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The relationship between perceptions of inequality and health

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THE RELATIONSHIP BETWEEN PERCEPTIONS OF INEQUALITY AND HEALTH

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ABSTRACT

This study examined the association between perception of income inequality (individual and societal) and its effects on perceptions of health (e.g. physiological, psychological, social, and financial stability). An online Qualitrics survey was used to collect data on perception of inequality in a societal level (i.e. Gini coefficient scale) and individual level (i.e. Adler et al., 2000 Subjective SES Scale), and perception on health (e.g. self-reported general heath, happiness, life-satisfaction, self-esteem, satisfying relationships, and financial adequacy). The data of 290 men and women, ages 18-81, was analyzed. Four hierarchal regressions were conducted, revealing that both forms inequality (individual and societal)are important contributors to well-being, even after controlling for the effects of sex, age, parental education, individual perception of US income (societal inequality) and household income (individual inequality). The model supports a new approach toward health outcome. Examination of income inequality and health should not focus on an individual or a societal point of view; instead, a holistic approach should be considered in understanding how inequality can influence health.

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coming years. Ζωή μου, σᾶς ἀγαπῶ. Siempre. Siempre. Siempre.

head-butt

DEDICATION

I dedicate this thesis to the only person who can make me laugh through the most troubled of times and the happiest of times, my brother, Francisco Ramos. Paco, every day I am grateful you were put in my life. Thank you for all the support and love you give me every day. We have had "Rises and Drops," but in the end, I am so proud to be your big sister, and honored to have you as my little brother.

I love you,

Michelle

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CHAPTER ONE

INTRODUCTION

A consequence of income inequality is health disparity, meaning a large majority of individuals have limited ability to achieve good health. Two perspectives have dominated the research concerning the relationship between income inequality and health disparity. Research focused on the individual (or micro) level shows that people with higher incomes or socioeconomic status (SES) tend to have better health, whereas those with lower incomes tend to have poorer health (Adler et al., 1994). Research examining the societal (or macro) level indicates that the degree of societal inequality relates to population health: The greater the income gap between the richest and poorest people in a society, the worse the overall health of the population in that society (Kawachi & Kennedy, 1999). Although there is a debate in the literature about whether individual or social inequality has the greater effect on health, the two perspectives share an important commonality. Within each perspective, there is evidence that to some extent, the effects of inequality on health are due to people's subjective

interpretation of how they fare relative to others in the shared society (Adler et al., 1994; Cohen et al., 2008). The importance of relative understandings in both perspectives suggests that individual and social inequality are complementary rather than oppositional perspectives. In this paper, we argue that beliefs about both personal and social inequality mutually interact to influence health.

What is "Health"?

The World Health Organization (WHO) defines health as "a state of complete physical, mental and social well-being" (2000). This definition allows for multiple approaches to assessing health. Although the most conventional measures of health involve objective physiological indicators (e.g., blood pressure, cholesterol, and BMI), health often is assessed via subjective self-ratings and indicators of psychological (e.g., self-esteem, happiness, and life satisfaction) and social (e.g., relationship satisfaction) well-being (Taylor, 2000). Because financial stability plays a central role in people's sense of self-worth, exposure to stressors, and expectations about their life outcomes, health can also be assessed in terms of people's

perceptions/beliefs feelings of financial stability (Adler et al., 1994, Schinasi, 2004; Smith, Langa, Kabeto, & Ubel, 2005). This proposition is consistent with the WHO's definition of health indicators as being any measure that strongly overlaps with objective measures of physiological health (Taylor, 2000). In this paper, we draw on the WHO's definition and characterize health as involving self-reported (or subjective) assessment of psychological, social, and financial well-being because the relationship between these indicators and physiological measures of health have been well established.

Self-Reported Health

People's subjective rating of their overall health has been found to be strongly associated with important health outcomes (e.g., early mortality; Idler & Benyamini, 1997), even when controlling for objective measures of health, age, sex, and other sociodemographic variables (e.g., Mossey & Shapiro, 1982). This research indicates that people tend to have an accurate sense of their actual physical health. Consequently, many health researchers, such as epidemiologists and gerontologists, rely on a single self-report item to assess physical well-being. One of the most common measures is the one used by the American

Centers for Disease Control, which asks people to rate on a scale ranging from extremely poor (1) to extremely good (7): "Would you say that in general your health is?"

Psychological Health

The psychological-physiological health link has been shown using psychological measures such as self-esteem, happiness, and life satisfaction. In a prospective longitudinal study, Trzesniewski et al. (2006) found that adolescents with low self-esteem had more physical health problems in adulthood than did adolescents with high self-esteem. These physical health problems included poorer cardiorespiratory health and greater weight gain. In a review of the relevant literature, Frederickson (2003) found converging evidence that higher levels of happiness were associated with better physical health outcomes, including increased life expectancy and cardiovascular health (see also Veenhoven, 2008). A large telephone survey of over 300,000 American adults produced similar findings in terms of life-satisfaction. In that study, Strine, Chapman, Balluz, Moriarty, and Mokdad (2008) found that individuals with lower levels of life-satisfaction had higher rates of obesity, asthma, arthritis, heart disease, as well as other forms of morbidity. Lower life-

satisfaction scores were also associated with many unhealthy behaviors (e.g. heavy drinking, smoking, & physical inactivity). In addition to influencing health via its effects on behavior, life satisfaction (and self-esteem) can enhance psychological and physical resilience, and undo negative emotions that can be physically harmful (Baumeister,Campbell, Kruegar, & Vohs, 2003; Greenberg et al., 1992). Overall, the research provides strong evidence that various aspects of psychological well-being act as buffers that help individuals successfully manage the psychological threats and negative outcomes in their lives, which thereby reduces stress and enhances physiological health.

Social Well-Being

Measures of social well-being provide results comparable to findings concerning psychological health. Individuals who are more socially isolated tend to have poorer physical health and a higher risk of death (House, Landis, & Umberson, 1988; Kawachi, Kennedy, & Glass, 1999). People who are in a relationship (e.g. marriage, friendship, or group associations) have a lower mortality rate, as compared to those individuals who do not have any primary social relationships (Berkman & Syme, 1979).

Although no research appears to have established a direct association between primary relationship (e.g., marriage) satisfaction and health, research does show that the perceived quality of social relationships is related to physiological health, such that increases in perceived quality are associated with improvements in physical health outcomes (House et al., 1988).

Financial Well-Being

The link between financial well-being and health is also well established, and is multiply determined. Having financial stability increases the accessibility to health-enhancing resources. In addition, financial stability in the form of material assets (e.g., owning property or a car) is predictive of health. People who rent rather than own their home or do not own a car have a higher mortality rate than do those who own their home and have a car (Filakti & Fox, 1995). Ownership of property also predicts better respiratory function, lower blood pressure, and fewer illnesses (Macintyre, Ellaway, Der, Ford, & Hunt, 1998). One of the benefits of financial stability is it creates a material and psychological cushion or buffer that helps people deal with the demands of life events (Curran, Totendagen, & Serdio, 2010). This buffer in turn, minimizes

any stress arising from the many demands on individuals and their exposure to daily or traumatic life events (Adler et al., 1994; Schinasi, 2004; Smith et al., 2005). The stress reduction properties of financial security have important implications for physiological health because chronically-experienced stress contributes to many physiological ailments (Glaser & Kiecolt-Glaser, 2005).

Multi-Pronged Assessment of Health

Across health-related literatures, researchers vary in the approach they use to measure health. However, because subjective, psychological, social, and financial well-being all relate to physiological health as well as to each other, many researchers interested in studying health prefer to take a multi-pronged approach. Consequently, health researchers tend to rely on several indicators of well-being within a single study, particularly when examining the impact of inequality on health.

How Does Income Inequality Relate to Health?

Before discussing the ways in which income inequality relates to health, it is necessary to first delineate how inequality is defined within the health literature. There are two primary ways that income inequality is understood.

Individual-Level Income Inequality

The first (and most common) conceptualization of income inequality is at the individual- or micro-level.

Objective Measures. Income inequality is commonly understood in terms of the variations across people in their personal or familial income, which is one component of individual SES. Researchers from this individual perspective measure income typically by dividing individuals in a population into low-, moderate-, or high-income categories, often based on cost of living indices (U.S. Department of Census Bureau, 2012). According to the World Bank (2001), the low-income category includes those individuals who are at or are under the poverty line in the given society. The moderate-income category includes those individuals who earn significantly more than do those in the low-category, and have enough to satisfy basic needs. This category ranges from working class (e.g. blue-collar industries or hourly paid employees) to upper-middle-class (e.g. white-collar positions or post-graduate degrees). The high-income category encompasses those who in addition to meeting basic needs, earn enough to afford extra material and social goods (e.g., insurances, entertainment, personal care, and technology), as well as to save and

accumulate wealth. These individuals are commonly referred to as the one or five percent.

Not all researchers categorize income inequality into three levels. Rather, some researchers assess income inequality as a continuum ranging from the lowest income earners to the highest (Adler et al., 1994). This approach captures the effects of income across the full continuum so the relationship between individual income and health can be assessed at all income levels. These participants might be asked to select the grouping that best reflects their pre-tax income from a list of nine or ten categories that increase in set increments (e.g., under $10,000, between 10,000 and $20,000, and so on). Alternately, participants might be asked to simply specify, to the closest 1000^{th} dollar the pretax income on their last tax return.

A final measure of income inequality relates to the length of time that people are exposed to low income, rather than their current income status (Gallo & Matthews, 2003). Income might also be assessed longitudinally at points across the lifespan so that changes and time in certain economic statuses can be recorded and related to health. The National Child Development Study (NCDS) is an example of a study that uses the time-in-status technique.

The NCDS, which is a continuing longitudinal study, has followed the lives, economic changes, and health of all those living in Great Britain who were born in one particular week in 1958. An abundance of empirical research shows that - regardless of how individual income inequality is measured - individual-level formulations of income inequality are associated with health disparities (Adler & Newman, 2002; Ecob & Smith, 1999; Kennedy, Kawachi, Glass, & Prothrow-Stith, 1998; Marmot, 2002; Wilkinson, 1997).

How Does Individual-Level Income Inequality Relate to Health? In general, individuals who are in the high-income category have better health relative to those in the moderate category, and those in the low-income category have worse health relative to the two higher categories (Adler & Newman, 2002). Research that examines income on a continuum finds similar results: as people's income increases, so does their overall health (Adler et al., 1994; Singer & Ryff, 2001). The length of time that people are exposed to low income also matters, such as the longer people live in low-income environments, the worse their health, and the longer they live in high-income environments, the better their health (Gallo & Matthews, 2003). Importantly, income is an important predictor of

health even when controlling for other components of SES. That is, researchers who use comprehensive measures of SES and assess occupational status, educational attainment, and familial or personal income find that income remains a predictor of many health outcomes, independent of people's educational or occupational status (Duncan, Daly, McDonough, & Williams, 2002; Geyer, Hemstrom, Peter, & Vagero, 2006). Further, the relationship between income and health has been shown across health indicators, including physiological (objective and self-report), psychological, social and financial.

Individual Inequality and Physiological Health.

Variations in individual income is an important predictor of physiological health (Wilkins, Adams, & Brancker, 1988). Individuals at the lower income strata experience poorer health (Adler et al., 1994) and have an overall lower life expectancy (Rogot et al., 1992) than do those in the higher strata. In their analyses of data from the National Longitudinal Mortality Study for 1979-85, Rogot and colleagues found that life expectancy differences between the highest and the lowest family income groups were about 10 years for White men and 4.3 years for White women. Gallo and Matthews (2003) found that being exposed to low income

for long periods of time can lower physical function, as well as lead to extensive negative health outcomes such as diabetes, cancer, arthritis, and cardiovascular disease. Self-report measures of general health show the same pattern: those in lower income brackets report poorer health (Mackenbach, Martikainen, Looman, Dalstra, Kunst, & Lahelma, 2005), which worsens with time spent in that bracket (Gallo & Mathews, 2003).

Individual Inequality and Psychological Health. In addition to providing access to health-related resources, income provides outward material characteristics of higher standing in society, which fosters self-esteem (Galobardes, Shaw, Lawlor, Lynch, & Smith 2006). Further, because with money people can perceive more control over their life, feel hopeful for their futures, and have more opportunities to enjoy life, income should relate to people's psychological and physiological well-being. Indeed, researchers have found that a positive correlation exists between individuals' income and their happiness (Diener, Horwitz, & Emmons, 1985; Diener, Suh, Lucas, & Smith, 1999). Further, Boyce, Brown, and Moore (2010) found that the rank of individual's income determines to some extent people's general life-satisfaction. Similarly, Clemente and

Sauer (1976) found that indicators of SES had a direct relationship with life satisfaction, meaning that the higher SES an individual had, the greater life satisfaction for that individual.

Why Does Individual Income Inequality Affect Health?

Perhaps the most obvious contribution income makes to subjective health is via its direct impact on people's access to physical and mental healthcare and opportunities to enhance healthy living, such as the ability to afford nutritious food, gym memberships, and rest and relaxation activities (e.g., vacations and social events). Although a large body of research supports the direct role income plays in health via access to material resources, it is not the full story. If the relationship between individual income inequality and health was solely about the effects of income on access to healthcare, the effects of income on health would no longer exist in countries that have universal healthcare systems. In these countries, one would expect then that the health outcomes would be similar for both the rich and poor. Countries with universal healthcare systems, however, provide evidence that the effects of SES on health goes beyond healthcare access. For example, in Canada where all residents, regardless of where they

stand on the social gradient, have equitable access to health services, "very poor" Canadians still have a higher rate than do moderate or high income Canadians of visits to emergency facilities and overall health-services usage (Sin, Svenson, Cowie, & Man, 2003). These findings, along with research showing that SES predicts health in Canada (Dunn, Veenstra, & Ross, 2006), suggest that low income Canadians have poorer health than do higher income Canadians, even with universal access to healthcare. One reason for the continued effect of income on health in spite of the presence of universal access to healthcare is that low income is associated with particular economic and social stressors, which in terms influence well-being across many dimensions.

In animal research, social status within the members of a clan, indicate different levels of stress. Those who are subordinate members (low-ranking), have higher levels of stress and hypertension, than do their dominant counterparts (high-ranking) (Goymann & Wingfield, 2004; Sapolsky, 2004; Sapolsky, 2005). This increase stress may be due to a lack of control the subordinate members have over the social environment (DeVries, Glasper & Detillion, 2003). However, Sapolsky (2004 & 2005) noted that a change

in social status within the clan can change the dynamic between the dominant and subordinates. For example during severe drought, members of a clan may focus more on foraging rather than social interaction, thus promoting a change in levels in stress. This change can also happen when a dominant individual has to constantly fight for its rank. In other words, hierarchical systems that are characterized by inequality can be harmful to the health for *both* low *and* high status members.

Humans do not follow the same one-dimensional hierarchy, as do other animals. Instead, humans follow multiple hierarchies, for example, a janitor who is the best player in the business' softball team. Two different hierarchies can be found: 1) the position the janitor has within the business, based on employment status, and 2) the position the janitor has within the business' softball team, based on talent. These different statuses may change the level of stress of the janitor, depending on which hierarchy is being observed. Therefore, because of these multidimensional hierarchies, the effects of SES on health are not just due to objective measures; rather, the effects of SES can be due to the perception of the individual. This means that subjective (not just objective) SES can be

predictive of health (e.g. feeling poor may predict poor health) (Sapolsky, 2004; Sapolsky, 2005).

Subjective Measures. The persistence of SES effects on general, psychological, social, and financial well-being in countries with universal healthcare suggests that the effects of SES on health might not be limited to material factors. Rather, the social-status implications of SES (or income) for individuals might also be meaningful to health. Indeed, research shows that perception of social position (e.g. where the individual sees him or herself relative to a social gradient) can have a greater effect on health than can objective SES (Adler, Epel, Castellazzo, & Ickovics, 2000; Singh-Manoux et al., 2005). Subjective SES is often measured via a picture of a ladder with each of the 10 rungs representing different status levels on the social hierarchy. Participants are asked to mark the rung that matches where they feel they are positioned on this hierarchy. People who marked themselves on the lower rungs are those who feel they are worse off in the social hierarchy and those who mark themselves on the upper rungs are those who feel they are best off in the social hierarchy. Using this technique, Adler and her colleagues (2000) found that people's perception of where they stood

on the social hierarchy ladder was a better predictor of their health, both physiological and psychological, than were of their actual occupation, income, and education. In a more direct test of the effects of subjective SES on health, Cohen and colleagues (2008) assessed the ladder measure's ability to predict development of future, rather than current illness. The researchers had participants complete the ladder measure along with measures of objective SES. Cohen and colleagues then exposed their participants to the rhino or influenza virus in order to create the potential for illness. The researchers found that participants' perception of social position on the ladder was a better predictor of the development, severity, and length of illness from the virus than was objective SES (income, occupation, and education).

Despite finding several studies showing the effects of subjective social status (or income) on physiological health, we were unable to find research that examined subjective social status and psychological, social, and financial indicators of well-being. Research, however, does indicate that perceptions of low status can be sources of stress and generate negative emotions such as shame (Dickerson Gruenewald, Kemeny, 2004; Marmot, 2006).

Further, recent brain-imaging studies reveal that individuals low in subjective social status have diminished grey matter in the area of the brain linked to emotion and stress reactivity, regardless of their actual individual income and education. Stress and shame are both negatively associated with other psychological outcomes such as happiness and life satisfaction (Dickerson et al., 2004). Thus, it is plausible that subjective SES predicts people's psychological well-being. It is also likely to predict relationship satisfaction and financial stability. When people feel valued in society, they likely feel better about themselves and successfully form healthy social attachments. Moreover, because subjective social status is a relative perception, people who position themselves on the higher rungs likely feel more financially stable relative to others than do those who position themselves on the lower rungs. On the basis of these premises and the extant literature, we propose that the effects of individual-level income inequality on the various indicators of health might be a matter of subjective interpretation of relative social standing rather than of objective circumstances.

Societal-Level Income Inequality

The second (and less popular) conceptualization of income inequality is at the societal-, or macro-level.

Objective Measures. In contrast to individual conceptualizations of inequality, societal-level formulations involve the degree of income disparity between the poorest and the richest individuals within a society. This macro approach to understanding income inequality focuses on the degree of disparity between the lowest and highest income earners in a society. The most common measure of societal-level income inequality is the Gini coefficient, which is an established measure for income inequality in the Economics field. The Gini coefficient is a variability measure of statistical or probable distribution. That is, it is the absolute difference between two observations (e.g., within a country: the lowest income earner and higher income earner or between countries). The distribution between the two observations is ranked from zero, meaning absolute equality exists, to 1.0, meaning one individual holds all the income and absolute inequality exists (Central Intelligence Agency, 2013; Dorfman, 1978; Subramanian & Kawachi, 2004). Although there are other measures of societal-level income

inequality, including the Robin Hood, Atkinson Deprivation Index, or the Theil Entropy Index, the Gini coefficient is the most commonly used in the health research.

How Does Societal-Level Income Inequality Relate to Health? A broader irregular economic distribution may determine the population's well-being (Kawachi & Kennedy, 1999). In other words, the greater the gap between the richest and poorest in a society, the worse the population health outcomes for that society (Kennedy et al., 1996; Lynch et al., 1998; Wilkinson, 1992). These effects appear to be robust and independent of individual-level income. That is, societal inequality remains a predictor even when individual SES is controlled for in the analyses. These effects of societal inequality can be found for another of population health indicators, including physiological, psychological, social, and financial well-being. However, the research to date has focused primarily on physiological followed by psychological health indicators.

Societal Inequality and Health. A consistent finding within the research is that an unequal distribution of wealth at the societal level is associated with higher mortality rates and risky behaviors (Kaplan, Pamuk, Lynch, Cohen, & Balfour, 1996; Power, 1994; Wilkinson, 1997).

Additionally, within a geographical region, the greater the gap between the richest and poorest, the worse health outcome for that region (Kennedy et al.,1996; Lynch et al., 1998; Wilkinson, 1992; Wilkinson & Pickett, 2007). Using international cross-sectional data from 56 countries, Rodgers (1979) concluded that as greater inequality income distribution existed, higher mortality rate existed as well. Lynch et al. (1998) examined the association between income inequality and mortality rates in metropolitan areas within the United States. The researchers found a positive correlation between higher rates of inequality and mortality. Areas with high levels of inequality had excessive mortality of 139.8 deaths per 100,000. These results were consistent regardless of which income inequality measure was used (Gini coefficient, the Atkinson Deprivation Index, or the Theil Entropy Index).

The effects of societal level income variations can be examined from the flipside in terms of the effects of increasing *equality*. Wilkinson (1992) found that as the income distribution in any given country becomes more equal, the life expectancy of its citizens increases. For example, during WWII, the United Kingdom adopted an egalitarian economy. The life expectancy and physical

health of its citizens increased by six to seven years. If equality is healthier for a population then the healthiest countries are not those with the richest societies, but rather those most egalitarian, assuming that people have enough money to meet their daily basic needs. This effect may be due to higher cohesiveness among members of an egalitarian society. This type of society tends to promote solidarity, social trust, and mutual expectation (Pattussi, Marcenes, Croucher, & Sheiham 2001; Wilkinson, 1992).

Given that these factors are conducive to an environment that would promote psychological well-being of the members of the society, it is not surprising that research also finds that higher levels of equality within a society are associated with improved psychological health outcomes. Ott (2005) indicated that as equality increases, happiness rises in any given country (e.g. Netherlands, Denmark, South Africa, and Venezuela).

Subjective Measures. Just as people's subjective understanding of their individual income can be assessed, so can their subjective perceptions of societal-level inequality. However, we could find no measure of perceived societal income inequality or assessment of how these perceptions could relate to health. This oversight in the

literature is startling given the large body of literature that uses measures related to perceived inequality and shows that variations in people's perception of the fairness of the system have significant implications for their well-being (see Schmitt & Branscombe, 2002; Major & O'Brien, 2005; Major et al., 2002). For example, disadvantaged group members who perceive their groups as targeted by discrimination tend to score lower on measures of self-esteem and higher on measures of depression (Branscombe, Schmitt, & Harvey, 1999). We argue that people's subjective perceptions of inequality within a meaningful geographical region also will have implications for their health - across various indicators of well-being. Further, we argue that these subjective perceptions will have greater implications for health than will the objective level of inequality in that region. We suggest both subjective understandings of both one's income status and the inequality in one's society will operate together to influence health.

How Do Individual and Societal Income Inequality Operate Together?

Researchers from the individual-level and societal-level perspectives disagree as to which form of inequality

matters most for health. We take neither stance and instead argue that both forms of inequality interactively affect health. Where people perceive they stand on the social ladder will have different meaning depending on the number of rungs in the ladder. Feeling that one belongs on the bottom rung does not have the same meaning on a ladder with ten rungs as it does on a ladder with three rungs. The greater the social distance between people, the more meaningful one's position on the ladder becomes. This proposed interaction between individual and societal inequality on health could be understood in two ways.

First, when the gap between the rich and poor is large rather than small, the effects of individual inequality on health should matter more. That is, the gradient between individual income and health should be steeper in societies with high income inequality than in societies with low income inequality. Second, the interaction could be that the relationship between societal income and population health will be greater for people lower in income than for those higher in income.

Research provides some support for the proposition that the effects of individual and societal income inequality have an interactive effect on health. Oishi,

Kesebir, and Diener (2011), found that a negative association exists between income inequality and happiness only for low-income earners and not high. Doorslaer et al. (1997) examined nine first world countries, including the United States and found that the degree of inequality and its effect on health varies across countries. First, the United States and the United Kingdom were the highest on the Gini coefficient whereas all other countries were on the lower end (Doorslaer et al., 1997). Second, inequality in the higher Gini countries favored those who were better off, and hindered the individuals with lower personal incomes (Graham & Felton, 2006). Kaplan et al. (1996) examined the worst-off 10 percent of households in each state within the United States, and found that higher income inequality at the state-level was associated with higher population mortality rate. State-level income inequality, however, had a smaller impact on mortality for those in households with higher incomes. These findings suggest that there are fewer benefits to health when income is increased for those already in the high-income brackets. Instead, redistribution of income may improve the health of those worse off, which will in turn improve the health of the population as a whole (Wilkinson, 1992).

Predictions

To our knowledge, there is no research looking at how individual and societal inequality interact to affect health. Both opposing theories, individual and societal perspectives, have valid points regarding health outcome; however, we propose that no one side must be taken to the exclusion of the other. Instead, both approaches must be examined from a holistic perspective. We propose that perceptions of individual inequality should affect well-being along with perceptions of societal inequality. We anticipate that the negative effects of low subjective SES on health will be greater among American participants who perceive a high (rather than low) level of income inequality in the USA. We hypothesize that this interactive effect will be present across various indicators of health, including self-ratings of physiological, psychological, social, and financial well-being.

CHAPTER TWO

METHOD

Participants

Altogether, 290 California State University, San Bernardino (CSUSB) students complete an anonymous computerized survey. Participants were recruited via the CSUSB SONA system. The participants received three extra credit points toward a psychology class based on the course instructor's discretion and APA guidelines.

Procedure

Participants were able to complete this study from any computer that had internet access. When participants entered the SONA system and selected our study, they were directed to a Qualtrics web-based survey system. They were first presented with a consent form (see Appendix B). Once participants signed the consent form, they could begin the survey. The survey contained items assessing perceptions of income inequality, subjective general health (CDC, 2000), self-esteem (Lude et al., 1986), life-satisfaction (SWLS: Diener, Emmons, Larsen, & Griffin, 1985), adequacy of financial situation (Lude et al., 1986), relationship

satisfaction (Schumm, Nichols, Schectman, & Grisby, 1983), and demographics (see Appendix C for full survey). At the end of the study, participants received an information statement explaining the purpose of the study and directions on how to receive a summary of results (see Appendix D). Participants were asked to answer the questions as truthfully and correctly as possible.

Measures

The following measures were used to analyze perception of inequality and health.

Perception of Inequality

The survey includes two measures of perceived income inequality. The first measure related to subjective inequality at the societal level. The second measure addressed subjective inequality at the individual level. To assess perceived *societal inequality*, we developed a scale based on the Gini coefficient. Participants saw a graph that looks similar to popular depictions of sound (or volume) waves. The graph contained a straight horizontal line with a short vertical tick line on the left end (marked 0%, No Inequality) and a longer tick line on the right end (marked 100%, Absolute Inequality). Between the

two end tick lines, there were 19 vertical incremental lines that gradually increased in size starting with the left end line and finishing with the right end line. Thus, the graph visually represented the Gini coefficient indicating 0 to 100 percent inequality, divided into five percent increments (see Appendix C for diagram). Participants received the following information to help them understand the graph:

> Imagine we could assign a country a number from 0 to 100 based on its degree of inequality in income, power, or social status. 0 would mean that there is NO inequality in that country (i.e., everyone has the same income, power, and status) and a 100 means that there is ABSOLUTE inequality in the country (i.e., only one person earns all the money, and has all the power, and status). Although no country truly has 0 or 100% inequality, the degree of inequality ranges from one country to the next. How people perceive inequality differs from person to person.

Participants then saw an example graph that illustrated where different people might click on the line to indicate their perceptions of the degree of inequality in the USA. An arrow pointing to the fifth incremental line from the

left end indicated a person who perceives low inequality; whereas, an arrow pointing to the fifteenth line represented a person who perceives the USA as having high income inequality.

Following the example graph, participants responded to a question asking how well they understood the example graph. This question was on a 7-point Likert scale, ranging from *extremely unclear* to *extremely clear*. Once participants answered this question, they were presented with the target graph and asked to mark the place on the line that best represented their beliefs regarding the degree of income inequality in the USA.

To assess subjective individual-level inequality, or SES, we adapted the Subjective SES Scale of Adler et al. (2000). This scale measured participants' perceptions of their household income relative to other households. Participants were presented with a demonstration image of a ladder and informed that the 10 rungs on the ladder represented where different households stand in terms of their income within American Society. The bottom rung represented those who are worse off in terms of income; whereas, the top rung represented those who are best off. Again arrows indicated how two people might rate their

households, with one indicating a household that earns the highest income in the USA and another indicating a household that earns the lowest income. Participants then were presented with another ladder and asked to click the rung that best that represented their household's position within American Society.

Perception of General Health

A single-item measure asked participants to indicate the descriptor that best described their general health. Participants were asked to indicate their answer on a 7-point Likert scale ranging from 1 (extremely poor) to 7 (extremely good). This subjective health item came from the American Centers for Disease Control and Prevention (CDC, 2000), USA HRQOL-14 Healthy Days Measure.

Perception of Happiness

A single-item question adapted from the Self-Rating of Happiness (Abdel-Khalek, 2006) was used to assess participants' happiness. The original measure is a single self-rating scale (i.e. Do you feel happy in general?). In the current study, participants were asked "how happy do you feel you are in general," and answer the question using a 7-point Likert scale ranging from 1 (extremely unhappy) to 7 (extremely happy).

Perception of Life Satisfaction

A five-item scale where participants were asked to what degree they agreed or disagreed with the statements toward their life satisfaction (e.g. If I could live over, I would change almost nothing) (Diener et al., 1985). Participants were asked to indicate their answer on a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree).

Perception of Self-Esteem

A single-item question asked participants to describe their feelings about themselves (Lude et al., 1986). Participants were asked to indicate their answer to the question on a 7-point Likert scale ranging from 1 (extremely negative) to 7 (extremely positive).

Perception of Financial Situation

A single-item question asked participants how they would describe the adequacy of their financial situation (Lude et al., 1986). Participants were directed to indicate to what degree they considered this adequacy on a 7-point Likert scale ranging from 1 (extremely inadequate) to 7 (extremely adequate).

Relationship Satisfaction

A three-item measure was adapted from the Kansas Marital Satisfaction scale (Schumm et al., 1983). The original scale is used to quickly evaluate marriage satisfaction (e.g. How satisfied are you with your marriage?) For the present study, we adapted the Kansas Marital Satisfaction scale to assess the level of satisfaction in participants' current relationship (e.g. How satisfied are you with your relationship?) This adapted measure was only available if the participant identified as being in a current relationship. The participant then answered to what degree they considered their satisfaction on a 7-point Likert scale ranging from 1 (extremely dissatisfied) to 7 (extremely satisfied).

Demographics

Participants were asked to indicate their weight (i.e. about how much do you weigh without shoes?) and height (i.e. about how tall are you without shoes?). These questions were used to calculate the BMI of each participant. Participants were also be asked to answer questions pertaining to their sex (i.e. what is your sex?), and age (i.e. what is your age?). Finally, participants were asked to answer questions related to the highest level

of education of their mother, father, and themselves (i.e. What is the highest level that your mother, father, and you completed in school [regardless of what country in which they received their education]?).

CHAPTER THREE

RESULTS AND DISCUSSION

Data Screening

Descriptive tests were run in order to identify possible outliners that could hinder the results. Three outliers were removed from the study. The first outlier was a multivariate outlier, the second stated an unrealistic age (i.e. 229), and finally, the third outlier reported "other" for gender, which meant the participant's gender datum, could not be used as a covariate. A reliability analysis was run to determine consistent results. A number of participants were removed from the data due to a lack of understanding about the instructions for the societal inequality graph. If participants answered, "it is kind of unclear," "very unclear," or "extremely unclear," their data were removed. Both, perception of US income and household income inequality were centered as outlined by Aiken and West (1991). Before centering, US income ranged from 2 to 20 and household income ranged from 1 to 10. We created an interaction term for the two centered variables by multiplying them together.

The primary measures (General Health, Life Satisfaction, Relationship Satisfaction, and Financial Adequacy) were fairly normally distributed.

Main Analyses

Four hierarchical regressions were run. The four outcome measures were General Health, Life Satisfaction, Relationship Satisfaction, and Financial Adequacy. The measures of happiness and self-esteem were integrated with the five life-satisfaction items because all seven items formed a single dimension in a factor analyses (Eigenvalue = 5.03; % of Variance = 71.88) and produced a highly internally valid measure, which was equal to that formed by the original five life satisfaction items (α =.93 for the 7-item measure versus α =.92 for the 5-item measure). This finding is not unexpected given that other research shows that happiness and life-satisfaction interrelate with each other or are considered the same measure (Veenhover, 1996).

In each regression, we controlled for key factors related to health (i.e. gender and age). It was also important to control for parental education because this variable is considered an objective SES measure that is related to health. For all but the Financial Adequacy

measure, BMI was also included as a covariate because in past research it relates to health indicators.

Predicting Self-Reported General Health

We performed a hierarchical regression analysis to determine whether the interaction between the perception of US and Household income inequality predicted the perception of participants' perception of general health, beyond demographic variables (e.g. sex, age, and parental education) Table 1 (see Appendix E) contains the standardized regression coefficients (β), R^2, and change R^2 (ΔR^2). In Step 1, sex, age, parental education, and BMI were inserted into the model, $F(4,260)=6.212$, $p<.001$, $R^2=.087$. Eight percent of the variance in self-reported general health was accounted for by the three predictors used in Step 1. In Step 2, perception of US and Household income inequality were added into the equation, $F\Delta(2,258)=5.607$, $p<.05$, $\Delta R^2=.038$. Twelve percent of the variance in general health was accounted for in this step. In Step 3, the interaction between the perception of income inequality for the US and Household was introduced, $F\Delta(1,257)=4.473$, $p< .05$, $\Delta R^2=.015$.

As can be seen in Table 1, the only significant covariates in Step 3 were Parental Education and BMI

(t=2.48, p<.05 and t=-2.74, p<.01). The main effect of Perceived Household Income was significant (t=3.01, p<.01) in addition to the significant interaction between perceptions of Household Income and USA Income inequality as demonstrated in the significant ΔR^2 (t = -2.12, p < .05). We then analyzed the simple slopes at three levels of Household Income: high, moderate, and low (see Figure 1 in Appendix F). These analyses revealed that the simple slopes followed the expected directions, but only the slope for low perceived household income was significant: increases in perceived USA Income Inequality were reliably associated with decreases in self-reported General Health, B=-.06, t=-2.08, p<.05. Although the slope for moderate perceived Household Income was in the same direction as the slope for low, it was non-significant, B=-.02, t=-1.04, p=.30. The slope for high perceived Household Income was in the opposite direction such that perceptions of USA Income Inequality and self-reported General Health increased together, but this relationship was non-significant, B=.01, t=0.68, p=.50.

The results of the model suggest that perceptions of Household Income and the interaction between the perception of USA and Household income inequality negatively predict

self-reported general health. As people perceive themselves higher on the household income ladder, the better their general health. Perceptions of income inequality in the USA appeared to be related to general health such that increases in perceived income inequality were associated (though non-significantly) with increased general health for those higher in perceived household income, but decreased general health for those lower in perceived household income.

Predicting Life Satisfaction

A hierarchical regression analysis was used to determine whether the interaction between perceptions of US and Household income inequality predicted participants' life satisfaction. Table 2 (see Appendix G) contains the standardized regression coefficients (β), R^2, and ΔR^2. In Step 1, sex, age, parental education, and BMI were inserted into the model, $F(4,260) = 7.830$, $p < .001$, $R^2 = .108$. Ten percent of the variance was accounted for in life-satisfaction. In Step 2, perception of US and Household income inequality were added and this step was not significant, $F\Delta(2,258) = 2.486$, $p > .05$, $\Delta R^2 = .017$. In Step 3, the interaction between the perception of income inequality for the US and Household was introduced and not

significant, $F\Delta(1,257)=.650$, $p>.05$, $\Delta R^2=.002$.

As can be seen in Table 2, the only significant covariates in Step 3 were Parental Education and BMI ($t=2.72$, $p<.01$ and $t=-2.70$, $p<.01$). Age was a marginally significant covariate ($t=-1.82$, $p>.05$). In terms of the predictor variables, only the main effect of Perceived Household Income was significant ($t=2.31$, $p<.05$).

Although the interaction was not significant, we proceeded to test our a priori predictions regarding the direction of the slopes (see Figure 2 in Appendix H). Overall, the simple slopes followed the same pattern as did the ones for general health, however, none of the slopes reached significance, all *ps* >.61.

The results of the regression analyses suggest that as people perceive themselves higher in Household Income they experience increased life satisfaction. Perceptions of USA Income Inequality or the interaction between Household Income and USA Income inequality was unrelated to life satisfaction. Thus, only perceived Household Income related to life satisfaction.

Predicting Perception of Relationship Satisfaction

A hierarchical regression analysis was used to determine whether the interaction between the perception of

US and Household income inequality predicted relationship satisfaction(α=.97). Table 3 (see Appendix I) contains the standardized regression coefficients (β), R^2, and ΔR^2. In Step 1, sex, age, parental education, and BMI were inserted into the model, $F(4,153)=4.792$, $p<.001$, $R^2=.111$. Eleven percent of the variance was accounted for in relationship satisfaction. In Step 2, perception of US and Household income inequality were inserted and this step was not significant, $F\Delta(2,151)=1.474$, $p>.05$, $\Delta R^2=.017$. In Step 3, the interaction between the perception of income inequality for the US and Household was introduced and was only marginally significant, $F\Delta(1,150)=2.950$, $p=.088$, $\Delta R^2=.017$.

As can be seen in Table 3, the only significant covariates in Step 3 were Participant Age and BMI, $t=-2.27$, $p<.05$ and $t=-2.20$, $p<.05$, respectively. For the predictor variables, there were only two marginally significant effects: the main effect for Perceived Household Income, $t=1.82$, $p=.071$, and the interaction (as demonstrated by the significant ΔR^2 in Step 3), $t=1.72$, $p=.088$. The simple slopes followed a similar pattern to the General Health analyses, but only one marginal effect emerged. People who perceived their household income as high tended to show an increase in relationship satisfaction as a function of an

increase in perceived USA Income Inequality, B=.07, t=1.68, p=.0945 (see Figure 3 in Appendix J).

The results of the analyses suggest that as people's perceptions of household income increases they experience some (albeit marginal) relationship satisfaction. These experiences might, to some degree, be moderated by people's perceptions of income inequality in the USA. The pattern of results suggest (though not significantly) that people who perceive themselves higher in Household Income could derive increased relationship satisfaction as their perceptions of income inequality in the USA increases.

Predicting Perception of Adequacy of Financial Situation

We performed a hierarchical regression analysis to determine whether the interaction between the perception of US and Household income inequality predicted the perception of participants' financial situation, beyond the demographic variables (e.g. sex, age, and parental education). Table 4 (see Appendix K) contains the standardized regression coefficient (β), R^2, and ΔR^2 statistics. In Step 1, sex, age, and parental education were entered into the equation, $F(3, 263)=3.854$, $p>.05$, $R^2=.042$. Four percent of the variance in perception of

Financial Situation was accounted for by the three predictors used in Step 1. In Step 2, perception of US and Household income inequality were added into the equation, $F\Delta(2,261)=9.014$, $p>.001$, $\Delta R^2=.062$. Ten percent of the variance in perception of Financial Situation was accounted for in Step 2. In Step 3, the income interaction between USA and Household income was added into the equation and this step was not significant, $F\Delta(1,260)=.007$, $p>.05$, $\Delta R^2=.0$. Ten percent of the variance in perception of Financial Situation was accounted after Step 3, which was consistent with Step 2.

As can be seen in Table 4, the only significant covariate in Step 3 was Parent Education, $t=1.99$, $p<.05$(note there was no theoretical or conceptual basis to perceive BMI as relevant to financial stability, it was not included as a covariate in this analysis). For the predictor variables, both main effects were significant. The main effect for perceived USA Income Inequality indicated the more people perceived the USA as having inequality in income, the less they felt their finances were adequate, $t=-2.19$, $p<.001$. The main effect for Household Income revealed that as people perceived themselves higher on the income ladder, the more adequate

they found their financial state, t=3.60, p<.001. As demonstrated by the non-significant ΔR^2 in Step 3, the interaction was not significant, t=0.08, p>.05. Consistent with the two main effects, the simple slopes analyses (see Figure 4 in Appendix L) indicated that at all levels of perceived Household Income, the relationship between perceptions of USA Income Inequality and Financial Adequacy was negative. The only significant slope, however, was at moderate levels of perceive Household Income, B=-.048, t=-2.18, p<.05. The slope for the low income level was only marginally significant, B=-.050, t=-1.82, p=.071, and the slope for high income level was non-significant B=-.046, t=-1.46, p=.147.

The results of the analyses suggest that regardless of where people perceive themselves higher in Household Income, they are likely to feel greater financial inadequacy as they also perceive the society as being characterized by inequality. This effect appears to be particularly evident for individuals at moderate levels of Perceived Household Income, and somewhat evident for individuals who perceive themselves to be low on the household income ladder.

Discussion

For the proposed study, we sought to demonstrate that an interactive approach that included perceptions of both individual and societal income inequality would provide a fuller picture regarding the predictability of inequality on health indicators. We anticipated that the negative effects of low (versus high) subjective SES (or household income) on health would be greater among American participants who perceived a high (rather than low) level of income inequality in the USA. We expected this interaction to occur over and above the contributions of age, sex, BMI, and parental education.

In terms of the covariates, BMI was the most consistent predictor in that it was significant in all the analyses in which it was included. More specifically, BMI was a negative predictor of self-reported general health, life satisfaction, and relationship satisfaction. In other words, as individuals' BMI score increased, their well-being decreased across the three health indicators. These findings are consistent with past research showing that individuals who have lower BMIs are usually healthier for several reasons.

Individuals with higher BMI scores tend to use more health care services (Quesenberry, Caan, & Jacobson, 1998). These individuals also use less preventative health care services, and are more vulnerable increased health risks due to obesity (Cornelisse-Vermaat, Antonides, van Ophem, & van den Brink, 2006). Such health risks include cardiovascular disease, cancer, and diabetes (Cornelisse-Vermaat et al., 2006; Fontaine, Faith, Allison, & Cheskin, 1998; McGinnis & Foege, 1993; Phinhey, Rubinstein, & Colfax, 1997; WHO, 2000). Being underweight, normal weight, or overweight will also have an influence on people's life-satisfaction (McCreary & Sadava, 2001). For example, Katsaiti (2009) found a significant effect of BMI on life satisfaction, in which obesity has a negative effect. Cornelisse-Vermaat et al. (2006), found an indirect effect of BMI on life-satisfaction through perceived health. The researchers concluded that BMI is a determinant of perceived health. If BMI is reduced, health perceptions increase, which in turn can increase the perception of life satisfaction.

It is also of no surprise that relationship satisfaction increases with lower BMI because Western culture obsesses and idolizes the perfect thin body and

beauty (Wolf, 1990). There are many negative stereotypes against overweight individuals creating difficulties to live a rich fulfilling life (Clayson & Klassen, 1989). Sheets and Ajmere (2005) found that weight was associated with dating and relationship satisfaction among college students. Those who are overweight, especially women, have a greater disadvantage in starting and maintaining a relationship. Having higher BMI scores may also affect household resources. As an individual has higher BMI this reduces income, which in turn reduces household resources. Lower resources can create a rift in relationship satisfaction (Clark & Etile, 2011).

Parental Education, which is considered an objective SES measure, was a significant covariate in the regression analyses for General Health, Life Satisfaction, and Financial Stability, but not Relationship Satisfaction. This outcome adds to the body of research showing that the components of people's objective SES (including education) relates to their health (Adler et al., 1993; Anderson & Armstead, 1995; Operario, Adler, & Williams, 2004; Singh-Manoux, Marmot, &Adler, 2005). Further, past research has found an important link between parents' education and the health outcomes of children (Chou, Liu, Grossman, & Joyce,

2010; Grossman, 2000; Grossman, 2006). Children with less-educated parents seem to have poorer health as adults (Greenlund et al., 1996; Kestilä, et al., 2006). Possibly, parental education level affects the allocation of resources toward health: the higher the education level, the more possible allocation toward health resources (Chou et al., 2010). Parental education can also positively influence children's achievement (Davis-Kean, 2005; Jimerson, Egeland, & Teo, 1999; Kohn, 1963; Luster, Rhoades, & Haas, 1989), behaviors, and beliefs (Eccles, 1993). We propose that these behaviors and beliefs might also relate to finances, shaping how individuals understand and achieve financial adequacy.

Participant's sex was not a significant covariate in any of the analyses, indicating that in our sample, biological sex was unrelated to any of the health indicators. Age was only marginally related to life satisfaction such that increases in age was marginally associated with increases in life satisfaction. Age was significantly related to relationship satisfaction: Increases in age were associated with increases in relationship satisfaction. Perhaps the contributions of age to both health indicators can be because as people age they

are more likely to have achieved life and relationship satisfaction. Alternately, they might have developed more realistic notions of what life can bring.

In terms of our primary analyses, the tested model supports our hypothesis that perceptions of Household Income relates to health outcomes. We found that as people perceived themselves higher [lower] on the household income ladder, they gave higher [lower] ratings of their general health, life satisfaction, relationship satisfaction (marginal effect), and financial stability. The finding that general health increased as subjective perspectives of household income also increased supports previous research regarding the relationship between family income and health outcomes (Adler, Boyce, Chesney, Folkman, & Syme, 1993; Baum, Garofalo, & Yaliet 1999), especially lab-based research showing that subjective SES predicts health outcomes (Adler et al., 2000; Cohen et al., 2008). There are many reasons why household income can relate to the household members' health.

Higher family and neighborhood economic conditions improve the quality of life and health of adults and children (Drukker, Kaplan, Feron, & van Os, 2003; Leventhal & Brooks-Gunn, 2000; Pickett & Pearl, 2001; Schneiders et

al., 2003; Kalff et al., 2001). For children, the origins of poor adult health can be due to circumstances their parents created (e.g. parental SES) during their childhood, which can follow the individuals well into their adulthood. Parental SES can also influence children's behaviors (e.g. physical activity, health eating, or smoking) that again continues into adulthood (Greenlund et al., 1996).Research has also found an association between family income and health, risk behavior, comfort, and resilience for children and teenagers (Starfield, Riley, Witt, & Robertson, 2002; Starfield, Robertson, & Riley, 2002).

Hardships during childhood can also affect people's life satisfaction as adults. Indeed, Louis and Zhao (2002) found that people's family SES as children is correlated with their life satisfaction in adulthood. Individuals with lower family SES in childhood, have higher rates of depression, making their life-satisfaction substandard. These outcomes do not disappear once an individual reaches adulthood. As a child, higher parental SES promotes a psychological buffer against stressful situations or outcomes. As the child grows older, this buffer is still intact well into adulthood, making life much more satisfying.

Past research also supports our finding that perceived household income positively (though only marginally) related to relationship satisfaction. As noted earlier, lower economic resources can add stressors in a relationship, which can in turn impair relationship satisfaction (Clark & Etile, 2011).

A final, and common, reason for the relationship between subjective ratings of household income and all the well-being measures might be the experience of relative deprivation, which occurs when individuals compare their positions to others and perceive that they are relatively worse off (see Walker & Smith, 2002). Having the idea that they are "worse off" can generate damaging psychological and physiological outcomes because such relative deprivations suggests that one is less worthy or entitled than other people.

The results for perceptions of USA Income Inequality were less consistent than those for perceived Household Income, and only provided limited support that perceptions of macro-level inequality would directly relate to health. The only significant main effect for this predictor was that perceptions of income inequality in the USA were negatively related to Financial Adequacy. Increases in

perceived income inequality in the USA were associated with reductions in people's adequacy ratings of their financial situation. By showing the importance of subjective perceptions of societal income inequality, this finding extends past research showing that increases in objective macro-level inequality are associated with poorer psychological and health outcomes (Kaplan et al., 1996; Rodgers, 1979; Wilkinson, 1997). Given the past research showing that objective measures of societal income inequality, such as the Gini coefficient, are related negatively to health, it is surprising that we did not find that subjective understandings of societal income inequality related to our health indicators other than financial stability. One explanation for this issue could be that for subjective, or perceived, societal-level income inequality, the relationship between that form of inequality and health depends on people's perceptions of their individual position within that inequality. As noted in the next section, we found some evidence for this possibility.

Our central hypothesis that perceptions of both individual-level and societal-level would interact to influence health was partially supported. The proposed

interaction was only significant in the analyses for self-reports of general health and ratings of relationship satisfaction. Although across all measures, this relationship (or simple slope) was negative for those who perceived themselves low in household income. However, the only significant negative relationship to emerge was with the measure of General Health. In addition, the relationship between perceived USA Income Inequality and Financial Stability was marginally significant. Together these findings suggest that participants who perceived their Household Income as low, experienced poorer general health and less financial stability as a function of perceiving high levels of income inequality in the USA. This negative contribution of perceived USA Income Inequality to health, however, did not hold for people who were high in perceived Household Income. For these individuals, perceiving income inequality showed a slight (but non-significant) increase in their self-reports of general health, life satisfaction, and relationship satisfaction. There was a slight negative, but non-significant, relationship between perceived USA Income Inequality and Financial Adequacy for high household income perceivers. Together the findings for financial adequacy

suggests that perceiving societal inequality might contribute to negative perceptions of financial adequacy for everyone, especially those who perceive their household income in the moderate or low range relative to others.

Our finding that subjective perceptions of inequality interacted with subjective individual (household income) inequality related to general health suggests, as some have argued, that the relative deprivation associated with societal inequality also matters (e.g., Wilkinson, 1997). Marmot and Wilkinson (2001) argue that greater inequality in a meaningful geographical area (e.g., country, state, or county) enhances experiences of relative deprivation, which in turn fosters stress and anxiety. Stress and anxiety are associated with reductions in psychological, relational, and physiological health (see Baum et al., 1999). We argue that perceptions of relative deprivation is especially likely to be experienced by individuals who perceive their income low relative to others, which is supported by the significant interaction between USA Income Inequality and Household Income for the general health and relationship satisfaction measures.

The limitations of this study must be mentioned. First, the sample was limited to college students, which

may cause a restriction in generalization to the population as a whole. Second, there could have been ethnic differences in our findings, however, the ethnic sample was too small to conduct analyses. Third, because the data was collected through an online survey, height and weight were self-reported, influencing the accuracy of the BMI measure. Fourth, Diener (2000) argues that when examining psychological factors of health, responses can be influenced by the mood in which participants felt when responding to the scales. Their responses can also be influenced by the standard of comparison that people tend to use when making relative judgments because as Diener notes, people tend to compare to others similar to them. In our sample, this possibility would mean that people from specific income groups compared themselves to others in their communities (with similar incomes) rather than to all people in the USA. Further research needs to ensure that all survey respondents are using similar relative comparisons when positioning themselves on the household income ladder.

Future direction of research should also include objective measures such as actual household incomes and the actual Gini coefficient in the area in which responds live.

These measures should be included in order to see if the perception of inequality measures matter over and above objective measures. Objective outcome variables such as number of sick days from work, visits to medical facilities, and diagnosed illness should be included in future research to give a more accurate understanding of the effects of both forms of income inequality on health.

Finally other factors that relate to people's well-being could be included in future studies are also worthy of future research consideration. People's perceptions of income inequality not only might affect health, but these perceptions could also affect educational choices or outcomes including GPA, choices of majors or schools, and academic expectations. Perceptions of inequality could also influence people's hopefulness regarding their future. People who perceive their household income as low in a highly unequal society might not consider themselves as able to become worthy or productive members of society. In such case, hope should be considered as a mediating factor, which can affect health. By having a loss of hope, individuals may be more vulnerable to indulging in risk behaviors such as alcohol, gambling, smoking, and physical inactivity, all of which can diminish health.

As far as we are aware, this study is the first of its kind. We found no past research that directly looked at the micro and macro level of income inequality as a hybrid factor. The primary evidence in his study suggests that both forms of inequality (individual and societal) matter. Future research should take into consideration of how perceptions of individual and societal inequality can influence health, as well as other quality of life factors, and how to develop interventions in order to enhance people's hope for their future.

APPENDIX A

IRB APPROVAL FORM

Human Subjects Review BoardDepartment of Psychology California State University, San Bernardino

PI: Garcia, Donna et al

From: Michael R. Lewin

Project Title: The relationship between health and perceptions of self, ethnic background, and American culture

Project ID: H-12SP-22

Date: 5/24/12

Disposition: Administrative Review

Your IRB proposal is approved. This approval is valid until 5/24/2013.

Good luck with your research!

Michael R. Lewin, Co-Chair
Psychology IRB Sub-Committee

APPENDIX B

CONSENT FORM

CALIFORNIA STATE UNIVERSITY
SAN BERNARDINO

College of Social and Behavioral Sciences
Department of Psychology

Consent Form

PURPOSE: Donna Garcia, Ph. D., and her associates are conducting a study to learn more about how people's perceptions, knowledge, and beliefs relate to their health outcomes. The ultimate goal is to identify social factors that influence health in order to develop strategies to improve the overall health of Americans. This study has been approved by the Department of Psychology Institutional Review Board Sub-Committee of the California State University, San Bernardino, and a copy of the official Psychology IRB stamp of approval should appear on this consent form. The University requires that you give your consent before participating in this study.

DESCRIPTION OF RESEARCH: If you agree to participate, you will be asked to fill out a survey containing questions about inequality, health (status, beliefs, and behaviors), ethnicity, culture and demographics.

PARTICIPATION: Your participation in this study is voluntary. If for any reason you wish to not answer any question or stop answering the survey, you are entitled to do so without any penalty or loss of extra credit (if you are enrolled in a psychology class).

DURATION: The survey should take approximately 60 minutes to complete. You can take breaks while you complete the survey: It does not need to be completed all at once. If you are enrolled in a psychology class at CSUSB, you might receive 3 points of extra credit at your instructor's discretion.

RISKS: This study involves no foreseeable risks beyond those which you encounter in your daily activities. You might, however, experience some fatigue from answering the survey at one time or some psychological discomfort from answering certain questions. If you do experience any discomfort that you would like to discuss, please feel free to contact the CSUSB Counseling Center (537-5040).

BENEFITS: You will receive no direct benefits for completing the study. Your participation, however, might contribute to the increased understanding of factors that influence people's health, which in turn might lead to shared knowledge and new policies that can improve people's health.

CONFIDENTIALITY: No identity information will be asked of you so that your name cannot be associated with your responses. All data provided online will be stored in password protected computers and all paper surveys will be kept in a locked filing cabinet in the researchers' locked office. Only the researchers and their assistants who are directly associated with the study will have access to any of the information.

RESULTS: Some of results from this study will be included in a Master's thesis by Alissa Ramos, a graduate student in the psychology department at CSUSB. Some of the results will be presented at scientific conferences and submitted for publication to scientific journals. In all cases, the results will be reported in group format so that the information from no single person can be identified. Once the data are published, the survey responses will be kept for seven years then destroyed. If you wish to receive a copy of the results after December 31, 2012, you can do so by contacting Dr. Donna Garcia, Assistant Professor of Psychology at dmgarcia@csusb.edu.

Please contact Dr. Garcia if you have any questions or the CSUSB Department of Psychology Institutional Review Board Sub-Committee psyc.irb@csusb.edu if you have any concerns about the research.

I acknowledge that I have been informed of, and that I understand the nature and purpose of this study, and I freely consent to participate. I also acknowledge that I am at least 18 years of age.

I agree

CALIFORNIA STATE UNIVERSITY PSYCHOLOGY INSTITUTIONAL REVIEW BOARD SUB-COMMITTEE			
APPROVED	5/24/12	VOIDAFTER	5/24/13
IRB #	H-12SP-12	CHAIR	MRL

APPENDIX C

THE RELATIONSHIP BETWEEN PERCEPTIONS

OF INEQUALITY AND HEALTH SURVEY

Developed by Ramos, A. M. & Garcia, D. M. (2012).

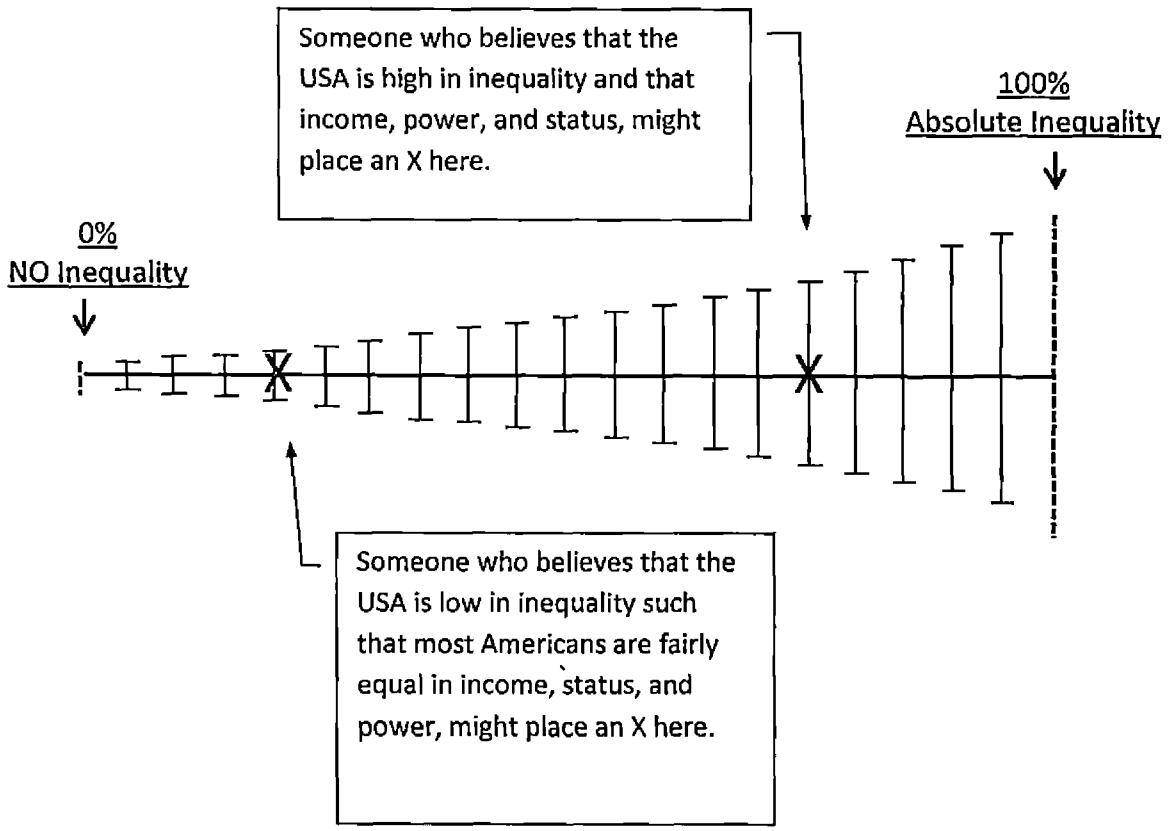
Part 1: Perceptions of Inequality

Degree of Inequality

People can experience various forms of inequality, including inequality in income, power, and social status. The degree of each of these inequalities can vary from one location to another. For example, in some countries, inequalities in income, power, and social status are much greater than they are in other countries.

Imagine we could assign a country a number from 0 to 100 based on its degree of inequality in income, power, or social status. 0 would mean that there is NO inequality in that country (i.e., everyone has the same income, power, and status) and a 100 means that there is absolute income inequality in the country (i.e., only one person earns all the money, and has all the power, and status).

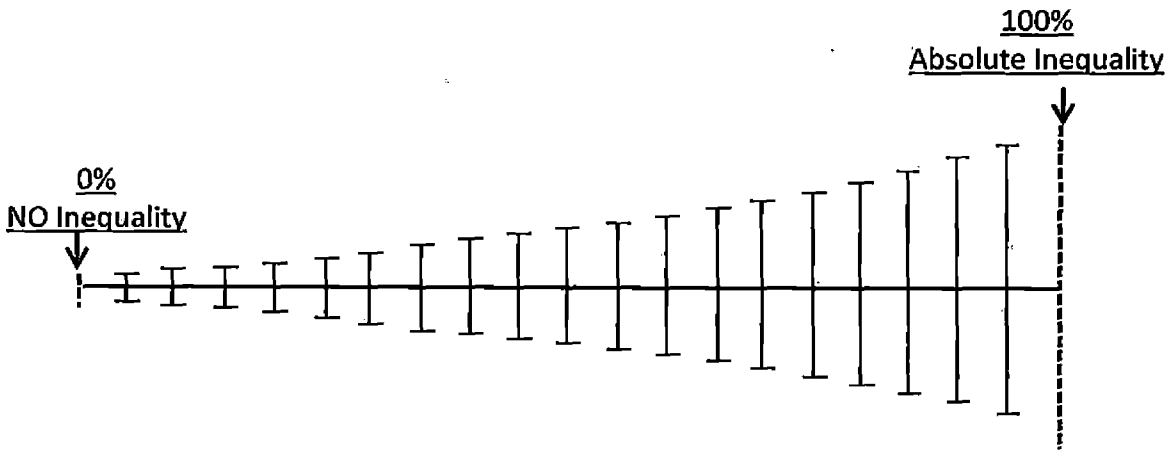
Although no country truly has 0 or 100% inequality, the degree of inequality ranges from one country to the next. How people perceive inequality differs from person to person. Below is an example of how two different people might view the USA.



How well do you understand the above graph? (Please circle the number that bests represents your opinion).

1	2	3	4	5	6	7
It is extremely UNCLEAR what the graph . means	It is very UNCLEAR what the graph means	It is kind of UNCLEAR what the graph means	It is neither CLEAR nor UNCLEAR what the graph means	It is kind of CLEAR what the graph means	It is very CLEAR what the graph means	It is completely CLEAR what the graph mean

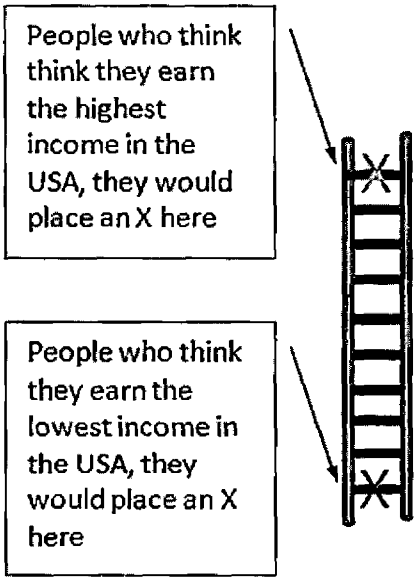
USA and Income Inequality: Now, think about the amount of income inequality that you feel there is in the USA, relative to other countries. Imagine again that a **0 means no income inequality** (everyone in the USA earns the same income) and a **100 means absolute inequality** (only one person in the USA earns all the income). Where do you feel the USA would fall on the below line? Using these guidelines, please mark an X at the spot on the horizontal line that you feel best represents the degree of income inequality in the USA.



Inequality among Individuals

The above question was about your perceptions of the degree of inequality in places.
Plotting Inequality among individuals

Imagine that the ladder to the bottom represents where people stand in American society. At the top step of the ladder are those that are best off, for example, earning the highest incomes in the USA. At the bottom step of the ladder are those who are, earning the lowest incomes. If we plotted how individuals perceived themselves fared in terms of having the highest or lowest income in the USA, we would find that it looks something like the ladder at the bottom. Those who felt they earned the most money would click on the top step; whereas, those who felt they made the least money would click on the bottom step.



Household and Income Inequality: Now think about your household (who you are currently living with) and how much income household members earn in comparison to other households. Please click on the step that best represents where you think your household stands on the ladder in terms of how much income people in your household earn relative to other households in the USA.

How many people are in your household _____?

Part 2: Perceptions of Health Indicators

Would you say that in general your health is (circle the one that best describes you):

1	2	3	4	5	6	7
Extremely Poor	*Very Poor*	*Poor*	*Fair*	*Good*	*Very Good*	*Extremely Good*

How happy do you feel you are in general?

1	2	3	4	5	6	7
Extremely Unhappy						*Extremely Happy*

In most ways my life is close to my ideal.

1	2	3	4	5	6	7
Strongly Disagree						*Strongly Agree*

The conditions of my life are excellent.

1	2	3	4	5	6	7
Strongly Disagree						*Strongly Agree*

I am satisfied with my life.

1	2	3	4	5	6	7
Strongly Disagree						*Strongly Agree*

So far I have gotten the important things I want in life.

1	2	3	4	5	6	7
Strongly Disagree						*Strongly Agree*

If I could live my life over, I would change almost nothing.

1	2	3	4	5	6	7
Strongly Disagree						*Strongly Agree*

How would you describe your feelings about yourself?

1	2	3	4	5	6	7
Extremely Negative						*Extremely Positive*

How would you describe the adequacy of your financial situation?

1	2	3	4	5	6	7
Extremely Inadequate						*Extremely Adequate*

How would you identify your current relationship status (please place an X beside the appropriate choice)? If a or b are selected, skip the other questions and go directly to Part 3 (the final section).

a. ____ Single
b. ____ Casually dating
c. ____ Exclusively dating
d. ____ Cohabiting
e. ____ Engaged
f. ____ Married
g. ____ Separated
h. ____ Divorced
i. ____ Widowed

How satisfied are you with your relationship?

1	2	3	4	5	6	7
Extremely Dissatisfied	*Very Dissatisfied*	*Somewhat Dissatisfied*	*Mixed*	*Satisfied*	*Very Satisfied*	*Extremely Satisfied*

How satisfied are you with your partner as a relationship partner?

1	2	3	4	5	6	7
Extremely Dissatisfied	*Very Dissatisfied*	*Somewhat Dissatisfied*	*Mixed*	*Satisfied*	*Very Satisfied*	*Extremely Satisfied*

How satisfied are you with your relationship with your romantic partner?

1	2	3	4	5	6	7
Extremely Dissatisfied	*Very Dissatisfied*	*Somewhat Dissatisfied*	*Mixed*	*Satisfied*	*Very Satisfied*	*Extremely Satisfied*

Part 3: Final Demographics

About how much do you weigh without shoes? (please indicate if in pounds or kilos)

_____ lbs or _____kilos

About how tall are you without shoes? (please indicate if in inches or centimeters)

_____ inches or _____ centimeters

What is your sex? _____male _____female

What is your age? _____

What is the highest level that your mother, father, and you completed in school (regardless of what country in which they received their education)?

	Mother	Father	You
Less than high school			
High School degree or equivalent (GED)			
Trades certificate or diploma from a vocational school or apprenticeship training			
Non-university/college certificate or diploma from a community college, CEGEP, school of nursing, etc.			
University or College certificate below bachelor's level (i.e. associates degree)			
Bachelor's Degree			
Postgraduate degree including: Master's degree (Example: MA, MS, MEng, MEd, MBA), a Professional School degree (Example: MD, DDS, DVM, JD) or a Doctoral degree (Example: PhD, EdD) DK, degree			

APPENDIX D

INFORMATION STATEMENT

The Relationship between Health and Perceptions
of Self, Ethnic Background, and American Culture

We would like to thank you for your participation in our research. The purpose of the study you just completed is to learn more about how people's perceptions, knowledge, and beliefs about life and health relate to their health outcomes. Our ultimate goal is to identify factors that positively or negatively influence health in order to develop strategies to improve the overall health of Americans.

In this study, you completed a survey. The survey was divided into 7 parts and contained questions about inequality in places, inequality among people, your health, your ethnicity, your beliefs about American Society, and your general background. We do not expect your involvement in the research will have caused you any discomfort, but it is always possible that certain questions cause unexpected distress for some individuals. If for any reason you do feel you have suffered some sort of distress please feel free to call CSUSB Counseling Center (537-5040). If you want a copy of the results from this study, want to discuss your participation in the research, or want more information about the research purposes, please feel free to contact Dr. Donna Garcia at 909-537-3893 or dmgarcia@csusb.edu. We are always pleased to discuss our research or hear our participants' thoughts about their experience or our work.

Thank you again!

APPENDIX E

TABLE 1: RESULTS OF MULTIPLE REGRESSION ANALYSIS FOR GENERAL HEALTH

Table 1

Results of Multiple Regression Analysis for General Health

Predictor Variable	Coefficients B	SE	B	*t*	*p*	*Adj. R^2*	*R^2* Change	*F* Change
Model 1						.073	.087	6.212
SEX	.068	.179	.023	.379	.705			
AGE	-.003	.008	-.027	-.440	.660			
P.ED	.115	.034	.202	3.381	.001			
BMI	-.034	.011	-.191	-3.07	.002			
Model 2						.105	.038	5.607
SEX	.029	.176	.010	.163	.871			
AGE	.000	.008	-.003	-.044	.965			
P.ED	.084	.035	.147	2.404	.017			
BMI	-.031	.011	-.173	-2.82	.005			
US.INCOME	-.012	.015	-.045	-.767	.444			
H.INCOME	.091	.028	.201	.201	.001			
Model 3						.117	.015	4.473
SEX	.027	.175	.009	.155	.877			
AGE	-.002	.008	-.014	-.237	.813			
P.ED	.086	.035	.151	2.475	.014			
BMI	-.030	.011	-.167	-2.73	.007			
US.INCOME	-.016	.015	-.060	-1.01	.312			
H.INCOME	.084	.028	.186	3.010	.003			
Interaction	-.013	.006	.125	-2.11	.035			

APPENDIX F

FIGURE 1: THE CONTRIBUTIONS OF PERCEIVED USA INCOME INEQUALITY AND PERCEIVED HOUSEHOLD INCOME TO SELF-REPORTED GENERAL HEALTH

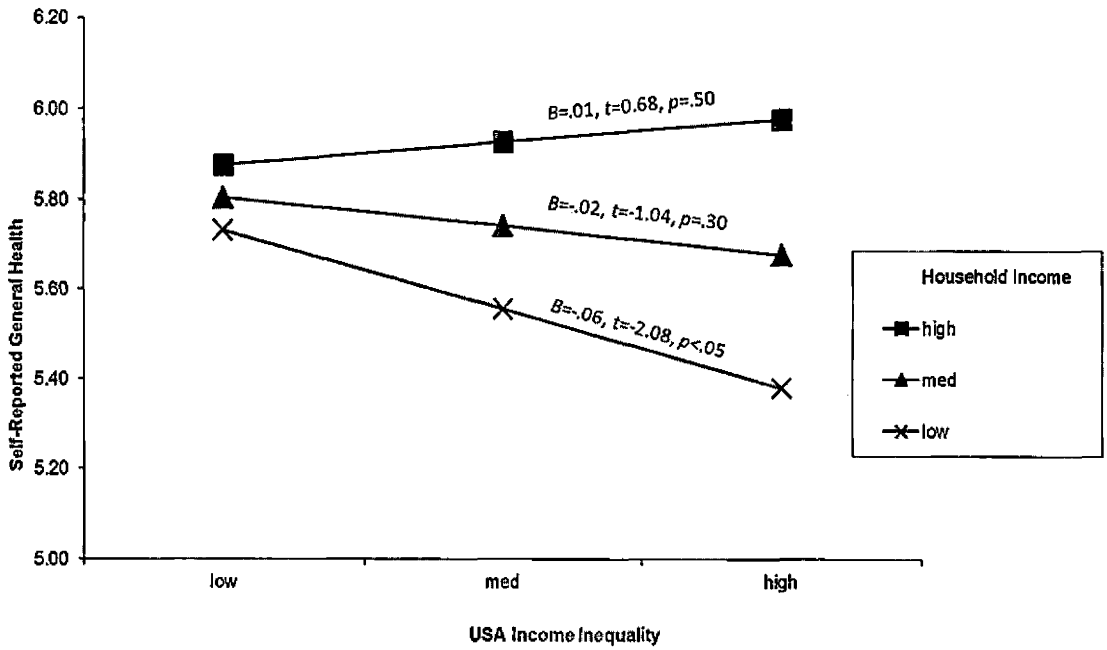


Figure 1. The Contributions of Perceived USA Income Inequality and Perceived Household Income to Self-Reported General Health. Legend. Household Income = Perceived Relative Household Income; USA Income inequality = Perceived USA Income Inequality

APPENDIX G

TABLE 2: RESULTS OF MULTIPLE REGRESSION

ANALYSIS FOR LIFE SATISFACTION

Table 2

Results of Multiple Regression Analysis for Life Satisfaction

	Coefficients					*Adj.* R^2	R^2 Change	*F* Change
Predictor Variable	B	SE	B	*t*	*p*			
Model 1						.094	.108	7.830
SEX	-.184	.232	-.047	-.796	.427			
AGE	-.021	.010	-.130	-2.13	.034			
P.ED	.154	.044	.207	3.520	.001			
BMI	-.041	.014	.177	-2.88	.004			
Model 2						.104	.017	2.486
SEX	-.208	.231	-.053	-.902	.368			
AGE	-.019	.010	-.116	-1.90	.059			
P.ED	.125	.045	.168	2.749	.006			
BMI	-.038	.014	-.164	-2.66	.008			
US.INCOME	-.001	.020	-.002	-.040	.969			
H.INCOME	.081	.036	.138	2.229	.027			
Model 3						.103	.002	.650
SEX	-.206	.231	-.053	-.892	.373			
AGE	-.018	.010	-.112	-1.81	.070			
P.ED	.124	.045	.167	2.724	.007			
BMI	-.038	.014	-.166	-2.70	.007			
US.INCOME	.001	.020	.003	.052	.961			
H.INCOME	.084	.036	.144	2.309	.022			
Interaction	.006	-.006	-.048	-.806	.421			

APPENDIX H

FIGURE 2: THE CONTRIBUTIONS OF PERCEIVED USA INCOME INEQUALITY AND PERCEIVED HOUSEHOLD INCOME TO LIFE SATISFACTION

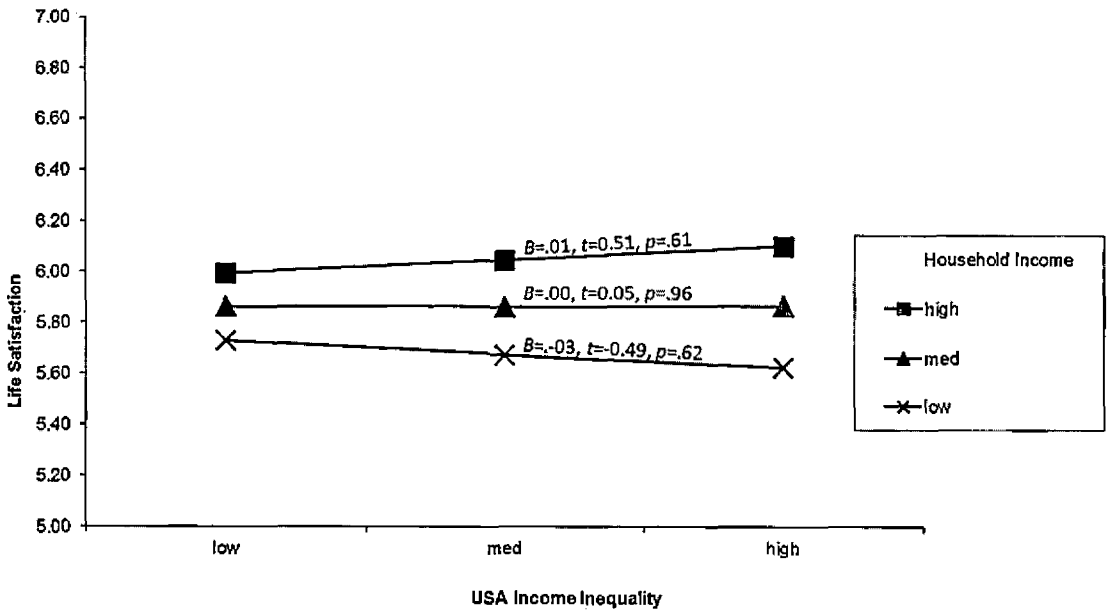


Figure 2. The Contributions of Perceived USA Income Inequality and Perceived Household Income to Life Satisfaction.
Legend. Household Income = Perceived Relative Household Income; USA Income Inequality = Perceived USA Income Inequality

APPENDIX I

TABLE 3: RESULTS OF MULTIPLE REGRESSION ANALYSIS FOR RELATIONSHIP SATISFACTION

Table 3

Results of Multiple Regression Analysis for Relationship Satisfaction

	Coefficients					*Adj.* R^2	R^2 Change	*F* Change
Predictor Variable	B	SE	B	*t*	*p*			
Model 1						.088	.111	4.792
SEX	-.513	.301	-.133	-1.70	.090			
AGE	-.027	.012	-.183	-2.30	.023			
P.ED	.081	.058	.107	1.398	.164			
BMI	-.047	.019	-.198	-2.44	.016			
Model 2						.094	.017	1.474
SEX	-.469	.302	-.121	-1.55	.122			
AGE	-.028	.012	-.187	-2.34	.020			
P.ED	.054	.060	.071	.900	.369			
BMI	-.039	.020	-.165	-1.98	.049			
US.INCOME	.014	.026	.042	.549	.584			
H.INCOME	.080	.049	.134	1.637	.104			
Model 3						.105	.017	2.950
SEX	-.485	.300	-.125	-1.61	.108			
AGE	-.027	.012	-.180	-2.27	.025			
P.ED	.040	.060	.053	.663	.508			
BMI	-.043	.020	-.184	-2.20	.029			
US.INCOME	.027	.026	.080	1.009	.314			
H.INCOME	.089	.049	.148	1.819	.071			
Interaction	-.019	.011	-.138	-1.71	.088			

APPENDIX J

FIGURE 3: THE CONTRIBUTIONS OF PERCEIVED USA INCOME INEQUALITY AND PERCEIVED HOUSEHOLD INCOME TO RELATIONSHIP SATISFACTION

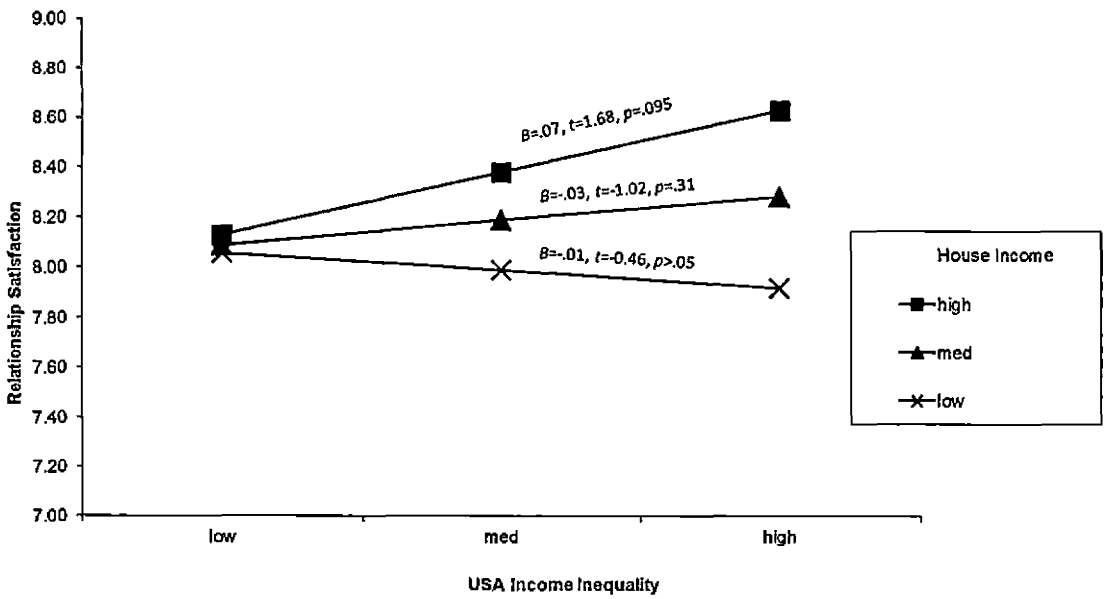


Figure 1. The Contributions of Perceived USA Income Inequality and Perceived Household Income to Relationship Satisfaction. Legend. Household Income = Perceived Relative Household Income; USA Income Inequality = Perceived USA Income Inequality

APPENDIX K

TABLE 4: RESULTS OF MULTIPLE REGRESSION ANALYSIS FOR ADEQUACY IN FINANCIAL SITUATION

Table 4

Results of Multiple Regression Analysis for Adequacy in Financial Situation

	Coefficients					*Adj.* R^2	R^2 Change	*F* Change
Predictor Variable	B	SE	B	*T*	*P*			
Model 1						.031	.042	3.85
SEX	.163	.259	.038	.628	.530			
AGE	-.016	.011	-.090	-1.49	.137			
P.ED	.150	.049	.183	3.03	.003			
Model 2						.087	.062	9.014
SEX	.082	.252	.019	.327	.744			
AGE	-.009	.010	-.051	-.851	.396			
P.ED	.100	.050	.123	1.998	.047			
US.INCOME	-.049	.022	-.131	-2.22	.027			
H.INCOME	.144	.040	.224	3.622	.000			
Model 3						.083	.000	.007
SEX	.083	.253	.019	.328	.743			
AGE	-.009	.011	-.050	-.840	.402			
P.ED	.100	.050	.123	1.991	.048			
US.INCOME	-.048	.022	-.131	-2.18	.030			
H.INCOME	.145	.040	.225	3.600	.000			
Interaction	-.001	.009	-.005	-.082	.935			

APPENDIX L

FIGURE 4: THE CONTRIBUTIONS OF PERCEIVED USA INCOME INEQUALITY AND PERCEIVED HOUSEHOLD INCOME TO FINANCIAL ADEQUACY

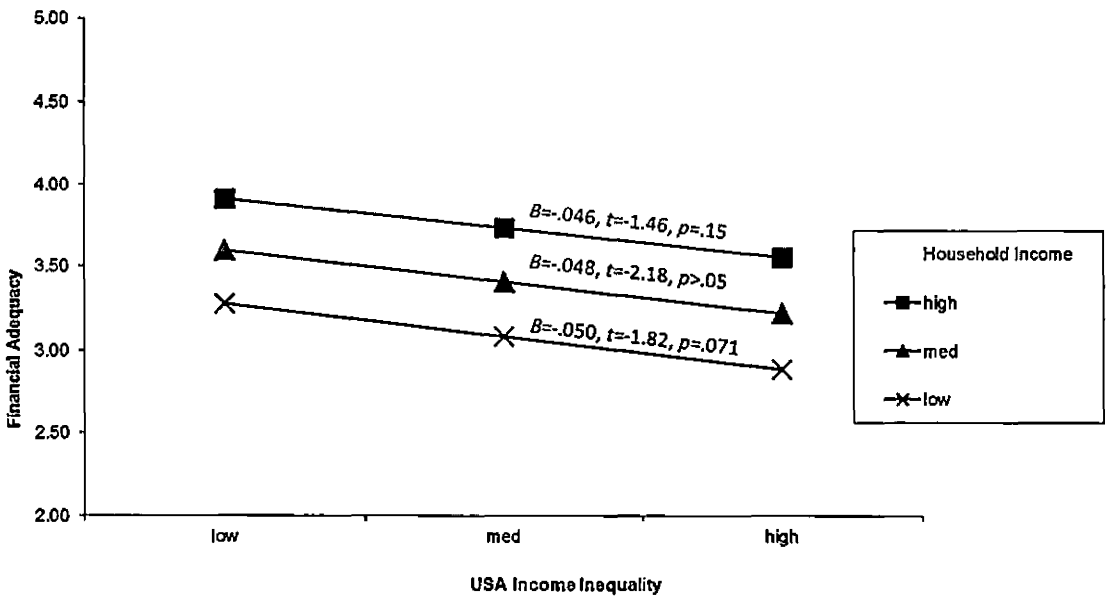


Figure 4. The Contributions of Perceived USA Income Inequality and Perceived Household Income to Financial Adequacy.
Legend. Household Income = Perceived Relative Household Income; USA Income Inequality = Perceived USA Income Inequality

REFERENCES

Abdel-Khalek, A. M. (2006). Measuring happiness with a single-item scale. *Social Behavior & Personality: An International Journal, 34*(2), 139-149.

Adler, N. E., Boyce, T., Chesney, M. A., Cohen, S., Folkman, S., Kahn, R. L., & Syme, S. L. (1994). Socioeconomic status and health the challenge of the gradient. *American Psychologist, 49*(1), 15-24.

Adler, N. E., Boyce, T., Chesney, M. A., Folkman, S., & Syme, S. L. (1993). Socioeconomic inequalities in health no easy solution. *Journal of the American Medical Association, 269,* 3140-3145.

Adler, N., Epel, E.S., Castellazzo, G., & Ickovics, J.R. (2000). Relationship of subjective and objective social status with psychological and physiological functioning: Preliminary data in healthy white women. *Health Psychology, 19,* 586-92.

Adler, N. E., & Newman, K. (2002). Socioeconomic disparities in health: Pathways and policies. Inequality in education, income, and occupation exacerbates the gaps between the health "haves" and "have-nots". *Health Affairs, 21*(2), 60-76.

Aiken, L. S., & West, S. G. (1991). Multiple regression: Testing and interpreting interactions. Newbury Park: Sage.

Anderson, N. B., & Armstead, C. A. (1995). Toward understanding the association of socioeconomic status and health: A new challenge for the biopsychosocial approach. *Psychosomatic Medicine, 57,* 213-225.

Baum, A., Garofalo, J. P., & Yali, A. (1999). Socioeconomic status and chronic stress: Does stress account for SES effects on health? *Annals of the New York Academy of Sciences, 896*(1), 131-144.

Baumeister, R. F., Campbell, J. D., Krueger, J. I., & Vohs, K. D. (2003). Does high self-esteem cause better performance, interpersonal success, happiness, or healthier lifestyles? *Psychological Science in the Public Interest, 4*(1), 1-44.

Berkman, L., & Syme, S. L. (1979). Social networks, host resistance, and mortality: A nine-year follow-up study of Alameda county residents. *American Journal of Epidemiology, 109*(2), 186-204.

Boyce, C. J., Brown, G. D. A., & Moore, S. C. (2010). Money and happiness: Rank of income, not income, affects

life satisfaction. *Psychological Science, 21*(4), 471-475.

Branscombe, N. R., Schmitt, M. T., & Harvey, R. D. (1999). Perceiving pervasive discrimination among African Americans: Implications for group identification and well-being. *Journal of Personality and Social Psychology,* 77(1), 135.

Central Intelligence Agency. (2013). The world factbook. Retrieved from https://www.cia.gov/library/publications/the-world-factbook/rankorder/2172rank.html\

Centers for Disease Control and Prevention. *Measuring Healthy Days*. Atlanta, Georgia: CDC, November, 2000.

Chou, S. Y., Liu, J. T., Grossman, M., & Joyce, T. J. (2010). Parental education and child health: Evidence from a natural experiment in Taiwan. *American Economic Journal: Applied Economics, 2*(1), 33-61.

Claessens, S., & Perotti, E. (2007). Finance and inequality: Channels and evidence. *Journal of Comparative Economics, 35*(4), 748-773.

Clark, A. E., & Etilé, F. (2011). Happy house: Spousal weight and individual well-being. *Journal of Health Economics, 30*(5), 1124-1136.

Clayson, D. E., & Klassen, M. L. (1989). Perception of attractiveness by obesity and hair color. *Perceptual and Motor Skills, 68*(1), 199-202.

Clemente, F., & Sauer, W. J. (1976). Life satisfaction in the United States. *Social Forces, 54*(3), 621-631.

Cohen, S., Alper, C.M., Doyle, W.J., Adler, N., Treanor, J.J., & Turner, R.B. (2008). Objective and subjective socioeconomic status and susceptibility to the common cold. *Health Psychology, 27*(2), 268-274.

Cornelisse-Vermaat, J. R., Antonides, G., van Ophem, J. A., & van den Brink, H. M. (2006). Body mass index, perceived health, and happiness: Their determinants and structural relationships. *Social Indicators Research, 79*(1), 143-158.

Curran, M., Totenhagen, C., & Serido, J. (2010). How resources (or lack thereof) influence advice seeking on psychological well-being and marital risk: Testing pathways of the lack of financial stability, support, and strain. *Journal of Adult Development, 17*(1), 44-56.

Davis-Kean, P. E. (2005). The influence of parent education and family income on child achievement: The indirect role of parental expectations and the home environment. *Journal of Family Psychology, 19*(2), 294-304.

Dickerson, S. S., Gruenewald, T. L., & Kemeny, M. E. (2004). When the social self is threatened: Shame, physiology, and health. *Journal of Personality, 72*(6), 1191-1216.

Diener, E. (2000). Subhective well-being the science of happiness and a proposal for a national index. *American Psychologist, 55*(1), 34-43.

Diener, E. D., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The satisfaction with life scale. *Journal of Personality Assessment, 49*(1), 71-75.

Diener, E., Horwitz, J., & Emmons, R. A. (1985). Happiness of the very wealthy. *Social Indicators Research, 16*(3), 263-274.

Diener, E., & Suh, E. (1997). Measuring quality of life: Economic, social, and subjective indicators. *Social Indicators Research, 40,* 189-216.

Doorslaer, E. V., Wagstaff, A., Bleichrodt, H., Calonge, S., Gerdtham, U-G., Gerfin, M., …Winkelhake, O.

(1997). Income-related inequalities in health: Some international comparisons. *Journal of Health Economics, 16,* 93-112.

Dorfman, R. (1979). A formula for the gini coefficient. *The MIT Press, 61*(1), 146-149. Retrieved June 5, 2013, from the JSTOR database.

Drukker, M., Kaplan, C., Feron, F., & Van Os, J. (2003). Children's health-related quality of life, neighbourhood socio-economic deprivation and social capital. A contextual analysis. *Social Science & Medicine, 57*(5), 825-841.

Duncan, G. J., Daly, M. C., McDonough, P., & Williams, D. R. (2002). Optimal indicators of socioeconomic status for health research. *American Journal of Public Health, 92*(7), 1151-1157.

Dunn, J. R., Veenstra, G., & Ross, N. (2006). Psychosocial and neo-material dimensions of SES and health revisited: Predictors of self-rated health in a Canadian national survey. *Social Science & Medicine, 62*(6), 1465-1473.

Eccles, J. S. (1993). School and family effects on the ontogeny of children's interests, self-perceptions, and activity choice. In J.Jacobs (Ed.), *Developmental*

Perspectives on Motivation (pp. 145-208). Lincoln: University of Nebraska Press.

Ecob, R., & Davey Smith, G. (1999). Income and health: What is the nature of the relationship? *Social Science & Medicine, 48*(5), 693-705.

Filakti, H., & Fox, J. (1995). Differences in mortality by housing tenure and by car access from the OPCS Longitudinal Study. *Population Trends, 81,* 27-30.

Fredrickson, B. L. (2003). The value of positive emotions: The emerging science of positive psychology is coming to understand why it's good to feel good. *American Scientist, 91*(4), 330-335.

Fontaine, K. R., Faith, M. S., Allison, D. B., & Cheskin, L. J. (1998). Body weight and health care among women in the general population. *Archives of Family Medicine,* 7(4), 381-384.

Gallo, L. C., & Matthews, K. A. (2003). Understanding the association between socioeconomic status and physical health: do negative emotions play a role? *Psychological Bulletin, 129*(1), 10.

Galobardes, B., Shaw, M., Lawlor, D. A., Lynch, J. W., & Smith, G. D. (2006). Indicators of socioeconomic

position (part 1). *Journal of Epidemiology and Community Health, 60*(1), 7-12.

Glaser, R., & Kiecolt-Glaser, J. K. (2005). Stress-induced immune dysfunction: Implications for health. *Nature Reviews Immunology, 5*(3), 243-251.

Geyer, S., Hemström, Ö., Peter, R., & Vågerö, D. (2006). Education, income, and occupational class cannot be used interchangeably in social epidemiology. Empirical evidence against a common practice. *Journal of Epidemiology and Community Health, 60*(9), 804-810.

Graham, C., & Felton, A. (2006). Inequality and happiness: Insights from Latin America. *Journal of Economic Inequality, 4*, 107-122.

Greenlund, K., Liu, K., Dyer, A. R., Kiefe, C. I., Burke, G. L., & Yunis, C. (1996). Body mass index in young adults: Associations with parental body size and education in the CARDIA Study. *American Journal of Public Health, 86*(4), 480-485.

Greenwood, J., & Jovanovic, B. (1990). Financial development, growth, and the distribution of income. *The Journal of Political Economy, 98*(5 pt.2), 1076-1107.

Grossman, M. (2000). The human capital model. *Handbook of Health Economics, 1,* 347-408.

Grossman, M. (2006). Education and nonmarket outcomes. *Handbook of the Economics of Education, 1,* 577-633.

Hazelrigg, L. E., & Hardy, M. A. (1997). Perceived income adequacy among older adults issues of conceptualization and measurement, with an analysis of data. *Research on Aging, 19*(1), 69-107.

House, J. S., Landis, K. R., & Umberson, D. (1988). Social relationships and health. *Science, 241*(4865), 540-545.

Idler, E. L., & Benyamini, Y. (1997). Self-rated health and mortality: A review of twenty-seven community studies. *Journal of Health and Social Behavior, 38,* 21-37.

Jimerson, S., Egeland, B., & Teo, A. (1999). A longitudinal study of achievement trajectories factors associated with change. *Journal of Educational Psychology, 91,* 116-126.

Kalff, A. C., Kroes, M., Vles, J. S. H., Hendriksen, J. G. M., Feron, F. J., Steyaert, J., ... van Os, J. (2001). Neighbourhood level and individual level SES effects on child problem behaviour: A multilevel analysis. *Journal of Epidemiology and Community Health, 55*(4), 246-250.

Kaplan, G. A., Pamuk, E. R., Lynch, J. W., Cohen, R. D., & Balfour, J. L. (1996). Inequality in income and mortality in the United States: Analysis of mortality and potential pathways. *British Medical Journal, 312*(7037), 999-1003.

Katsaiti, M. S. (2009). Obesity and Happiness. (Working Paper No. 44R) University of Connecticut Department of Economics Working Paper Series. Retrieved from: http://www.econ.uconn.edu/working/2009-44R.pdf

Kawachi, I. (1999). Income inequality and health. In I. Kawachi, B. P. Kennedy, & R. Wilkinson (Eds.), *The Society and Population Health Reader: Income Inequality and Health* (pp. 76-94) New York: New Press.

Kawachi, I., Kennedy, B. P., & Glass, R. (1999). Social capital and self-rated health: A contextual analysis. *American Journal of Public Health, 89*(8), 1187-1193.

Kennedy, B. P., Kawachi, I., & Prothrow-Stith, D. (1996). Income distribution and mortality: Cross sectional ecological study of the Robin Hood index in the United States. *British Medical Journal, 312*(7037), 1004-1007.

Kestilä, L., Koskinen, S., Martelin, T., Rahkonen, O., Pensola, T., Pirkola, S., …Aromaa, A. (2006). Influence of parental education, childhood

adversities, and current living conditions on daily smoking in early adulthood. *The European Journal of Public Health, 16*(6), 617-626.

Klusmann, D. (2002). Sexual motivation and the duration of partnership. *Archives of Sexual Behavior, 31*(3), 275-287.

Kohn, M. L. (1963). Social class and parent-child relationships: An interpretation. *American Journal of Sociology, 68,* 471-480.

Leventhal, T., & Brooks-Gunn, J. (2000). The neighborhoods they live in: The effects of neighborhood residence on child and adolescent outcomes. *Psychological Bulletin, 126*(2), 309-337.

Louis, V. V., & Zhao, S. (2002). Effects of family structure, family SES, and adulthood experiences on life satisfaction. *Journal of Family Issues, 23*(8), 986-1005.

Lund, D.A., Dimond, M.F., Caserta, M.S., Johnson, R.L., Poulton, J.L. & Connelly, J.R. (1986). Identifying elderly with coping difficulties after two years of bereavement. *Omega: Journal of Death & Dying, 16*(3), 213-224.

Luster, T., Rhoades, K., & Haas, B. (1989). The relation between parental values and parenting behavior: A test of the kohn hypothesis. *Journal of Marriage and the Family, 51,* 139-147.

Lynch, J. W., Kaplan, G. A., Pamuk, E. R., Cohen, R. D., Heck, K. E., Balfour, J. L., & Yen, I. H. (1998). Income inequality and mortality in metropolitan areas of the United States. *American Journal of Public Health, 88,* 1074-1080.

Macintyre, S., Ellaway, A., Der, G., Ford, G., & Hunt, K. (1998). Do housing tenure and car access predict health because they are simply markers of income or self-esteem? A Scottish study. *Journal of Epidemiology and Community Health, 52*(10), 657-664.

Mackenbach, J. P., Martikainen, P., Looman, C. W., Dalstra, J. A., Kunst, A. E., & Lahelma, E. (2005). The shape of the relationship between income and self-assessed health: An international study. *International Journal of Epidemiology, 34*(2), 286-293.

Major, B., & O'Brien, L. T. (2005). The social psychology of stigma. *Annual Review of Psychology, 56,* 393-421.

Major, B., Quinton, W. J., & McCoy, S. K. (2002). Antecedents and consequences of attributions to

discrimination: Theoretical and empirical advances. *Advances in Experimental Social Psychology, 34,* 251-330.

Marmot, M. (2002). The influence of income on health: Views of an epidemiologist. *Health Affairs, 21*(2), 31-46.

Marmot, M. G. (2006). Status syndrome: A challenge to medicine. *The Journal of the American Medical Association, 295*(11), 1304-1307.

Marmot, M., & Wilkinson, R. G. (2001). Psychosocial and material pathways in the relation between income and health: A response to Lynch et al. *British Medical Journal, 322*(7296), 1233-1236.

McCord, C., & Freeman H.P. (1990). Excess mortality in Harlem. *The New England Journal of Medicine, 322,* 173-177.

McCreary, D. R., & Sadava, S. W. (2001). Gender differences in relationships among perceived attractiveness, life satisfaction, and health in adults as a function of body mass index and perceived weight. Psychology of Men & Masculinity, 2(2), 108.

McGinnis, J. M., & Foege, W. H. (1993). Actual causes of death in the United States. *The Journal of the American Medical Association, 270*(18), 2207-2212.

Modigliani, F. en R. Brumberg, 1954, Utility analysis and the consumption function: An interpretation of cross-section data. *Post-Keynesian Economics, 6,* 128-197.

Mossey, J. M., & Shapiro, E. (1982). Self-rated health: A predictor of mortality among the elderly. *American Journal of Public Health, 72*(8), 800-808.

Oishi, S., Kesebir, S., & Diener, E. (2011). Income inequality and happiness. *Psychological Science, 22*(9), 1095-1100.

Operario, D., Adler, N. E., & Williams, D.R. (2004). Subjective social status: Reliability and predictive utility for global health. *Psychology and Health, 2,* 237-246.

Ott, J. (2005). Level and inequality of happiness in nations: Does greater happiness of a greater number imply greater inequality in happiness? *Journal of Happiness Studies, 6*(4), 397-420.

Pattussi, M. P., Marcenes, W., Croucher, R., & Sheiham, A. (2001). Social deprivation, income inequality, social cohesion and dental caries in Brazilian school children. *Social Science & Medicine, 53,* 915-925.

Pickett, K. E., & Pearl, M. (2001). Multilevel analyses of neighborhood socioeconomic context and health

outcomes: A critical review. *Journal of Epidemiology and Community Health, 55*(2), 111-122.

Pinhey, T. K., Rubinstein, D. H., & Colfax, R. S. (1997). Overweight and happiness: The reflected self-appraisal hypothesis reconsidered: Consequences of obesity. *Social Science Quarterly, 78*(3), 747-755.

Power, C. (1994). Health and social inequality in Europe. British *Medical Journal, 308*(6937), 1153-1156.

Quesenberry Jr, C. P., Caan, B., & Jacobson, A. (1998). Obesity, health services use, and health care costs among members of a health maintenance organization. *Archives of Internal Medicine, 158*(5), 466-472.

Reedy, M. N., Birren, J. E., & Schaie, K. W. (1981). Age and sex differences in satisfying love relationships across the adult life span. *Human Development, 24*(1), 52-66.

Rodgers, G. B. (1979). Income and inequality as determinants of mortality: An international cross-section analysis. *Population Studies, 33*(2), 343-351. Retrieved June 5, 2013, from the JSTOR database.

Rogot, E., Sorlie, P. D., Johnson, N. J., & Schmitt, C. (1992) *A Mortality Study of 1.3 Million Persons by Demographic, Social, and Economic Factors: 1979-1985*

Follow-up: US National Longitudinal Mortality Study (No. 92). Bethesda, MD: National Institutes of Health, National Heart, Lung, and Blood Institute.

Sapolsky, R. M. (2004). Social status and health in human and other animals. *Annual Review of Anthropology, 33,* 393-418.

Sapolsky, R. M. (2005). The influence of social hierarchy on primate health. *Science, 308,* 648-652.

Schinasi, G. J. (2004). Defining financial stability. (Working Paper No. 87) Retrieved from International Monetary Fund: http://cdi.mecon.gov.ar/biblio/docelec/fmi/wp/wp04187.pdf

Schmitt, M. T., & Branscombe, N. R. (2002). The meaning and consequences of perceived discrimination in disadvantaged and privileged social groups. *European Review of Social Psychology, 12*(1), 167-199.

Schneiders, J., Drukker, M., Van der Ende, J., Verhulst, F. C., Van Os, J., & Nicolson, N. A. (2003). Neighbourhood socioeconomic disadvantage and behavioral problems from late childhood into early adolescence. *Journal of Epidemiology and Community Health, 57*(9), 699-703.

Schumm, W. A., Nichols, C. W., Schectman, K. L., & Grigsby, C. C. (1983). Characteristics of responses to the Kansas Marital Satisfaction Scale by a sample of 84 married mothers. *Psychological Reports, 53,* 567-572.

Sheets, V., & Ajmere, K. (2005). Are romantic partners a source of college students' weight concern? *Eating Behaviors, 6*(1), 1-9.

Sin, D. D., Svenson, L. W., Cowie, R. L., & Man, S. P. (2003). Can universal access to health care eliminate health inequities between children of poor and nonpoor families? A case study of childhood asthma in Alberta. *CHEST Journal, 124*(1), 51-56.

Singer, B. H., & Ryff, C. D. (2001). New horizons in health: an integrative approach. *National Academy of Sciences.* Retrieved from http://www.nap.edu/openbook.php?record_id=10002&page=100

Singh-Manoux, A., Marmot, M. G., & Adler, N. E. (2005). Does subjective social status predict health and change in health status better than objective status? *Psychosomatic Medicine, 67,* 855-861.

Smith, D. M., Langa, K. M., Kabeto, M. U., & Ubel, P. A. (2005) Health, wealth, happiness: Financial resources

buffer subjective well-being after the onset of a disability. *Psychological Science, 16*(9), 663-666.

Starfield, B., Riley, A. W., Witt, W. P., & Robertson, J. (2002). Social class gradients in health during adolescence. *Journal of Epidemiology and Community Health, 56*(5), 354-361.

Starfield, B., Robertson, J., & Riley, A. W. (2002). Social class gradients and health in childhood. *Ambulatory Pediatrics, 2*(4), 238-246.

Strine, T. W., Chapman, D. P., Balluz, L. S., Moriarty, D. G., & Mokdad, A. H. (2008). The associations between life satisfaction and health-related quality of life, chronic illness, and health behaviors among U.S. community-dwelling adults. *The Journal of Community Health, 33,* 40-50.

Subramanian, S.V., & Kawachi, I. (2004). Income inequality and health. What have we learned so far. *Epidemiologic Reviews, 26,* 78-91.

Taylor, V. R. (2000). *Measuring healthy days: Population assessment of health-related quality of life.* US Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for

Chronic Disease Prevention and Health Promotion, Division of Adult and Community Health.

The World Bank. (2001). World Development Report, 2000/2001 Attacking Poverty.

Trzesniewski, K. H., Donnellan, M. B., Moffitt, T. E., Robins, R. W., Poulton, R., & Caspi, A. (2006). Low self-esteem during adolescence predicts poor health, criminal, behavior, and limited economic during adulthood. *Developmental Psychology, 42*(2), 381-390.

U.S. Department of Census Bureau. (2012). *Income, poverty and health insurance coverage in the United States: 2011 report* (CB Publication No. P60-243). Retrieved from http://www.census.gov/prod/2012pubs/p60-243.pdf

Veenhovern, R. (1996). The study of life satisfaction. In W. E. Saris, R. Veenhoven, A. C. Scherpenzeel, & B. Bunting (Eds.), *A comparative study of satisfaction with life in Europe* (11-48). Eötvös: University Press.

Veenhoven, R. (2008). Healthy happiness: Effects of happiness on physical health and the consequences for preventive health care. *Journal of Happiness Studies, 9*(3), 449-469.

Vinokur, A. D., Price, R. H., & Caplan, R. D. (1996). Hard times and hurtful partners: How financial strain

affects depression and relationship satisfaction of unemployed persons and their spouses. *Journal of Personality and Social Psychology, 71*(1), 166-179.

Wilkie, R., Peat, G., Thomas, E., & Croft, P. (2007). Factors associated with participation restriction in community-dwelling adults aged 50 years and over. *Quality of Life Research, 16*(7), 1147-1156.

Wilkins, R., Adams, O., & Brancker, A. (1988). Changes in mortality by income in urban Canada from 1971 to 1986. *Health reports/Statistics Canada, Canadian Centre for Health Information= Rapports sur la sante/Statistique Canada, Centre canadien d'information sur la sante, 1*(2), 137-174.

Wilkinson, R. (1992). Income distribution and life expectancy. *British Medical Journal, 304*, 165-168.

Wilkinson, R. G. (1997). Socioeconomic determinants of health. Health inequalities: Relative or absolute material standards? *British Medical Journal, 314*(7080), 591-599.

Wilkinson, R., & Pickett, K. E. (2007). The problems of relative deprivation: Why some societies do better than others. *Social Science & Medicine, 65*, 1965-1978.

W. H. O. (2000). Obesity: Preventing and managing the global epidemic. *World Health Organization Technical Report Series, 894.*

Wolf, N. (1990). The beauty myth. Toronto: Random House.