	Race	0.067*	-0.052
Smoking W2	<---	SES	0.039	0.041
Smoking W2	<---	gender	0.025	0.024
Smoking W2	<---	Neighborhood Quality	-0.038	-0.033
Smoking W2	<---	Smoking W1	0.702***	0.705***
Smoking W3	<---	Race	0.126*	-0.113*
Smoking W3	<---	SES	-0.003	0.001
Smoking W3	<---	gender	-0.02	-0.024
Smoking W3	<---	Neighborhood Quality	-0.011	-0.007
Smoking W3	<---	Smoking W2	0.098*	0.098*
Self-Rated Health W1	<---	Race	0.009	-0.01
Self-Rated Health W2	<---	Race	0.013	-0.005
Self-Rated Health W3	<---	Race	0.023	-0.026
Self-Rated Health W1	<---	SES	0.338***	0.337***
Self-Rated Health W2	<---	SES	0.307***	0.308***
Self-Rated Health W3	<---	SES	0.303***	0.302***
Self-Rated Health W1	<---	gender	0.050**	0.050**
Self-Rated Health W2	<---	gender	0.065***	0.065***
Self-Rated Health W3	<---	gender	0.037	0.036
Self-Rated Health W1	<---	Neighborhood Quality	0.081***	0.081***
Self-Rated Health W2	<---	Neighborhood Quality	0.068***	0.070***
Self-Rated Health W3	<---	Neighborhood Quality	0.051**	0.050**
Self-Rated Health W1	<---	Smoking W1	-0.124***	-0.125***
Self-Rated Health W2	<---	Smoking W1	-0.074	-0.072
Self-Rated Health W3	<---	Smoking W1	-0.058	-0.061
Self-Rated Health W2	<---	Smoking W2	-0.013	-0.014
Self-Rated Health W3	<---	Smoking W2	-0.039	-0.037
Self-Rated Health W3	<---	Smoking W3	0.078*	0.079*

*p<0.05, **p<0.01, ***p<0.001

Model 9 "Drinking and BMI"

Model 9 is a baseline model of Fundamental Cause Theory using drinking as a health- related behavior and BMI as a health outcome.

CFI $\geq$ 0.95 and RMSEA $\leq$ 0.06 indicate the models fit the data well (Table 22).

A large part of the variance explained in drinking W2 was attributed to the influence of drinking W1; a large part of the variance explained in drinking W3 was attributed to the influence of drinking W2; but very little variance was explained in BMI W1-W3.

Table 22. Fundamental Cause Theory: Evaluation for Drinking and BMI

	Model that includes variable White Race	Model that includes variable Black Race
CFI	0.999	0.999
RMSEA	0.021	0.021
Squared Multiple Correlations (R^2):		
Drinking W1	.078	.076
Drinking W2	.313	.313
Drinking W3	.345	.345
BMI W1	.030	.034
BMI W2	.022	.025
BMI W3	.022	.025

The results presented in Table 23 support Hypotheses 2-5, Hypothesis 7, and Hypothesis 8; but do not support Hypothesis 1, Hypothesis 6, and Hypothesis 9.

Table 23. Fundamental Cause Theory: Model 9 "Drinking and BMI" Regression Weights

			Model that includes variable White Race	Model that includes variable Black Race
Drinking W1	<---	Race	-0.068**	0.048
Drinking W1	<---	SES	-0.030	-0.033
Drinking W1	<---	gender	0.245***	0.246***
Drinking W1	<---	Neighborhood Quality	-0.104***	-0.112***
Drinking W2	<---	Race	-0.046	0.048
Drinking W2	<---	SES	-0.024	-0.024
Drinking W2	<---	gender	0.130***	0.131***
Drinking W2	<---	Neighborhood Quality	-0.076**	-0.076**
Drinking W2	<---	Drinking W1	0.491***	0.492***
Drinking W3	<---	Race	-0.004	-0.019
Drinking W3	<---	SES	-0.013	-0.016
Drinking W3	<---	gender	0.160***	0.160***
Drinking W3	<---	Neighborhood Quality	-0.120***	-0.128***
Drinking W3	<---	Drinking W2	0.388***	0.389***
BMI W1	<---	Race	-0.106***	0.127***
BMI W2	<---	Race	-0.109***	0.122***
BMI W3	<---	Race	-0.128***	0.142***
BMI W1	<---	SES	-0.083***	-0.079***
BMI W2	<---	SES	-0.043*	-0.041*
BMI W3	<---	SES	0.023	0.027
BMI W1	<---	gender	-0.082***	-0.080***
BMI W2	<---	gender	-0.071***	-0.070***
BMI W3	<---	gender	-0.056**	-0.054**
BMI W1	<---	Neighborhood Quality	0.020	0.025
BMI W2	<---	Neighborhood Quality	0.018	0.021
BMI W3	<---	Neighborhood Quality	-0.016	-0.013
BMI W1	<---	Drinking W1	0.003	0.004
BMI W2	<---	Drinking W1	0.047	0.048
BMI W3	<---	Drinking W1	0.034	0.035
BMI W2	<---	Drinking W2	-0.009	-0.009
BMI W3	<---	Drinking W2	0.000	0.000
BMI W3	<---	Drinking W3	-0.004	-0.003

*p<0.05, **p<0.01, ***p<0.001

Model 10 "Drinking and Functional Limitation"

Model 10 is a baseline model of the Fundamental Cause Theory, using drinking as a health-related behavior and functional limitation as a health outcome.

CFI ≥ 0.95 and RMSEA = 0.079 indicate the models fit the data moderately well (Table 24).

A large part of the variance explained in drinking W2 was attributed to the influence of drinking W1; a large part of the variance explained in drinking W3 was attributed to the influence of drinking W2; 11% or more of the variance was explained in functional limitation W1-W3.

Table 24. Fundamental Cause Theory: Evaluation for Drinking and Functional Limitation

	Model that includes variable White Race	Model that includes variable Black Race
CFI	0.981	0.981
RMSEA	0.079	0.079
Squared Multiple Correlations (R^2):		
Drinking W1	.080	.078
Drinking W2	.335	.335
Drinking W3	.394	.395
Functional Limitation W1	.108	.108
Functional Limitation W2	.107	.107
Functional Limitation W3	.125	.125

The results presented in Table 25 support Hypotheses 2-5 and Hypothesis 8; but do not support Hypothesis 1, Hypothesis 6, Hypothesis 7, and Hypothesis 9.

Table 25. Fundamental Cause Theory: Model 10 “Drinking and Functional Limitation” Regression Weights

			Model that includes variable White Race	Model that includes variable Black Race
Drinking W1	<---	Race	-0.068**	0.046
Drinking W1	<---	SES	-0.017	-0.02
Drinking W1	<---	gender	0.251***	0.251***
Drinking W1	<---	Neighborhood Quality	-0.105***	-0.113***
Drinking W2	<---	Race	-0.042	0.044
Drinking W2	<---	SES	-0.016	-0.016
Drinking W2	<---	gender	0.123***	0.123***
Drinking W2	<---	Neighborhood Quality	-0.072**	-0.072**
Drinking W2	<---	Drinking W1	0.517***	0.518***
Drinking W3	<---	Race	0.012	-0.032
Drinking W3	<---	SES	-0.007	-0.01
Drinking W3	<---	gender	0.113***	0.113***
Drinking W3	<---	Neighborhood Quality	-0.095***	-0.100***
Drinking W3	<---	Drinking W2	0.573***	0.574***
Functional Limitation W1	<---	Race	0.03	-0.018
Functional Limitation W2	<---	Race	0.012	-0.007
Functional Limitation W3	<---	Race	-0.023	0.024
Functional Limitation W1	<---	SES	-0.305***	-0.303***
Functional Limitation W2	<---	SES	-0.307***	-0.306***
Functional Limitation W3	<---	SES	-0.333***	-0.332***
Functional Limitation W1	<---	gender	-0.037*	-0.036*
Functional Limitation W2	<---	gender	-0.044*	-0.044*
Functional Limitation W3	<---	gender	-0.048*	-0.048*
Functional Limitation W1	<---	Neighborhood Quality	-0.014	-0.011
Functional Limitation W2	<---	Neighborhood Quality	-0.006	-0.004
Functional Limitation W3	<---	Neighborhood Quality	0.029	0.029
Functional Limitation W1	<---	Drinking W1	-0.107***	-0.109***
Functional Limitation W2	<---	Drinking W1	-0.019	-0.02
Functional Limitation W3	<---	Drinking W1	-0.031	-0.031
Functional Limitation W2	<---	Drinking W2	-0.080**	-0.079**
Functional Limitation W3	<---	Drinking W2	-0.026	-0.027
Functional Limitation W3	<---	Drinking W3	-0.038	-0.037

*p<0.05, **p<0.01, ***p<0.001

Model 11 "Drinking and Depression"

Model 11 is a baseline model of Fundamental Cause Theory, using drinking as a health-related behavior and depression as a health outcome.

CFI $\geq$ 0.95 and RMSEA $\leq$ 0.06 indicate the models fit the data well (Table 26).

A large part of the variance explained in drinking W2 was attributed to the influence of drinking W1; a large part of the variance explained in drinking W3 was attributed to the influence of drinking W2; 11% or more of the variance was explained in the depression index W1-W3.

Table 26. Fundamental Cause Theory: Evaluation for Drinking and Depression

	Model that includes variable White Race	Model that includes variable Black Race
CFI	0.999	0.999
RMSEA	0.020	0.020
Squared Multiple Correlations (R^2):		
Drinking W1	.077	.076
Drinking W2	.314	.314
Drinking W3	.342	.342
Depression Index W1	.109	.108
Depression Index W2	.109	.107
Depression Index W3	.120	.116

The results presented in Table 27 support Hypotheses 2-9; but do not support Hypothesis 1.

Table 27. Fundamental Cause Theory: Model 11 “Drinking and Depression” Regression Weights

			Model that includes variable White Race	Model that includes variable Black Race
Drinking W1	<---	Race	-0.067**	0.047
Drinking W1	<---	SES	-0.034	-0.037
Drinking W1	<---	gender	0.246***	0.247***
Drinking W1	<---	Neighborhood Quality	-0.100***	-0.108***
Drinking W2	<---	Race	-0.046	0.049
Drinking W2	<---	SES	-0.024	-0.023
Drinking W2	<---	gender	0.130***	0.130***
Drinking W2	<---	Neighborhood Quality	-0.077**	-0.077**
Drinking W2	<---	Drinking W1	0.492***	0.493***
Drinking W3	<---	Race	-0.001	-0.022
Drinking W3	<---	SES	-0.019	-0.022
Drinking W3	<---	gender	0.157***	0.158***
Drinking W3	<---	Neighborhood Quality	-0.118***	-0.125***
Drinking W3	<---	Drinking W2	0.387***	0.387***
Depression Index W1	<---	Race	-0.051**	0.035*
Depression Index W2	<---	Race	-0.068***	0.050**
Depression Index W3	<---	Race	-0.127***	0.111***
Depression Index W1	<---	SES	-0.141***	-0.144***
Depression Index W2	<---	SES	-0.190***	-0.193***
Depression Index W3	<---	SES	-0.209***	-0.210***
Depression Index W1	<---	gender	-0.090***	-0.090***
Depression Index W2	<---	gender	-0.077***	-0.078***
Depression Index W3	<---	gender	-0.047*	-0.046*
Depression Index W1	<---	Neighborhood Quality	-0.201***	-0.206***
Depression Index W2	<---	Neighborhood Quality	-0.141***	-0.146***
Depression Index W3	<---	Neighborhood Quality	-0.104***	-0.110***
Depression Index W1	<---	Drinking W1	0.084**	0.086***
Depression Index W2	<---	Drinking W1	0.092**	0.095**
Depression Index W3	<---	Drinking W1	0.046	0.049
Depression Index W2	<---	Drinking W2	0.007	0.008
Depression Index W3	<---	Drinking W2	-0.055	-0.056
Depression Index W3	<---	Drinking W3	0.087**	0.089**

*p<0.05, **p<0.01, ***p<0.001

Model 12 "Drinking and Self-Rated Health"

Model 12 is a baseline model of Fundamental Cause Theory, using drinking as a health-related behavior and self-rated health as a health outcome.

CFI $\geq$ 0.95 and RMSEA $\leq$ 0.06 indicate the models fit the data well (Table 28).

A large part of the variance explained in drinking W2 was attributed to the influence of drinking W1; a large part of the variance explained in drinking W3 was attributed to the influence of drinking W2; 11% or more of the variance was explained in self-rated health W1-W3.

Table 28. Fundamental Cause Theory: Evaluation for Drinking and Self-Rated Health

	Model that includes variable White Race	Model that includes variable Black Race
CFI	0.999	0.999
RMSEA	0.015	0.016
Squared Multiple Correlations (R^2):		
Drinking W1	.079	.077
Drinking W2	.314	.314
Drinking W3	.345	.345
Self-Rated Health W1	.135	.135
Self-Rated Health W2	.117	.117
Self-Rated Health W3	.106	.106

The results presented in Table 29 support Hypotheses 2-6, Hypothesis 8, and Hypothesis 9; but do not support Hypothesis 1 and Hypothesis 7.

Table 29. Fundamental Cause Theory: Model 12 "Drinking and Self-Rated Health" Regression Weights

			Model that includes variable White Race	Model that includes variable Black Race
Drinking W1	<---	Race	-0.068**	0.048
Drinking W1	<---	SES	-0.028	-0.03
Drinking W1	<---	gender	0.248***	0.249***
Drinking W1	<---	Neighborhood Quality	-0.103***	-0.112***
Drinking W2	<---	Race	-0.045	0.046
Drinking W2	<---	SES	-0.026	-0.025
Drinking W2	<---	gender	0.129***	0.129***
Drinking W2	<---	Neighborhood Quality	-0.079**	-0.079**
Drinking W2	<---	Drinking W1	0.492***	0.493
Drinking W3	<---	Race	-0.004	-0.018
Drinking W3	<---	SES	-0.012	-0.015
Drinking W3	<---	gender	0.160***	0.161***
Drinking W3	<---	Neighborhood Quality	-0.120***	-0.127***
Drinking W3	<---	Drinking W2	0.388***	0.388***
Self-Rated Health W1	<---	Race	-0.016	0.014
Self-Rated Health W2	<---	Race	-0.007	0.015
Self-Rated Health W3	<---	Race	0.013	-0.015
Self-Rated Health W1	<---	SES	0.337***	0.337***
Self-Rated Health W2	<---	SES	0.304***	0.306***
Self-Rated Health W3	<---	SES	0.301***	0.300***
Self-Rated Health W1	<---	gender	0.021	0.021
Self-Rated Health W2	<---	gender	0.053**	0.053**
Self-Rated Health W3	<---	gender	0.016	0.016
Self-Rated Health W1	<---	Neighborhood Quality	0.090***	0.089***
Self-Rated Health W2	<---	Neighborhood Quality	0.070***	0.072***
Self-Rated Health W3	<---	Neighborhood Quality	0.058**	0.057**
Self-Rated Health W1	<---	Drinking W1	0.047*	0.047*
Self-Rated Health W2	<---	Drinking W1	0.058*	0.058*
Self-Rated Health W3	<---	Drinking W1	0.024	0.024
Self-Rated Health W2	<---	Drinking W2	-0.057*	-0.057*
Self-Rated Health W3	<---	Drinking W2	-0.021	-0.020
Self-Rated Health W3	<---	Drinking W3	0.021	0.020

*p<0.05, **p<0.01, ***p<0.001

Summary of the Results for Fundamental Cause Theory:

Hypothesis 1 was partially supported by the Fundamental Cause Theory, because it was the higher the SES as individuals became more physically active. However, effects of SES on smoking and drinking were not significant.

Hypotheses 2 through 5 were supported by the Fundamental Cause Theory. Results showed the higher the neighborhood quality, the more physically active, less smoking, and less alcohol consumption by its residents. Whites smoked more at Wave 1, Wave 2, and Wave 3; and African Americans smoked less at Wave 1 only. Results also showed Whites consumed less alcohol at Wave 1 only. Men smoked more and consumed more alcohol, but at the same time were more physically active than women. It was also found the higher the SES, the lower BMI, less functional limitation, less depression, and better self-rated health of individuals.

Hypothesis 6 was partially supported by the results, because it was found the higher the neighborhood quality, less depression and better self-rated health of its residents. However, effects of neighborhood quality on BMI and functional limitation were not significant.

Hypotheses 7 and 8 were partially supported by the results. It was found BMI, functional limitation, and depression varied by race and gender. Self-rated health varied by gender, but not by race. The results showed Whites have lower BMI, lower functional limitation, and fewer suffered from depression; but African Americans had higher BMI, higher functional limitation, and more suffered from depression. It was also found men had lower BMI, less functional limitation, fewer suffered from depression, and reported better self-rated health.

Hypothesis 9 was partially supported by the results, which showed the higher the level of physical activity, the lower BMI, functional limitation, and less depression; and the higher the level of physical activity the better self-rated health.

It was found the more people smoked at Wave 1 there was greater depression at Wave 1, but more people smoked at Wave 3 resulting in a lower level of depression at Wave 3.

Results showed as more people smoked at Wave 1 as worth self-rated health was reported at Wave 1.

It was determined the more people drank alcoholic beverages, the greater they were depressed. It was also found that as more people drank at Wave 2 as worth self-rated health was reported at Wave 2.

Relationships between drinking and functional limitation did not support Hypothesis 9. The results showed as more people drank at Wave 1 less functional limitation was reported at Wave 1, and as more people drank at Wave 2 less functional limitation was reported at Wave 2.

Stress Process Model

The data analysis began with the assessment of the Stress Process Model (Figure 4). To evaluate the Stress Process Model, four exogenous variables were used: neighborhood quality, gender, race (White or Black), and SES; three health-related behaviors: physical activity, smoking, and drinking; and four health outcomes: BMI, functional limitation, depression index, and self-rated health. Twelve models were constructed in total (3 health-related behaviors x 4 health outcomes = 12). Then, each model was repeated with the variable White Race and the variable Black Race separately with the purpose to analyze the

effect of race on health-related behaviors and health outcomes. The Stress Process Model also includes financial stress and negative life events as sources of stress and spousal support as mediator. Variable spousal support includes only respondents who are married or living with a partner (see Figure 4).

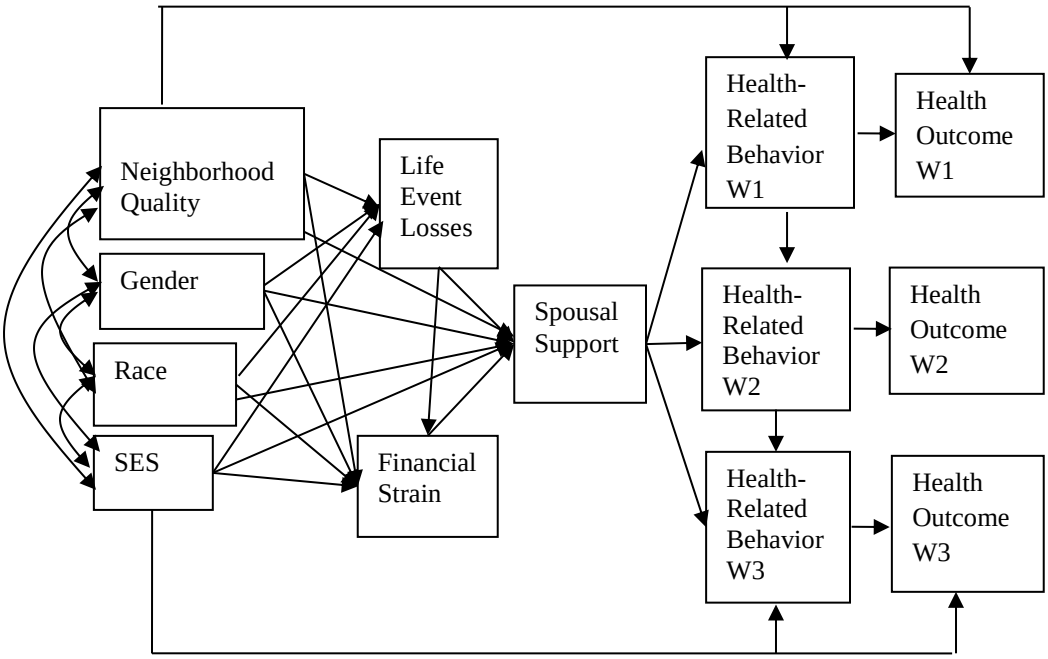

Figure 4. The Stress Process Model (W1 = Wave 1, W2 = Wave 2, W3 = Wave 3).

Model 13 "Physical Activity and BMI"

Model 13 is a baseline Stress Process Model using physical activity as a health-related behavior and BMI as a health outcome.

CFI $\geq$ 0.95 and RMSEA $\leq$ 0.06 indicate the models fit the data well (Table 30).

In this model substantially more variances were explained in financial stress and physical activity W1-W3, but very little variance was explained in BMI W1-W3.

Table 30. Stress Process Model: Evaluation for Physical Activity and BMI

	Model that includes variable White Race	Model that includes variable Black Race
CFI	0.995	0.995
RMSEA	0.037	0.036
Squared Multiple Correlations (R^2):		
Life Events	.070	.070
Financial Stress	.165	.164
Spousal Support	.060	.061
Physical Activity W1	.103	.103
Physical Activity W2	.442	.442
Physical Activity W3	.398	.398
BMI W1	.034	.038
BMI W2	.022	.024
BMI W3	.022	.025

The results presented in Table 31 support Hypotheses 1-3, 5, 6, 8, 10, and13; but do not support Hypotheses 4, 7, 9, 11, and 12

Table 31.Stress Process Model: Model 13 “Physical Activity and BMI” Regression Weights

			Model that includes variable White Race	Model that includes variable Black Race
Life Events	<--	SES	-0.231***	-0.230***
Life Events	<--	Race	-0.016	0.023
Life Events	<--	Neighborhood Quality	-0.045**	-0.043*
Life Events	<--	gender	-0.058***	-0.057***
Financial Stress	<--	Neighborhood Quality	-0.233***	-0.235***
Financial Stress	<--	SES	-0.185***	-0.185***
Financial Stress	<--	Race	-0.135***	0.133***
Financial Stress	<--	Life Events	0.014	0.013
Financial Stress	<--	gender	-0.025	-0.023
Spousal Support	<--	Financial Stress	-0.158***	-0.158***
Spousal Support	<--	SES	-0.083***	-0.084***
Spousal Support	<--	Neighborhood Quality	0.084***	0.084***
Spousal Support	<--	Race	0.050*	-0.056*
Spousal Support	<--	gender	0.086***	0.086***
Spousal Support	<--	Life Events	-0.070**	-0.069**
Physical Activity W1	<--	Spousal Support	0.005	0.004
Physical Activity W1	<--	Neighborhood Quality	0.049**	0.050**
Physical Activity W1	<--	SES	0.249***	0.249***
Physical Activity W1	<--	Race	0.056**	-0.058***
Physical Activity W1	<--	gender	0.111***	0.110***
Physical Activity W2	<--	Physical Activity W1	0.602***	0.603***
Physical Activity W2	<--	SES	0.104***	0.106***
Physical Activity W2	<--	Race	0.050***	-0.041**
Physical Activity W2	<--	gender	0.051***	0.050***
Physical Activity W2	<--	Spousal Support	0.026	0.027
Physical Activity W2	<--	Neighborhood Quality	0.013	0.016
Physical Activity W3	<--	Physical Activity W2	0.459***	0.458***
Physical Activity W3	<--	Spousal Support	0.002	0.002
Physical Activity W3	<--	gender	0.071***	0.071***
Physical Activity W3	<--	Race	-0.004	-0.006
Physical Activity W3	<--	SES	0.099***	0.097***
Physical Activity W3	<--	Neighborhood Quality	0.008	0.005
BMI W1	<--	Physical Activity W1	-0.064***	-0.062***
BMI W2	<--	Physical Activity W2	0.020	0.020
BMI W3	<--	Physical Activity W3	0.018	0.019
BMI W1	<--	Race	-0.101***	0.122***
BMI W2	<--	Race	-0.111***	0.123***
BMI W3	<--	Race	-0.127***	0.141***

Table 31. (continued)

			Model that includes variable White Race	Model that includes variable Black Race
BMI W1	<--	SES	-0.068***	-0.064***
BMI W2	<--	SES	-0.041*	-0.038*
BMI W3	<--	SES	0.024	0.027
BMI W1	<--	gender	-0.072***	-0.071***
BMI W2	<--	gender	-0.059***	-0.058***
BMI W3	<--	gender	-0.046*	-0.044*
BMI W1	<--	Neighborhood Quality	0.025	0.03
BMI W2	<--	Neighborhood Quality	0.017	0.019
BMI W3	<--	Neighborhood Quality	-0.014	-0.012
BMI W2		Physical Activity W1	-0.036	-0.035
BMI W3		Physical Activity W1	-0.027	-0.025
BMI W3		Physical Activity W2	0.006	0.005
BMI W1		Spousal Support	-0.018	-0.016
BMI W2		Spousal Support	-0.016	-0.014
BMI W3		Spousal Support	-0.035	-0.033

*p<0.05, **p<0.01, ***p<0.001

Model 14 "Physical Activity and Functional Limitation"

Model 14 is a baseline Stress Process Model using physical activity as a health-related behavior and functional limitation as a health outcome.

CFI ≥ 0.95 and RMSEA = 0.06 indicate the models fit the data well (Table 30).

In this model a large part of the variances were explained in financial stress, physical activity W1-W3, and functional limitation W1-W3. However, in life events and spousal support less than 10% of the variances were explained.

Table 32. Stress Process Model: Evaluation for Physical Activity and Functional Limitation

	Model that includes variable White Race	Model that includes variable Black Race
CFI	0.981	0.981
RMSEA	0.060	0.060
Squared Multiple Correlations (R^2):		
Life Events	.070	.070
Financial Stress	.165	.164
Spousal Support	.061	.062
Physical Activity W1	.103	.103
Physical Activity W2	.442	.442
Physical Activity W3	.398	.398
Functional Limitations W1	.196	.195
Functional Limitations W2	.197	.196
Functional Limitations W3	.215	.215

The results presented in Table 33 support Hypotheses 1-3, 5, 6, 8, 10, and 13; but do not support Hypotheses 4, 7, 9, 11, and 12.

Table 33. Stress Process Model: Model 14 “Physical Activity and Functional Limitation” Regression Weights

			Model that includes variable White Race	Model that includes variable Black Race
Life Events	<---	SES	-0.231***	-0.230***
Life Events	<---	White Race	-0.016	0.023
Life Events	<---	Neighborhood Quality	-0.045**	-0.043*
Life Events	<---	gender	-0.058***	-0.057***
Financial Stress	<---	Neighborhood Quality	-0.233***	-0.235***
Financial Stress	<---	SES	-0.185***	-0.185***
Financial Stress	<---	White Race	-0.135***	0.133***
Financial Stress	<---	Life Events	0.014	0.013
Financial Stress	<---	gender	-0.025	-0.023
Spousal Support	<---	Financial Stress	-0.159***	-0.158***
Spousal Support	<---	SES	-0.083***	-0.084***
Spousal Support	<---	Neighborhood Quality	0.085***	0.086***
Spousal Support	<---	Race	0.049*	-0.055*
Spousal Support	<---	gender	0.085***	0.084***
Spousal Support	<---	Life Events	-0.069**	-0.068**
Physical Activity W1	<---	Spousal Support	0.003	0.003
Physical Activity W1	<---	Neighborhood Quality	0.050**	0.050**
Physical Activity W1	<---	SES	0.249***	0.248***
Physical Activity W1	<---	Race	0.056**	-0.058***
Physical Activity W1	<---	gender	0.111***	0.110***
Physical Activity W2	<---	Physical Activity W1	0.602***	0.603***
Physical Activity W2	<---	SES	0.104***	0.106***
Physical Activity W2	<---	Race	0.050***	-0.041**
Physical Activity W2	<---	gender	0.051***	0.050***
Physical Activity W2	<---	Spousal Support	0.026	0.026
Physical Activity W2	<---	Neighborhood Quality	0.013	0.016
Physical Activity W3	<---	Physical Activity W2	0.459***	0.458***
Physical Activity W3	<---	Spousal Support	0.001	0.000
Physical Activity W3	<---	gender	0.071***	0.071***
Physical Activity W3	<---	Race	-0.003	-0.006
Physical Activity W3	<---	SES	0.099***	0.097***
Physical Activity W3	<---	Neighborhood Quality	0.008	0.005

Table 33. (continued)

			Model that includes variable White Race	Model that includes variable Black Race
Functional Limitation W1	<---	Physical Activity W1	-0.332***	-0.331***
Functional Limitation W2	<---	Physical Activity W2	-0.185***	-0.184***
Functional Limitation W3	<---	Physical Activity W3	-0.163***	-0.162***
Functional Limitation W1	<---	Race	0.056***	-0.043**
Functional Limitation W2	<---	Race	0.049**	-0.041*
Functional Limitation W3	<---	Race	-0.001	0.001
Functional Limitation W1	<---	SES	-0.221***	-0.219***
Functional Limitation W2	<---	SES	-0.214***	-0.213***
Functional Limitation W3	<---	SES	-0.247***	-0.247***
Functional Limitation W1	<---	gender	-0.026	-0.027
Functional Limitation W2	<---	gender	-0.024	-0.025
Functional Limitation W3	<---	gender	-0.028	-0.029
Functional Limitation W1	<---	Neighborhood Quality	0.014	0.019
Functional Limitation W2	<---	Neighborhood Quality	0.022	0.025
Functional Limitation W3	<---	Neighborhood Quality	0.052**	0.052**
Functional Limitation W2	<---	Physical Activity W1	-0.182***	-0.182***
Functional Limitation W3	<---	Physical Activity W1	-0.127***	-0.126***
Functional Limitation W3	<---	Physical Activity W2	-0.084***	-0.085***
Functional Limitation W1	<---	Spousal Support	-0.005	-0.004
Functional Limitation W2	<---	Spousal Support	0.003	0.004
Functional Limitation W3	<---	Spousal Support	0.032	0.032

*p<0.05, **p<0.01, ***p<0.001

Model 15 "Physical Activity and Depression"

Model 15 is a baseline Stress Process Model using physical activity as a health-related behavior and depression as a health outcome.

CFI ≥ 0.95 and RMSEA = 0.068 indicate the models fit the data moderately well (Table 34). In this model a large part of the variances were explained in financial stress, physical activity W1-W3, and depression index W1-W3. However, only 7% of the variance in life events and 10% of the variance in spousal support were explained.

Table 34. Stress Process Model: Evaluation for Physical Activity and Depression

	Model that includes variable White Race	Model that includes variable Black Race
CFI	0.974	0.973
RMSEA	0.068	0.069
Squared Multiple Correlations (R^2):		
Life Events	.070	.070
Financial Stress	.165	.164
Spousal Support	.095	.097
Physical Activity W1	.103	.103
Physical Activity W2	.442	.442
Physical Activity W3	.398	.398
Depression Index W1	.220	.220
Depression Index W2	.178	.177
Depression Index W3	.172	.168

The results presented in Table 35 support Hypotheses 1-6, 8, 10, 12, and13; but do not support Hypotheses 7, 9, and 11.

Table 35. Stress Process Model: Model 15 “Physical Activity and Depression” Regression Weights

			Model that includes variable White Race	Model that includes variable Black Race
Life Events	<---	SES	-0.231***	-0.230***
Life Events	<---	Race	-0.016	0.023
Life Events	<---	Neighborhood Quality	-0.045**	-0.043*
Life Events	<---	gender	-0.058***	-0.057***
Financial Stress	<---	Neighborhood Quality	-0.233***	-0.235***
Financial Stress	<---	SES	-0.185***	-0.185***
Financial Stress	<---	Race	-0.135***	0.133***
Financial Stress	<---	Life Events	0.014	0.013
Financial Stress	<---	gender	-0.025	-0.023
Spousal Support	<---	Financial Stress	-0.250***	-0.250***
Spousal Support	<---	SES	-0.079***	-0.081***
Spousal Support	<---	Neighborhood Quality	0.068**	0.065**
Spousal Support	<---	Race	0.035	-0.049*
Spousal Support	<---	gender	0.082***	0.082***
Spousal Support	<---	Life Events	-0.073***	-0.072***
Physical Activity W1	<---	Spousal Support	0.006	0.006
Physical Activity W1	<---	Neighborhood Quality	0.049**	0.049**
Physical Activity W1	<---	SES	0.249***	0.248***
Physical Activity W1	<---	Race	0.056**	-0.058***
Physical Activity W1	<---	gender	0.111***	0.110***
Physical Activity W2	<---	Physical Activity W1	0.602***	0.603***
Physical Activity W2	<---	SES	0.104***	0.105***
Physical Activity W2	<---	Race	0.051***	-0.041**
Physical Activity W2	<---	gender	0.051***	0.050***
Physical Activity W2	<---	Spousal Support	0.024	0.024
Physical Activity W2	<---	Neighborhood Quality	0.013	0.016
Physical Activity W3	<---	Physical Activity W2	0.458***	0.457***
Physical Activity W3	<---	Spousal Support	0.015	0.014
Physical Activity W3	<---	gender	0.070***	0.070***
Physical Activity W3	<---	Race	-0.004	-0.005
Physical Activity W3	<---	SES	0.099***	0.098***
Physical Activity W3	<---	Neighborhood Quality	0.006	0.004
Depression Index W1	<---	Physical Activity W1	-0.119***	-0.120***
Depression Index W2	<---	Physical Activity W2	-0.120***	-0.121***
Depression Index W3	<---	Physical Activity W3	-0.053*	-0.052*

Table 35. (continued)

			Model that includes variable White Race	Model that includes variable Black Race
Depression Index W1	<---	Race	-0.027	0.005
Depression Index W2	<---	Race	-0.042*	0.020
Depression Index W3	<---	Race	-0.103***	0.081***
Depression Index W1	<---	SES	-0.119***	-0.123***
Depression Index W2	<---	SES	-0.156***	-0.159***
Depression Index W3	<---	SES	-0.174***	-0.177***
Depression Index W1	<---	gender	-0.026	-0.025
Depression Index W2	<---	gender	-0.010	-0.009
Depression Index W3	<---	gender	0.013	0.014
Depression Index W1	<---	Neighborhood Quality	-0.161***	-0.167***
Depression Index W2	<---	Neighborhood Quality	-0.113***	-0.119***
Depression Index W3	<---	Neighborhood Quality	-0.085***	-0.093***
Depression Index W2	<---	Physical Activity W1	-0.043*	-0.043*
Depression Index W3	<---	Physical Activity W1	-0.090***	-0.089***
Depression Index W3	<---	Physical Activity W2	-0.046	-0.049*
Depression Index W1	<---	Spousal Support	-0.329***	-0.332***
Depression Index W2	<---	Spousal Support	-0.243***	-0.244***
Depression Index W3	<---	Spousal Support	-0.183***	-0.185***

*p<0.05, **p<0.01, ***p<0.001

Model 16 "Physical Activity and Self-Rated Health"

Model 16 is a baseline Stress Process Model using physical activity as a health-related behavior and self-rated health as a health outcome.

CFI ≥ 0.95 and RMSEA ≤ 0.06 indicate the models fit the data well (Table 36).

In this model a large part of the variances were explained in financial stress, physical activity W1-W3, and self-rated health W1-W3. However, in life events and spousal support less than 10% of the variances were explained.

Table 36. Stress Process Model: Evaluation for Physical Activity and Self-Rated Health

	Model that includes variable White Race	Model that includes variable Black Race
CFI	0.985	0.985
RMSEA	0.053	0.053
Squared Multiple Correlations (R^2):		
Life Events	.070	.070
Financial Stress	.165	.164
Spousal Support	.068	.069
Physical Activity W1	.103	.103
Physical Activity W2	.443	.442
Physical Activity W3	.398	.398
Self-Rated Health W1	.184	.184
Self-Rated Health W2	.157	.158
Self-Rated Health W3	.158	.158

The results presented in Table 37 support Hypotheses 1-6, 8, 10, 12, and13; but do not support Hypotheses 7, 9, and 11.

Table 37. Stress Process Model: Model 16 “Physical Activity and Self-Rated Health” Regression Weights

			Model that includes variable White Race	Model that includes variable Black Race
Life Events	<---	SES	-0.231***	-0.230***
Life Events	<---	Race	-0.016	0.023
Life Events	<---	Neighborhood Quality	-0.045**	-0.043*
Life Events	<---	gender	-0.058***	-0.057***
Financial Stress	<---	Neighborhood Quality	-0.233***	-0.235***
Financial Stress	<---	SES	-0.185***	-0.185***
Financial Stress	<---	Race	-0.135***	0.133***
Financial Stress	<---	Life Events	0.014	0.013
Financial Stress	<---	gender	-0.025	-0.023
Spousal Support	<---	Financial Stress	-0.170***	-0.170***
Spousal Support	<---	SES	-0.083***	-0.084***
Spousal Support	<---	Neighborhood Quality	0.082***	0.082***
Spousal Support	<---	Race	0.049*	-0.056*
Spousal Support	<---	gender	0.086***	0.086***
Spousal Support	<---	Life Events	-0.087***	-0.086***
Physical Activity W1	<---	Spouse Support	0.006	0.006
Physical Activity W1	<---	Neighborhood Quality	0.049**	0.049**
Physical Activity W1	<---	SES	0.249***	0.249***
Physical Activity W1	<---	Race	0.056**	-0.058***
Physical Activity W1	<---	gender	0.111***	0.110***
Physical Activity W2	<---	Physical Activity W1	0.602***	0.603***
Physical Activity W2	<---	SES	0.104***	0.106***
Physical Activity W2	<---	Race	0.050***	-0.041**
Physical Activity W2	<---	gender	0.050***	0.050***
Physical Activity W2	<---	Spousal Support	0.030	0.030
Physical Activity W2	<---	Neighborhood Quality	0.012	0.015
Physical Activity W3	<---	Physical Activity W2	0.459***	0.458***
Physical Activity W3	<---	Spousal Support	0.007	0.007
Physical Activity W3	<---	gender	0.071***	0.071***
Physical Activity W3	<---	Race	-0.004	-0.006
Physical Activity W3	<---	SES	0.099***	0.098***
Physical Activity W3	<---	Neighborhood Quality	0.007	0.005
Self-Rated Health W1	<---	Physical Activity W1	0.217***	0.217***
Self-Rated Health W2	<---	Physical Activity W2	0.124***	0.124***
Self-Rated Health W3	<---	Physical Activity W3	0.124***	0.124***

Table 37. (continued)

			Model that includes variable White Race	Model that includes variable Black Race
Self-Rated Health W1	<---	Race	-0.039*	0.037*
Self-Rated Health W2	<---	Race	-0.031	0.038*
Self-Rated Health W3	<---	Race	-0.008	0.005
Self-Rated Health W1	<---	SES	0.285***	0.285***
Self-Rated Health W2	<---	SES	0.253***	0.254***
Self-Rated Health W3	<---	SES	0.247***	0.247***
Self-Rated Health W1	<---	gender	-0.001	0.000
Self-Rated Health W2	<---	gender	0.018	0.019
Self-Rated Health W3	<---	gender	-0.018	-0.018
Self-Rated Health W1	<---	Neighborhood Quality	0.062***	0.061***
Self-Rated Health W2	<---	Neighborhood Quality	0.052**	0.053**
Self-Rated Health W3	<---	Neighborhood Quality	0.038*	0.037*
Self-Rated Health W2	<---	Physical Activity W1	0.100***	0.101***
Self-Rated Health W3	<---	Physical Activity W1	0.053*	0.053*
Self-Rated Health W3	<---	Physical Activity W2	0.080***	0.080***
Self-Rated Health W1	<---	Spousal Support	0.095***	0.096***
Self-Rated Health W2	<---	Spousal Support	0.078***	0.078***
Self-Rated Health W3	<---	Spousal Support	0.072**	0.072**

*p<0.05, **p<0.01, ***p<0.001

Model 17 "Smoking and BMI"

Model 17 is a baseline Stress Process Model using smoking as a health-related behavior and BMI as a health outcome.

CFI ≥ 0.95 and RMSEA ≤ 0.06 indicate the models fit the data well (Table 38).

In this model substantially more variances were explained in financial stress and smoking W2, but very little variances were explained in smoking W3 and BMI W1-W3. A large part of the variance that was explained in smoking W2 was attributed to influence of smoking W1. Effect of smoking W1 on smoking W2 is much stronger than effect of smoking W2 on

smoking W3 (Table 39). That is why much more variance was explained in smoking W2 than in smoking W3.

Table 38. Stress Process Model: Evaluation for Smoking and BMI

	Model that includes variable White Race	Model that includes variable Black Race
CFI	0.995	0.995
RMSEA	0.029	0.029
Squared Multiple Correlations (R^2):		
Life Events	.070	.070
Financial Stress	.165	.164
Spousal Support	.059	.060
Smoking W1	.093	.087
Smoking W2	.529	.527
Smoking W3	.023	.019
BMI W1	.033	.037
BMI W2	.024	.027
BMI W3	.023	.027

The results presented in Table 39 support Hypotheses 2-6, 8, 10, and 11; but do not support Hypotheses 1, 4, 7, 9, 12, and 13.

Table 39. Stress Process Model: Model 17 “Smoking and BMI” Regression Weights

			Model that includes variable White Race	Model that includes variable Black Race
Life Events	<---	SES	-0.231***	-0.230***
Life Events	<---	White Race	-0.016	0.023
Life Events	<---	Neighborhood Quality	-0.045**	-0.043*
Life Events	<---	gender	-0.058***	-0.057***
Financial Stress	<---	Neighborhood Quality	-0.233***	-0.235***
Financial Stress	<---	SES	-0.185***	-0.185***
Financial Stress	<---	White Race	-0.135***	0.133***
Financial Stress	<---	Life Events	0.014	0.013
Financial Stress	<---	gender	-0.025	-0.023
Spousal Support	<---	Financial Stress	-0.158***	-0.157***
Spousal Support	<---	SES	-0.083***	-0.084***
Spousal Support	<---	Neighborhood Quality	0.082***	0.082***
Spousal Support	<---	Race	0.051*	-0.057*
Spousal Support	<---	gender	0.085***	0.084***
Spousal Support	<---	Life Events	-0.067**	-0.066**
Smoking W1	<---	Spousal Support	-0.112**	-0.114**
Smoking W1	<---	Neighborhood Quality	-0.084**	-0.076*
Smoking W1	<---	SES	0.022	0.023
Smoking W1	<---	Race	0.251***	-0.239***
Smoking W1	<---	gender	0.165***	0.159***
Smoking W2	<---	Smoking W1	0.705**	0.709***
Smoking W2	<---	SES	0.040	0.043
Smoking W2	<---	Race	0.061*	-0.046
Smoking W2	<---	gender	0.016	0.015
Smoking W2	<---	Spousal Support	0.032	0.031
Smoking W2	<---	Neighborhood Quality	-0.037	-0.032
Smoking W3	<---	Smoking W2	0.190*	0.192*
Smoking W3	<---	Spousal Support	-0.033	-0.035
Smoking W3	<---	gender	-0.024	-0.027
Smoking W3	<---	Race	0.108*	-0.097
Smoking W3	<---	SES	-0.015	-0.01
Smoking W3	<---	Neighborhood Quality	-0.006	-0.004
BMI W1	<---	Smoking W1	0.053	0.059
BMI W2	<---	Smoking W2	0.012	0.012
BMI W3	<---	Smoking W3	-0.011	-0.012
BMI W1	<---	Race	-0.118***	0.140***
BMI W2	<---	Race	-0.124***	0.137***
BMI W3	<---	Race	-0.133***	0.148***

Table 39. (continued)

			Model that includes variable White Race	Model that includes variable Black Race
BMI W1	<---	SES	-0.085***	-0.081***
BMI W2	<---	SES	-0.047**	-0.044*
BMI W3	<---	SES	0.021	0.025
BMI W1	<---	gender	-0.088***	-0.087***
BMI W2	<---	gender	-0.070***	-0.069***
BMI W3	<---	gender	-0.050**	-0.049**
BMI W1	<---	Neighborhood Quality	0.026	0.031
BMI W2	<---	Neighborhood Quality	0.021	0.023
BMI W3	<---	Neighborhood Quality	-0.014	-0.011
BMI W2	<---	Smoking W1	0.044	0.049
BMI W3	<---	Smoking W1	0.050	0.054
BMI W3	<---	Smoking W2	-0.021	-0.021
BMI W1	<---	Spousal Support	-0.015	-0.011
BMI W2	<---	Spousal Support	-0.010	-0.007
BMI W3	<---	Spousal Support	-0.030	-0.028

*p<0.05, **p<0.01, ***p<0.001

Model 18 "Smoking and Functional Limitation"

Model 18 is a baseline Stress Process Model using smoking as a health-related behavior and functional limitation as a health outcome.

CFI ≥ 0.95 and RMSEA ≤ 0.06 indicate the models fit the data well (Table 40).

In this model a large part of the variances were explained in financial stress and smoking W2; 10% or more variances were explained in functional limitation W1-W3. However, in life events and spousal support less than 10% of variances were explained.

Table 40. Stress Process Model: Evaluation for Smoking and Functional Limitation

	Model that includes variable White Race	Model that includes variable Black Race
CFI	0.980	0.980
RMSEA	0.044	0.044
Squared Multiple Correlations (R^2):		
Life Events	.070	.070
Financial Stress	.165	.164
Spousal Support	.060	.061
Smoking W1	.091	.086
Smoking W2	.529	.528
Smoking W3	.023	.020
Functional limitation W1	.098	.098
Functional limitation W2	.102	.102
Functional limitation W3	.122	.122

The results presented in Table 41 support Hypotheses 2, 3, 5, 6, 8, 10, and 11; but do not support Hypotheses 1, 4, 7, 9, 12, and 13.

Table 41. Stress Process Model: Model 18 “Smoking and Functional Limitation” Regression Weights

			Model that includes variable White Race	Model that includes variable Black Race
Life Events	<---	SES	-0.231***	-0.230***
Life Events	<---	Race	-0.016	0.023
Life Events	<---	Neighborhood Quality	-0.045**	-0.043*
Life Events	<---	gender	-0.058***	-0.057***
Financial Stress	<---	Neighborhood Quality	-0.233***	-0.235***
Financial Stress	<---	SES	-0.185***	-0.185***
Financial Stress	<---	Race	-0.135***	0.133***
Financial Stress	<---	Life Events	0.014	0.013
Financial Stress	<---	gender	-0.025	-0.023
Spousal Support	<---	Financial Stress	-0.159***	-0.158***
Spousal Support	<---	SES	-0.083***	-0.084***
Spousal Support	<---	Neighborhood Quality	0.083***	0.083***
Spousal Support	<---	Race	0.051*	-0.057*
Spousal Support	<---	gender	0.084***	0.083***
Spousal Support	<---	Life Events	-0.067**	-0.065**
Smoking W1	<---	Spousal Support	-0.107**	-0.109**
Smoking W1	<---	Neighborhood Quality	-0.083**	-0.075*
Smoking W1	<---	SES	0.023	0.025
Smoking W1	<---	Race	0.250***	-0.238***
Smoking W1	<---	gender	0.163***	0.157***
Smoking W2	<---	Smoking W1	0.705***	0.708***
Smoking W2	<---	SES	0.042	0.045
Smoking W2	<---	Race	0.061*	-0.047
Smoking W2	<---	gender	0.019	0.018
Smoking W2	<---	Spousal Support	0.032	0.031
Smoking W2	<---	Neighborhood Quality	-0.037	-0.032
Smoking W3	<---	Smoking W2	0.192*	0.194**
Smoking W3	<---	Spousal Support	-0.032	-0.033
Smoking W3	<---	gender	-0.025	-0.028
Smoking W3	<---	Race	0.109*	-0.098
Smoking W3	<---	SES	-0.013	-0.008
Smoking W3	<---	Neighborhood Quality	-0.006	-0.003
Functional Limitation W1	<---	Smoking W1	0.027	0.031
Functional Limitation W2	<---	Smoking W2	-0.051	-0.051
Functional Limitation W3	<---	Smoking W3	0.002	-0.003

Table 41. (continued)

			Model that includes variable White Race	Model that includes variable Black Race
Functional Limitation W1	<---	Race	0.031	-0.016
Functional Limitation W2	<---	Race	0.015	-0.008
Functional Limitation W3	<---	Race	-0.029	0.031
Functional Limitation W1	<---	SES	-0.304***	-0.302***
Functional Limitation W2	<---	SES	-0.303***	-0.302***
Functional Limitation W3	<---	SES	-0.330***	-0.329***
Functional Limitation W1	<---	gender	-0.067***	-0.068***
Functional Limitation W2	<---	gender	-0.072***	-0.073***
Functional Limitation W3	<---	gender	-0.081***	-0.081***
Functional Limitation W1	<---	Neighborhood Quality	0.000	0.004
Functional Limitation W2	<---	Neighborhood Quality	0.007	0.010
Functional Limitation W3	<---	Neighborhood Quality	0.042*	0.042*
Functional Limitation W2	<---	Smoking W1	0.066	0.069
Functional Limitation W3	<---	Smoking W1	0.052	0.054
Functional Limitation W3	<---	Smoking W2	-0.017	-0.020
Functional Limitation W1	<---	Spousal Support	-0.002	-0.001
Functional Limitation W2	<---	Spousal Support	0.003	0.004
Functional Limitation W3	<---	Spousal Support	0.030	0.030

*p<0.05, **p<0.01, ***p<0.001

Model 19 "Smoking and Depression"

Model 19 is a baseline Stress Process Model using smoking as a health-related behavior and depression as a health outcome.

CFI ≥ 0.95 and RMSEA = 0.062 indicate the models fit the data moderately well (Table 42). In this model a large part of the variances were explained in financial stress, smoking W2, and depression index W1-W3. However, in life events and spousal support less than 10% of the variances were explained.

Table 42. Stress Process Model: Evaluation for Smoking and Depression

	Model that includes variable White Race	Model that includes variable Black Race
CFI	0.960	0.959
RMSEA	0.062	0.062
Squared Multiple Correlations (R^2):		
Life Events	.070	.070
Financial Stress	.165	.164
Spousal Support	.092	.094
Smoking W1	.093	.087
Smoking W2	.528	.526
Smoking W3	.022	.019
Depression index W1	.208	.207
Depression index W2	.162	.160
Depression index W3	.155	.152

The results presented in Table 43 support Hypotheses 2-6, 8, 10, 11, and 12; but do not support Hypotheses 1, 7, 9, and 13.

Table 43. Stress Process Model: Model 19 “Smoking and Depression” Regression Weights

			Model that includes variable White Race	Model that includes variable Black Race
Life Events	<---	SES	-0.231***	-0.230***
Life Events	<---	White Race	-0.016	0.023
Life Events	<---	Neighborhood Quality	-0.045**	-0.043*
Life Events	<---	gender	-0.058***	-0.057***
Financial Stress	<---	Neighborhood Quality	-0.233***	-0.235***
Financial Stress	<---	SES	-0.185***	-0.185***
Financial Stress	<---	White Race	-0.135***	0.133***
Financial Stress	<---	Life Events	0.014	0.013
Financial Stress	<---	gender	-0.025	-0.023
Spousal Support	<---	Financial Stress	-0.247***	-0.246***
Spousal Support	<---	SES	-0.078***	-0.080***
Spousal Support	<---	Neighborhood Quality	0.066**	0.063**
Spousal Support	<---	Race	0.036	-0.051*
Spousal Support	<---	gender	0.081***	0.081***
Spousal Support	<---	Life Events	-0.073***	-0.072***
Smoking W1	<---	Spouse Support	-0.103**	-0.106**
Smoking W1	<---	Neighborhood Quality	-0.086**	-0.077*
Smoking W1	<---	SES	0.031	0.032
Smoking W1	<---	Race	0.251***	-0.239***
Smoking W1	<---	gender	0.165***	0.159***
Smoking W2	<---	Smoking W1	0.704***	0.707***
Smoking W2	<---	SES	0.038	0.04
Smoking W2	<---	Race	0.064*	-0.049
Smoking W2	<---	gender	0.016	0.015
Smoking W2	<---	Spousal Support	0.032	0.031
Smoking W2	<---	Neighborhood Quality	-0.039	-0.035
Smoking W3	<---	Smoking W2	0.189*	0.191*
Smoking W3	<---	Spousal Support	-0.022	-0.023
Smoking W3	<---	gender	-0.032	-0.035
Smoking W3	<---	Race	0.103*	-0.092
Smoking W3	<---	SES	-0.013	-0.009
Smoking W3	<---	Neighborhood Quality	0.008	0.011
Depression Index W1	<---	Smoking W1	0.038	0.030
Depression Index W2	<---	Smoking W2	0.047	0.046
Depression Index W3	<---	Smoking W3	-0.081*	-0.083*

Table 43. (continued)

			Model that includes variable White Race	Model that includes variable Black Race
Depression Index W1	<---	Race	-0.043*	0.019
Depression Index W2	<---	Race	-0.074***	0.048*
Depression Index W3	<---	Race	-0.111***	0.087***
Depression Index W1	<---	SES	-0.150***	-0.153***
Depression Index W2	<---	SES	-0.200***	-0.203***
Depression Index W3	<---	SES	-0.217***	-0.219***
Depression Index W1	<---	gender	-0.046**	-0.044**
Depression Index W2	<---	gender	-0.040*	-0.038*
Depression Index W3	<---	gender	-0.013	-0.011
Depression Index W1	<---	Neighborhood Quality	-0.164***	-0.172***
Depression Index W2	<---	Neighborhood Quality	-0.113***	-0.122***
Depression Index W3	<---	Neighborhood Quality	-0.089***	-0.097***
Depression Index W2	<---	Smoking W1	0.022	0.014
Depression Index W3	<---	Smoking W1	-0.053	-0.060
Depression Index W3	<---	Smoking W2	0.089	0.088
Depression Index W1	<---	Spousal Support	-0.325***	-0.328***
Depression Index W2	<---	Spousal Support	-0.243***	-0.245***
Depression Index W3	<---	Spousal Support	-0.194***	-0.197***

*p<0.05, **p<0.01, ***p<0.001

Model 20 "Smoking and Self-Rated Health"

Model 20 is a baseline Stress Process Model using smoking as a health-related behavior and self-rated health as a health outcome.

CFI ≥ 0.95 and RMSEA ≤ 0.06 indicate the models fit the data well (Table 44).

In this model a large part of the variances were explained in financial stress and smoking W2. More than 12% of variances were explained in self-rated health W1-W3.

Table 44. Stress Process Model: Evaluation for Smoking and Self-Rated Health

	Model that includes variable White Race	Model that includes variable Black Race
CFI	0.987	0.987
RMSEA	0.037	0.036
Squared Multiple Correlations (R^2):		
Life Events	.070	.070
Financial Stress	.165	.164
Spousal Support	.066	.067
Smoking W1	.091	.085
Smoking W2	.528	.527
Smoking W3	.023	.020
Self-rated health W1	.153	.153
Self-rated health W2	.125	.125
Self-rated health W3	.122	.123

The results presented in Table 45 support Hypotheses 2-6, 8, 10, 11, 12, and 13; but do not support Hypotheses 1, 7, and 9.

Table 45. Stress Process Model: Model 20 “Smoking and Self-Rated Health” Regression Weights

			Model that includes variable White Race	Model that includes variable Black Race
Life Events	<---	SES	-0.231***	-0.230***
Life Events	<---	Race	-0.016	0.023
Life Events	<---	Neighborhood Quality	-0.045**	-0.043*
Life Events	<---	gender	-0.058***	-0.057***
Financial Stress	<---	Neighborhood Quality	-0.233***	-0.235***
Financial Stress	<---	SES	-0.185***	-0.185***
Financial Stress	<---	Race	-0.135***	0.133***
Financial Stress	<---	Life Events	0.014	0.013
Financial Stress	<---	gender	-0.025	-0.023
Spousal Support	<---	Financial Stress	-0.169***	-0.168***
Spousal Support	<---	SES	-0.083***	-0.084***
Spousal Support	<---	Neighborhood Quality	0.080***	0.080***
Spousal Support	<---	Race	0.050*	-0.058*
Spousal Support	<---	gender	0.085***	0.084***
Spousal Support	<---	Life Events	-0.084***	-0.083***
Smoking W1	<---	Spousal Support	-0.105**	-0.107**
Smoking W1	<---	Neighborhood Quality	-0.084**	-0.076*
Smoking W1	<---	SES	0.019	0.021
Smoking W1	<---	Race	0.251***	-0.239***
Smoking W1	<---	gender	0.163***	0.157***
Smoking W2	<---	Smoking W1	0.704***	0.707***
Smoking W2	<---	SES	0.04	0.043
Smoking W2	<---	Race	0.063*	-0.048
Smoking W2	<---	gender	0.019	0.018
Smoking W2	<---	Spousal Support	0.028	0.027
Smoking W2	<---	Neighborhood Quality	-0.037	-0.032
Smoking W3	<---	Smoking W2	0.189*	0.190*
Smoking W3	<---	Spousal Support	-0.027	-0.029
Smoking W3	<---	gender	-0.032	-0.035
Smoking W3	<---	Race	0.107*	-0.098
Smoking W3	<---	SES	-0.011	-0.007
Smoking W3	<---	Neighborhood Quality	0.002	0.004
Self-Rated Health W1	<---	Smoking W1	-0.112***	-0.112***
Self-Rated Health W2	<---	Smoking W2	-0.016	-0.016
Self-Rated Health W3	<---	Smoking W3	0.078*	0.080*

Table 45. (continued)

Self-Rated Health W1	<---	Race	0.002	-0.003
Self-Rated Health W2	<---	Race	0.007	0.002
Self-Rated Health W3	<---	Race	0.017	-0.019
Self-Rated Health W1	<---	SES	0.341***	0.341***
Self-Rated Health W2	<---	SES	0.310***	0.311***
Self-Rated Health W3	<---	SES	0.306***	0.305***
Self-Rated Health W1	<---	gender	0.042*	0.041*
Self-Rated Health W2	<---	gender	0.058**	0.057**
Self-Rated Health W3	<---	gender	0.03	0.03
Self-Rated Health W1	<---	Neighborhood Quality	0.064***	0.064***
Self-Rated Health W2	<---	Neighborhood Quality	0.055**	0.057**
Self-Rated Health W3	<---	Neighborhood Quality	0.038	0.038
Self-Rated Health W2	<---	Smoking W1	-0.062	-0.06
Self-Rated Health W3	<---	Smoking W1	-0.048	-0.05
Self-Rated Health W3	<---	Smoking W2	-0.042	-0.039
Self-Rated Health W1	<---	Spousal Support	0.084***	0.084***
Self-Rated Health W2	<---	Spousal Support	0.074**	0.074**
Self-Rated Health W3	<---	Spousal Support	0.072**	0.072**

*p<0.05, **p<0.01, ***p<0.001

Model 21 "Drinking and BMI"

Model 21 is a baseline Stress Process Model using drinking as a health-related behavior and BMI as a health outcome.

CFI ≥ 0.95 and RMSEA ≤ 0.06 indicate the models fit the data well (Table 46).

In this model a large part of the variance was explained in financial stress and drinking W2 and W3. However, very little variance was explained in BMI W1-W3.

Table 46. Stress Process Model: Evaluation for Drinking and BMI

	Model that includes variable White Race	Model that includes variable Black Race
CFI	0.993	0.993
RMSEA	0.036	0.036
Squared Multiple Correlations (R^2):		
Life Events	.070	.070
Financial Stress	.165	.164
Spousal Support	.062	.063
Drinking W1	.084	.082
Drinking W2	.313	.313
Drinking W3	.346	.346
BMI W1	.030	.034
BMI W2	.022	.025
BMI W3	.022	.026

The results presented in Table 47 support Hypotheses 2, 3, 5, 6, 8, 10, and 11; but do not support Hypotheses 1, 4, 7, 9, 12, and 13.

Table 47. Stress Process Model: Model 21 “Drinking and BMI” Regression Weights

			Model that includes variable White Race	Model that includes variable Black Race
Life Events	<---	SES	-0.231***	-0.230***
Life Events	<---	Race	-0.016	0.023
Life Events	<---	Neighborhood Quality	-0.045**	-0.043*
Life Events	<---	gender	-0.058***	-0.057***
Financial Stress	<---	Neighborhood Quality	-0.233***	-0.235***
Financial Stress	<---	SES	-0.185***	-0.185***
Financial Stress	<---	Race	-0.135***	0.133***
Financial Stress	<---	Life Events	0.014	0.013
Financial Stress	<---	gender	-0.025	-0.023
Spousal Support	<---	Financial Stress	-0.163***	-0.163***
Spousal Support	<---	SES	-0.086***	-0.087***
Spousal Support	<---	Neighborhood Quality	0.082***	0.082***
Spousal Support	<---	Race	0.050*	-0.057*
Spousal Support	<---	gender	0.086***	0.085***
Spousal Support	<---	Life Events	-0.068**	-0.068**
Drinking W1	<---	Spousal Support	-0.081**	-0.082**
Drinking W1	<---	Neighborhood Quality	-0.096***	-0.105***
Drinking W1	<---	SES	-0.032	-0.035
Drinking W1	<---	Race	-0.061*	0.04
Drinking W1	<---	gender	0.251***	0.252***
Drinking W2	<---	Drinking W1	0.493***	0.494***
Drinking W2	<---	SES	-0.024	-0.024
Drinking W2	<---	Race	-0.049	0.051*
Drinking W2	<---	gender	0.128***	0.129***
Drinking W2	<---	Spousal Support	0.023	0.024
Drinking W2	<---	Neighborhood Quality	-0.078**	-0.078**
Drinking W3	<---	Drinking W2	0.388***	0.389***
Drinking W3	<---	Spousal Support	-0.033	-0.035
Drinking W3	<---	gender	0.163***	0.163***
Drinking W3	<---	Race	-0.001	-0.022
Drinking W3	<---	SES	-0.014	-0.017
Drinking W3	<---	Neighborhood Quality	-0.117***	-0.124***
BMI W1	<---	Drinking W1	0.000	0.001
BMI W2	<---	Drinking W2	-0.010	-0.010
BMI W3	<---	Drinking W3	-0.004	-0.003

Table 47. (continued)

			Model that includes variable White Race	Model that includes variable Black Race
BMI W1	<---	Race	-0.105***	0.126***
BMI W2	<---	Race	-0.108***	0.122***
BMI W3	<---	Race	-0.125***	0.140***
BMI W1	<---	SES	-0.084***	-0.080***
BMI W2	<---	SES	-0.044*	-0.041*
BMI W3	<---	SES	0.022	0.026
BMI W1	<---	gender	-0.079***	-0.078***
BMI W2	<---	gender	-0.070***	-0.068***
BMI W3	<---	gender	-0.052**	-0.051**
BMI W1	<---	Neighborhood Quality	0.022	0.027
BMI W2	<---	Neighborhood Quality	0.019	0.022
BMI W3	<---	Neighborhood Quality	-0.013	-0.010
BMI W2	<---	Drinking W1	0.046	0.047
BMI W3	<---	Drinking W1	0.029	0.030
BMI W3	<---	Drinking W2	0.001	0.001
BMI W1	<---	Spousal Support	-0.018	-0.015
BMI W2	<---	Spousal Support	-0.011	-0.009
BMI W3	<---	Spousal Support	-0.031	-0.029

*p<0.05, **p<0.01, ***p<0.001

Model 22 "Drinking and Functional Limitations"

Model 22 is a baseline Stress Process Model using drinking as a health-related behavior and functional limitation as a health outcome.

CFI ≥ 0.95 and RMSEA ≤ 0.06 indicate the models fit the data well (Table 48).

In this model a large part of the variances were explained in financial stress and drinking W2 and W3. More than 10% of variance was explained in functional limitation W1-W3.

Table 48. Stress Process Model: Evaluation for Drinking and Functional Limitation

	Model that includes variable White Race	Model that includes variable Black Race
CFI	0.977	0.976
RMSEA	0.050	0.050
Squared Multiple Correlations (R^2):		
Life Events	.070	.070
Financial Stress	.165	.164
Spousal Support	.062	.063
Drinking W1	.085	.084
Drinking W2	.314	.315
Drinking W3	.348	.349
Functional limitation W1	.109	.109
Functional limitation W2	.108	.108
Functional limitation W3	.125	.125

The results presented in Table 49 support Hypotheses 2, 3, 5, 6, 8, 10, and 11; but do not support Hypotheses 1, 4, 7, 9, 12, and 13.

Table 49. Stress Process Model: Model 22 “Drinking and Functional Limitation” Regression Weights

			Model that includes variable White Race	Model that includes variable Black Race
Life Events	<---	SES	-0.231***	-0.230***
Life Events	<---	White Race	-0.016	0.023
Life Events	<---	Neighborhood Quality	-0.045**	-0.043*
Life Events	<---	gender	-0.058***	-0.057***
Financial Stress	<---	Neighborhood Quality	-0.233***	-0.235***
Financial Stress	<---	SES	-0.185***	-0.185***
Financial Stress	<---	White Race	-0.135***	0.133***
Financial Stress	<---	Life Events	0.014	0.013
Financial Stress	<---	gender	-0.025	-0.023
Spousal Support	<---	Financial Stress	-0.164***	-0.163***
Spousal Support	<---	SES	-0.085***	-0.086***
Spousal Support	<---	Neighborhood Quality	0.083***	0.083***
Spousal Support	<---	Race	0.050*	-0.057*
Spousal Support	<---	gender	0.085***	0.085***
Spousal Support	<---	Life Events	-0.069**	-0.068**
Drinking W1	<---	Spousal Support	-0.080**	-0.082**
Drinking W1	<---	Neighborhood Quality	-0.097***	-0.106***
Drinking W1	<---	SES	-0.017	-0.02
Drinking W1	<---	Race	-0.059*	0.037
Drinking W1	<---	gender	0.256***	0.257***
Drinking W2	<---	Drinking W1	0.495***	0.495***
Drinking W2	<---	SES	-0.016	-0.016
Drinking W2	<---	Race	-0.05	0.053*
Drinking W2	<---	gender	0.127***	0.128***
Drinking W2	<---	Spousal Support	0.023	0.024
Drinking W2	<---	Neighborhood Quality	-0.078**	-0.078**
Drinking W3	<---	Drinking W2	0.390***	0.390***
Drinking W3	<---	Spousal Support	-0.032	-0.035
Drinking W3	<---	gender	0.164***	0.165***
Drinking W3	<---	Race	0.001	-0.024
Drinking W3	<---	SES	-0.007	-0.01
Drinking W3	<---	Neighborhood Quality	-0.118***	-0.125***
Functional Limitation W1	<---	Drinking W1	-0.114***	-0.116***
Functional Limitation W2	<---	Drinking W2	-0.079**	-0.079**
Functional Limitation W3	<---	Drinking W3	-0.034	-0.033

Table 49. (continued)

			Model that includes variable White Race	Model that includes variable Black Race
Functional Limitation W1	<---	Race	0.031	-0.019
Functional Limitation W2	<---	Race	0.012	-0.007
Functional Limitation W3	<---	Race	-0.025	0.025
Functional Limitation W1	<---	SES	-0.305***	-0.303***
Functional Limitation W2	<---	SES	-0.307***	-0.306***
Functional Limitation W3	<---	SES	-0.332***	-0.331***
Functional Limitation W1	<---	gender	-0.034*	-0.034*
Functional Limitation W2	<---	gender	-0.042*	-0.042*
Functional Limitation W3	<---	gender	-0.051*	-0.050*
Functional Limitation W1	<---	Neighborhood Quality	-0.014	-0.011
Functional Limitation W2	<---	Neighborhood Quality	-0.006	-0.005
Functional Limitation W3	<---	Neighborhood Quality	0.027	0.027
Functional Limitation W2	<---	Drinking W1	-0.025	-0.027
Functional Limitation W3	<---	Drinking W1	-0.028	-0.028
Function Limitation W3	<---	Drinking W2	-0.031	-0.032
Function Limitation W1	<---	Spousal Support	-0.011	-0.011
Function Limitation W2	<---	Spousal Support	-0.005	-0.004
Function Limitation W3	<---	Spousal Support	0.020	0.020

*p<0.05, **p<0.01, ***p<0.001

Model 23 "Drinking and Depression"

Model 23 is a baseline Stress Process Model using drinking as a health-related behavior and depression as a health outcome.

CFI ≥ 0.95 and RMSEA = 0.065 indicate the models fit the data moderately well (Table 50). In this model a large part of the variances were explained in financial stress, drinking W2 and W3, and depression index W1-W3. However, less than 10% of variances were explained in drinking W1, life events, and spousal support.

Table 50. Stress Process Model: Evaluation for Drinking and Depression

	Model that includes variable White Race	Model that includes variable Black Race
CFI	0.961	0.960
RMSEA	0.065	0.066
Squared Multiple Correlations (R^2):		
Life Events	.070	.070
Financial Stress	.165	.164
Spousal Support	.094	.096
Drinking W1	.086	.084
Drinking W2	.315	.315
Drinking W3	.345	.346
Depression index W1	.210	.210
Depression index W2	.163	.162
Depression index W3	.153	.150

The results presented in Table 51 support Hypotheses 2-6, 8, and 10-13; but do not support Hypotheses 1, 7, and 9.

Table 51. Stress Process Model: Model 23 “Drinking and Depression” Regression Weights

			Model that includes variable White Race	Model that includes variable Black Race
Life Events	<---	SES	-0.231***	-0.230***
Life Events	<---	Race	-0.016	0.023
Life Events	<---	Neighborhood Quality	-0.045**	-0.043*
Life Events	<---	gender	-0.058***	-0.057***
Financial Stress	<---	Neighborhood Quality	-0.233***	-0.235***
Financial Stress	<---	SES	-0.185***	-0.185***
Financial Stress	<---	Race	-0.135***	0.133***
Financial Stress	<---	Life Events	0.014	0.013
Financial Stress	<---	gender	-0.025	-0.023
Spousal Support	<---	Financial Stress	-0.250***	-0.250***
Spousal Support	<---	SES	-0.080***	-0.081***
Spousal Support	<---	Neighborhood Quality	0.066**	0.063**
Spousal Support	<---	Race	0.035	-0.050*
Spousal Support	<---	gender	0.081***	0.081***
Spousal Support	<---	Life Events	-0.074***	-0.073***
Drinking W1	<---	Neighborhood Quality	-0.091***	-0.099***
Drinking W1	<---	SES	-0.034	-0.037
Drinking W1	<---	Race	-0.060*	0.038
Drinking W1	<---	gender	0.254****	0.254***
Drinking W1	<---	Spousal Support	-0.094***	-0.095***
Drinking W2	<---	Drinking W1	0.489***	0.490***
Drinking W2	<---	SES	-0.009	-0.008
Drinking W2	<---	Race	-0.046	0.049
Drinking W2	<---	gender	0.129***	0.130***
Drinking W2	<---	Spousal Support	0.043	0.044
Drinking W2	<---	Neighborhood Quality	-0.067*	-0.067*
Drinking W2	<---	Financial Stress	0.072**	0.072**
Drinking W3	<---	Drinking W2	0.387***	0.388***
Drinking W3	<---	Race	0.004	-0.028
Drinking W3	<---	SES	-0.019	-0.022
Drinking W3	<---	gender	0.162***	0.162***
Drinking W3	<---	Neighborhood Quality	-0.113***	-0.119***
Drinking W3	<---	Spousal Support	-0.054	-0.057*
Depression Index W1	<---	Drinking W1	0.050*	0.052*
Depression Index W2	<---	Drinking W2	0.018	0.019
Depression Index W3	<---	Drinking W3	0.087**	0.089**
Depression Index W2	<---	Drinking W1	0.061*	0.063*

Table 51. (continued)

			Model that includes variable White Race	Model that includes variable Black Race
Depression Index W3	<---	Drinking W2	-0.044	-0.045
Depression Index W3	<---	Drinking W1	0.022	0.025
Depression Index W1	<---	Race	-0.031	0.009
Depression Index W2	<---	Race	-0.052**	0.03
Depression Index W3	<---	Race	-0.115***	0.096***
Depression Index W2	<---	SES	-0.194***	-0.197***
Depression Index W3	<---	SES	-0.211***	-0.213***
Depression Index W1	<---	gender	-0.052**	-0.052**
Depression Index W2	<---	gender	-0.050**	-0.050**
Depression Index W3	<---	gender	-0.026	-0.026
Depression Index W1	<---	Neighborhood Quality	-0.163***	-0.169***
Depression Index W2	<---	Neighborhood Quality	-0.111***	-0.118***
Depression Index W3	<---	Neighborhood Quality	-0.082***	-0.088***
Depression Index W2	<---	Spousal Support	-0.241***	-0.242***
Depression Index W3	<---	Spousal Support	-0.185***	-0.187***
Depression Index W1	<---	Spousal Support	-0.325***	-0.327***
Depression Index W1	<---	SES	-0.147***	-0.151***

*p<0.05, **p<0.01, ***p<0.001

Model 24 "Drinking and Self-Rated Health"

Model 24 is a baseline Stress Process Model using drinking as a health-related behavior and self-rated health as a health outcome.

CFI ≥ 0.95 and RMSEA ≤ 0.06 indicate the models fit the data well (Table 52).

In this model a large part of the variances were explained in financial stress and drinking W2 and W3. More than 11% of variance was explained in self-rated health W1-W3.

Table 52. Stress Process Model: Evaluation for Drinking and Self-Rated Health

	Model that includes variable White Race	Model that includes variable Black Race
CFI	0.982	0.982
RMSEA	0.045	0.045
Squared Multiple Correlations (R^2):		
Life Events	.070	.070
Financial Stress	.165	.164
Spousal Support	.069	.070
Drinking W1	.085	.084
Drinking W2	.315	.315
Drinking W3	.346	.347
Self-rated health W1	.112	.112
Self-rated health W2	.124	.124
Self-rated health W3	.145	.145

The results presented in Table 53 support Hypotheses 2-6, 8, and 10-13; but do not support Hypotheses 1, 7, and 9.

Table 53. Stress Process Model: Model 24 “Drinking and Self-Rated Health” Regression Weights

			Model that includes variable White Race	Model that includes variable Black Race
Life Events	<---	SES	-0.231***	-0.230***
Life Events	<---	White Race	-0.016	0.023
Life Events	<---	Neighborhood Quality	-0.045**	-0.043*
Life Events	<---	gender	-0.058***	-0.057***
Financial Stress	<---	Neighborhood Quality	-0.233***	-0.235***
Financial Stress	<---	SES	-0.185***	-0.185***
Financial Stress	<---	White Race	-0.135***	0.133***
Financial Stress	<---	Life Events	0.014	0.013
Financial Stress	<---	gender	-0.025	-0.023
Spousal Support	<---	Financial Stress	-0.175***	-0.174***
Spousal Support	<---	SES	-0.085***	-0.086***
Spousal Support	<---	Neighborhood Quality	0.080***	0.079***
Spousal Support	<---	Race	0.050*	-0.058*
Spousal Support	<---	gender	0.086***	0.085***
Spousal Support	<---	Life Events	-0.087***	-0.086***
Drinking W1	<---	Spousal Support	-0.084**	-0.085**
Drinking W1	<---	Neighborhood Quality	-0.096***	-0.104***
Drinking W1	<---	SES	-0.028	-0.031
Drinking W1	<---	Race	-0.061*	0.04
Drinking W1	<---	gender	0.254***	0.255***
Drinking W2	<---	Drinking W1	0.494***	0.495***
Drinking W2	<---	SES	-0.026	-0.025
Drinking W2	<---	Race	-0.048	0.05
Drinking W2	<---	gender	0.126***	0.127***
Drinking W2	<---	Spousal Support	0.024	0.025
Drinking W2	<---	Neighborhood Quality	-0.080**	-0.080**
Drinking W3	<---	Drinking W2	0.388***	0.388***
Drinking W3	<---	Spousal Support	-0.032	-0.035
Drinking W3	<---	gender	0.163***	0.164***
Drinking W3	<---	Race	-0.001	-0.022
Drinking W3	<---	SES	-0.012	-0.015
Drinking W3	<---	Neighborhood Quality	-0.117***	-0.124***
Self-Rated Health W1	<---	Drinking W1	0.058*	0.059*
Self-Rated Health W2	<---	Drinking W2	-0.057*	-0.058*
Self-Rated Health W3	<---	Drinking W3	0.021	0.020

Table 53. (continued)

			Model that includes variable White Race	Model that includes variable Black Race
Self-Rated Health W1	<---	Race	-0.023	0.022
Self-Rated Health W2	<---	Race	-0.013	0.022
Self-Rated Health W3	<---	Race	0.007	-0.009
Self-Rated Health W1	<---	SES	0.341***	0.341***
Self-Rated Health W2	<---	SES	0.307***	0.309***
Self-Rated Health W3	<---	SES	0.303***	0.303***
Self-Rated Health W1	<---	gender	0.008	0.008
Self-Rated Health W2	<---	gender	0.043*	0.043*
Self-Rated Health W3	<---	gender	0.007	0.007
Self-Rated Health W1	<---	Neighborhood Quality	0.079***	0.078***
Self-Rated Health W2	<---	Neighborhood Quality	0.060**	0.063***
Self-Rated Health W3	<---	Neighborhood Quality	0.049*	0.048*
Self-Rated Health W2	<---	Drinking W1	0.066*	0.067*
Self-Rated Health W3	<---	Drinking W1	0.032	0.033
Self-Rated Health W3	<---	Drinking W2	-0.022	-0.021
Self-Rated Health W1	<---	Spousal Support	0.102***	0.102***
Self-Rated Health W2	<---	Spousal Support	0.085***	0.086***
Self-Rated Health W3	<---	Spousal Support	0.079***	0.079***

*p<0.05, **p<0.01, ***p<0.001

Comparison of direct and indirect effects of financial stress on health behaviors and outcomes provides the possibility to assess the role of the mediator (spousal support). Thus, when direct effect of financial stress on drinking at Wave 1 was added to the model, it was found this effect was equal to 0.102 (p <0.001); effect of financial stress on spousal support was equal to (-0.171; p < 0.001); effect of spousal support on drinking at Wave 1 was (-0.056, p = 0.056). Indirect effect of financial stress on drinking at Wave 1 = effect of financial stress on spousal support* effect of spousal support on drinking at Wave 1 = (-0.171)*(-0.056) = 0.01, less than 0.102. This indicates spousal support mitigated the effect of financial stress on drinking.

When direct effect of financial stress on self-rated health at Wave 1 was added to the model, it was determined this effect was equal to (-0.071; p <0.001); effect of financial stress on spousal support was equal to (-0.169; $p < 0.001$); effect of spousal support on self-rated health at Wave 1 was (-0.082, $p < 0.001$). Indirect effect of financial stress on self-rated health at Wave 1 = effect of financial stress on spousal support* effect of spousal support on self-rated health at Wave 1 = (-0.169)*(0.082) = (- 0.014) that is larger than (-0.071). This indicates spousal support mitigated the negative effect of financial stress on self-rated health.

Summary of the Results for Stress Process Model:

The results related to Hypotheses 1, 4, and 13 were described above in the summary of the results for Fundamental Cause Theory.

Hypotheses 2, 3, 5, 6, 8, and 10 were supported by the Stress Process Model. It was determined financial stress and negative life events decreased accordingly with an increase of individuals' SES and neighborhood quality. Spousal support increased accordingly with an increase of neighborhood quality, where individuals reside. At the same time, spousal support decreased if financial stress and negative life events increased.

Hypothesis 7 was not supported by the Stress Process Model. Results showed the effect of SES on spousal support was significant and negative. The regression coefficient for spousal support on SES was not significant. However, when financial stress was added to the model, the effect of SES on spousal support became significant and negative. This finding indicated financial stress mediated the effect of SES on spousal support.

Hypothesis 9 was not supported by the Stress Process Model.

Results showed the effect of negative life events on stress was not significant.

Hypothesis 11 was partially supported by the Stress Process Model. Smoking at Wave 1 and drinking at Wave 1 decreased, if spousal support increased.

Hypothesis 12 was partially supported by the Stress Process Model. Individuals, who received spousal support, became less depressed and reported better self-rated health.

A comparison of direct and indirect effects of financial stress on health behavior and outcome showed spousal support mitigated the effect of financial stress on health behavior and outcome (drinking and self-rated health).

Social Cognitive Theory

The data analysis began with the assessment of the SCT baseline model (Figure 5). This model was constructed on the basis of the description of SCT provided by Bandura (1986) and by using the corresponding constructs from the ACL dataset. According to Bandura (2009), people's behaviors and social factors "operate as codeterminants in an integrated causal structure" (p. 94). He also noted, "Most external characteristics affect behavior through cognitive processes rather than directly" (p. 95). For this reason, it was important to assess the indirect effect of social factors on health-related behaviors and outcomes through the moderators (perceived control and barriers—financial strains).

To evaluate SCT, four exogenous variables were used: neighborhood quality, gender, race (White or Black), and SES; three health-related behaviors: physical activity, smoking, and drinking; and four health outcomes: BMI, functional limitation, depression index, and self-rated health. Twelve models were constructed in total (3 health-related behaviors x 4

health outcomes = 12). Then, each model was repeated with the variable White Race and the variable Black Race separately with the purpose to analyze the effect of race on health-related behaviors and health outcomes. SCT also includes perceived control and financial strains.

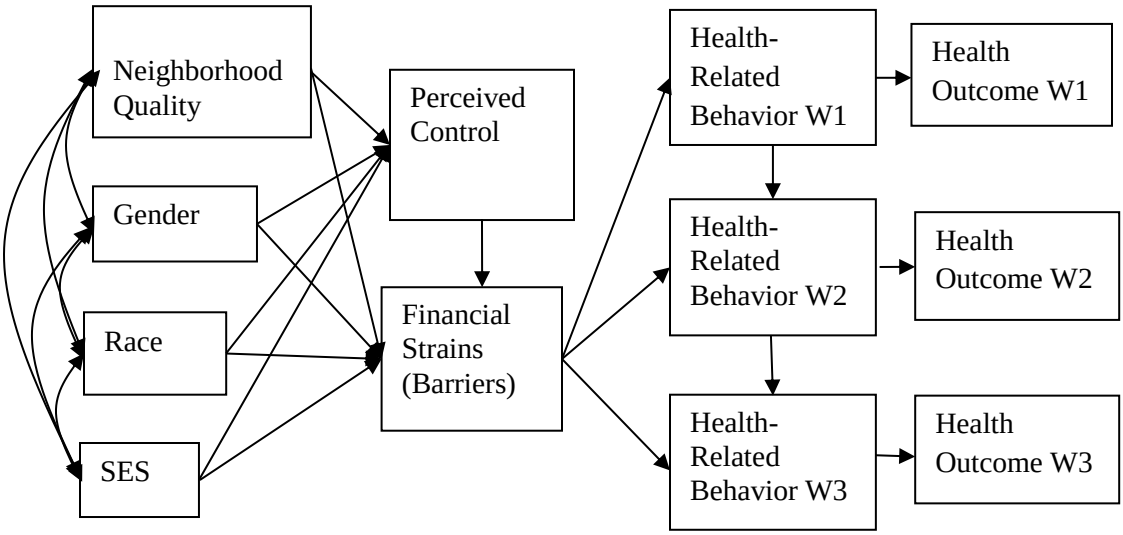

Figure 5. Social Cognitive Theory (W1 = Wave 1, W2 = Wave 2, W3 = Wave 3)

Model 25 "Physical Activity and BMI"

Model 25 helped analyze SCT by using physical activity as a health-related behavior and BMI as a health outcome.

CFI $\geq$ 0.95 and RMSEA = 0.069 indicate the baseline models fit the data moderately well (Table 54). CFI $\geq$ 0.95 and RMSEA $\leq$ 0.06 indicate the models with direct effects of socioeconomic factors on physical activity fit the data well (Table 54).

In these models substantially more variances were explained in financial stress and physical activity W2 and W3, but very little variance was explained in BMI W1-W3.

Table 54. SCT: Evaluation for Physical Activity and BMI

	Baseline Model White Race	Baseline Model Black Race	Model with direct effects of socio economic factors on Physical Activity White Race	Model with direct effects of socio economic factors on Physical Activity Black Race
CFI	0.953	0.953	0.988	0.987
RMSEA	0.069	0.070	0.042	0.044
Squared Multiple Correlations (R^2):				
Perceived Control	0.072	0.070	0.072	0.070
Financial Strains	0.213	0.214	0.213	0.214
Physical Activity W1	0.011	0.011	0.103	0.103
Physical Activity W2	0.424	0.424	0.442	0.441
Physical Activity W3	0.386	0.386	0.398	0.398
BMI W1	0.011	0.011	0.011	0.011
BMI W2	0.004	0.004	0.004	0.004
BMI W3	0.002	0.002	0.002	0.002

The results presented in the Table 55 support Hypotheses 1-9.

Table 55. SCT: Model 25 "Physical Activity and BMI" Regression Weights

			Baseline Model White Race	Baseline Model Black Race	Model with direct effects of socio economic factors on Physical Activity White Race	Model with direct effects of socio economic factors on Physical Activity Black Race
Perceived Control	<-	Neighb Quality[a]	0.152***	0.158***	0.152***	0.158***
Perceived Control	<-	SES	0.146***	0.148***	0.146***	0.148***
Perceived Control	<-	Race	0.053**	-0.036*	0.053**	-0.036*
Perceived Control	<-	gender	0.050**	0.049**	0.050**	0.049**
Financial Strains	<-	Perceived Control	-0.229***	-0.231***	-0.229***	-0.231***
Financial Strains	<-	SES	-0.154***	-0.153***	-0.154***	-0.153***

Table 55. (continued)

			Baseline Model White Race	Baseline Model Black Race	Model with direct effects of socio economic factors on Physical Activity White Race	Model with direct effects of socio economic factors on Physical Activity Black Race
Financial Strains	<-	Neighb[a] Quality	-0.198***	-0.199***	-0.198***	-0.199***
Financial Strains	<-	Race	-0.123***	0.125***	-0.123***	0.125***
Financial Strains	<-	gender	-0.014	-0.012	-0.014	-0.012
Physical Activity W1	<-	Financial Strains	-0.105***	-0.105***	0.003	0.003
Physical Activity W1	<-	SES			0.249***	0.249***
Physical Activity W1	<-	Neighb[a] Quality			0.051**	0.051**
Physical Activity W1	<-	Race			0.057***	-0.059***
Physical Activity W1	<-	gender			0.111***	0.111***
Physical Activity W2	<-	Physical Activity W1	0.644***	0.644***	0.602***	0.603***
Physical Activity W2	<-	Financial Strains	-0.051***	-0.051***	-0.005	-0.006
Physical Activity W2	<-	SES			0.102***	0.103***
Physical Activity W2	<-	Neighb[a] Quality			0.015	0.018
Physical Activity W2	<-	Race			0.052***	-0.042**
Physical Activity W2	<-	gender			0.053***	0.052***
Physical Activity W3	<-	Physical Activity W2	0.465***	0.465***	0.459***	0.458***
Physical Activity W3	<-	Financial Strains	-0.050***	-0.050***	-0.02	-0.019
Physical Activity W3	<-	SES			0.095***	0.094***
Physical Activity W3	<-	Neighb[a] Quality			0.004	0.001
Physical Activity W3	<-	Race			-0.006	-0.004

Table 55. (continued)

			Baseline Model White Race	Baseline Model Black Race	Model with direct effects of socio economic factors on Physical Activity White Race	Model with direct effects of socio economic factors on Physical Activity Black Race
Physical Activity W3	<-	gender			0.071***	0.071***
BMI W1	<-	Physical Activity W1	-0.106***	-0.106***	-0.106***	-0.106***
BMI W2	<-	Physical Activity W2	0.021	0.021	0.021	0.021
BMI W3	<-	Physical Activity W3	0.023	0.023	0.023	0.023
BMI W2	<-	Physical Activity W1	-0.071***	-0.071***	-0.071***	-0.071***
BMI W3	<-	Physical Activity W1	-0.055*	-0.055*	-0.055*	-0.055**
BMI W3	<-	Physical Activity W2	0.008	0.008	0.008	0.008

*p<0.05, **p<0.01, ***p<0.001
[a]Neighborhood Quality

Direct and indirect effects were compared for Hypothesis 1: There are positive relationships between SES and physical activity.

It was found direct effects of SES on physical activity across three time points (Wave 1, Wave 2, and Wave 3) were significant and positive (Table 55). Indirect effects of SES on physical activity were calculated for the same models. It was determined indirect effects were very small across the three time points. For example, indirect effects of SES on physical activity at Wave 1 = effect SES on perceived control*effect of perceived control on financial strain*effect of financial strain on physical activity at Wave 1 = 0.146*(-0.229)*0.003 = -0.0001 (for the model with direct effects of socio economic factors on physical activity). Indirect direct effects of SES on physical activity at Wave 1 = (-0.0001) was much smaller than direct effects for SES on physical activity at Wave 1 = 0.249.

Model 26 "Physical Activity and Functional Limitation"

Model 26 helped analyze SCT by using physical activity as a health-related behavior and functional limitation as a health outcome.

CFI ≥ 0.9 and RMSEA = 0.083 indicate the baseline models fit the data moderately well (Table 56). CFI ≥ 0.95 and RMSEA = 0.069 indicate that models with direct effects of socioeconomic factors on physical activity fit the data better than baseline models (Table 56). In this model a large part of the variance was explained in physical activity W2 and W3. More than 15% of the variance was explained in functional limitation W1-W3. However, less than 10% of the variance was explained in perceived control. Very little variance was explained in physical activity W1 in baseline model.

Table 56. SCT: Evaluation for Physical Activity and Functional Limitation

	Baseline Model White Race	Baseline Model Black Race	Model with direct effects of socio economic factors on Physical Activity White Race	Model with direct effects of socio economic factors on Physical Activity Black Race
CFI	0.914	0.915	0.960	0.960
RMSEA	0.083	0.082	0.069	0.069
Squared Multiple Correlations (R^2):				
Perceived Control	.072	.070	.072	.070
Financial Strains	.213	.214	.213	.214
Physical Activity W1	.011	.011	.103	.103
Physical Activity W2	.424	.424	.442	.441
Physical Activity W3	.386	.386	.398	.398
Functional Limitation W1	.152	.152	.152	.152
Functional Limitation W2	.151	.151	.151	.151
Functional Limitation W3	.153	.153	.153	.153

The results presented in the Table 57 support Hypotheses 1-9.

Table 57. SCT: Model 26 “Physical Activity and Functional Limitation” Regression Weights

			Baseline Model White Race	Baseline Model Black Race	Model with direct effects of socio economic factors on Physical Activity White Race	Model with direct effects of socio economic factors on Physical Activity Black Race
Perceived Control	<-	Neighb[a] Quality	0.152***	0.158***	0.152***	0.158***
Perceived Control	<-	SES	0.146***	0.148***	0.146***	0.148***
Perceived Control	<-	Race	0.053**	-0.036*	0.053**	-0.036*
Perceived Control	<-	gender	0.050**	0.049**	0.050**	0.049**
Financial Strains	<-	Perceived Control	-0.229***	-0.231***	-0.229***	-0.231***
Financial Strains	<-	SES	-0.154***	-0.153***	-0.154***	-0.153***
Financial Strains	<-	Neighb[a] Quality	-0.198***	-0.199***	-0.198***	-0.199***
Financial Strains	<-	Race	-0.123***	0.125***	-0.123***	0.125***
Financial Strains	<-	gender	-0.014	-0.012	-0.014	-0.012
Physical Activity W1	<-	Financial Strains	-0.105***	-0.105***	0.003	0.003
Physical Activity W1	<-	SES			0.249***	0.249***
Physical Activity W1	<-	Neighb[a] Quality			0.051**	0.051**
Physical Activity W1	<-	Race			0.057***	-0.059***
Physical Activity W1	<-	gender			0.111***	0.111***
Physical Activity W2	<-	Physical Activity W1	0.644***	0.644***	0.602***	0.603***
Physical Activity W2	<-	Financial Strains	-0.051***	-0.051***	-0.005	-0.006
Physical Activity W2	<-	SES			0.102***	0.103***
Physical Activity W2	<-	Neighb[a] Quality			0.015	0.018

Table 57. (continued)

			Baseline Model White Race	Baseline Model Black Race	Model with direct effects of socio economic factors on Physical Activity White Race	Model with direct effects of socio economic factors on Physical Activity Black Race
Physical Activity W2	<-	Race			0.052***	-0.042**
Physical Activity W2	<-	gender			0.053***	0.052***
Physical Activity W3	<-	Physical Activity W2	0.465***	0.465***	0.459***	0.458***
Physical Activity W3	<-	Financial Strains	-0.050***	-0.050***	-0.02	-0.019
Physical Activity W3	<-	SES			0.095***	0.094***
Physical Activity W3	<-	Neighb[a] Quality			0.004	0.001
Physical Activity W3	<-	Race			-0.006	-0.004
Physical Activity W3	<-	gender			0.071***	0.071***
Functional Limitation W1	<-	Physical Activity W1	-0.390***	-0.390***	-0.390***	-0.390***
Functional Limitation W2	<-	Physical Activity W2	-0.197***	-0.197***	-0.197***	-0.197***
Functional Limitation W3	<-	Physical Activity W3	-0.165***	-0.165***	-0.165***	-0.165***
Functional Limitation W2	<-	Physical Activity W1	-0.231***	-0.231***	-0.231***	-0.231***
Functional Limitation W3	<-	Physical Activity W1	-0.177***	-0.177***	-0.177***	-0.177***
Functional Limitation W3	<-	Physical Activity W2	-0.109***	-0.109***	-0.109***	-0.109***

*p<0.05, **p<0.01, ***p<0.001

[a]Neighborhood Quality

Model 27 "Physical Activity and Depression"

Model 27 helped analyze SCT by using physical activity as a health-related behavior and depression as a health outcome.

CFI ≤ 0.9 and RMSEA ≥ 0.08 indicate the baseline models and models with direct effects of socioeconomic factors on physical activity did not fit the data well (Table 58). Models were modified by adding direct effects from SES, Neighborhood Quality, and Perceived Control on Depression Index to improve model fit (Table 58).

Substantially more variances were explained in depression index W1-W3 in modified models comparing with original models.

Table 58. SCT: Evaluation for Physical Activity and Depression

	Baseline Model White Race	Baseline Model Black Race	Model with direct effects of socio economic factors on Physical Activity White Race	Model with direct effects of socio economic factors on Physical Activity Black Race	Modified model White Race	Modified model Black Race
CFI	0.830	0.830	0.877	0.877	0.978	0.979
RMSEA	0.114	0.114	0.119	0.119	0.058	0.057
Squared Multiple Correlations (R^2):						
Perceived Control	.072	.070	.072	.070	.072	.070
Financial Strains	.213	.214	.213	.214	.213	.214
Physical Activity W1	.011	.011	.103	.103	.103	.103
Physical Activity W2	.424	.424	.442	.441	.442	.441
Physical Activity W3	.386	.386	.398	.398	.398	.398
Depression Index W1	.038	.038	.038	.038	.243	.243
Depression Index W2	.053	.053	.053	.053	.178	.178
Depression Index W3	.061	.061	.061	.061	.179	.179

The results presented in the Table 59 support Hypotheses 1-9.

The results also showed direct effects of SES, neighborhood quality, and perceived control on the depression index were significant and negative across three time points (Wave 1, Wave 2, and Wave 3).

Table 59. SCT: Model 27 "Physical Activity and Depression" Regression Weights

			Modified Model White Race	Modified Model Black Race
Perceived Control	<---	Neighborhood Quality	0.152***	0.158***
Perceived Control	<---	SES	0.146***	0.148***
Perceived Control	<---	Race	0.053**	-0.036*
Perceived Control	<---	gender	0.050**	0.049**
Financial Strains	<---	Perceived Control	-0.229***	-0.231***
Financial Strains	<---	SES	-0.154***	-0.153***
Financial Strains	<---	Neighborhood Quality	-0.198***	-0.199***
Financial Strains	<---	Race	-0.123***	0.125***
Financial Strains	<---	gender	-0.014	-0.012
Physical Activity W1	<---	Financial Strains	0.003	0.002
Physical Activity W1	<---	SES	0.249***	0.249***
Physical Activity W1	<---	Neighborhood Quality	0.049**	0.050**
Physical Activity W1	<---	Race	0.059***	-0.057***
Physical Activity W1	<---	gender	0.111***	0.111***
Physical Activity W2	<---	Physical Activity W1	0.603***	0.604***
Physical Activity W2	<---	Financial Strains	-0.008	-0.010
Physical Activity W2	<---	SES	0.103***	0.105***
Physical Activity W2	<---	Race	0.056***	-0.047***
Physical Activity W2	<---	gender	0.053***	0.053***
Physical Activity W3	<---	Physical Activity W2	0.458***	0.458***
Physical Activity W3	<---	Financial Strains	-0.020	-0.020
Physical Activity W3	<---	SES	0.095***	0.094***
Physical Activity W3	<---	gender	0.071***	0.071***

Table 59. (continued)

			Modified Model White Race	Modified Model Black Race
Depression Index W1	<---	Physical Activity W1	-0.110***	-0.110***
Depression Index W2	<---	Physical Activity W2	-0.127***	-0.127***
Depression Index W3	<---	Physical Activity W3	-0.050**	-0.050*
Depression Index W2	<---	Physical Activity W1	-0.037	-0.037
Depression Index W3	<---	Physical Activity W1	-0.084***	-0.084***
Depression Index W3	<---	Physical Activity W2	-0.057*	-0.057*
Depression Index W1	<---	SES	-0.071***	-0.071***
Depression Index W2	<---	SES	-0.127***	-0.127***
Depression Index W3	<---	SES	-0.154***	-0.154***
Depression Index W1	<---	Neighborhood Quality	-0.157***	-0.157***
Depression Index W2	<---	Neighborhood Quality	-0.121***	-0.121***
Depression Index W1	<---	Perceived Control	-0.382***	-0.382***
Depression Index W2	<---	Perceived Control	-0.259***	-0.259***
Depression Index W3	<---	Perceived Control	-0.238***	-0.238***
Depression Index W3	<---	Neighborhood Quality	-0.105***	-0.105***

*p<0.05, **p<0.01, ***p<0.001

Model 28 "Physical Activity and Self-Rated Health"

Model 28 helped analyze SCT by using physical activity as a health-related behavior and self-rated health as a health outcome.

CFI ≤ 0.9 and RMSEA ≥ 0.08 indicate the baseline models do not fit the data well. Models with direct effects of socioeconomic factors on physical activity fit the data better than the baseline model, but RMSEA for these models were larger than 0.08 (Table 60). Models were modified by adding direct effects from SES and Perceived Control on Self-Rated Health to improve the model fit (Table 60).

Substantially more variances were explained in self-rated health W1-W3 in modified models comparing with original models.

Table 60. SCT: Evaluation for Physical Activity and Self-Rated Health

	Baseline Model White Race	Baseline Model Black Race	Model with direct effects of socio economic factors on Physical Activity White Race	Model with direct effects of socio economic factors on Physical Activity Black Race	Modified Model White Race	Modified Model Black Race
CFI	0.896	0.897	0.942	0.942	0.966	0.967
RMSEA	0.090	0.090	0.082	0.082	0.058	0.057
Squared Multiple Correlations (R^2):						
Perceived Control	.072	.070	.072	.070	.072	.070
Financial Strains	.213	.214	.213	.214	.213	.214
Physical Activity W1	.011	.011	.103	.103	.068	.068
Physical Activity W2	.424	.424	.442	.441	.421	.421
Physical Activity W3	.386	.386	.398	.398	.398	.398
Self-Rated Health W1	.093	.093	.093	.093	.185	.185
Self-Rated Health W2	.081	.081	.081	.081	.154	.154
Self-Rated Health W3	.086	.086	.086	.086	.144	.144

The results presented in the Table 61 support Hypotheses 1-9.

The results also show direct effects of SES and perceived control on self-rated health were significant and positive across three time points (Wave 1, Wave 2, and Wave 3).

Table 61. SCT: Model 28 “Physical Activity and Self-Rated Health” Regression Weights

			Modified Model White Race	Modified Model Black Race
Perceived Control	<---	Neighborhood Quality	0.152***	0.158***
Perceived Control	<---	SES	0.146***	0.148***
Perceived Control	<---	White Race	0.053**	-0.036*
Perceived Control	<---	gender	0.050**	0.049**
Financial Strains	<---	Perceived Control	-0.229***	-0.231***
Financial Strains	<---	SES	-0.154***	-0.153***
Financial Strains	<---	Neighborhood Quality	-0.198***	-0.199***
Financial Strains	<---	White Race	-0.123***	0.125***
Financial Strains	<---	gender	-0.014	-0.012
Physical Activity W1	<---	Financial Strains	-0.038*	-0.038*
Physical Activity W1	<---	SES	0.248***	0.248***
Physical Activity W2	<---	Physical Activity W1	0.641***	0.641***
Physical Activity W2	<---	Financial Strains	-0.051***	-0.051***
Physical Activity W3	<---	Physical Activity W2	0.494***	0.494***
Physical Activity W3	<---	Financial Strains	-0.046***	-0.046***
Self-Rated Health W1	<---	Physical Activity W1	0.211***	0.211***
Self-Rated Health W2	<---	Physical Activity W2	0.127***	0.127***
Self-Rated Health W3	<---	Physical Activity W3	0.123***	0.123***
Self-Rated Health W2	<---	Physical Activity W1	0.097***	0.097***
Self-Rated Health W3	<---	Physical Activity W1	0.050*	0.050*
Self-Rated Health W3	<---	Physical Activity W2	0.083***	0.083***
Self-Rated Health W1	<---	SES	0.265***	0.265***
Self-Rated Health W2	<---	SES	0.237***	0.237***
Self-Rated Health W3	<---	SES	0.238***	0.238***
Self-Rated Health W1	<---	Perceived Control	0.149***	0.149***
Self-Rated Health W2	<---	Perceived Control	0.133***	0.133***
Self-Rated Health W3	<---	Perceived Control	0.089***	0.089***

*p<0.05, **p<0.01, ***p<0.001

Model 29 “Smoking and BMI”

Model 29 helped analyze SCT by using smoking as a health-related behavior and BMI as a health outcome.

CFI ≥ 0.95 and RMSEA ≤ 0.08 indicate the baseline models and models with direct effects of socioeconomic factors on smoking fit the data well (Table 62).

In this model a large part of the variances were explained in financial strains and smoking W2. However, zero variances were explained in BMI W1-W3 in baseline models. It happened because effects of smoking on BMI were not significant in baseline models. No variances were explained in smoking W1 in baseline model, because effect of financial strains on smoking W1 was not significant (Table 63).

Table 62. SCT: Evaluation for Smoking and BMI

	Baseline Model White Race	Baseline Model Black Race	Model with direct effects of socio economic factors on Smoking White Race	Model with direct effects of socio economic factors on Smoking Black Race
CFI	0.970	0.969	0.981	0.980
RMSEA	0.046	0.047	0.044	0.046
Squared Multiple Correlations (R^2):				
Perceived Control	.072	.070	.072	.070
Financial Strains	.213	.214	.213	.214
Smoking W1	0.000	0.000	.100	.096
Smoking W2	0.524	0.524	.538	.538
Smoking W3	0.013	0.013	.038	.033
BMI W1	0.000	0.000	.008	.009
BMI W2	0.000	0.000	.006	.006
BMI W3	0.001	0.001	.008	.009

The results presented in Table 63 support Hypotheses 2-7 and 9; but do not support Hypotheses 1and 8.

Table 63. SCT: Model 29 “Smoking and BMI” Regression Weights

			Baseline Model White Race	Baseline Model Black Race	Model with direct effects of socio economic factors on Smoking White Race	Model with direct effects of socio economic factors on Smoking Black Race
Perceived Control	<-	Neighb[a] Quality	0.152***	0.158***	0.152***	0.158***
Perceived Control	<-	SES	0.146***	0.148***	0.146***	0.148***
Perceived Control	<-	Race	0.053**	-0.036*	0.053**	-0.036*
Perceived Control	<-	gender	0.050**	0.049**	0.050**	0.049**
Financial Strains	<-	Perceived Control	-0.229***	-0.231***	-0.229***	-0.231***
Financial Strains	<-	SES	-0.154***	-0.153***	-0.154***	-0.153***
Financial Strains	<-	Neighb[a] Quality	-0.198***	-0.199***	-0.198***	-0.199***
Financial Strains	<-	Race	-0.123***	0.125***	-0.123***	0.125***
Financial Strains	<-	gender	-0.014	-0.012	-0.014	-0.012
Smoking W1	<-	Financial Strains	-0.012	-0.012	0.036	0.034
Smoking W1	<-	SES			0.067*	0.069*
Smoking W1	<-	Neighb[a] Quality			-0.090**	-0.083**
Smoking W1	<-	Race			0.264***	-0.254***
Smoking W1	<-	gender			0.165***	0.159***
Smoking W2	<-	Smoking W1	0.724***	0.724***	0.703***	0.706***
Smoking W2	<-	Financial Strains	0.000	0.000	0.036	0.04
Smoking W2	<-	SES			0.068*	0.074**
Smoking W2	<-	Neighb[a] Quality			-0.03	-0.026
Smoking W2	<-	Race			0.057	-0.043

Table 63. (continued)

			Baseline Model White Race	Baseline Model Black Race	Model with direct effects of socio economic factors on Smoking White Race	Model with direct effects of socio economic factors on Smoking Black Race
Smoking W2	<-	gender			0.025	0.024
Smoking W3	<-	Smoking W2	0.198**	0.198**	0.191*	0.192*
Smoking W3	<-	Financial Strains	-0.038	-0.038	-0.081	-0.082
Smoking W3	<-	SES			-0.114*	-0.110*
Smoking W3	<-	Neigh[a] Quality			-0.002	0.001
Smoking W3	<-	Race			0.123*	-0.112*
Smoking W3	<-	gender			-0.034	-0.038
BMI W1	<-	Smoking W1	0.012	0.012	-0.087**	-0.093***
BMI W2	<-	Smoking W2	0.015	0.015	0.032	0.036
BMI W3	<-	Smoking W3	-0.023	-0.023	-0.065**	-0.065**
BMI W2	<-	Smoking W1	0.006	0.006	-0.095**	-0.100**
BMI W3	<-	Smoking W1	0.011	0.011	-0.094*	-0.104*
BMI W3	<-	Smoking W2	-0.015	-0.015	0.052	0.061

*p<0.05, **p<0.01, ***p<0.001
[a]Neighborhood Quality

Model 30 "Smoking and Functional Limitation"

Model 30 helped analyze SCT by using smoking as a health-related behavior and functional limitation as a health outcome.

CFI ≤ 0.9 and RMSEA ≤ 0.08 indicate the baseline models do not fit the data well. CFI ≥ 0.9 and RMSES ≤ 0.08 indicate the models with direct effects of socioeconomic factors on smoking fit the data moderately well (Table 64).

In this model a large part of the variances were explained in financial strains and smoking W2. However, zero variances were explained in functional limitation W1-W3 in baseline models. It happened because effects of smoking on functional limitation were non-significant in baseline models (Table 65).

Table 64. SCT: Evaluation for Smoking and Functional Limitation

	Baseline Model White Race	Baseline Model Black Race	Model with direct effects of socio economic factors on Physical Activity White Race	Model with direct effects of socio economic factors on Physical Activity Black Race
CFI	0.874	0.875	0.901	0.901
RMSEA	0.072	0.071	0.078	0.077
Squared Multiple Correlations (R^2):				
Perceived Control	.072	.070	.072	.070
Financial Strains	.213	.214	.213	.214
Smoking W1	.000	.000	.132	.130
Smoking W2	.523	.523	.574	.575
Smoking W3	.013	.013	.025	.023
Functional Limitation W1	.000	.000	.026	.029
Functional Limitation W2	.002	.002	.036	.038
Functional Limitation W3	.001	.001	.054	.056

The results presented in Table 65 support Hypotheses 2-7; but do not support Hypotheses 1, 8, and 9.

Table 65. SCT: Model 30 “Smoking and Functional Limitations” Regression Weights

			Baseline Model that includes variable White Race	Baseline Model that includes variable Black Race	Model with direct effects of socio economic factors on Smoking and with variable White Race	Model with direct effects of socio economic factors on Smoking and with variable Black Race
Perceived Control	<-	Neighb[a] Quality	0.152***	0.158***	0.152***	0.158***
Perceived Control	<-	SES	0.146***	0.148***	0.146***	0.148***
Perceived Control	<-	Race	0.053**	-0.036*	0.053**	-0.036*
Perceived Control	<-	gender	0.050**	0.049**	0.050**	0.049**
Financial Strains	<-	Perceived Control	-0.229***	-0.231***	-0.229***	-0.231***
Financial Strains	<-	SES	-0.154***	-0.153***	-0.154***	-0.153***
Financial Strains	<-	Neighb[a] Quality	-0.198***	-0.199***	-0.198***	-0.199***
Financial Strains	<-	Race	-0.123***	0.125***	-0.123***	0.125***
Financial Strains	<-	gender	-0.014	-0.012	-0.014	-0.012
Smoking W1	<-	Financial Strains	-0.006	-0.006	0.037	0.035
Smoking W1	<-	SES			0.186***	0.191***
Smoking W1	<-	Neighb[a] Quality			-0.093**	-0.087**
Smoking W1	<-	Race			0.232***	-0.223***
Smoking W1	<-	gender			0.178***	0.173***
Smoking W2	<-	Smoking W1	0.723***	0.723***	0.699***	0.703***
Smoking W2	<-	Financial Strains	-0.005	-0.005	0.033	0.033
Smoking W2	<-	SES			0.125***	0.126***
Smoking W2	<-	Neighb[a] Quality			-0.031	-0.027

Table 65. (continued)

			Baseline Model that includes variable White Race	Baseline Model that includes variable Black Race	Model with direct effects of socio economic factors on Smoking and with variable White Race	Model with direct effects of socio economic factors on Smoking and with variable Black Race
Smoking W2	<-	Race			0.049	-0.036
Smoking W2	<-	gender			0.039	0.038
Smoking W3	<-	Smoking W2	0.201**	0.201**	0.205**	0.206**
Smoking W3	<-	Financial Strains	-0.028	-0.028	-0.028	-0.025
Smoking W3	<-	SES			-0.032	-0.018
Smoking W3	<-	Neighb[a] Quality			-0.016	-0.016
Smoking W3	<-	Race			0.108*	-0.098
Smoking W3	<-	gender			-0.035	-0.038
Functional Limitation W1	<-	Smoking W1	0.021	0.021	-0.163***	-0.171***
Functional Limitation W2	<-	Smoking W2	-0.064	-0.064	-0.154***	-0.154***
Functional Limitation W3	<-	Smoking W3	-0.014	-0.014	-0.015	-0.027
Functional Limitation W2	<-	Smoking W1	0.067	0.067	-0.043	-0.049
Functional Limitation W3	<-	Smoking W1	0.042	0.042	-0.05	-0.057
Functional Limitation W3	<-	Smoking W2	-0.048	-0.048	-0.190***	-0.188***

*p<0.05, **p<0.01, ***p<0.001

[a]Neighborhood Quality

Model 31 "Smoking and Depression"

Model 31 helped analyze SCT by using smoking as a health-related behavior and depression as a health outcome.

CFI ≤ 0.9 and RMSEA ≥ 0.08 indicate the models do not fit the data well (Table 66).

Table 66. SCT: Evaluation for Smoking and Depression

	Baseline Model that includes variable White Race	Baseline Model that includes variable Black Race	Model with direct effects of socio economic factors on Smoking White Race	Model with direct effects of socio economic factors on Smoking Black Race
CFI	0.742	0.743	0.763	0.763
RMSEA	0.106	0.105	0.124	0.124
Squared Multiple Correlations (R^2):				
Perceived Control	.072	.070	.072	.070
Financial Strains	.213	.214	.213	.214
Smoking W1	.000	.000	.118	.111
Smoking W2	.524	.524	.542	.539
Smoking W3	.013	.013	.039	.035
Depression Index W1	.002	.012	.012	.011
Depression Index W2	.004	.004	.013	.012
Depression Index W3	.012	.002	.045	.044

Models were modified with the purpose to improve model fit. Direct effects from SES to depression indexes (Wave 1, Wave 2, and Wave 3) and from perceived control to depression index (Wave 1, Wave 2, and Wave 3) were added to the models.

CFI ≥ 0.9 and RMSEA ≤ 0.08 indicate the modified models fit the data moderately well (Table 67).

Substantially more variances were explained in depression index W1-W3 in modified models comparing with original models.

Table 67. SCT: Evaluation of modified models Smoking and Depression

	Modified Model that includes variable White Race	Modified Model that includes variable Black Race
CFI	0.942	0.943
RMSEA	0.071	0.070
Squared Multiple Correlations (R^2):		
Perceived Control	.072	.070
Financial Strains	.213	.214
Smoking W1	.083	.077
Smoking W2	.529	.527
Smoking W3	.034	.028
Depression Index W1	.211	.211
Depression Index W2	.144	.145
Depression Index W3	.155	.154

The results presented in Table 68 support Hypotheses 2-7; but do not support Hypotheses 1, 8, and 9.

The results also showed significant and negative effects of SES on depression index across three time points (Wave 1, Wave 2, and Wave 3) and significant and negative effects of perceived control on depression index across three time points (Wave 1, Wave 2, and Wave 3).

Table 68. SCT: Model 31 “Smoking and Depression” Regression Weights

			Modified Model that includes variable White Race	Modified Model that includes variable Black Race
Perceived Control	<---	Neighborhood Quality	0.152***	0.158***
Perceived Control	<---	SES	0.146***	0.148***
Perceived Control	<---	Race	0.053**	-0.036*
Perceived Control	<---	gender	0.050**	0.049**
Financial Strains	<---	Perceived Control	-0.229***	-0.231***
Financial Strains	<---	SES	-0.154***	-0.153***
Financial Strains	<---	Neighborhood Quality	-0.198***	-0.199***
Financial Strains	<---	Race	-0.123***	0.125***
Financial Strains	<---	gender	-0.014	-0.012
Smoking W1	<---	Financial Strains	0.047	0.047
Smoking W1	<---	SES	0.051	0.053
Smoking W1	<---	Neighborhood Quality	-0.092**	-0.086**
Smoking W1	<---	Race	0.248***	-0.235***
Smoking W1	<---	gender	0.149***	0.142***
Smoking W2	<---	Smoking W1	0.702***	0.705***
Smoking W2	<---	Financial Strains	0.026	0.027
Smoking W2	<---	SES	0.050	0.053
Smoking W2	<---	Neighborhood Quality	-0.032	-0.028
Smoking W2	<---	Race	0.056	-0.042
Smoking W2	<---	gender	0.022	0.021
Smoking W3	<---	Smoking W2	0.192**	0.193**
Smoking W3	<---	Financial Strains	-0.038	-0.039
Smoking W3	<---	SES	-0.037	-0.031
Smoking W3	<---	Neighborhood Quality	0.009	0.012
Smoking W3	<---	Race	0.134**	-0.121*
Smoking W3	<---	gender	-0.042	-0.045
Depression Index W1	<---	Smoking W1	0.031	0.037
Depression Index W2	<---	Smoking W2	0.031	0.038
Depression Index W3	<---	Smoking W3	-0.111**	-0.109**
Depression Index W2	<---	Smoking W1	0.003	0.004
Depression Index W3	<---	Smoking W1	-0.084	-0.085

Table 68. (continued)

			Modified Model that includes variable White Race	Modified Model that includes variable Black Race
Depression Index W3	<---	Smoking W2	0.083	0.090
Depression Index W1	<---	SES	-0.133***	-0.134***
Depression Index W2	<---	SES	-0.201***	-0.203***
Depression Index W3	<---	SES	-0.220***	-0.220***
Depression Index W1	<---	Perceived Control	-0.414***	-0.414***
Depression Index W2	<---	Perceived Control	-0.285***	-0.285***
Depression Index W3	<---	Perceived Control	-0.259***	-0.259***

*p<0.05, **p<0.01, ***p<0.001

Model 32 "Smoking and Self-Rated Health"

Model 32 helped analyze SCT by using smoking as a health-related behavior and self-rated health as a health outcome.

CFI ≤ 0.9 and RMSEA ≥ 0.08 indicate the models do not fit the data well (Table 69).

Table 69. SCT: Evaluation for Smoking and Self-Rated Health

	Baseline Model that includes variable White Race	Baseline Model that includes variable Black Race	Model with direct effects of socio economic factors on Physical Activity White Race	Model with direct effects of socio economic factors on Physical Activity Black Race
CFI	0.853	0.853	0.869	0.868
RMSEA	0.080	0.080	0.092	0.092
Squared Multiple Correlations (R^2):				
Perceived Control	.072	.070	.072	.070
Financial Strains	.213	.214	.213	.214
Smoking W1	.001	.001	.091	.087
Smoking W2	.523	.523	.535	.534
Smoking W3	.013	.013	.032	.030
Self-Rated Health W1	.014	.014	.000	.000
Self-Rated Health W2	.007	.007	.004	.004
Self-Rated Health W3	.014	.014	.014	.016

Models were modified with the purpose to improve model fit. Direct effects from SES to self-rated health (Wave 1, Wave 2, and Wave 3) were added to the models.

CFI $\geq$ 0.95 and RMSEA $\leq$ 0.06 indicate the modified models fit the data well (Table 70). Substantially more variances were explained in self-rated health W1-W3 in modified models comparing with original models.

Table 70. SCT: Evaluation of modified models for Smoking and Self-Rated Health

	Modified Model that includes variable White Race	Modified Model that includes variable Black Race
CFI	0.974	0.974
RMSEA	0.044	0.044
Squared Multiple Correlations (R^2):		
Perceived Control	.072	.070
Financial Strains	.213	.214
Smoking W1	.080	.074
Smoking W2	.528	.527
Smoking W3	.027	.024
Self-Rated Health W1	.138	.138
Self-Rated Health W2	.111	.111
Self-Rated Health W3	.114	.114

The results presented in Table 71 support Hypotheses 2-7 and 9; but do not support Hypotheses 1 and 8.

Table 71. SCT: Model 32 "Smoking and Self-Rated Health" Regression Weights

			Modified Model that includes variable White Race	Modified Model that includes variable Black Race
Perceived Control	<---	Neighborhood Quality	0.152***	0.158***
Perceived Control	<---	SES	0.146***	0.148***
Perceived Control	<---	Race	0.053**	-0.036*
Perceived Control	<---	gender	0.050**	0.049**
Financial Strains	<---	Perceived Control	-0.229***	-0.231***
Financial Strains	<---	SES	-0.154***	-0.153***
Financial Strains	<---	Neighborhood Quality	-0.198***	-0.199***
Financial Strains	<---	Race	-0.123***	0.125***
Financial Strains	<---	gender	-0.014	-0.012
Smoking W1	<---	Financial Strains	0.061	0.059
Smoking W1	<---	SES	0.05	0.051
Smoking W1	<---	Neighborhood Quality	-0.096**	-0.089**
Smoking W1	<---	Race	0.247***	-0.234***
Smoking W1	<---	gender	0.142***	0.135***

Table 71. (continued)

			Modified Model that includes variable White Race	Modified Model that includes variable Black Race
Smoking W2	<---	Smoking W1	0.700***	0.704***
Smoking W2	<---	Financial Strains	0.020	0.020
Smoking W2	<---	SES	0.046	0.049
Smoking W2	<---	Neighborhood Quality	-0.027	-0.023
Smoking W2	<---	Race	0.065*	-0.050
Smoking W2	<---	gender	0.024	0.022
Smoking W3	<---	Smoking W2	0.188*	0.189*
Smoking W3	<---	Financial Strains	-0.034	-0.034
Smoking W3	<---	SES	-0.024	-0.021
Smoking W3	<---	Neighborhood Quality	-0.004	-0.002
Smoking W3	<---	Race	0.112*	-0.106*
Smoking W3	<---	gender	-0.034	-0.037
Self-Rated Health W1	<---	Smoking W1	-0.112***	-0.112***
Self-Rated Health W2	<---	Smoking W2	-0.007	-0.011
Self-Rated Health W3	<---	Smoking W3	0.087*	0.090**
Self-Rated Health W2	<---	Smoking W1	-0.057	-0.058
Self-Rated Health W3	<---	Smoking W1	-0.046	-0.046
Self-Rated Health W3	<---	Smoking W2	-0.036	-0.035
Self-Rated Health W1	<---	SES	0.364***	0.364***
Self-Rated Health W2	<---	SES	0.333***	0.334***
Self-Rated Health W3	<---	SES	0.325***	0.324***

*p<0.05, **p<0.01, ***p<0.001

Model 33 "Drinking and BMI"

Model 33 helped analyze SCT by using drinking as a health-related behavior and BMI as a health outcome.

CFI ≥ 0.95 and RMSEA ≤ 0.08 indicate the baseline models and models with direct effects of socioeconomic factors on drinking fit the data well (Table 72).

In this model a large part of the variances were explained in financial strains and drinking W2 and W3. However, almost zero variances were explained in BMI W1-W3.

Table 72. SCT: Evaluation for Drinking and BMI

	Baseline Model White Race	Baseline Model Black Race	Model with direct effects of socio economic factors on drinking White Race	Model with direct effects of socio economic factors on drinking Black Race
CFI	0.960	0.959	0.982	0.981
RMSEA	0.055	0.055	0.045	0.047
Squared Multiple Correlations (R^2):				
Perceived Control	.072	.070	.072	.070
Financial Strains	.213	.214	.213	.214
Drinking W1	.026	.026	.096	.094
Drinking W2	.302	.302	.319	.319
Drinking W3	.329	.329	.351	.351
BMI W1	.001	.001	.000	.000
BMI W2	.005	.005	.002	.001
BMI W3	.003	.003	.002	.002

The results presented in Table 73 support Hypotheses 2-9; but do not support Hypothesis 1.

Table 73. SCT: Model 33 “Drinking and BMI” Regression Weights

			Baseline Model that includes variable White Race	Baseline Model that includes variable Black Race	Model with direct effects of socio economic factors on drinking and with variable White Race	Model with direct effects of socio economic factors on drinking and with variable Black Race
Perceived Control	<-	Neighb[a] Quality	0.152***	0.158***	0.152***	0.158***
Perceived Control	<-	SES	0.146***	0.148***	0.146***	0.148***
Perceived Control	<-	Race	0.053**	-0.036*	0.053**	-0.036*
Perceived Control	<-	gender	0.050**	0.049**	0.050**	0.049**
Financial Strains	<-	Perceived Control	-0.229***	-0.231***	-0.229***	-0.231***
Financial Strains	<-	SES	-0.154***	-0.153***	-0.154***	-0.153***
Financial Strains	<-	Neighb[a] Quality	-0.198***	-0.199***	-0.198***	-0.199***
Financial Strains	<-	Race	-0.123***	0.125***	-0.123***	0.125***
Financial Strains	<-	gender	-0.014	-0.012	-0.014	-0.012
Drinking W1	<-	Financial Strains	0.160***	0.160***	0.134***	0.136***
Drinking W1	<-	SES			0.002	0.000
Drinking W1	<-	Neighb[a] Quality			-0.075**	-0.083***
Drinking W1	<-	Race			-0.060*	0.040
Drinking W1	<-	gender			0.250***	0.251***
Drinking W2	<-	Drinking W1	0.536***	0.536***	0.488***	0.488***
Drinking W2	<-	Financial Strains	0.064**	0.064**	0.050	0.050
Drinking W2	<-	SES			-0.010	-0.010
Drinking W2	<-	Neighb[a] Quality			-0.069**	-0.069**
Drinking W2	<-	Race			-0.042	0.043

Table 73. (continued)

			Baseline Model that includes variable White Race	Baseline Model that includes variable Black Race	Model with direct effects of socio economic factors on drinking and with variable White Race	Model with direct effects of socio economic factors on drinking and with variable Black Race
Drinking W2	<-	gender			0.133***	0.133***
Drinking W3	<-	Drinking W2	0.411***	0.411***	0.387***	0.387***
Drinking W3	<-	Financial Strains	0.095***	0.095***	0.072**	0.074**
Drinking W3	<-	SES			0.003	0.000
Drinking W3	<-	Neighb[a] Quality			-0.106***	-0.113***
Drinking W3	<-	Race			0.001	-0.024
Drinking W3	<-	gender			0.161***	0.161***
BMI W1	<-	Drinking W1	0.030	0.030	-0.004	-0.006
BMI W2	<-	Drinking W2	-0.005	-0.005	-0.006	-0.006
BMI W3	<-	Drinkin g W3	0.006	0.006	0.006	0.005
BMI W2	<-	Drinking W1	0.072**	0.072**	0.043	0.042
BMI W3	<-	Drinking W1	0.054	0.054	0.032	0.031
BMI W3	<-	Drinking W2	0.001	0.001	0.011	0.011

*p<0.05, **p<0.01, ***p<0.001
[a]Neighborhood Quality

Model 34 "Drinking and Functional Limitation"

Model 34 helped analyze SCT by using drinking as a health-related behavior and Functional Limitation as a health outcome.

CFI ≤ 0.9 indicates the baseline models do not fit the data well. CFII ≥ 0.9 and RMSEA = 0.081 indicate the models with direct effects of socioeconomic factors on drinking fit the data moderately well (Table 74).

In this model a large part of the variances were explained in financial strains and drinking W2 and W3. However, very little variance was explained in functional limitation W1-W3.

Table 74. SCT: Evaluation for Drinking and Functional Limitation

	Baseline Model White Race	Baseline Model Black Race	Model with direct effects of socio economic factors on Drinking White Race	Model with direct effects of socio economic factors on Drinking Black Race
CFI	0.865	0.866	0.904	0.904
RMSEA	0.078	0.078	0.081	0.081
Squared Multiple Correlations (R^2):				
Perceived Control	.072	.070	.072	.070
Financial Strains	.213	.214	.213	.214
Drinking W1	.021	.021	.096	.094
Drinking W2	.299	.299	.322	.322
Drinking W3	.329	.329	.355	.356
Functional Limitation W1	.003	.003	.019	.019
Functional Limitation W2	.004	.004	.013	.013
Functional Limitation W3	.002	.002	.015	.015

The results presented in Table 75 support Hypotheses 2-8; but do not support Hypotheses 1 and 9.

Table 75. SCT: Model 34 “Drinking and Functional Limitations” Regression Weights (This table does not provide the data for baseline models, because the baseline models did not fit the data well.)

			Model with direct effects of socio economic factors on drinking and with variable White Race	Model with direct effect of socio economic factors on drinking and with variable Black Race
Perceived Control	<---	Neighborhood Quality	0.152***	0.158***
Perceived Control	<---	SES	0.146***	0.148***
Perceived Control	<---	White Race	0.053**	-0.036*
Perceived Control	<---	gender	0.050**	0.049**
Financial Strains	<---	Perceived Control	-0.229***	-0.231***
Financial Strains	<---	SES	-0.154***	-0.153***
Financial Strains	<---	Neighborhood Quality	-0.198***	-0.199***
Financial Strains	<---	White Race	-0.123***	0.125***
Financial Strains	<---	gender	-0.014	-0.012
Drinking W1	<---	Financial Strains	0.114***	0.116***
Drinking W1	<---	SES	0.053*	0.050*
Drinking W1	<---	Neighborhood Quality	-0.082***	-0.091***
Drinking W1	<---	Race	-0.057*	0.034
Drinking W1	<---	gender	0.260***	0.261***
Drinking W2	<---	Drinking W1	0.492***	0.493***
Drinking W2	<---	Financial Strains	0.047	0.047
Drinking W2	<---	SES	0.002	0.003
Drinking W2	<---	Neighborhood Quality	-0.070**	-0.070**
Drinking W2	<---	Race	-0.041	0.042
Drinking W2	<---	gender	0.133***	0.133***
Drinking W3	<---	Drinking W2	0.387***	0.387***
Drinking W3	<---	Financial Strains	0.070**	0.072**
Drinking W3	<---	SES	0.030	0.028
Drinking W3	<---	Neighborhood Quality	-0.113***	-0.120***
Drinking W3	<---	Race	0.009	-0.032
Drinking W3	<---	gender	0.166***	0.167***
Functional Limitation W1	<---	Drinking W1	-0.139***	-0.138***

Table 75. (continued)

			Model with direct effects of socio economic factors on drinking and with variable White Race	Model with direct effect of socio economic factors on drinking and with variable Black Race
Functional Limitation W2	<---	Drinking W2	-0.070**	-0.069**
Functional Limitation W3	<---	Drinking W3	-0.066*	-0.068*
Functional Limitation W2	<---	Drinking W1	-0.059*	-0.059*
Functional Limitation W3	<---	Drinking W1	-0.062	-0.062
Functional Limitation W3	<---	Drinking W2	-0.012	-0.011

*p<0.05, **p<0.01, ***p<0.001

Model 35 "Drinking and Depression"

Model 35 helped analyze SCT by using drinking as health-related behavior and depression as health outcome.

CFI ≤ 0.9 and RMSEA ≥ 0.08 indicate the models do not fit the data well (Table 76).

Table 76. SCT: Evaluation for Drinking and Depression

	Baseline Model White Race	Baseline Model Black Race	Model with direct effects of socio economic factors on Physical Activity White Race	Model with direct effects of socio economic factors on Physical Activity Black Race
CFI	0.758	0.759	0.790	0.790
RMSEA	0.108	0.108	0.123	0.123
Squared Multiple Correlations (R^2):				
Perceived Control	.072	.070	.072	.070
Financial Strains	.213	.214	.213	.214
Drinking W1	.051	.051	.112	.110
Drinking W2	.310	.310	.323	.323
Drinking W3	.338	.338	.354	.354
Depression Index W1	.033	.033	.029	.029
Depression Index W2	.032	.032	.027	.027
Depression Index W3	.031	.031	.026	.026

The models were modified with the purpose to improve model fit. Non-significant effects for SES and race from drinking were removed from the model. Direct effects from SES to depression index (Wave 1, Wave 2, and Wave 3) and from perceived control to depression index (Wave 1, Wave 2, and Wave 3) were added to the models.

CFII $\geq$ 0.95 and RMSEA $\leq$ 0.06 indicate the modified models fit the data well (Table 77). Substantially more variances were explained in depression index W1-W3 in modified models comparing with original models.

Table 77. SCT: Evaluation of modified models for Drinking and Depression

	Modified Model that includes variable White Race	Modified Model that includes variable Black Race
CFI	0.950	0.951
RMSEA	0.060	0.059
Squared Multiple Correlations (R^2):		
Perceived Control	.072	.070
Financial Strains	.213	.214
Drinking W1	.097	.097
Drinking W2	.322	.322
Drinking W3	.351	.351
Depression Index W1	.222	.222
Depression Index W2	.155	.155
Depression Index W3	.154	.154

The results presented in Table 78 support Hypotheses 2-9.

Table 78. SCT: Model 35 “Drinking and Depression” Regression Weights

			Modified model that includes variable White Race	Modified model that includes variable Black Race
Perceived Control	<---	Neighborhood Quality	0.152***	0.158***
Perceived Control	<---	SES	0.146***	0.148***
Perceived Control	<---	Race	0.053**	-0.036*
Perceived Control	<---	gender	0.050**	0.049**
Financial Strains	<---	Perceived Control	-0.229***	-0.231***
Financial Strains	<---	SES	-0.154***	-0.153***
Financial Strains	<---	Neighborhood Quality	-0.198***	-0.199***
Financial Strains	<---	Race	-0.123***	0.125***
Financial Strains	<---	gender	-0.014	-0.012
Dinking W1	<---	Financial Strains	0.162***	0.162***
Drinking W1	<---	gender	0.239***	0.239***
Drinking W1	<---	Neighborhood Quality	-0.104***	-0.104***
Drinking W2	<---	Drinking W1	0.494***	0.494***
Drinking W2	<---	Financial Strains	0.055*	0.055*
Drinking W2	<---	gender	0.130***	0.130***
Drinking W2	<---	Neighborhood Quality	-0.081**	-0.081**
Drinking W3	<---	Drinking W2	0.383***	0.383***
Drinking W3	<---	Financial Strains	0.083***	0.083***
Drinking W3	<---	gender	0.156***	0.156***
Drinking W3	<---	Neighborhood Quality	-0.107***	-0.107***
Depression Index W1	<---	Drinking W1	0.108***	0.108***
Depression Index W2	<---	Drinking W2	0.019	0.019
Depression Index W3	<---	Drinking W3	0.091**	0.091**
Depression Index W2	<---	Drinking W1	0.096***	0.096***
Depression Index W3	<---	Drinking W1	0.059	0.059
Depression Index W3	<---	Drinking W2	-0.037	-0.037
Depression Index W1	<---	Perceived Control	-0.410***	-0.410***
Depression Index W2	<---	Perceived Control	-0.281***	-0.281***
Depression Index W3	<---	Perceived Control	-0.258***	-0.258***
Depression Index W1	<---	SES	-0.127***	-0.127***
Depression Index W2	<---	SES	-0.194***	-0.194***
Depression Index W3	<---	SES	-0.217***	-0.217***

*p<0.05, **p<0.01, ***p<0.001

This model did not evaluate Hypothesis 1, that relationships between SES and drinking are negative, because it did not include the direct effects of SES on drinking (these effects were non-significant in the baseline model).

These results showed the effects of SES on the depression index and effects of perceived control on the depression index were significant and negative across three time points (Wave 1, Wave 2, and Wave3).

Direct and indirect effects of perceived control on depression at Wave 1 were compared.

Direct effects of perceived control on depression at Wave 1 = (-0.410, p <0.001).

Indirect effects of perceived control on depression at Wave 1 = effect of perceived control on financial strains*effect of financial strains on drinking at Wave 1*effect of drinking at Wave 1 on depression index at Wave 1= (-0.229)*0.162*0.108= (-0.004).

The result (-0.410) is much less than (-0.004) indicates a negative direct effect of perceived control on depression is stronger than the indirect effect.

Model 36 "Drinking and Self-Rated Health"

Model 36 helped analyze SCT by using drinking as a health-related behavior and self-rated health as a health outcome.

CFI ≤ 0.9 and RMSEA ≥ 0.08 indicate the models do not fit the data well (Table 79).

Table 79. SCT: Evaluation for Drinking and Self-Rated Health

	Baseline Model White Race	Baseline Model Black Race	Model with direct effects of socio economic factors on Physical Activity White Race	Model with direct effects of socio economic factors on Physical Activity Black Race
CFI	0.848	0.848	0.882	0.881
RMSEA	0.085	0.085	0.092	0.092
Squared Multiple Correlations (R^2):				
Perceived Control	.072	.070	.072	.070
Financial Strains	.213	.214	.213	.214
Drinking W1	.027	.027	.095	.094
Drinking W2	.303	.303	.318	.318
Drinking W3	.330	.330	.349	.350
Self-Rated Health W1	.002	.002	.000	.000
Self-Rated Health W2	.004	.004	.003	.003
Self-Rated Health W3	.003	.003	.002	.002

The models were modified with the purpose to improve model fit. Non-significant effects of SES and race on drinking were removed from the model. Direct effects from SES to self-rated health (Wave 1, Wave 2, and Wave 3) and from perceived control to self-rated health (Wave 1, Wave 2, and Wave 3) were added to the models.

Squared Multiple Correlations (R^2) for perceived control, financial strains, and drinking at Wave 1, Wave 2, and at Wave 3 were about the same in the modified models compared with the original models. R^2 for self-rated health at Wave 1, Wave 2, and Wave 3 significantly increased in the modified models compared with the original models. Fit indices are better in the modified models than in the original models. CFA $\geq$ 0.95 and RMSEA are close to zero in the modified models that indicate a good fit (Table 80).

Substantially more variances were explained in self-rated health W1-W3 in modified models comparing with original models.

Table 80. SCT: Evaluation of modified models for Drinking and Self-Rated Health

	Modified Model that includes variable White Race	Modified Model that includes variable Black Race
CFI	0.992	0.993
RMSEA	0.023	0.023
Squared Multiple Correlations (R^2):		
Perceived Control	.072	.070
Financial Strains	.213	.214
Drinking W1	.091	.091
Drinking W2	.319	.319
Drinking W3	.349	.349
Self-Rated Health W1	.151	.151
Self-Rated Health W2	.130	.130
Self-Rated Health W3	.111	.111

The results presented in Table 81 support Hypotheses 2-8, but do not support Hypothesis 9. The results showed the effects of SES on self-rated health and effects of perceived control on self-rated health were significant and positive across three time points (Wave 1, Wave 2, and Wave 3).

Table 81. SCT: Model 36 “Drinking and Self-Rated Health” Regression Weights

			Modified model that includes variable White Race	Modified model that includes variable Black Race
Perceived Control	<---	Neighborhood Quality	0.152***	0.158***
Perceived Control	<---	SES	0.146***	0.148***
Perceived Control	<---	Race	0.053**	-0.036*
Perceived Control	<---	gender	0.050**	0.049**
Financial Strains	<---	Perceived Control	-0.229***	-0.231***
Financial Strains	<---	SES	-0.154***	-0.153***
Financial Strains	<---	Neighborhood Quality	-0.198***	-0.199***
Financial Strains	<---	Race	-0.123***	0.125***
Financial Strains	<---	gender	-0.014	-0.012
Drinking W1	<---	Financial Strains	0.134***	0.134***
Drinking W1	<---	gender	0.252***	0.252***
Drinking W1	<---	Neighborhood Quality	-0.095***	-0.095***
Drinking W2	<---	Drinking W1	0.492***	0.492***
Drinking W2	<---	Financial Strains	0.059*	0.059*
Drinking W2	<---	gender	0.127***	0.127***
Drinking W2	<---	Neighborhood Quality	-0.086***	-0.086***
Drinking W3	<---	Drinking W2	0.384***	0.384***
Drinking W3	<---	Financial Strains	0.070**	0.070**
Drinking W3	<---	gender	0.163***	0.163***
Drinking W3	<---	Neighborhood Quality	-0.105***	-0.105***
Self-Rated Health W1	<---	Drinking W1	0.03	0.03
Self-Rated Health W2	<---	Drinking W2	-0.05	-0.05
Self-Rated Health W3	<---	Drinking W3	0.018	0.018
Self-Rated Health W2	<---	Drinking W1	0.063*	0.063*
Self-Rated Health W3	<---	Drinking W1	0.016	0.016
Self-Rated Health W3	<---	Drinking W2	-0.028	-0.028
Self-Rated Health W1	<---	Perceived Control	0.163***	0.163***
Self-Rated Health W2	<---	Perceived Control	0.144***	0.144***
Self-Rated Health W3	<---	Perceived Control	0.097***	0.097***
Self-Rated Health W1	<---	SES	0.323***	0.323***
Self-Rated Health W2	<---	SES	0.299***	0.299***
Self-Rated Health W3	<---	SES	0.299***	0.299***

*p<0.05, **p<0.01, ***p<0.001

Direct and indirect effects of perceived control on self-rated health at Wave 1 were compared.

Direct effect of perceived control on self-rated health at Wave 1 = (0.163, p <0.001). Indirect effects of perceived control on depression at Wave 1 = effect of perceived control on financial strains *effect of financial strain at Wave 1 on drinking at Wave 1*effect of drinking at Wave 1on self-rated health at Wave 1= (-0.229)*0.134*0.03= (- 0.0009). The absolute value |0.0009| is less than the absolute value |0.163|. This indicates the direct effect of perceived control on self-rated health is stronger than the indirect effect.

Summary of the Results for Social Cognitive Theory:

The results related to Hypotheses 1 and 9 were described above in in the summary of the results for the Fundamental Cause Theory.

Hypotheses 2 through 7 were supported by the results.

It was determined perceived control increased and financial strain decreased accordingly with an increase of SES and neighborhood quality.

The results also showed Whites had a higher perceived control and less financial strain, but African Americans had lower perceived control and higher financial strain. Men had higher perceived control. Effects of gender on financial strains were not significant. Increase in perceived control was associated with a decrease of financial strain.

Hypothesis 8 was partially supported by the results.

Analysis of baseline models showed an increase of financial strain associated with a decrease in physical activity. However, when the direct effects of socio economic factors on physical activity were taken into consideration, they suppressed the effects of financial strain on physical activity and this effect became insignificant.

Effects of financial strain on smoking were not significant.

Results showed drinking increased accordingly with an increase of financial strain.

The results also showed that depression decreased accordingly with an increase of SES, neighborhood quality, and perceived control. Individuals reported better self-rated health accordingly with an increase of their SES and perceived control.

CHAPTER 5: DISCUSSION

People's lives, well-being, and health tightly connect to the surrounding social structures. Unequal location in this structure leads to health disparities. The contribution of the current dissertation is to reveal ways to help understand how social inequality affects individuals' health by conducting a comparison between the following socio psychological theories: Fundamental Cause Theory, Stress Process Model, and Social Cognitive Theory (SCT).

All three theories are considered influences of social and economic factors on health behaviors and outcomes. The Stress Process Model considered the effects of chronic stress and negative life events on health outcomes. This model also included the effect of mediators, such as social support, which mitigate the effect of stressors on health outcomes. SCT emphasized the role of cognitive resources. Bandura (2009) explained people are creative components of society and they able consciously influence their behaviors. "People are self-developing, proactive, self-regulating, and self-reflecting organisms shaped and shepherded by environmental events or inner forces" (Bandura, 2009:94). Pearlin (1989) and Bandura (2005) indicated tight relationships between health-related behaviors and health outcomes. Bandura noted that to stay healthy, "people should exercise, reduce dietary fat, refrain from smoking, keep blood pressures down, and develop effective ways of managing stressors" (2005:245).

Most previous research on health disparities relates to mental health outcome. Pearlen (1989:254) noted the tendency of "Focusing exclusively on a single outcome, such a depression, may lead to the mistaken conclusion that some groups of people are affected adversely by stressors that leave others unaffected." However, other people may develop

problems with physical health as a result of inappropriate conditions. The current study provided the possibility to compare the development of disparities in physical and mental health by taking into account three health-related behaviors (physical activity, smoking, and drinking) and four health outcomes (BMI, functional limitations, depression index, and self-rated health). The changes of health behaviors and outcomes were observed across three time points (1986, 1989, and 1994).

Analysis of Structural Equation Models

Structural equation models were constructed for each of three social psychological theories: Fundamental Cause Theory, Stress Process Model, and Social Cognitive Theory. Each model was analyzed by using three health-related behaviors (physical activity, smoking, and drinking) and four health outcomes (BMI, functional limitations, depression index, and self-rated health). Each model was repeated with variable White Race and variable Black Race separately with the purpose to analyze the effect of race on health-related behaviors and health outcomes. Twelve baseline models were constructed for each theory. The models with a poor data fit were modified.

Fundamental Cause Theory

The results of the current study add to the growing evidence that disadvantaged socio economic status, low neighborhood quality, and belonging to a minority group are strong predictives of health outcome.

It was found that the higher the SES as people became more physically active. These results support Phelan et al.'s (2010) statement that SES is associated with protective factors for disease, because physical activity is a health-protective behavior. Harris and Guten

(1979:18) defined health-protective behaviors as any behavior performed by a person "to protect, promote, or maintain his or her health."

Results from the current study suggest the higher the neighborhood quality the more physically active its residents and being White positively influenced physical activity, but being African American negatively influenced physical activity. Wilson et al. (2004) found that residents from low-SES areas reported engaging in less physical activity than from high-SES areas ($p < .05$). The authors also noted "More African Americans (66.5%) than Whites (33.5%) were classified as living in low-SES areas" (p. 20). This indicates African Americans have a less possibility than Whites for physical exercise. These data coincide with the results of the current study that physical activity varies by race. According to Williams (2012:284), "the most consequential effects of racism on health are due to residential segregation by race." The author emphasized that segregation creates neighborhoods with health-damaging environments and inadequate outdoor life. These conditions lead to an insufficient possibility for physical activity among minority populations.

The results that effects of SES on smoking and drinking were not significant helped explain a relative lack of consistency in the literature concerning these issues. The literature data indicate that smoking rates vary inversely with SES (Winkleby et al., 1990; Adler et al., 1994). However, Laaksonen et al. (2005) found that socioeconomic indicators were strongly associated with smoking and their association with smoking was attenuated when indicators were examined simultaneously. Adler et al. (1994:18) indicate "several studies (Cauley et al., 1991; Marmot et al., 1991; Matthews et al., 1989) have found a positive correlation of alcohol consumption with SES as measured by education or job status." At the same time

Casswell, Pledger, and Hooper (2003) found that less well-educated young adults consumed significantly more alcohol during a drinking occasion.

Findings from the current study show the higher the neighborhood quality the less smokers and less alcohol consumption by its residents, which support the Fundamental Cause Theory by showing social conditions directly affect health-related behaviors. Ganz (2000:371) explained that negative external factors, such as unsafe neighborhoods "originate from the social and physical environment are positively associated with participation in some unhealthy behaviors (e.g., smoking)." By conducting an investigation of the relationships between external risks and smoking, he found that smoking is significantly associated with the perception of living in an unsafe neighborhood.

Results from the current study showed Whites smoked more during Wave 1, Wave 2, and Wave 3; and African Americans smoked less during Wave 1and Wave 3. Results also showed that Whites consumed less alcohol at Wave 1 only. Williams (2012:282) explained "even if levels of tobacco use and alcohol consumption are comparable between both racial groups, Blacks have more serious health related complications of it compared with Whites."

Results from the current study show men smoked more and consumed more alcohol, but at the same time were more physically active than women. These results support the hypothesis that health-related behaviors vary by gender. This study's results showed health outcomes vary by gender, also. It was shown men had lower BMI, less functional limitations, less depression, and reported better self-rated health.

Current findings showed the higher SES with a lower BMI, the less functional limitations, less depression, and better self-rated health by individuals. The results also

showed Whites have a lower BMI, lower functional limitation, and less depression, but African Americans had a higher BMI, higher functional limitation, and more depression. These results demonstrate the most vulnerable groups of the population, such as low SES and minority groups had worse health than well-established people and Whites. Williams (2012:283) noted "race and SES combine in complex ways to affect health." He mentioned that racial discrimination created racial inequities in SES and racial inequality in health status. Williams wrote that racial discrimination overburdened the effects of low SES on health. He provide evidence of large racial differences in health at similar levels of SES, such as "infant mortality rate for college-educated African American women is more than two and a half times as high as that of similarly educated whites and Hispanics" (Williams, 2012:283). In support of Williams' statements, results of the current study showed the effect of race on BMI is stronger than the effect of SES on BMI (Table 5).

Poor neighborhood quality is often related to racial segregation, an additional factor linked to worth health. The current study showed the higher neighborhood quality the less suffering from depression and better self-rated health by its residents. The results that SES, race, and neighborhood quality significantly affect health outcomes support the Fundamental Cause Theory. The results also showed these factors are correlated (Appendix A), which supports Williams' (2012) notion that indicators of SES are not equivalent across race. SES and race are related to the quality of the neighborhood where people live. People, who belong to minority groups, often live in neighborhoods of low quality, for two reasons—low SES and racial segregation. These factors adversely affect health.

As hypothesized in the current study, physically active individuals had a lower BMI, lower functional limitations, and less depression, but reported a high self-rated health.

The hypothesis that the relationship between smoking and depression is positive was partly supported by the results. It was found the more people who smoked during Wave 1, the greater their depression at Wave 1. However, more people smoked during Wave 3 but the depression level was lower at Wave 3. The hypothesis that the relationships between smoking and self-rated health are negative was partly supported by these results. Smokers at Wave 1 reported low self-rated health at Wave 1, but smokers at Wave 3 reported a high self-rated health at Wave 3. The limitation of the current study is insufficient data for the explanation of the findings that self-rated health was high and depression was low during Wave 3 among smokers. Most of the literature sources indicate association of smoking with poor self-rated health. Manderbacka, Lundberg, and Martikainen (1999) and Cott, Gignac, and Badley (1999) found relationships between smoking and depression are positive. "People with current or past depression are about twice as likely to be current smokers and smoke more cigarettes per day than people without depression" (Mendelson, 2012:304). Fergusson, Goodwin, and Horwood (2003) conducted structural equation modeling to examine explanations of the linkage between smoking and depression. The authors noted this analysis was inconclusive, but the best-fitting model was the one in which depression influenced smoking. "Thus, although the weight of the evidence suggests the presence of a causal relationship between smoking and depression, the direction of this causal relationship remains unclear" (p. 1365). Fergusson et al. (2003) suggested an experimental design for clarification of the relationships between smoking and depression, a direction for future research.

The current study showed the more people drank alcoholic beverages, the greater their depression. This result coincides with previous investigations, such as Williams (1966),

which showed excessive drinking is positively associated with depression. Williams's study demonstrated people, who were depressed, consumed more alcohol than non depressed individuals during party participation. At the same time, excessive alcohol consumption increased the level of depression. The study conducted by Williams (1966) indicates a reciprocal causation between alcohol consumption and depression. The results of SEM in the current study showed an increase in drinking leads to an increase in depression. Effect of drinking on depression was examined because, according to the Fundamental Cause Theory, social causes for health inequalities affect health through multiple risk factors. These risk factors include health-related behaviors, such as drinking. However, it should be noted depression can lead to excessive drinking. Causal relationships between drinking and depression depend upon numerous factors, such as the situation at the concrete time point, amount of alcohol consumption, level of depression, and other reasons. Elaboration of this problem is a direction for the future research.

Current results showed that people who drank excessively had lower functional limitations. These findings coincide with literature data. Lin et al. (2011:807 indicated "recent publications have been more consistent in suggesting the association between low to moderate alcohol use and lower risk of functional impairments among older adults." By analyzing the data received from the Health and Retirement Study (HRS) of 19,017 adults 50 years and older, Lin et al. (2011:811) found, "Compared to consistent abstainers, consistent low-risk drinking was associated with lower odds of developing functional limitations."

It was also found as more people drank excessively during Wave 2, as worth self-rated health was reported at Wave 2. However, as more people drank excessively during Wave 1, better self-rated health was reported at Wave 1 ($p = 0.041$) and better self-rated

health was reported at Wave 2 ($p = 0.044$). It should be taken into consideration that p values for positive effects close to 0.05 are borderline. This indicates the effects of drinking on self-rated health were almost non-significant. Lin et al. (2011) also found non-significant interactions of drinking patterns with self-rated health status.

In sum, the results of the current study support the Fundamental Cause Theory in agreement with Link and Phelan (1995) and Phelan et al. (2010). A fundamental social cause of health inequalities has the following essential features. First, it influences multiple health outcomes, such as BMI, functional limitations, depression, and self-rated health. Second, it affects these health outcomes through multiple risk factors, such as insufficient physical activity, smoking, and drinking. Third, it involves access to resources, such as high SES and high neighborhood quality, which positively affect health. Finally, the association between a fundamental cause and health is reproduced over time (3 time points in the current study).

Stress Process Model

Accordingly to Pearlin's (1989:243) recommendation, "information about structural contexts and people's links to those contexts was analyzed at virtually every step of the stress process model." The results of the current study showed as SES and neighborhood quality increased, financial stress and negative life events decreased. Results also showed that stress exposure varies by race, because Whites experienced less financial stress, but African Americans experienced more financial stress. These findings support Williams' (2012:284) statement that "racism can trigger increased exposure to traditional stressors (e.g., unemployment)" because unemployment can lead to financial stress. As mentioned before, SES, neighborhood quality, and race are often related to each other, because people with low

SES and minority groups often live in poor neighborhoods with high levels of different kinds of stressors and high crime rates, which can lead to negative life events, such as physical attacks.

Using spousal support as a mediator helped analyze Pearlin's (1989:249) statement, "the same stressors do not necessarily lead to the same stress outcomes" because of the effect of mediators, such as spouse support. Turner and Marino (1994) indicated being married usually defines an existence of stable relationships that is a minimum condition for experiencing social support. For this reason, spousal support was used as indicator of social support in the current study as well as in previous research (e.g., Eaton, 1978; Gore, 1978).

Current results showed the effect of SES on spousal support was significant and negative. The regression coefficient of spousal support on SES was non-significant. However, when financial stress was added to the model, the effects of SES on spousal support became significant and negative. This finding indicated that financial stress mediated the effect of SES on spousal support. Literature data about the relationships between SES and spousal support are controversial. In their literature review, Turner and Marino (1994:196) noted that "Evidence on the extent to which the structures and processes of relationships, particularly perceived social support, varies by class status is sparse and contradictory." By conducting their own research, Turner and Marino analyzed interviews with 1,394 individuals aged 18 to 55 and did not find an association between SES and the experience of spousal support. Results from the current study suggest an investigation of the role of mediators or moderators as a direction for the future research.

The results of the current study demonstrated the higher spousal support, the less people smoked and consumed less alcohol during Wave 1. Conducting the survey analysis

based on 634 couples, Dollar et al. (2009:231) found “spousal and one's own heavy drinking decreased the likelihood of smoking cessation.” These results showed spousal health-related behaviors influence each other. The results of the current study were consistent with these findings. The difference is the current results showed spousal support not spousal behavior negatively affected smoking and drinking.

The current study showed people who received spousal support were less depressed and reported better self-rated health. Turner and Marino (1994) indicated numerous studies found persistently observed connections between social support and mental health that go from support to mental health.

It was found as neighborhood quality increased as residents received more spousal support. However, the occurrence of more financial stress and more negative life events, the less spousal support people received.

According to Pearlin (1989) negative life events and chronic strains often happened together in people’s lives. However, effect of negative life events on stress was found non-significant in the current study.

The results of the current study support Pearlin’s (1989) suggestions that every step of the stress process is related to an individual’s location in the social structure. The results also showed spousal support mitigated the effect of financial stress on health behavior and outcome (smoking, drinking, depression, and self-rated health). It was found the more spousal support people received, they smoked less, consumed less alcohol, less depression, and reported better self-rated health.

Social Cognitive Theory

The results of the current study showed that perceived control increased accordingly with an increase of SES and neighborhood quality. Additionally, Whites had higher perceived control and less financial strains, but African Americans had lower perceived control and more financial strains. Men had higher perceived control. These findings can be explained by Bailis et al. (2001:1662) who suggested "The perception of control ultimately derives from an individual's history of success or failure at attaining goals." Thus, people who experience repeated success in goal attainment start to believe they are able to achieve control over life's circumstances. However, for people who experience constant difficulties in attainment of their goals, it is hard to be confident they are able to overcome barriers and achieve control over the outcomes. Well-established people have more resources for attainment of their goals than vulnerable groups of the population. Consequently, individuals in upper positions of social structure are able to develop a better sense of control over their lives and their health-related behaviors and health outcomes, in particular, than individuals from lower classes or minority groups. However, evidence of social structure influence on perceived control should be considered. Bandura's (1986) notion is perceived control is a personality characteristic. Bandura (1998) emphasized Social Cognitive Theory addresses the sociostructural and personal determinants of health and believes in individual's ability "to exercise control over health-related behavior plays and influential role in health status and functioning" (p. 628). The results of the current study support these statements by showing depression decreased accordingly with increasing SES, neighborhood quality, and perceived control, and self-rated health status improved accordingly with increasing SES and perceived control.

Direct effects of perceived control on depression and self-rated health were much stronger than indirect effects through barriers (financial strains) and health-related behaviors. Direct effects of socio economic factors on health-related behaviors and health outcomes were much stronger than indirect effects through perceived control. These findings indicate perceived control mitigates negative effects of socio economic factors on health and reduced health disparities.

The results of the current study demonstrated high perceived control helped overcome the barriers toward positive health-related behaviors and health outcome, by showing an increase in perceived control is associated with a decrease in financial strains.

It was found the level of physical activity decreased, if financial strains increased. However, when direct effects of socio economic factors on physical activity were taken into consideration, they suppressed the effect of financial strains on physical activity and this effect became non-significant.

Current results showed alcohol consumption increased accordingly with an increase in financial strains. These results are consistent with the literature. Pearlin (1989) indicated excessive drinking increases as one of the responses to stress. Dawson, Grant, and Ruyan (2005) analyzed data from the 2001–2002 National Epidemiologic Survey on Alcohol and Related Condition (NESARC) that included 43,093 respondents. A measure of stress for this study included financial crisis. The researchers found "a consistent positive relationship between level of past-year stress and various measures of heavy drinking" (Dawson et al., 2005:457).

In sum, perceived control is a personal determinant. It also influences of social and economic factors. However, as Bandura (2009) noted, that people are not simply embedded

in their social structure, but they are able to express their personality and consciously influence their lives. “People are self-developing, proactive, self-regulating, and self-reflecting, not just reactive organisms shaped and shepherded by environmental events or inner forces” (Bandura, 2009:94). In particular, people are able to consciously affect their health-related behaviors and health outcomes. The current results show individuals who perceived control over their circumstances are able to overcome barriers, such as financial stress and improve their health. Findings that depression decreased and self-rated health improved accordingly with an increase of perceived control provide evidence that perceived control is a significant determinant of health outcomes. Socio economic factors influenced health-related behaviors and health outcomes. However, perceived control mitigated negative effects of socio economic factors on health.

Limitations

There are several limitations for this study. First, the physical activity standardized indexes W1-W3 and perceived control standardized index W1 have low reliability (low Cronbach’s alphas, see Table 3). However, the correlations among the components for each of these indexes are between 0.130 and 0.340 with less than a 0.01 level of significance. This indicates the convergent validity of physical activity and perceived control indexes are high (Campbell and Fiske 1959).

A second limitation is the large number of hypotheses may lead to false positive results. For the prevention of this problem the results using SEM were verified with the assistance of other techniques, such as multiple regression analysis and correlations. For example, multiple regression analysis helped reveal the confounding effect of SES and mediating effect of physical activity that influenced change in the direction of effects of race

on functional limitations. The results of the current study were consistent with the results of the previous investigations from the literature sources. Herd et al. (2007) indicated, in their investigation of the differential effects of education versus income on health by using the ACL dataset, it was impossible to "rule out all potential for confounding results due to reverse causality in the association between socioeconomic position and health" (p. 236). As shown above, current study helped fill this gap by revealing confounding and mediating effects of social and behavioral factors on health. It should be noted SEM is a preferable technique that analyses the comprehensive structure of causal relationships between the models' components to compare three social psychological theories and reveal factors, which influenced health disparities.

Social and policy implications of the findings

Summary of the results across three social psychological theories have been provided in Table 82. The results showed that the relationships between socio economic factors (SES, race, gender, and neighborhood quality), health behaviors (physical activity, smoking, and drinking) and health outcomes (BMI, functional limitation, depression index, and self-rated health) are the same across the three theories. All models fit the data well (CFA > 0.950 and RMSEA < 0.06 in most of the models). Only two models have CFA larger than 0.900, but less than 0.950, and RMSEA equal to 0.083 and 0.081 (Appendix B). Squared multiple correlations for the same variables are stable across three theories (Appendix C). This indicates stability of the models.

The findings that people with high education and income (high SES) are more physically active and have better health outcomes indicate the ways of decreasing the

disparities in this issue. Improvement of social condition of the vulnerable population and implementation of health education programs can help decrease health disparities. Health education is able to enhance perceived control of individuals because knowledge about the health maintenance and disease prevention supports people's beliefs that they can achieve these goals and overcome the barriers. The finding that high level of perceived control promotes improvement of self-rated health and decrease depression supports Bandura's statement that perceived control is a strong personal determinant of health. That is why, educational programs that can help to improve perceived control can be useful for maintenance of the individuals' health. Infurna et al. (2009) also indicated that perceived control is important indicator of health, especially in old age.

High neighborhood quality negatively affected drinking and depression (Appendix B). Current results showed that alcohol consumption and depression are conditions that strongly related to each other. By examining the literature on the associations between alcohol use disorders and major depression, Boden and Fergusson (2011) also showed that "the presence of either disorder doubled the risks of the second disorder" (p. 106). That is why, it is important to improve neighborhood quality especially in poorest and segregated neighborhoods. In such neighborhoods high level of crime, unemployment, and poverty lead to depression and alcohol consumption by residents.

Minority groups of population often live in poor neighborhood conditions. Current results showed that African Americans more suffered from depression than people of other racial origin. Racial discrimination, poverty, stressful situations, and chronic strains lead to high level of depression among African Americans. According to Williams (2012), "depressed blacks are more likely than their white peers to have higher levels of impairment,

to have more severe symptoms, to be chronically depressed, and do not receive any treatment" (p. 282). That is why, improvement of social conditions of minority group populations will improve their health and decrease health disparities.

Current results showed that social support is important factor that influence health of individuals (Table 82). Consequently, for the improvement and maintenance of health it is important strength families, neighborhood, communities, and other institutions in order to support individuals in difficult situations, such as stress or illness. Social relationships and support are important in everyday life also, because they can improve quality of life and help to preserve health. Current findings showed that improvement in social, economic, and psychological factors preserve people's health.

Table 82. Summary of the Effects of Socio Economic and Personal Factors on Health-Related Behaviors and Health Outcomes

	SES	Neighborhood Quality	White Race	Black Race	Male Gender	Spousal Support	Perceived Control	Financial Stress
Physical Activity W1	+	+	+	-	+	N/S		-
Physical Activity W2	+	N/S	+	-	+	N/S		-
Physical Activity W3	+	N/S	N/S	N/S	+	N/S		-
Smoking W1	N/S	-	+	-	+	-		N/S
Smoking W2	N/S	N/S	+	N/S	N/S	N/S		N/S
Smoking W3	N/S	N/S	+	-	N/S	N/S		N/S
Drinking W1	N/S	-	-	N/S	+	-		+
Drinking W2	N/S	-	N/S	N/S	+	N/S		+
Drinking W3	N/S	-	N/S	N/S	+	N/S		+
BMI W1	-	N/S	-	+	-	N/S		
BMI W2	-	N/S	-	+	-	N/S		
BMI W3	N/S	N/S	-	+	-	N/S		
Functional Limitation W1	-	N/S	+	-	-	N/S		
Functional Limitation W2	-	N/S	+	-	-	N/S		
Functional Limitation W3	-	+	N/S	N/S	-	N/S		
Depression Index W1	-	-	-	+	-	-	-	
Depression Index W2	-	-	-	+	-	-	-	
Depression Index W3	-	-	-	+	N/S	-	-	
Self-Rated Health W1	+	+	N/S	N/S	N/S	+	+	
Self-Rated Health W2	+	+	N/S	N/S	+	+	+	
Self-Rated Health W3	+	+	N/S	N/S	N/S	+	+	

+ Significant and positive effect
- Significant and negative effect
N/S Non-significant effect
(W1 = Wave 1, W2 = Wave 2, W3 = Wave 3)

CHAPTER 6: CONCLUSIONS

The objective of the current study was to compare the effectiveness of Fundamental Cause Theory, Stress Process Model, and Social Cognitive Theory for an explanation of disparities in physical and mental health outcomes. This purpose was achieved by analyzing the ACL dataset with help of Structural Equation Modeling. This approach provides a possibility to reveal a comprehensive picture of the relationships among the socio economic and cognitive factors, stressors, mediators, health behaviors, and outcomes. The results showed that the three theories supplement each other. Each considered the social structural approach supported by the results of the current study, which showed that most of the direct effects of socio economic factors on all parts of the models were significant. Consideration of differential stress exposures provides additional explanation to health disparities. SCT provides a possibility to consider cognitive factors, which demonstrate individuals' ability to consciously influence health behaviors and outcomes. All constructed models confirmed the Fundamental Cause Theory and the Stress Process Model. One-half of the models constructed for SCT did not fit the data well and were modified. These models were: "Physical Activity and Depression," "Physical Activity and Self-Rated Health," "Smoking and Depression," "Smoking and Self-Rated Health," "Drinking and Depression," and "Drinking and Self-Rated Health." All modified models fit the data well.

The results related to relationships between socio economic factors (SES, race, gender, and neighborhood quality), health behaviors (physical activity, smoking, and drinking) and health outcomes (BMI, functional limitation, depression index, and self-rated health) are the same across the three theories and suggest stability of the models.

Current results showed the level of physical activity increased accordingly with an increase in individuals' SES. The level of physical activity increased, but alcohol consumption and smoking decreased with an increase in neighborhood quality. BMI, functional limitations, and depression decreased; self-rated health improved with an increase of individuals' SES. Levels of depression among residents decreased and self-rated health improved with increasing neighborhood quality. Whites were more physically active and smoked more, but African Americans were less physically active and smoked less. Results also showed Whites consumed less alcohol during Wave 1 only. Men smoked more and consumed more alcohol, but at the same time were more physically active than women. Whites have a lower BMI, lower functional limitation, and suffered less from depression. However, African Americans had a higher BMI, higher functional limitation, and suffered more from depression. Men had a lower BMI, less functional limitation, less suffered from depression, and reported better self-rated health.

The results of the current study support the Fundamental Cause Theory by showing accordingly to Link and Phelan (1995) and Phelan et al. (2010), a fundamental social cause of health inequalities has the following essential features. First, it influences multiple health outcomes, such as BMI, functional limitation, depression, and self-rated health. Second, it affects these health outcomes through multiple risk factors, such as insufficient physical activity, smoking, and drinking. Third, it involves access to resources, such as high SES and high neighborhood quality that positively affect health. Finally, the association between a fundamental cause and health is reproduced over time (3 time points in this current study).

The results of the current study suggest significant socioeconomic disparities in stress exposure. This includes findings that financial stress and negative life events negatively

associated with high SES and high neighborhood quality. Stress exposure varies by race, because Whites experienced less financial stress, but African Americans experienced more financial stress.

An important finding included spousal support decreased, if financial stress and negative life events increased. At the same time, spousal support increased accordingly with an increase of neighborhood quality. These results support Pearlin's (1989) suggestions that every step of the stress process is related to an individual's location in the social structure.

It was found the more spousal support increased, the less they smoked, consumed less alcohol, less depression, and reported a better self-rated health. Consideration of the effects of spousal support on health outcomes is important, because spousal support mitigated the effect of stressors on health.

It was found that perceived control increased with increase of SES and neighborhood quality. The results also showed that men and Whites had higher perceived control, but African Americans had lower perceived control and more financial strains.
Increasing perceived control is associated with decreasing financial strains. According to Bandura, "Social cognitive theory addresses the sociostructural determinants of health as well as the personal determinants" (1998:623). The results of the current study showed that perceived control is important to personal determinant of health. Depression decreased and self-rated health status improved with increase of perceived control. Current results may be used as a theoretical grounding for the development and implementation of health education programs, which can help to enhance perceived control of individuals and promote healthy life style.

Direct effects of socio economic factors on health-related behaviors and health outcomes were much stronger than indirect effects through perceived control. These findings indicate perceived control mitigated negative effects of socio economic factors on health and reduced health disparities.

Changes in the influence of social and economic factors on health-related behaviors and health outcomes were observed across three time points. This approach helped reveal the following findings:

1) Each health-related behavior (physical activity, smoking, and drinking) was a very strong predictor in the subsequent time point.
2) Most of the effects of socio economic and cognitive factors on health behaviors and health outcomes were strong and stable across 3 time points. For example, effects of SES on physical activity were significant and positive across 3 time points; effects of SES on self-rated health were significant and positive across 3 time points; and effects of perceived control on self-rated health were significant and positive across 3 time points.

These results confirm Link and Phelan's (1995) statement, "The association between a fundamental cause and health is reproduced over time via the replacement or intervening mechanisms" (Phelan et al., 2010:S29).

Comparative analysis of three social psychological theories demonstrated every component in each of these theories was related to an individual's location in the social structure. Thus, Fundamental Cause Theory became a basis for Stress Process Model and Social Cognitive Theory. Stress Process Model considers the effect of stress on health that provides an additional explanation of health disparities. "In addition to socioeconomic

inequality, it may be useful to consider the roles that other factors, such as unequal and cumulative exposure to stressors and discrimination across the life course, may play in generation racial-ethnic health disparities" (Brown 2003; Williams & Mohammed 2009; Brown, O'Rand, & Adkins 2012:362). Social Cognitive Theory takes into account personal determinants to mitigate the negative effects of socio economic factors on health and to reduce health disparities.

Pearlin (1989) noted most of the social stress studies related to mental health outcomes. However, "The observation of multiple outcomes is highly desirable because people having different social and economic characteristics also may have different modes of manifesting stress" (Pearlin 1989:253). Investigations that considered only single health outcome did not take into account the large part of the effects, which difficult life circumstances may have produced on people's health. The current study filled this gap and contributed to the scientific literature by conducting a longitudinal comparison of three social psychological theories and investigating multiple health behaviors (physical activity, smoking, and drinking) and multiple health outcomes (BMI, functional limitation, depression, and self-rated health).

The results of the current study, that disadvantaged social conditions negatively affected people's health, provide evidence for potential policy implications, which can help reduce health disparities by improvement of socioeconomic conditions of the most vulnerable groups of population and promote healthy lifestyles.

APPENDIX A:

Correlation Table

	1	2	3	4	5	6	7	8
SES	1							
Neighborhood Quality	.216**	1						
Black Race	-.245**	-.348**	1					
White Race	.241**	.357**	-.929**	1				
Gender	.136**	.052**	-.055**	.041*	1			
Physical Activity W1	.288**	.130**	-.142**	.139**	.150**	1		
Spousal Support	-.011	.120**	-.089**	.086**	.076**	.027	1	
Financial Stress	-.274**	-.323**	.263**	-.264**	-.069**	-.105**	-.154**	1
Negative Life Events	-.252**	-.104**	.098**	-.090**	-.092**	-.127**	-.063**	.099**
Perceived Control	.198**	.205**	-.130**	.144**	.080**	.117**	.244**	-.319**
Depression Index W1	-.212**	-.264**	.154**	-.169**	-.102**	-.196**	-.288**	.366**
BMI W1	-.116**	-.041*	.142**	-.123**	-.096**	-.106**	-.030	.065**
Physical Activity W2	.300**	.138**	-.164**	.169**	.161**	.649**	.048*	-.118**
Depression Index W2	-.256**	-.225**	.169**	-.185**	-.092**	-.197**	-.245**	.285**
BMI W2	-.108**	-.043*	.137**	-.124**	-.064**	-.071**	-.023	.102**
Physical Activity W3	.247**	.095**	-.111**	.104**	.159**	.577**	.026	-.105**
Depression Index W3	-.261**	-.209**	.208**	-.225**	-.072**	-.191**	-.203**	.271**
BMI W3	-.066**	-.071**	.154**	-.140**	-.036	-.065**	-.033	.109**
Self-Rated Health W1	.354**	.153**	-.097**	.093**	.082**	.306**	.073**	-.217**
Self-Rated Health W2	.325**	.143**	-.111**	.109**	.097**	.251**	.092**	-.178**
Self-Rated Health W3	.303**	.127**	-.125**	.114**	.082**	.207**	.082**	-.167**
Functional Limitation W1	-.304**	-.059**	.053**	-.040*	-.103**	-.390**	.017	.122**
Functional Limitation W2	-.300**	-.069**	.084**	-.075**	-.104**	-.327**	-.008	.120**
Functional Limitation W3	-.306**	-.038	.099**	-.094**	-.133**	-.280**	.024	.076**
Smoking W1	.068*	-.001	-.216**	.221**	.143**	-.045	-.088*	-.001
Smoking W2	.108**	-.006	-.218**	.228**	.092*	-.016	-.006	-.024
Smoking W3	.030	.005	-.127**	.139**	-.009	-.002	-.046	-.024
Drinking W1	-.056*	-.130**	.092**	-.114**	.242**	-.022	-.067*	.136**
Drinking W2	-.079**	-.177**	.138**	-.144**	.238**	-.063*	-.010	.157**
Drinking W3	-.046	-.151**	.055	-.077**	.272**	-.024	-.020	.117**

Correlation Table (continued)

	9	10	11	12	13	14	15	16
Negative Life Events	1							
Perceived Control	-.054**	1						
Depression Index W1	.100**	-.440**	1					
BMI W1	.047**	-.040*	.017	1				
Physical Activity W2	-.149**	.114**	-.180**	-.094**	1			
Depression Index W2	.102**	-.318**	.513**	.034	-.245**	1		
BMI W2	.048**	-.043*	.030	.852**	-.053**	.007	1	
Physical Activity W3	-.163**	.098**	-.171**	-.114**	.644**	-.222**	-.078**	1
Depression Index W3	.107**	-.297**	.484**	.082**	-.198**	.517**	.072**	-.199**
BMI W3	-.012	-.026	.026	.767**	-.077**	.043*	.810**	-.069**
Self-Rated Health W1	-.180**	.225**	-.332**	-.123**	.295**	-.308**	-.114**	.270**
Self-Rated Health W2	-.158**	.199**	-.299**	-.152**	.307**	-.398**	-.116**	.289**
Self-Rated Health W3	-.151**	.147**	-.231**	-.200**	.256**	-.271**	-.174**	.298**
Functional Limitation W1	.197**	-.155**	.259**	.077**	-.348**	.243**	.057**	-.335**
Functional Limitation W2	.199**	-.123**	.212**	.076**	-.393**	.345**	.024	-.354**
Functional Limitation W3	.187**	-.106**	.140**	.141**	-.306**	.197**	.111**	-.372**
Smoking W1	.073*	.006	.044	.017	-.024	.053	.045	-.014
Smoking W2	.073	.022	-.039	-.041	.026	.022	-.041	.051
Smoking W3	.006	.080	-.002	-.010	.058	.041	-.097*	.042
Drinking W1	.058*	-.038	.092**	.006	-.034	.106**	.048	-.031
Drinking W2	.114**	-.031	.097**	.071*	-.061*	.089**	.074**	-.048
Drinking W3	.071*	-.015	.092**	.012	-.016	.077*	.039	-.008

Correlation Table (continued)

	17	18	19	20	21	22	23	24
Depression Index W3	1							
BMI W3	.034	1						
Self-Rated Health W1	-.267**	-.093**	1					
Self-Rated Health W2	-.327**	-.119**	.607**	1				
Self-Rated Health W3	-.365**	-.099**	.523**	.545**	1			
Functional Limitation W1	.171**	.014	-.517**	-.418**	-.329**	1		
Functional Limitation W2	.242**	.025	-.423**	-.491**	-.318**	.619**	1	
Functional Limitation W3	.304**	-.010	-.359**	-.349**	-.486**	.474**	.489**	1
Smoking W1	-.016	.000	-.105**	-.089*	-.069	.025	.033	.002
Smoking W2	.002	-.091*	-.044	-.020	-.045	.002	-.021	.028
Smoking W3	-.097*	-.070	.027	-.008	.090*	.009	.034	.000
Drinking W1	.093**	.027	.006	-.016	-.030	-.072**	-.025	-.031
Drinking W2	.050	.074*	.003	-.037	-.013	-.043	-.074**	-.019
Drinking W3	.122**	.023	.021	-.034	.010	-.062*	-.045	-.058*

Correlation Table (continued)

	25	26	27	28	29	30
Smoking W1	1					
Smoking W2	.702**	1				
Smoking W3	.044	.146**	1			
Drinking W1	.128**	.081	-.027	1		
Drinking W2	.124**	.141**	.086	.537**	1	
Drinking W3	.135**	.180**	.054	.565**	.585**	1

**Correlation is significant at the 0.01 level (2-tailed)

* Correlation is significant at the 0.05 level (2-tailed)

(W1 = Wave 1, W2 = Wave 2, W3 = Wave 3)

APPENDIX B:

Summary of the Models Fit

Fundamental Cause Theory:	Model 1: Physical Activity and BMI	Model 2: Physical Activity and Functional Limitation	Model 3: Physical Activity and Depression	Model 4: Physical Activity and Self-Rated Health
CFA	0.999	0.991	0.998	0.993
RMSEA	0.026	0.089	0.040	0.077
	Model 5: Smoking and BMI	Model 6: Smoking and Functional Limitation	Model 7: Smoking and Depression	Model 8: Smoking and Self-Rated Health
CFA	0.999	1.000	1.000	0.998
RMSEA	0.022	0.004	0.012	0.021
	Model 9: Drinking and BMI	Model 10: Drinking and Functional Limitation	Model 11: Drinking and Depression	Model 12: Drinking and Self-Rated Health
CFA	0.999	0.981	0.999	0.999
RMSEA	0.021	0.079	0.020	0.015
Stress Process Model:	Model 13: Physical Activity and BMI	Model 14: Physical Activity and Functional Limitation	Model 15: Physical Activity and Depression	Model 16: Physical Activity and Self-Rated Health
CFA	0.995	0.981	0.974	0.985
RMSEA	0.037	0.060	0.068	0.053
	Model 17: Smoking and BMI	Model 18: Smoking and Functional Limitation	Model 19: Smoking and Depression	Model 20: Smoking and Self-Rated Health
CFA	0.995	0.980	0.960	0.987
RMSEA	0.029	0.044	0.062	0.037
	Model 21: Drinking and BMI	Model 22: Drinking and Functional Limitation	Model 23: Drinking and Depression	Model 24: Drinking and Self-Rated Health
CFA	0.993	0.977	0.961	0.982
RMSEA	0.036	0.050	0.065	0.045

Summary of the Models Fit (continued)

Social Cognitive Theory:	Model 25: Physical Activity and BMI	Model 26: Physical Activity and Functional Limitation	Model 27: Physical Activity and Depression	Model 28: Physical Activity and Self-Rated Health
CFA	0.953	0.914	0.978	0.966
RMSEA	0.069	0.083	0.058	0.058
	Model 29: Smoking and BMI	Model 30: Smoking and Functional Limitation	Model 31: Smoking and Depression	Model 32: Smoking and Self-Rated Health
CFA	0.981	0.901	0.942	0.974
RMSEA	0.044	0.071	0.071	0.044
	Model 33: Drinking and BMI	Model 34: Drinking and Functional Limitation	Model 35: Drinking and Depression	Model 36: Drinking and Self-Rated Health
CFA	0.982	0.904	0.950	0.992
RMSEA	0.045	0.081	0.060	0.023

APPENDIX C:

Summary of the Squared Multiple Correlations (R^2) across Three Theories

	Fundamental Cause Theory	Stress Process Model	Social Cognitive Theory
Physical Activity W1	0.103	0.103	0.011
Physical Activity W2	0.442	0.442	0.424
Physical Activity W3	0.398	0.398	0.386
Smoking W1	0.082	0.093	0.100
Smoking W2	0.529	0.529	0.538
Smoking W3	0.023	0.023	0.038
Drinking W1	0.078	0.084	0.096
Drinking W2	0.313	0.313	0.319
Drinking W3	0.345	0.346	0.351
BMI W1	0.033	0.034	0.011
BMI W2	0.021	0.022	0.004
BMI W3	0.021	0.022	0.002
Functional Limitation W1	0.196	0.196	0.152
Functional Limitation W2	0.197	0.197	0.151
Functional Limitation W3	0.214	0.215	0.153
Depression Index W1	0.116	0.220	0.243
Depression Index W2	0.121	0.178	0.178
Depression Index W3	0.139	0.172	0.179
Self-Rated Health W1	0.175	0.184	0.185
Self-Rated Health W2	0.151	0.157	0.154
Self-Rated Health W3	0.153	0.158	0.144
Life Events		0.070	
Financial Stress		0.165	0.213
Spousal Support		0.060	
Perceived Control			0.072

(W1 = Wave 1, W2 = Wave 2, W3 = Wave 3)

REFERENCES

Adams, Scott J. 2002. "Educational Attainment and Health: Evidence from a Sample of Older Adults." *Education Economics* 10 (1):97–109.

Adler, Nancy E., Thomas Boyce, Margaret A. Chesney, Sheldon Cohen, Susan Folkman, Robert L. Kahn, and S. Leonard Syme. 1994. "Socioeconomic Status and Health The Challenge of the Gradient." *American Psychologist* 49(1):15–24.

Adler, Nancy E. and David H. Rehkopf. 2008. "US disparities in Health: Descriptions, Causes, and Mechanisms." *Annual Review of Public Health* 29:235–252.

Agger, Ben. (1991). "Critical Theory, Poststructuralism, Postmodernism: Their Sociological Relevance." *Annual Review of Sociology,* Vol.17: 105-131.

AMOS software Version 20. "Help. Data Imputation Window."

Aneshensel, Carol S. 2009. "Toward Explaining Mental Health Disparities" *Journal of Health and Social Behavior* 50:377–394.

Armitage, Cristofer J., & Mark Conner. 2000. "Social cognition models and health behavior**:** A structured review." *Psychology and Health* 15:173–189.

Bailis, Daniel S., Alexander Segall, Michael J. Mahon, Judith G. Chipperfield, and Elaine M.Dunn. 2001. "Perceived control in relation to socioeconomic and behavioral resources for health." Social Science and Medicine 52:1661–1676.

Bandura, Albert. 1986. *Social Foundations of Thought and Action: A Social Cognitive Theory.* Engelwood Cliffs, NJ: Prentice-Hall.

Bandura, Albert. 1998. "Health Promotion from the Perspective of Social Cognitive Theory." *Psychology and Health* 13:623–649.

Bandura, Albert. 2001. "Social Cognitive Theory: An Agentic Perspective." *Annual Review of Psychology* 52:1-26.

Bandura, Albert. 2005. "The Primacy of Self-Regulation in Health Promotion." *Applied Psychology: an International Review* 54 (2): 245–254.

Bandura, Albert. 2009. "Social Cognitive Theory of Mass Communication." Pp. 94–124 in *Media Effects: Advances in theory and research,* edited by J. Bryant & M. B. Oliver. Mahwah, NJ: Lawrencec Erlbaum.

Barrett, Paul. 2007. "Structural Equation Modeling: Adjudging Model Fit." *Personality and Individual Differences* 42 (5):815-824.

Becker, Marshall H., Susan M. Radius, Irwin M. Rosenstock, Roberth H. Drachman, Kenneth C. Schuberth, and Katherine C. Teets. 1978. "Compliance with a Medical Regimen for Asthma: a Test of the Health Belief Model." *Public Health Reports* 93 (3):268–277.

Becker, Marshall H. and Nancy K. Janz. 1985. "The Health Belief Model Applied to Understanding Diabetes Regimen Compliance" *The Diabetes Educator*:41–47.

Boardman, Jason D. and Stephanie A. Robert. 2000. "Neighborhood Socioeconomic Status and Perceptions of Self-efficacy." *Sociological Perspectives*, 43:117–136.

Boden, Joseph M. and David M. Fergusson. 2011. "Alcohol and depression." *Addiction* 106(5):906–914.

Braveman, Paula. 2006. "Health Disparities and Health Equity: Concepts and Measurement." *Annual Review of Public Health*. 27:167–194.

Brown, Tony N. 2003. "Critical Race Theory Speaks to the Sociology of Mental Health Problems Linked to Racial Stratification." *Journal of Health and Social Behavior* 44(3):292–301.

Brown, Tyson H., Angela M. O'Rand, and Daniel E. Adkins. 2012. "Race-Ethnicity and Health Traectories: Tests of Three Hypotheses across Multiple Groups and Health Outcomes." *Journal of Health and Social Behavior* 53(3):359–377.

Bruce, Marino A., Bettina M. Beech, Errol D. Crook, Mario Sims, Sharon B. Wyatt, Michael F. Flessner, Herman A. Taylor, David R. Williams, Ermeg L. Akylbekova, T. Alp Ikizler. 2010. "Association of Socioeconomic Status and CKD among African Americans: The Jackson Heart Study." *American Journal of Kidney Disease* 55(6):1001–1008.

Burgard, Sarah A, Jennie E. Brand, and James S. House. 2007. "Toward a Better Estimation of the Effect of Job Loss on Health." *Journal of Health and Social Behavior* 48 (4):369–384.

Campbell, Donald T. and Donald W. Fiske. 1959. "Convergent and Discriminant Validation by the Multitrait-Multimethod Matrix." *Psychological Bulletin* 56(2):81–105.

Carter-Pokras, Olivia and Claudia Baquet. 2002 "What is a "Health Disparity"?" *Public Health Reports* 117:426–434.

Casswell, Sally, Megan Pledger, and Rhonda Hooper. 2003. "Socioeconomic status and drinking patterns in young adults." *Addiction* 98(5):601–610.

Cott, Cheryl A., Monique A. M. Gignac, Elizabeth M. Badley 1999. "Determinants of self-rated health for Canadians with chronic disease and disability." *Journal of Epidemiology and Community Health* 53:731–736.

Cubbin, Catherine and Marylin A. Wincleby. 2005. “Protective and Harmful Effects of Neighborhood-Level Deprivation on Individual-Level Health Knowledge, Behavior Changes, and Risk of Coronary Heart Disease.” *American Journal of Epidemiology* 162 (6): 559–568.

Dawson, Deborah A., Bridget F. Grant, W. June Ruan. 2005. “The association between stress and drinking: modifying effects of gender and vulnerability.” *Alcohol and Alcoholism* 40 (5):453-460.

DeMaris, Alfred. 2004. *Regression with Social Data: Modeling Continuous and Limited Response Variables.* New Jersey: John Willey & Sons, Inc.

Doll, Richard, Richard Peto, Keith Wheatley, Richard Gray, Isabelle Sutherland. 1994. “Mortality in relation to smoking: 40 years' observations on male British doctors.” *British Medical Journal* 309:901–911.

Dollar, Katherine M., Gregory G. Homish, Lynn T. Kozlowski, and Kenneth E. Leonard, 2009. “Spousal and Alcohol-Related Predictors of Smoking Cessation: A Longitudinal Study in a Community Sample of Married Couples.” *American Journal of Public Health* 99(2): 231–233.

Dragan, Alina and Noori Akhtar-Danesh. 2007. “Relation between Body Mass Index and Depression: a Structural Equation Modeling Approach.” *BMC Medical Research Methodology* 7:17.

Eaton, William W. 1978.”Life Events, Social Supports, and Psychiatric Symptoms: a Reanalysis of New Haven Data.” *Journal of Health and Social Behavior* 19:230–234.

Femia, Elia E., Steven H. Zarit, and Boo Johansson. 1997. “Predicting change in activities of daily living: A longitudinal study of the oldest old in Sweden.” *Journal of Gerontology: Psychological Sciences* 52B:294–302.

Fergusson, David M., R. D. Goodwin, and L. J. Horwood. 2003. “Major depression and cigarette smoking: results of a 21-year longitudinal study.” *Psychological Medicine* 33:1357–1367.

Ferraro Kenneth F. and Jerome R. Koch. 1994. “Religion and Health among Black and White Adults: Examining Social Support and Consolation.” *Journal for the Scientific Study of Religion* 33(4):362–375.

Ganz, Michael Lee. 2000. “The Relationship between External Threats and Smoking in Central Harlem.” *American Journal of Public Health* 90(3):367–371.

George, D., & Mallery, P. (2003). *SPSS for Windows step by step: A simple guide and reference. 11.0 update.* 4th ed. Boston: Allyn & Bacon.

Glanz, Karen, Barbara K. Rimer, and Frances M. Lewis. 2002. *Health behavior and health education: theory, research, and practice.* San Francisko CA: Jossey-Bass.

Gore, Susan. 1978. "The effects of Social Support in Moderating the Health Consequences of Unemployment." *Journal of Health and Social Behavior* 19:157–165.

Gordon-Larsen, Penny, Melissa C. Nelson, Phil Page, Barry M. Popkin. 2006. "Inequality in the Built Environment Underlies Key Health Disparities in Physical Activity and Obesity." *Pediatrics* 117(2):417–424.

Grabner, Michael J. 2008. "The Causal Effect of Education on Obesity: Evidence from Compulsory Schooling Laws." JEL No. I12, I20:1–55. Retrieved 08.04.2011. (http://www.econ.ucdavis.edu/graduate/mgrabner/research/jobmarketpaper.pdf)

Harris, Daniel M. and Sharon Guten. 1979. "Health-Protective Behavior: An Exploratory Study." *Journal of Health and Social Behavior* 20:17–29.

Harris, R., Skyler, J.S., Linn, M.W., Pollack, L., and Tewksbury, D. 1982. "Relationship between the health belief model and compliance as a basis for intervention in diabetes mellitus." *Pediatric Adolescent Endocrinology* (10):123–132.

He Yulei. 2010. "Missing Data Analysis Using Multiple Imputation Getting to the Heart of the Matter." *Circulation: Cardiovascular Quality and Outcomes* 3(1):98–105.

Herd, Pamela, Brian Goesling, and James S. House. 2007. "Socioeconomic position and health: The differential effects of education versus income on the onset versus progression of health problems." *Journal of Health and Social Behavior* 48(3):223–238.

Hooper, Daire, Joseph Coughlan, and Michael R. Mullen. 2008. "Structural Equation Modeling: Guidelines for Determining Model Fit." *Electronic Journal of Business Research Methods* 6 (1):53 – 60. Retrieved June 30, 2012 (http://www.ejbrm.com).

House, James S. 2001. "Understanding Social Factors and Inequalities in Health: 20th Century Progress and 21st Century Prospects." *Journal of Health and Social Behavior* 43 (June): 125–142

Hu, Li-tze and Peter M. Bentler. 1999. "Cutoff Criteria for Fit Indexes in Covariance Structure Analysis: Conventional Criteria Versus New Alternatives." *Structural Equation Modeling* 6 (1):1-55.

Infurna, Frank J., Denis Gerstorf, and Steven H. Zari. 2011. "Examining Dynamic Links Between Perceived Control and Health: Longitudinal Evidence for Differential Effects in Midlife and Old Age." *Developmental Psychology* 47 (1):9–18.

Jeffery, Robert W. and Simone A. French. 1998. “Epidemic Obesity in the United States: Are Fast Foods and Television Viewing Contributing?” *American Journal of Public Health* 88 (2):277–280.

Kaplan, David and Pamela R. Elliott. 1997. “A didactic example of multilevel structural equation modeling applicable to the study of organizations.” *Structural Equation Modeling: A Multidisciplinary Journal* 4 (1): 1–24.

Kim, Pan Suk and Gregory B. Lewis. 1994. “Asian Americans in the Public Service: Success, Diversity, and Discrimination.” *Public Administration Review* 54 (3):285–290.

Kim, Jinyoung and Richard Miech. 2009. “The Black-White Difference in Age Trajectories of Functional Health over the Life Course.” *Social Science and Medicine* 68(4):717–725.

Kirby, James B. and Toshiko Kaneda. 2005. “Neighborhood Socioeconomic Disadvantage and Access to Health Care.” *Journal of Health and Social Behavior* 46:15–31.

Klesges, Robert C., Kenneth D. Ward, JoAnne W. Ray, Gary Cutter, David R. Jacobs, Jr., Lynne E. Wagenknecht. 1998. “The Prospective Relationships Between Smoking and Weight in a Young, Biracial Cohort: The Coronary Artery Risk Development in Young Adults Study.” *Journal of Consulting and Clinical Psychology* 66 (6): 987–993.

Kohout, Frank J., Lisa F. Berkman, Denis A. Evans, and Joan Coroni-Huntley. 1993. “Two Shorter Forms of the CESD (Center for Epidemiological Studies Depression) Depression Symptoms Index.” *Journal of Aging and Health* 5:179–93.

Krieger, Nancy, Jarvis T. Chen, Pamela D. Waterman, David H. Rehkopf, and S.V. Subramanian. 2003. “Race/Ethnicity, Gender, and Monitoring Socioeconomic Gradients in Health: A Comparison of Area-Based Socioeconomic Measures—The Public Health Disparities Geocoding Project.” *American Journal of Public Health* 93:1655–1671.

Laaksonen, Mikko, Ossi Rahkonen, Sakari Karvonen, and Eero Lahelma. 2005. “Socioeconomic status and smoking: Analysing inequalities with multiple indicators.” *European Journal of Public Health* 15(3):262–269.

Lantz, Paula M.; Lynch, John W.; House, James S.; Lepkowski, James M. Mero, Richard P.; Musick, Marc A.; Williams, David R., "Socioeconomic disparities in health change in a longitudinal study of US adults: The role of health-risk behaviors." *Social Science and Medicine.* Jul 2001, 53, (1), 29–40.

Lantz, Paula M., James S. House, Richard P. Mero, and David R. Williams. 2005. "Stress, life events, and socioeconomic disparities in health: Results from the Americans' Changing Lives Study." *Journal of Health and Social Behavior* 46(3):274–288.

Lantz, Paula M.; Ezra Golberstein, James S. House, Jeffrey Morenoff. 2010. "Socioeconomic and behavioral risk factors for mortality in a national 19-year prospective study of U.S. adults" *Social Science & Medicine* 70:1558–1566.

Larsen, Penny, Melissa C. Nelson, Phil Page and Barry M. Popkin. 2006. "Inequality in the Built Environment Underlies Key Health Disparities in Physical Activity and Obesity." *Pediatrics* 117(2):417–424.

Leventhal, Howard, Daniel Meyer, and Mary Gutmann. 1980. "The role of theory in the study of compliance to high blood pressure regimes." In Patient compliance to prescribed antihypertensive medication regimens: A report to the National Heart, Lung, and Blood Institute (N.I.H. Publication No. 1-2102), edited by R. B. Haynes, M. E. Mattson, & T. O. Engbetson .Washington, DC:U.S. Department of Health and Human Services.

Lieberson, Stanley. 1985. *Making it Count: The Improvement of Social Research and Theory.* Berkeley, CA: University of California Press.

Lin, James C., Joy Guerrieri-Bang, and Alison A. Moore. 2011. "Drinking Patterns and the Development of Functional Limitations in Older Adults: Longitudinal Analyses of the Health and Retirement Survey." *Journal of Aging and Health* 23(5): 806–821.

Lin, Jielu. "Neighborhood Environments and Depression: A longitudinal Study." Master Thesis Presented to the Graduate School of Clemson University. May 2008.

Lin, Peter, Jane M. Simoni, and Vance Zemon. 2005. "The Health Belief Model, Sexual Behaviors, and HIV Risk among Taiwanese Immigrants." *AIDS Education and Prevention* 17(5):469–483.

Link, Bruce G. and Jo C. Phelan. 1995. "Social Conditions as Fundamental Causes of Diseases." *Journal of Health and Social Behavior* 35 (Extra Issue):80–94.

Little, Roderick and Donald B. Rubin. 1989. "The Analysis of Social Science Data with Missing Values." *Sociological Methods and Research* 18:292–326.

Maciejewski, Paul K., Holly G. Prigerson, and Carolyn M. Mazure. 2000. "Self-efficacy as a mediator between stressful life events and depressive symptoms: Differences based on history of prior depression." *The British Journal of Psychiatry* 176:373–378.

Manderbacka, Kristina, Olle Lundberg, and Pekka Martikainen, 1999. "Do risk factors and health behaviors contribute to self-ratings of health?" *Social Science and Medicine* 48 (12):1713–1720.

Mendelson, Colin. 2012. "Smoking and Depression - a Review." *Australian Family Physician* 41 (5):304–307.

Mendes de Leon, Carlos F., Teresa E. Seeman, Dorothy I. Baker, Emily D. Richardson, and Mary E. Tinetti. 1996. "Self-efficacy, physical decline, and change in functioning in community-living elders: A prospective study." *Journal of Gerontology: Social Sciences* 51B:S183–S190.

Menne, Heather Lee. 2006. "A Stress process model of chronic illness: understanding the well-being and decision-making involvement of individuals with dementia" Ph.D. dissertation, Department of Sociology, Case Western Reserve University.
Pearlin, Leonard I. and Carmi Schooler. 1978. "The Structure of Coping" *Journal of Health and Social Behavior* 19:2–21.

Pearlin, Leonard I., Elizabeth G. Menaghan, Morton A. Liberman, and Joseph T. Mullan. 1981. "The Stress Process" *Journal of Health and Social Behavior* 22:337–356.

Pearlin, Leonard I. 1989. "The Sociological Study of Stress" *Journal of Health and Social Behavior* 30:241–256.

Pearlin, Leonard I., Joseph T. Mullan, Shirley J. Semple, and Marilyn M. Skaff. 1990. "Caregiving and the Stress Process: An Overview of Concepts and Their Measures." The Gerontologist 30(5):585–594.

Pearlin, Leonard I., Carol S. Aneshensel, and Allen J. LeBlanc, A. J. 1997. "The forms and mechanisms of stress proliferation: The case of AIDS caregivers." *Journal of Health and Social Behavior* 38:223–236.

Penedo, Frank Ja and Jason R. Dahn. 2005. "Exercise and well-being: a review of mental and physical health benefits associated with physical activity." *Current Opinion in Psychiatry* 18(2): 189–193.

Pescosolido, B. A., McLeod, J., & Alegría, M. 2000. "Confronting the second social contract: The place of medical sociology in research and policy for the twenty first century." Pp. 411–425 in *Handbook of medical sociology* edited by C. Bird, P. Conrad, and A. Fremont. Upper Saddle, NJ: Prentice Hall.

Phelan, Jo C., Bruce G. Link, and Parisa Tehranifar. 2010. "Social Conditions as Fundamental Causes of Health Inequalities: Theory, Evidence, and Policy Implications." *Journal of Health and Social Behavior* 51 (5):S28–S40.

Powell, Lisa M., Sandy Slater, and Frank J. Chaloupka. 2004. "The Relationship between Community Physical Activity Settings and Race, Ethnicity and Socioeconomic Status." *Evidence-Based Preventive Medicine* 1(2): 135–144.

Radloff, Lenore S. 1977. "The CES-D Scale: A Self-Report Depression Scale for Research in the General Population." *Applied Psychological Measurement* 1:385–401.

Rasky, Eva, Willibald-Julius Stronegger, and Wolfgang Freidl. 1996. "The Relationship between Body Weight and Patterns of Smoking in Women and Men." *International Journal of Epidemiology* 25 (6): 1208–1212.

Rosenstock, Irwin M.,Victor J. Strecher, Marshall H. Becker. 1988. "Social Learning Theory and the Health Belief Model" *Health Education Quarterly* 15(2):175–183.

Rubin, Donald B. 1976. "Inference with missing data." *Biometrika* 63(3):581–592.

Salovey, Peter and Alexander J. Rothman. 2003. *Social Psychology of Health.* New York: Psychology Press.

Seeman, Teresa E., Jennifer B. Unger, Gail McAvay, and Carlos F. Mendes de Leon.1999. "Self-efficacy beliefs and perceived declines in functional ability: MacArthur Studies of Successful Aging." Journal of Gerontology: *Psychological Sciences* 54B:214–222.

Shea, S., Stein, A., Basch, C., Lantigua, R., Maylahn, C., Strogatz, D. & Novick, L. 1991. "Independent associations of educational attainment and ethnicity with behavioral risk factors for cardiovascular disease." *American Journal of Epidemiology* 134:567–582.

Steiger, James H. 2007. "Understanding the limitations of global fit assessment in structural equation modeling." *Personality and Individual Differences* 42 (5): 893–898.

Steptoe, Andrew and Pamela J. Feldman. 2001. "Neighborhood Problems as Sources of Chronic Stress: Development of a Measure of Neighborhood Problems, and Associations with Socioeconomic Status and Health." *Annals of Behavioral Medicine* 23(3):177–185.

Sturm, Roland. 2002. The Effects of Obesity, Smoking, and Drinking on Medical Problems and Costs." *Health Affairs* 21 (2):245–253.

Tabachnick, Barbara G. and Linda S. Fidell. 2007. *Using Multivariate Statistics* 5th ed. New York: Allyn and Bacon.

Turner, Heather A., Leonard I. Pearlin, and Joseph T. Mullan. 1998. "Sources and determinants of social support for caregivers of persons with AIDS." *Journal of Health and Social Behavior* 39(2):137-151.

Turner, R. Jay and Franco Marino. 1994. "Social Support and Social Structure: a Descriptive Epidemiology." *Journal of Health and Social Behavior* 35: 193–212.

Turner, R. Jay and William R. Avison. 2003. "Status Variations in Stress Exposure: Implications for the Interpretation of Research on Race, Socioeconomic Status, and Gender." *Journal of Health and Social Behavior* 44(4):488–505.

Twisk Jos and Wieke de Vente. 2002. “Attrition in longitudinal studies: How to deal with missing data.” *Journal of Clinical Epidemiology* 55(4):329–337.

Veenstra, Gerry. 2000. “Social capital, SES and health: an individual-level analysis.” *Social Science and Medicine* 50(5):619–629.

Wardle, Jane and Joanna Griffith. 2001. “Socioeconomic status and weight control practices in British adults.” *Journal of Epidemiology and Community Health* 55:185–190.

Williams, Allan F. 1966. “Social Drinking, Anxiety, and Depression.” *Journal of Personality and Social Psychology* 3(6):689–693.

Williams, David R., Yan Yu, and James S. Jackson. 1997. “Racial Differences in Physical and Mental Health.” *Journal of Health Psychology* 2 (3):335–351.

Williams David R. and Selina A. Mohammed. 2009. “Discrimination and Racial Disparities in Health: Evidence and Needed Research.” *Journal of Behavioral Medicine* 32(1):20–47.

Williams, David R., Michelle Sternthal and Rosalind J. Wright. 2009. “Taking the Social Context of Asthma Seriously.” *Pediatrics* 123:S174–S184.

Williams, David R. 2012. “Miles to Go before We Sleep: Racial Inequities in Health.” *Journal of Health and Social Behavior* 53 (3):279–295.

Wilson, Dawn K., Karen A. Kirtland, Barbara E. Ainsworth, Cheryl L. Addy. 2004. “Socioeconomic Status and Perceptions of Access and Safety for Physical Activity.” *Annals of Behavioral Medicine* 28(1):20–28.

Winkleby, M., Fortmann, S., and Barrett, D. 1990. “Social class disparities in risk factors for disease: Eight-year prevalence patterns by level of education.” *Preventive Medicine* 19:1–12.

Winkleby, Marilyn A., Danus E. Jatulis, Erica Frank, and Stephen P. Fortmann, 1992. ”Socioeconomic Status and Health:How Education, Income, and Occupation Contribute to Risk Factors for Cardiovascular Disease.” *American Journal of Public Health* 82 (6):816–820.

Zimmer, Zachary and James S. House, "Education, income, and functional limitation transitions among American adults: Contrasting onset and progression." *International Journal of Epidemiology*. Dec 2003, 32, (6), 1089–1097.

ACKNOWLEDGEMENTS

I wish to express my sincere appreciation to my major professor, Dr. Gloria Jones-Johnson, for all her help and support throughout the process of developing and writing the dissertation. I would also like to thank my POS committee members, Dr. W. Roy Johnson, Dr. David Peters, Dr. Stephen G. Sapp, and Dr. Mack C. Shelley, for their help and support.