

Subjective Status, Depression, and Neuroticism

Cristina Vitouchanskaia

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This is to certify that the thesis prepared

By: **Cristina Vitouchanskaia**

Entitled: **Subjective Status, Depression, and Neuroticism**

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Master of Arts (Psychology)

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Signed by the final examining committee:

Chair

Dr. Wayne Brake

Examiner

Dr. June Chaikelson

Examiner

Dr. Constantina Giannopoulos

Thesis Supervisor

Dr. Michael Conway

Approved by:

Dr. Wayne Brake, Graduate Program Director

_____ 2013

Dean of Arts and Science

ABSTRACT

Subjective Status, Depression, and Neuroticism

Cristina Vitouchanskaia

Subjective status refers to the way in which individuals perceive themselves in relation to others in society, in terms of social status. Lower subjective status has been linked to poorer health outcomes, particularly depression. Individuals with lower subjective status report more symptoms of depression, even when their objective socio-economic status (i.e., education, occupation, and income) is taken into account. Previous research has largely ignored individuals' personality differences, particularly individuals' level of neuroticism, when looking at the relation between subjective status and depression. Neuroticism is a core personality characteristic that negatively impacts many different areas of life. Individuals with higher neuroticism are more likely to report symptoms of depression. In addition, individuals with higher neuroticism have lower socio-economic status and poorer health, factors which may influence their subjective status. In light of such observations, the aim of the present research was to determine whether neuroticism plays a role in the relation between subjective status and depression. Participants were 371 retirees participating in a longitudinal study on life adjustment after retirement. Cross-sectional analysis of the data indicated that individuals with lower subjective status reported more symptoms of depression, even when their objective socio-economic status was taken into account. When neuroticism was taken into account, however, individuals with lower status did not report more symptoms of depression. Further analyses indicated that negative affect was not a sufficient proxy for neuroticism in the relation between subjective status and depression. In other words, when negative

affect was taken into account, subjective status continued to play a statistically significant role in predicting symptoms of depression.

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Introduction

Status is often very important in social interactions. Hierarchical relations are amongst one of the basic forms of relating to others and these hierarchical relations begin as early as in childhood (Bugental, 2000; Fiske 1992). Status plays an important role in how individuals are perceived by others and is related to many forms of power. For example, individuals with higher status are usually perceived as more competent and assertive, and are more admired than individuals with lower status (Berger, Wagner, & Zelditch, 1985; Conway & Vartanian, 2000; Raven & Kruglanski, 1970). When people interact in groups, status hierarchies naturally develop (Berger, Rosenholtz, & Zelditch, 1980). People are often very accurate at identifying their own status within a group and rarely overestimate their social position (Anderson, Srivastava, Beer, Spataro, & Chatman, 2006). In other words, people know fairly well where they stand compared to others in terms of their social status in face to face groups.

Individuals seem to situate themselves in a unidimensional status hierarchy. Despite the fact that there are many objective socio-economic status indicators (such as education, occupation, and income; Cralley, 2007), people generally assess their status in a global manner. In the study by Kluegel, Singelton, and Starnes (1977), participants indicated their level of education, their occupation, and their income. Participants also rated the social status of their education, occupation, and income separately (in terms of lower, working, middle, or upper class) and indicated their overall social class. Participants rated their education, occupation, and income in a way that reflected their perception of their overall social class, rather than their respective objective levels of education, occupation, and income. In other words, a unidimensional model of social

class was a better fit to participants' ratings than a multidimensional model which included separate dimensions. In sum, people do not perceive their education, occupation, and income separately in terms of status, but instead perceive themselves as having an overall social status.

Measuring Subjective Status

Although it has long been established that higher objective socio-economic status (SES henceforth) is associated with lower rates of morbidity and mortality, more recent research has examined how *subjective status* is related to health (e.g., Adler et al., 2008). Subjective status refers to how individuals perceive themselves in regards to others in society, in terms of social status. Although people will rely on their level of education, occupation, and income to assign themselves a certain subjective status, there is no strong positive correlation between people's objective socio-economic status indices (i.e., education, occupation, and income) and their subjective status (Franzini & Fernandez-Esquer, 2006; Karvonen & Rahkonen, 2011; Operario, Adler, & Williams, 2004). Researchers have focused on subjective status because it has been frequently argued that subjective status has a wide range of consequences for psychological adjustment and for health, above and beyond the objective measures of SES.

A commonly used measure for subjective status, which was proposed by Adler, Epel, Castellazzo, and Ickovics (2000), is the MacArthur Scale of Subjective Social Status. This scale is a 10 rung ladder, and participants are told that the people at the bottom of the ladder have the least education, worst occupation, and least income, whereas the people at the top of the ladder have the best or highest education, occupation, and income (Adler et al., 2000). Participants are then asked to place themselves on this

social ladder. In most studies conducted to date, researchers have either used the MacArthur scale or a modified version of the MacArthur scale in examining participants' subjective status. Such studies will be reviewed in this paper.

Relation of Subjective Status to Objective Socio-Economic Status

Individuals' scores on the subjective status scale are not simply a combination of their standing on objective SES factors (i.e., education, occupation, and income). Most of the correlations between subjective status and SES factors in the literature are low to moderate (here and below, the magnitude of correlations is described according to the guidelines proposed by Cohen [1988]). For example, Alfonsi, Conway, and Pushkar (2011) found that the correlations between objective SES measures and subjective status ranged from low ($r = .17$) for occupational prestige to moderate ($r = .39$) for salary. Adler and colleagues (2000) found individual correlations between objective SES measures and subjective status to vary from being quite low ($r = .11$ for occupation) to moderate associations ($r = .32$ for education). In the same study, a composite of individual scores of the three SES factors (i.e., household income, education, and occupation) correlated moderately with subjective status ($r = .40$). Other research has found correlations between individual SES measures and subjective status to range from small to moderate, but the correlations never exceeded .50 (Franzini & Fernandez-Esquer, 2006; Karvonen & Rahkonen, 2010; Operario et al., 2004; Sakurai, Kawakami, Yamaoka, Ishikawa, & Hashimoto, 2010; Wolff, Subramanian, Acevedo-Garcia, Weber, Kawachi, 2010). In light of these findings, it is reasonable to state that when individuals determine their status, they take into account more than just their objective SES.

Furthermore, when researchers have attempted to account for the variance in subjective status, they found that most of the variance was not accounted for by objective SES factors. In fact, researchers rarely reported the variance accounted for by only objective SES predictors. For example, Brown and colleagues (2008) found that objective SES measures (i.e., education and personal income) as well as a subjective measure of economic establishment (i.e., feeling financially secure) accounted for 6% of the variance in subjective status. Singh-Manoux, Adler, and Marmot (2003) found that SES factors (i.e., education, employment grade, and household income), along with satisfaction with standard of living, and feelings of financial security, all accounted for 48% of the variance in subjective status. Satisfaction with standard of living and feelings of financial security assessed in these studies may reflect other factors in addition to objective SES. As such, it is difficult to determine precisely what factors individuals take into account apart from their own objective SES when they assign themselves to a certain rank.

Subjective Status and Health

In a large amount of cross-sectional research, it has been found that people with lower subjective status have poorer health outcomes, even when objective SES factors are taken into account. Some of these poor health outcomes have been assessed in terms of self-ratings, such as poor self-rated health, stress, and depression. Other health outcomes have been objectively assessed, such as cardiovascular disease, diabetes, and mortality. The associations between subjective status and poor health were found in studies using both the MacArthur scale and modified versions of the MacArthur scale.

Many different variations of the MacArthur scale have been utilized by researchers. With the MacArthur scale, participants rate themselves in relation to people

in society at large, in terms of education, occupation, and income, on a 10 rung ladder. Variations of the MacArthur scale have included changes to the comparison group, the subject (i.e., whose status is being rated), what status refers to (i.e., education, occupation, income, or other criteria), and the scaling of the measure (i.e., number of rungs in the scale or number of categories). The first change concerns the comparison group. Instead of asking participants to indicate their subjective status relative to society at large, some researchers have asked participants to indicate their subjective status relative to specific groups (e.g., their community, their school, and their ethnic group). In some cases, researchers seemed to have kept the focus on society at large, but modified the wording of the comparison group. For instance, researchers have asked their American participants to indicate their subjective status relative to the U.S. population or the American society. It is unclear whether an American participant would rate his or her status differently relative to the U.S. population or to society at large. The second change concerns whose status is being rated. Some researchers have asked participants to indicate the subjective status of a group they belong to (e.g., their family or their professional group) instead of their own personal subjective status. The third change concerns what status refers to. Some researchers have either omitted or modified the instructions of the scale, such that participants were not asked to indicate their subjective status in terms of education, occupation, and income. It is unclear whether participants would still take these SES factors into consideration when assessing their own status. The fourth change is in regard to the scaling of the measure. Some researchers have not used the standard 10 rung ladder in their research. Instead, they have either used a different number of rungs or used a scale with worded categories (e.g., upper to lower strata) rather

than a scale with rungs. There may be two potential issues when using a strata scale instead of a ladder scale. First, a strata scale has worded categories, whereas a ladder scale does not. As such, there may be more room for subjective interpretation when participants complete a ladder scale relative to a strata scale. The second issue is the number of categories. A ladder scale with 10 rungs offers more variability than a strata scale with only 5 categories. Nevertheless, regardless of how subjective status was assessed, individuals with lower subjective status seemed to have poorer health outcomes. Research that supports this claim will be examined in the following sections of this paper.

The MacArthur Scale of Subjective Status and Health

Researchers who have used the MacArthur scale in their studies have found that young and middle-aged adults with lower subjective status report poorer psychosocial health. Most of the cross-sectional studies reviewed below found statistically significant associations between subjective status and psychosocial health. For example, Adler and colleagues (2000) found that white adult women with lower subjective status reported more chronic stress, more pessimism, more passive coping and less active coping, and perceived having less control over their lives. These findings emerged even after controlling for negative affect and objective SES measures, namely education, occupation, and income. Similarly, Dennis and colleagues (2012) found that pregnant women with low subjective status were more likely to be depressed and to report high stress, than pregnant women who had high subjective status. In their study, the authors ran analyses comparing the women with low subjective status to those with high subjective status in their risk of depression and high stress. They controlled for two objective SES factors (i.e., education and income) and economic disadvantage (i.e., receiving public assistance,

having a basic utility shut off, and experiencing homelessness). In another study of pregnant women who quit smoking during their pregnancy, Reitzel and colleagues (2007) found that women with lower subjective status reported more negative affect, less positive affect, and less social support, after controlling for objective SES factors (i.e., education and income), ethnicity, and relationship status (i.e., having a partner). It is important to note that the authors found no statistically significant association between subjective status and depression, and between subjective status and stress. In another study of adults trying to quit smoking, Reitzel and colleagues (2010) found that participants with lower subjective status reported more symptoms of depression, more stress, less positive affect, and more negative affect. In addition, they were more likely to start smoking again after a period of abstinence. In that study, the authors controlled for objective SES factors (i.e., education, employment status, and income) and demographic variables (i.e., age, gender, ethnicity, and relationship status). In another study, male prisoners in Norway with low subjective status were more likely to report psychological distress relative to those with high subjective status (Friestad, 2010). However, they were not more likely to use drugs. The author ran analyses comparing prisoners with low subjective status to those with high subjective status and controlled for objective SES prior to imprisonment (i.e., education, occupation, income, and childhood SES), and age. Similarly, in two studies, middle-aged office workers had a higher risk of depression and reported more psychological distress with lower subjective status (with the exception of men who were not more likely to be depressed with lower subjective status; Singh-Manoux et al., 2003; Singh-Manoux, Marmot, & Adler, 2005). In the first study, the authors examined the risk of depression in individuals with low subjective status relative

to those with high subjective status and they controlled for life satisfaction, objective SES (i.e., education, employment grade, and income) and age (Singh-Manoux et al., 2003). In the second study, the authors examined whether participants reported more psychological distress with lower subjective status (Singh-Manoux et al., 2005). The authors controlled only for employment grade and age. In another study, Kraus, Adler and Chen (2013) found that adults in the U.S. with lower subjective status reported more chronic negative affect and more symptoms of depression. The authors controlled for acute negative affect, objective SES factors (i.e., education and income), and demographic variables (i.e., age, gender, and ethnicity). As noted above, there were some null findings, whereby subjective status had no statistically significant association with psychosocial health outcomes. Furthermore, in one study focusing on the relation between subjective status and sleep disturbance, subjective status was unrelated to sleep disturbance in a sample of college students in the U.S. (Goodin, McGuire, & Smith, 2010). The authors controlled for psychosocial factors (i.e., depressive symptoms and stress), employment status, body mass index, and demographic variables (i.e., gender and ethnicity). In sum, in most studies in which the MacArthur scale has been used, researchers have found that young and middle-aged adults with lower subjective status report worse psychosocial health.

In addition to young and middle-aged adults, researchers using the MacArthur scale found that older adults with lower subjective status report poorer psychosocial health. For example, Demakakos, Nazroo, Breeze, and Marmot (2008) found that older adults from England with lower subjective status were more likely to be depressed, even after controlling for objective SES measures (i.e., education, occupational class, wealth), age, and marital status. In summary, regardless of the age of participants, individuals with

lower subjective status report poorer psychosocial health in studies in which the MacArthur scale has been used.

In addition to demonstrating this association between subjective status and psychosocial health, other research has focused on self-rated global health. Self-rated global health refers to the overall perception of one's health. Many studies have found that young and middle-aged adults with lower subjective status on the MacArthur scale report poorer self-rated global health. For example, Dennis and colleagues (2012) found that pregnant women in the U.S with low subjective status were more likely to report poor physical and emotional self-rated health during pregnancy and after giving birth compared to participants with high subjective status. The authors controlled for objective SES factors (i.e., education and income) and economic disadvantage (i.e., receiving public financial assistance, having a basic utility shut off, and experiencing homelessness). In another study, office workers in England with low subjective status were more likely to report poor global health compared to individuals with high subjective status, after controlling for life satisfaction, objective SES factors (i.e., education, employment grade, and personal income), and age (Singh-Manoux et al., 2003). Similarly, in a longitudinal study with office workers in England, participants with lower subjective status reported poorer global health (Singh-Manoux et al., 2005). In that study, the authors controlled for employment grade and age. In another study with a national sample of Hungarian individuals, Kopp, Skrabski, Rethelyi, Kawachi, and Adler (2004) found that individuals with lower subjective status reported poorer global health. Unfortunately, that study had no control variables. Lundberg and Kristenson (2008) found that middle-aged individuals from Sweden with lower subjective status reported

poorer global health. In their study, the authors did not control for objective SES factors. Instead, they ran analyses controlling for demographic variable (i.e., age and gender) and different psychosocial factors individually (e.g., depression, life satisfaction, perceived control, and self-esteem). These different psychosocial control factors reduced somewhat the association between subjective status and self-rated global health, but it remained statistically significant. In another study of adults in the U.S., Kraus and colleagues (2013) found that participants with lower subjective status reported poorer global health. In addition, participants with lower subjective status reported poorer physical and emotional health. The authors controlled for acute negative affect, objective SES factors (i.e., education and income), and demographic variables (i.e., age, gender, and ethnicity). In two studies no statistically significant association was found between self-rated global health and subjective status among white adult women in the U.S. and male prisoners in Norway (Adler et al., 2000; Friestad, 2010). Nevertheless, in most studies in which the MacArthur scale was used, researchers have found that young and middle-aged adults with lower subjective status report poorer global health.

In addition to young and middle-aged adults, older individuals with lower subjective status on the MacArthur scale also report poorer global health. Demakakos and colleagues (2008) found that older individuals with lower subjective status were more likely to report poor global health. The authors controlled for objective SES factors (i.e., education, occupational class, and wealth), age, and marital status. In other research, elderly individuals from Taiwan with lower subjective status reported poorer global health and more difficulties with daily instrumental activities (such as using a telephone or shopping) and with general physical activity, but their subjective status was unrelated

to their rudimentary daily activities (such as bathing and dressing; Hu, Adler, Goldman, Weinstein, & Seeman, 2005). The authors controlled for health-related factors (i.e., smoking and alcohol use), depressive symptoms, objective SES factors (i.e., education, working status, income, and socioeconomic index), and other demographic factors (i.e., age, sex, ethnicity, and marital status). In sum, regardless of age, individuals with lower subjective status on the MacArthur scale have reported poorer global health.

In addition to poorer self-rated global health and psychosocial health, researchers have found that individuals with lower subjective status on the MacArthur scale have a higher rate of mortality. Kopp and colleagues (2004) found that individuals with lower subjective status had a higher rate of mortality in a national sample of elderly Hungarian individuals, even after controlling for self-rated global health. In summary, most researchers who have used the MacArthur scale in their studies have found that individuals with lower subjective status also have poorer psychosocial, self-rated, and objective health (namely a higher rate of mortality). Similar findings were observed in studies with modified versions of the MacArthur scale.

Modified Versions of the MacArthur Subjective Status Scale and Health

Studies with modified versions of the MacArthur scale have also shown that young and middle-aged adults with lower subjective status report worse psychosocial health. These findings were observed in samples with individuals living in the U.S. and in samples with individuals living outside the U.S. For example, in a community sample of adults living in the U.S., participants were asked to indicate where they stand relative to the U.S. population (Adler et al., 2008). Participants with low subjective status had a higher rate of depression than participants with high subjective status. The authors

controlled for objective SES factors (i.e., education, occupation, and income) and age. Similarly, pregnant women in the U.S., who indicated where they stood relative to the U.S. population, reported more symptoms of depression with lower subjective status (Stewart, Dean, Gregorich, Brawarsky, & Haas, 2007). The authors controlled for objective SES (i.e., personal income and the education level of women's mothers), economic disadvantage (i.e., public assistance and material deprivation), and demographic factors (i.e., age, ethnicity, and number of children). In another study, African American adults in the U.S were asked to indicate where they stand relative to the U.S. population and to their community (Subramanyam et al., 2012). Participants with lower subjective status on either one of the two measures had more symptoms of depression. However, they did not report more stress (with the odd exception of women who reported more stress with higher community subjective status). The authors controlled for a psychosocial factor (i.e., perceived lifetime discrimination), objective SES factors (i.e., education and income), and age. In another study, foreign-born Asian Americans were asked to indicate where they stand relative to their community and to the American population (Leu et al., 2008). Participants with lower subjective status on either measure reported more mood dysfunction. The authors controlled for objective SES factors (i.e., education and income), demographic variables (i.e., age, gender, ethnicity, and marital status), immigration factors (i.e., citizenship status and age at immigration), and English proficiency. In another study with Asian Americans, participants were asked to indicate where they stand relative to their community and to the U.S. population (Gong, Xu, & Takeuchi, 2012). Participants with lower subjective status on either one of the two measures reported more psychological distress. The

authors controlled for individual differences in social desirability, objective SES factors (i.e., education, occupation, and household income), demographic variables (i.e., age, gender, ethnicity, and marital status), the number of years living in the U.S., and English proficiency. Similarly, Ghaed and Gallo (2007) found that middle-aged women in the U.S., who indicated where they stood relative to their community, reported more depressive symptoms, trait anxiety, stress, pessimism, and less social support with lower subjective status. Participant subjective status relative to the U.S. population did not have any statistically significant association with these psychosocial outcomes. The authors controlled for objective SES factors (i.e., education, occupation, and household income), age, and ethnicity. In addition, in an experimental study with female college students, individuals who were induced to imagine having low subjective status reported more negative affect and ruminated more than individuals who were induced to imagine having high status (Jackson, Twenge, Souza, Chiang, & Goodman, 2011). The authors controlled for ethnicity. In sum, studies with modified versions of the MacArthur scale have shown that young and middle-aged individuals living in the U.S. with lower subjective status report poorer psychosocial health. Similar findings were observed for young and middle-aged individuals living outside the U.S.

Studies with modified versions of the MacArthur scale have shown that young and middle-aged adults living outside the U.S. with lower subjective status report worse psychosocial health. For example, individuals in South Africa were asked to indicate where they stand relative to their community and to their country (Hamad, Fernald, Karlan, & Zinman, 2008). Participants who reported lower subjective status relative to their community also reported more symptoms of depression and more stress. The

authors controlled for demographic variables (i.e., age, gender, ethnicity, province of residence, and number of people living in the household). Participant subjective status relative to their country was not significantly associated with depression and stress when the authors controlled for the demographic variables. In a study of long-term care staff members in Israel, participants were asked to indicate where they stand relative to their community (Ayalon, 2008). Participants with lower subjective status reported more emotional exhaustion, a lower sense of accomplishment and less positive aspects of caregiving, and were more likely to depersonalize their patients. The author controlled for work conditions (i.e., staff-to-patient ratio and daily hours of work), objective SES factors (i.e., education and professional affiliation), and the number of years worked with older adults. Sakurai and colleagues (2010), who compared individuals with high and low subjective status, found that women with low subjective status were more likely to report psychological distress. Men with low subjective status were not more likely to report psychological distress than men with high subjective status. The authors used a five-strata measure of subjective status instead of the 10 rung ladder in their study of a Japanese community sample, and they controlled for objective SES factors (i.e., education and household income), age, and marital status. In other research with prison guards in Italy, Sani, Magrin, Scrignarò, and Mccollum (2010) found that individuals who perceived their professional group (i.e., prison guards) lower on the subjective status ladder relative to other professional groups reported more stress, less job satisfaction, and higher psychiatric disturbance. The authors controlled for in-group (i.e., prison guards) identification, but not for SES factors. In their second study, a sample of individuals in Scotland who indicated where their family stood relative to their community on a 10 rung

ladder, reported more depressive symptoms, lower life satisfaction, and more stress with lower subjective status. The authors controlled only for in-group (i.e., family) identification. In addition to the few null findings mentioned previously, in one study, the authors did not find statistically significant associations between subjective status and two psychosocial measures in their sample of Asian Americans in the U.S. (i.e., depression and anxiety; John, de Castro, Martin, Duran, & Takeuchi, 2012). In that study, the authors asked participants to indicate where they stand relative to the U.S. population, their community, and their country of origin. The authors controlled for psychosocial factors (i.e., discrimination and social support), objective SES factors (i.e., education and occupational class), demographic factors (i.e., age, gender, ethnicity, marital status, and country of birth), immigration factors (i.e., immigration stress and years living in the U.S.), English proficiency, and health insurance. Nevertheless, most studies with modified versions of the MacArthur scale have shown that young and middle-aged individuals living outside the U.S. with lower subjective status report poorer psychosocial health.

In addition to young and middle-aged adults, adolescents with lower subjective status on a modified version of the MacArthur scale report poorer psychosocial health. For example, 15 year old students in Finland with low subjective status were more likely to report psychological distress than students with high subjective status (Karvonen & Rahkonen, 2010). The subjective status measure in this study instructed participants to indicate where their family stands relative to society, instead of themselves. The authors controlled for objective SES factors (i.e., pocket money, parental education level, and parental employment status) and school performance. In contrast, Finkelstein, Kubzansky,

and Goodman (2006), found that high school students in the U.S. who indicated where their family stood relative to society were not more likely to smoke cigarettes with lower subjective status. However, when asked to indicate where they stand relative to other students in their school (in terms of respect, highest grades, and highest standing), students with lower subjective status were more likely to smoke. In this study, the authors controlled for stress, school grade level, parental education level, and demographic factors (i.e., age, gender, and ethnicity). In another study, high school students in the U.S. who indicated where their families stood relative to society reported less optimism and lower self-esteem, and perceived having less control over life with lower subjective status (Chen & Paterson, 2006). However, there were no control variables. In sum, regardless of age, individuals with lower subjective status on a modified version of the MacArthur scale report poorer psychosocial health. These findings are similar to the findings in studies in which the MacArthur scale was used.

In addition to demonstrating the association between subjective status and psychosocial health in studies with modified versions of the MacArthur scale, other research with modified versions of the MacArthur scale has focused on self-rated global health. Young and middle-aged adults with lower subjective status on a modified version of the MacArthur scale report poorer global health. For example, in a national sample of U.S. adults, Operario and colleagues (2004) found that individuals who indicated where they stood relative to the U.S. population reported poorer global health with lower subjective status. The authors controlled for negative affect, health risks (i.e., high blood pressure and heart attack or heart problems), objective SES factors (i.e., education and income), and demographic factors (i.e., age, sex, and ethnicity). Franzini and Fernandez-

Esquer (2006) found similar results in a national sample of Mexican Americans who indicated where they stood relative to "other people". Participants with lower subjective status were more likely to report poor global health. Although subjective status was not the largest predictor of self-rated global health, it still remained a statistically significant predictor after controlling for psychosocial factors (i.e., opportunity, perceived racism, perceived social support, perceived victimization, personal trust, and religiosity), objective SES factors (i.e., education, work status, and income), and demographic factors (i.e., age, gender, and country of birth). In the same study, participants also rated their physical and emotional health separately. Subjective status was not a statistically significant predictor of either physical or emotional self-rated health. In another study with a large nationally representative U.S. sample, participants indicated where they stood relative to four different referent groups: relative to the American population, to their ethnic group, to their neighbors, and to their parents when they were the same age (Wolff et al., 2010). Only subjective status relative to the American population had a statistically significant association with global health; individuals with low subjective status were more likely to report poor global health compared to individuals who had medium subjective status. There was no statistically significant differences between individuals with high subjective status and medium subjective status in their likelihood of reporting poor global health. The authors controlled for psychosocial factors (i.e., presence of anxiety disorder, bipolar disorder, and depression in the past year), physical health factors (i.e., body mass index, diabetes, high blood pressure, high cholesterol, skin cancer, and other cancer), objective SES factors (i.e., education, household income, and home ownership), demographic variables (i.e., age, gender, ethnicity, marital status, and

household size), and health insurance. Adler and colleagues (2008) found similar results in their community sample of adults living in the U.S. who were asked to indicate where they stand relative to the U.S. population. Participants with low subjective status were more likely to report poor global health than participants with high subjective status. The authors controlled for objective SES factors (i.e., education, occupation, and income) and age. Similarly, Castro, Gee, and Takeuchi (2010) used two measures of subjective status in their study of Asian Americans living in the U.S. Participants indicated where they stood relative to their community and to the U.S. population. The authors did not report results for each subjective status separately. They created an average for each participant by combining participants' answers on both scales. Participants with lower subjective status were more likely to report poor physical health. The authors controlled for financial strain, satisfaction with economic opportunity, objective SES factors (i.e., education, occupation, and income), demographic variables (i.e., age, gender, ethnicity, marital status, country of birth, region of residence), and the number of years living in the U.S. In another study with Asian Americans, participants indicated where they stood relative to their community and to the U.S. population (Gong et al., 2012). Participants with lower subjective status on either one of the two measures were more likely to report poor physical and emotional health. The authors controlled for social desirability, objective SES factors (i.e., education, occupation, and household income), demographic variables (i.e., age, gender, ethnicity, and marital status), the number of years living in the U.S., and English proficiency. Similarly, in a sample of pregnant women in the U.S., participants indicated where they stood relative to the U.S. population (Stewart et al., 2007). Participants with lower subjective status reported poorer global health. The

authors controlled for objective SES factors (i.e., personal income and the education level of women's mothers), economic disadvantage (i.e., public financial assistance and material deprivation), and demographic factors (i.e., age, ethnicity, and number of children). In another study of pregnant women in the U.S., participants indicated where they stood relative to the U.S. population (Ostrove, Adler, Kuppermann, & Washington, 2000). Chinese and Caucasian women with lower subjective status reported poorer global health. However, Latin and African American women did not report poorer global health with lower subjective status. The authors controlled for education and household income. In sum, young and middle-aged adults with lower subjective status on a modified version of the MacArthur scale report poorer global health. In addition to the null findings mentioned above, in one study subjective status was not significantly associated with self-rated physical and mental health (John et al., 2012). In that study with Asian Americans, participants were asked to indicate their status relative to the U.S. population, their community, and their country of origin. None of these measures predicted self-rated physical and mental health when all control variables were accounted for. The authors controlled for psychosocial factors (i.e., perceived discrimination and perceived social support), objective SES factors (i.e., education and occupational class), demographic factors (i.e., age, gender, ethnicity, marital status, and country of birth), immigration factors (i.e., immigration stress and years living in the U.S.), English proficiency, and health insurance.

In addition to young and middle-aged adults, adolescents with lower subjective status on a modified version of the MacArthur scale also report poorer global health. For example, 15 year-old students in Finland with low subjective status were more likely to

report average or poor global health and more health complaints than students with high subjective status (Karvonen & Rahkonen, 2010). Participants were asked to indicate where their family stands relative to society, instead of themselves. The authors controlled for objective SES factors (i.e., pocket money, parental education level, and parental employment status) and school performance. Similarly, Goodman, Huang, Schafer-Kalkhoff, and Adler (2007) asked high school students in the U.S. to indicate where they stand relative to the U.S. population. Participants with lower subjective status reported poorer global health. The authors controlled for objective SES factors (i.e., parental education level and household income) and demographic factors (i.e., age, gender, and ethnicity). These associations between subjective status and self-rated global health remained three years later, when global health was reassessed. In sum, regardless of age, individuals with lower subjective status on a modified version of the MacArthur scale report poorer global health.

In summary, most cross-sectional studies that looked at the relation between subjective status and health found that individuals with lower subjective status report poorer psychosocial and global health. These associations between subjective status and health were found regardless of the measure of subjective status used. In addition, the associations between subjective status and health were evident across the populations studied to date, regardless of age; subjective status was associated with health outcomes in teenagers, young adults, middle-aged adults, and elderly individuals. One experimental study supports the view that subjective status has a causal impact on negative affect. Finally, across the studies that looked at the relation between subjective status and a psychosocial outcome measure, many studies examined the relation between subjective

status and depression or a related construct (such as negative affect or mood dysfunction). Although the measures of depression and related constructs varied, these studies nevertheless found that individuals with low subjective status have a higher risk of depression or negative affect relative to individuals with high subjective status.

Depression

Depression is a pervasive state characterized by apathy, loss of interest, anhedonia (i.e., inability to find pleasure in enjoyable activities), and negative affect (American Psychiatric Association, 2000). Often, it is also accompanied by feelings of low self-esteem and social withdrawal. Among mental disorders, major depression is the leading cause of disability in the workplace around the world (Gotlib & Hammen, 2009). Lifetime prevalence ranges between 5% and 12% for men and 10% and 25% for women (American Psychiatric Association, 2000). In addition, at any point in time, between 2% and 3% of men and 5% and 9% of women suffer from major depression (American Psychiatric Association, 2000).

Cognitive Theories of Depression

There are different cognitive theories of depression. Two prominent theories are Beck's cognitive theory and the hopelessness theory. Beck's (1967) cognitive theory of depression suggests that depression occurs as a result of a negative interpretation of events. Individuals who are more prone to depression tend to perceive events as more negative and, as a result, to experience more negative emotions. This negative perception of events is theorized to be due to different filters, or schemas, that people use to process information. Schemas serve to process and filter all the information that is received and to direct attention to the most relevant aspects. Schemas can be conceptualized as a belief

system and they tend to center around specific themes. Individuals assign meanings to situations through these schemas. In the case of depression, these schemas may center on negative themes, such as unlovability or inadequacy, and events are interpreted through these schemas. Beck theorized that automatic thoughts are generated through these schemas in interpreting events, such as “he doesn’t love me” when a partner can’t make it to a date. Specifically, depressed individuals may have more negative automatic thoughts in ambiguous or stressful situations, more so than non-depressed individuals (Crawford & Cromwell, 1995; Dohr, Rush, & Bernstein, 1989; Hollon & Kendall, 1980; Hollon, Kendall, & Lumry, 1986; Kwon & Oei, 1992). As a result, individuals who are more prone to depression may have more negative thoughts about themselves, about the world, and about the future.

Another theory of depression, proposed by Abramson, Metalsky, and Alloy (1989) is the hopelessness theory of depression. This theory suggests that hopeless depression may develop depending on the inferences people draw regarding causes, consequences, and the nature of the self following a negative event. If individuals attribute negative events to stable (i.e., lasting a long time) and global (i.e., affecting many areas of life) causes, then hopeless depression may be more likely to develop. In addition, in this theory, the perceived consequences also play a role in mediating the relation between negative events and hopeless depression. If an event is perceived as having consequences that are important, unchangeable, and affecting many different areas of life, then hopeless depression may develop. For example, if an individual who failed an exam perceives this as the end of his academic career, he may be more likely to get depressed. Moreover, individuals may be more likely to be depressed if they infer negative characteristics about

themselves following a negative event. For example, in a situation in which a student fails an exam, if he assumes that he is not smart enough for school or perceives himself as worthless, he may become depressed. In sum, in this theory, this attributional style, whereby individuals attribute the causes of negative events to global and stable factors and make negative inferences about the self, may increase feelings of hopelessness when negative events occur.

Hopelessness theory (Abramson et al., 1989) and the cognitive theory proposed by Beck (1967) overlap to a certain degree. Both theories suggest that individuals who are more prone to depression have a tendency to interpret events in a more negative manner. These individuals are more likely to perceive the causes of the events as more global, rather than situational. In addition, they may be more likely to make negative inferences about themselves and about their future. Both theories suggest a diathesis stress model for depression, whereby cognitive factors predispose individuals to depression in the face of negative life events. Diathesis stress models of depression suggest that the diathesis (i.e., predisposition) increases the rate of depression given major stressful events. In contrast to these cognitive diathesis stress models of depression, Monroe and Simons (1991) suggested that some individuals are more predisposed to experience depression following a major stressful event, but that predisposition also increases their chances of experiencing those major stressful events (e.g., divorce, loss of employment, loss of a loved one, or severe health problems; Monroe & Hadjiyannakis, 2002). In other words, the diathesis not only increases the risk of depression itself following a major stressful event, but also the occurrence of such events. For example, an individual who is predisposed to be depressed from social rejection may act in ways that

would eventually lead to rejection, by needing more reassurance from close peers and a significant other. One candidate for this predisposition for depression is neuroticism.

Neuroticism is linked to many anxiety and mood disorders, and affects a wide range of life outcomes, namely the predisposition to experience major negative life events (such as divorce, loss of employment, and severe health problems). As such, neuroticism may be a very important factor when looking at depression.

Neuroticism

Neuroticism is a personality characteristic that refers to people's propensity to experience negative emotions and it affects a wide range of domains and experiences.

Neuroticism is very stable across the lifespan in terms of relative rank order; this means that individuals who score higher on neuroticism remain higher on the neuroticism scale than those who score lower (Roberts & DelVecchio, 2000). It is also highly heritable, with 40-60% of the variability in neuroticism scores being due to genetic factors (Lahey, 2009; Widiger, 2009). However, neuroticism, as a personality characteristic, is more related to genetic factors in younger individuals than in older individuals (Lahey, 2009).

In other words, life experiences play a larger role in the level of neuroticism of older individuals than of younger individuals, because older individuals have had more life experiences. Individuals with high neuroticism tend to experience more negative emotions, such as anxiety, anger, and guilt, thereby showing more emotional instability (Widiger, 2009). Prominent behavioral aspects of neuroticism include hostility (e.g., mistrust of others, cynicism, resentment, and devaluation of others), aggression (i.e., harmful actions towards others), and impulsivity (Widiger, 2009).

Neuroticism has also been linked to poorer self-representation. Individuals with high neuroticism scores tend to be more self-critical (i.e., having negative evaluations of themselves; Judge, Erez, & Bono, 1998; Watson, Clark, & Harkness, 1994). It is therefore not surprising that individuals with higher neuroticism also have lower self-esteem (Judge et al., 1998; Watson, Suls, & Haig, 2002).

Neuroticism and Depression

Individuals with higher neuroticism scores tend to be more depressed (Malouff, Thorsteinsson, & Schutte, 2005). Furthermore, they are at higher risk for anxiety disorders. Individuals with high neuroticism are also at greater risk for other psychiatric disorders, namely schizophrenia, panic disorders, and somatoform disorders (i.e., medically unexplained physical symptoms; Khan, Jacobson, Gardner, Prescott, & Kendler, 2005; Malouff et al., 2005). They also have more eating disorders and substance abuse disorders (Khan et al., 2005; Malouff et al., 2005). In addition, neuroticism is linked to higher comorbidity among different mental disorders (Khan et al., 2005). Individuals who have both an anxiety and a mood disorder have significantly higher scores on neuroticism than individuals with only one of these disorders (Weinstock & Whisman, 2006). Nevertheless, individuals with either a mood or an anxiety disorder have higher neuroticism scores than individuals without any disorder.

Although neuroticism and depression are often highly correlated, they are clearly different constructs. Whereas neuroticism is a stable personality trait across the lifespan, depression occurs in episodes, lasting for months or years, followed by remission. The majority of individuals who suffer from depressive episodes recover within the first year (Gotlib & Hammen, 2009). Only approximately 10 percent of individuals who suffer

from a depressive episode do not recover within the first 5 years of its onset. Both depression and neuroticism are characterized by a propensity for negative emotions, but the negative affect in depression is more intense and pervasive. In addition, depression is usually accompanied by behavioral and emotional deficits that are not present in neuroticism (such as anhedonia and changes in appetite and sleep). As such, depression and neuroticism are not the same constructs. Nevertheless, higher neuroticism may predispose individuals to experience depressive episodes.

There are many pathways through which neuroticism may be linked to depression and other mental disorders. One of these pathways is a genetic predisposition. The same genetic factors involved in neuroticism may be involved in many mental disorders. This is perhaps why in twin studies, one third to two thirds of the genetic variance in many mental disorders is shared with neuroticism, in terms of the distribution of these disorders in the population (Hettema, Neale, Myers, Prescott, & Kendler, 2006). Research has identified some of the genetic predisposition for neuroticism and depression. The serotonergic system, which regulates the level of serotonin in the brain, has been implicated with neuroticism. In humans, the 5-HTTLPR gene has two different forms, a short and a long form. Given that individuals possess two alleles, they may inherit a combination of two short alleles of the 5-HTTLPR gene, two long alleles, or one long and one short allele. Different genetic studies have found that individuals having a short allele of the 5-HTTLPR gene are more likely to have higher neuroticism scores than individuals possessing two long alleles (Schinka, Busch, & Robichaux-Keene, 2004; Sen, Burmeister, & Ghosh, 2004). The presence of the short allele of this 5-HTTLPR gene is also associated with a higher risk for depression following stressful life events (Caspi et

al., 2003; Lotrich & Pollock, 2004). As such, neuroticism and depression may have similar genetic roots. Moreover, possessing a short 5-HTTLPR allele has also been implicated in higher alcohol consumption (Munafo, Lingford-Hughes, Johnstone, & Walton, 2005). It is therefore not surprising that individuals with higher neuroticism scores tend to have more alcohol use disorders (Khan et al., 2005; Malouff et al., 2005).

Another pathway through which neuroticism may impact the occurrence of depressive disorder may be through self-criticism. Individuals with higher neuroticism scores are more self-critical, in that they have more negative evaluations of themselves (Judge et al., 1998; Watson et al., 1994). It has previously been shown that greater self-criticism is linked to a greater occurrence and severity of depression (Dunkley, Sanislow, Grilo, & McGlashan, 2009; Regev, Shahar, & Lipsitz, 2012; Tang, Zhou, Liao, & Zhu, 2011).

Another pathway from neuroticism to depressive disorder may be through negative life events. Individuals with higher neuroticism scores experience more negative life events (Kandler, Bleidorn, Reimann, Angleitner, & Spinath, 2012; Magnus, Diener, Fujita, & Pavot, 1993), such as divorce, serious illness, and loss of employment, which may, in turn, bring them at a higher risk of developing a depressive disorder. These findings are in line with Monroe and Simons' (1991) diathesis stress model, which suggested that the diathesis may not only predispose individuals to experience depression following a major stressful event, but also to experience more of these negative events (Monroe & Hadjiyannakis, 2002; Monroe & Simons, 1991). Such a predisposition may include higher neuroticism.

In sum, neuroticism and depression may be connected through many different pathways. For one, neuroticism and depression have similar genetic predispositions. Second, individuals with higher neuroticism scores may be more likely to experience depression because of greater self-criticism. Third, these individuals also experience more negative life events, which precipitate depression.

Social Rank and Evolutionary Theories of Depression

There are many evolutionary theories of depression that may partially account for the link between depression and social status, namely the Involuntary Defeat Strategy (IDS), Resource Allocation theory, and Incentive Disengagement theory. The IDS theory was proposed by Sloman, Gilbert, and Hasey (2003). It is a theory of depression based on social phenomena. The IDS is triggered in social situations in which the individual perceives being defeated. In order to minimize social and physical damage, this strategy promotes submission or flight, and reduces confrontation. Individuals experience feelings of defeat, inferiority, negative affect, and loss of self-esteem. Depending on the situation, these feelings enable them to either adopt subordinate behavior or to escape the situation, which will minimize further losses or prevent further damage and punishment. In order for the IDS to be turned off and depressive symptoms to disappear, the individual must escape the situation, accept his defeat, or get help dealing with the situation. For example, an individual who feels controlled by a significant other and who cannot either escape the relationship or end the control may be more likely to become depressed. In that case, the IDS may become chronic and may manifest itself as depression.

The IDS may turn into depression when the person cannot concentrate their efforts in another pursuit. Depression may occur because of external events (such as the

person is still controlled by the significant other after the dissolution of the relationship) or internal events (e.g., the person ruminating on his past relationship). In such situations, the IDS may not turn off and may turn into depression. Another example is in the context of a loss of employment. The IDS may not turn off if an individual fails to find another job, or ruminates on the failure to sustain the previous employment. In some cases, the IDS may also be affected by changes in social rank or chronically low social rank. For example, an individual who finds a less lucrative or less prestigious employment after losing his job may be more likely to be depressed.

The IDS theory of depression suggests that depression is a social phenomenon, triggered by social defeat, failure, or inability to achieve a desirable social standing. It posits that depression may occur if the individual fails to accept his or her defeat or escape a negative situation. In other words, accepting defeat or escaping unwanted situations provides individuals with an opportunity to concentrate their efforts on other pursuits or goals. The IDS theory of depression may partially account for the link between subjective status and depression. When individuals experience a loss of status, loss of employment, or are unable to achieve a desirable social position, they may perceive their status as low and be more susceptible to depression. If they remain in their low social position, either by not being able to achieve a more desirable position, or by not being able to change their perception of it, they may have higher rates of depression than individuals who do not perceive their status as low. This may explain why lower subjective status is associated with higher rates of depression.

The IDS theory is similar to the Resource Allocation theory, proposed by Nesse (2000), which suggests that low moods and depression are evolutionarily adaptive. In the

Resource Allocation theory, depression permits individuals to disengage from pursuits that are dangerous or not profitable and to allocate their efforts and resources to endeavors that will yield benefits. For example, an individual applying to a managerial position who cannot find employment may benefit from disengaging from that goal and concentrating his efforts into getting hired for a lower position. These actions would increase his likelihood of finding employment. In addition, the Resource Allocation theory posits that depression prevents individuals from acting in situations when doing so would be more costly to them. Unlike the IDS theory, the Resource Allocation theory does not directly relate subjective status to depression.

The IDS is also very similar to the Incentive Disengagement theory, proposed by Klinger (1975), which suggests that depression is part of a cycle that enables individuals to disengage from goals too difficult or impossible to achieve. When an individual is pursuing a goal and encounters obstacles to its achievement, he or she is first frustrated and tries harder to succeed. However, when such attempts fail, the person then becomes aggressive. Depression follows aggression and permits individuals to disengage from the goal. This is evident through feelings of apathy and loss of pleasure. Usually, depression is followed by recovery if other meaningful goals can be found and successes can be experienced by the person. The Incentive Disengagement theory is very similar to the Resource Allocation theory, in that they both state that depression is necessary in order to abandon unprofitable pursuits, thereby enabling individuals to concentrate their efforts on other pursuits. Nevertheless, the Incentive Disengagement theory does not directly relate subjective status to depression.

The IDS theory is very similar to both the Incentive Disengagement theory and the Resource Allocation theory. All three theories propose that depression permits individuals to disengage from failed pursuits or negative situations, and reduces the risk of more loss or harm. Both the IDS and Incentive Disengagement theory suggest that in order for individuals not to experience depression following defeat or failure, individuals must escape the situation and concentrate their efforts on other endeavors. If individuals fail to do so, by remaining in their negative situation, or ruminating on their failure, and not finding other pursuits to concentrate on, they will experience depression. In contrast to the Resource Allocation and Incentive Disengagement theories, the IDS theory proposes that an individual can accept defeat in order to avoid depression. Finally, although these theories are very similar at the core, the IDS states that social failure can create depression if it is not accepted or escaped, while the other two speak more generally of goals and endeavors. As such, the IDS theory of depression relates subjective status to depression, whereby a drop in subjective status may lead to depression.

An alternative explanation for the link between subjective status and depression may be the influence of neuroticism on both subjective status and depression. Individuals with higher neuroticism may experience lower subjective status and higher rates of depression. That may be due to the fact that individuals with higher neuroticism are more likely to have lower objective SES, fewer accomplishments, less social support, and a wide range of other negative social outcomes.

Neuroticism and Subjective Status

People who are higher on neuroticism may have lower subjective status. There may be a number of processes that make individuals with higher neuroticism situate themselves lower on the subjective status ladder. Some of these processes may be based on psychosocial factors (i.e., damaging social comparisons, exaggerated perception of failure, and lower status in groups), while the others are based on economic (i.e., lower objective SES) and health (i.e., poorer health) factors. Some of these factors may be more evident for older individuals as opposed to younger adults, such as differences in health and SES, because the effects of neuroticism may be cumulative throughout the lifetime. In other words, the effects of neuroticism on health and SES may become greater with time. The processes through which higher neuroticism may be linked to lower subjective status are examined in the following paragraphs.

The first process through which higher neuroticism may be related to lower subjective status is through damaging social comparison. Individuals with higher neuroticism scores tend to engage in more damaging social comparison. In a study of cancer patients, VanderZee, Buunk, and Sanderman (1996) found that individuals with higher neuroticism scores expressed a greater need for social comparison, in that they expressed a greater need for affiliation to others similar to themselves and a greater need to seek information about others. In addition, when it came to assessing their own health in relation to the health of others, individuals with higher neuroticism scores were more likely to compare themselves to people who were better off relative to individuals with lower neuroticism scores. Finally, when individuals with higher neuroticism scores made social comparisons to individuals who were better or worse off they tended to have more

negative evaluations of their own health. They also tended to experience greater negative emotional responses in relation to these comparisons relative to individuals with lower neuroticism scores. The study was conducted with cancer patients with a mean age of 58.4 years. Damaging social comparison may also be prominent in younger individuals with higher neuroticism scores.

In addition to damaging social comparisons, higher neuroticism may be related to lower subjective status through negative self-evaluations. Gilbert and Allan (1994) found that neuroticism was positively related to negative evaluations of oneself compared to others on different dimensions, such as likeability, social standing, competence, group belonging, and level of openness. Individuals who had more negative evaluations of themselves when they compared themselves to others, were more likely to display submissive behavior, as assessed through self-reports. In sum, neuroticism may be related to subjective status through damaging social comparison and negative self-evaluations.

The second process through which neuroticism may be related to subjective status is through the exaggerated perception of failure. Sturman and Mongrain (2008) found that compared to individuals with lower neuroticism scores, individuals with higher neuroticism scores who participated in sports competitions were more likely to feel a great sense of loss after losing a sports game. This great sense of loss was exaggerated in that it not only applied to the sport game, but was also generalized to their life. An example of a question meant to measure this sense of loss was "I feel that I have lost important battles in life" (Sturman & Mongrain, 2008). Individuals with lower neuroticism scores were not as likely to exaggerate their loss and extrapolate it to their

lives. As such, individuals with higher neuroticism scores may have lower subjective status because they have an exaggerated perception of their failures.

In addition to having an exaggerated perception of failure, individuals with higher neuroticism may have lower subjective status because they feel less competent and successful in their lives. Sturman (2011) found a strong correlation between neuroticism and a higher order construct, which he named involuntary subordination, derived through exploratory factor analysis. In that study, involuntary subordination was a combination of statements referring to a sense of loss and lack of success in life (e.g., "I feel that I have not made it in life"; Sturman, 2011), the perception of the frequency of one's own submissive behaviors, and the degree to which one feels trapped in situations that one wants to escape (e.g., "I am in a situation I feel trapped in"; Sturman, 2011). The measure also included social comparison, which seemed to reflect the degree to which participants compared themselves to others in terms of attractiveness, social rank, and group belonging (i.e., how much they fit into a group). The higher order construct that Sturman (2011) labeled involuntary subordination predicted depressive symptoms. In sum, individuals with higher neuroticism scores tend to have an exaggerated perception of their failures, a factor which may lower their subjective status.

The third process through which neuroticism may be related to subjective status is through lower status in groups. Individuals with higher neuroticism scores tend to have lower status in groups. Specifically, Anderson, John, Keltner, and Kring (2001) found that men with higher neuroticism scores had lower status in groups, as rated by their peers, but it was not the case for women. A potential explanation may be that men with higher neuroticism are more socially disadvantaged when displaying negative emotions

compared to women with higher neuroticism (Anderson et al., 2001). Whereas women displaying negative emotions may be comforted, men displaying such emotions may be seen as less masculine and may lose status in groups. Gender norms dictate that men cannot display fear, depression, or guilt. Those who display negative emotions are seen as less 'manly'. Although the expression of negative emotions may not be desirable in both genders, it does not have such a large impact on the status of women compared to men. In addition, negative emotions associated with higher neuroticism, such as fear, shame, and embarrassment, may impede on the attainment of higher status (Anderson et al., 2001). These emotions may prevent individuals from acting in an assertive manner. In fact, individuals with higher neuroticism scores behave more submissively than individuals with lower neuroticism scores, as is apparent in their self-reports regarding their own behaviors (Gilbert & Allan, 1994). They also tend to have more negative evaluations of themselves compared to others on different dimensions (Gilbert & Allan, 1994). Their increased submissive behavior and negative self-evaluations when comparing themselves to others, may, in turn, contribute in lowering their status in groups and may decrease their subjective status. In summary, individuals with higher neuroticism scores are more likely to make damaging social comparisons, evaluate themselves in a negative way, perceive their failures as having large consequences, and have lower status in groups (specifically men), factors which may lower their subjective status.

The fourth process through which individuals with higher neuroticism scores may have lower subjective status is through lower objective SES. Individuals with higher neuroticism scores have lower occupational attainment and lower incomes (Judge, Higgins, Thoresen, & Barrick, 1999; Roberts, Caspi, & Moffitt, 2003). Although these

socio-economic disadvantages are more visible for older adults, they are nonetheless present for individuals in early and middle adulthood but to a lower degree. Individuals with higher neuroticism scores also experience lower job satisfaction (Judge, Heller, & Mount, 2002), which may ultimately have an impact on their occupational attainment and ability to maintain their job. In fact, individuals with higher neuroticism scores are more likely to experience job loss (Magnus et al., 1993).

Neuroticism may also be related to performance at work through negative affect. In a meta-analysis on work performance and negative affect, Kaplan, Bradley, Luchman, and Haynes (2009) found that individuals who experienced more negative affect had a higher incidence of work-related injuries, counter-productive work behaviors, and withdrawal behaviors at work. These relations were especially strong when assessed through self-report measures and supervisor ratings compared to objective measures (such as number of sales). Given that negative affect is an important emotional component of neuroticism, it would be reasonable to assume that individuals with higher neuroticism scores would also exhibit these work-related behaviors and have work-related injuries. In sum, individuals with higher neuroticism scores may have lower subjective status because of lower objective SES.

The fifth process through which individuals with higher neuroticism scores may have lower subjective status is through poorer self-rated health. Individuals with higher neuroticism scores are more likely to report poor health, to have more somatic complaints, and to experience more catastrophic thoughts about their symptoms (Lahey, 2009; Löckenhoff, Terracciano, Ferrucci, & Costa, 2012; Okun & George, 1984; Vassend, Røysamb, & Nielsen, 2012). Poor perceived health in individuals with higher neuroticism

scores may reduce their subjective status, because individuals with poor perceived health may feel less effective, less desirable, and less able to perform. Given that most of the variance in subjective status is not explained through objective SES factors, it may be partially explained through perceived and actual health. Although most research on neuroticism and self-rated health was conducted with older individuals, it may be reasonable to assume that neuroticism may also affect how younger individuals perceive their health. In fact, Page and colleagues (2009) found that self-rated health in adolescents was related to many psychological factors. Although they did not measure neuroticism specifically, it seems likely that neuroticism may also affect young adults' perception of their health. However, the effects of neuroticism on self-rated health may be more prominent in older adults, because older individuals are more likely to have actual health problems than younger individuals.

Poor self-rated health of individuals with higher neuroticism scores may reflect their poorer objective health. Individuals with higher neuroticism scores have a higher risk of atopic eczema, asthma, cardiovascular disease, diabetes, and irritable bowel syndrome (Lahey, 2009). Individuals with higher neuroticism scores also have a higher rate of mortality in old age (Lahey, 2009; Wilson, Mendes de Leon, Bienias, Evans, & Bennett, 2004). In addition, when diagnosed with cardiovascular disease, individuals with higher neuroticism scores are less likely to survive (Shipley, Weiss, Der, Taylor, & Deary, 2007). Declines in health occur more often in older adults and elderly individuals, so differences in objective health may also be more visible during that time frame.

Given that individuals with higher neuroticism scores experience poorer objective and self-rated health, it may lead them to experience lower subjective status. In fact, in a

longitudinal study of older individuals, Alfonsi (2011) found that self-reported illness (as assessed through a self-report measure, which looked at the presence and severity of 69 different physical illnesses) experienced by elderly individuals, was associated with their lower subjective status. When assessed at different times, individuals who experienced a decrease in objective health subsequently experienced a decrease in subjective status. Alfonsi (2011) also found that poorer objective health (which was measured by the number of medical interventions received in a year through the public health insurance of Quebec) was negatively associated with the change in subjective status in the following year, even after controlling for neuroticism. In other words, individuals who had more medical interventions had lower subjective status the following year.

In sum, individuals with higher neuroticism scores may have lower subjective status because they tend to make more damaging social comparisons and to have more negative self-evaluations, to react more negatively to loss in social competition, and to have lower status in groups. In addition, they also have lower objective SES, in terms of income and occupational attainment. If subjective status is partially based on objective SES, individuals with higher neuroticism scores may have lower subjective status. Moreover, individuals with higher neuroticism scores have poorer self-rated and objective health, both factors which may lead these individuals to have lower subjective status. Lower SES and poorer health are factors that may be especially apparent for older individuals. As noted above, in addition to these factors, individuals with higher neuroticism scores are more self-critical, which may also contribute to a lower subjective status.

While subjective status has been found to predict depressive symptoms, most studies on subjective status and depressive symptoms did not include neuroticism as a potential mediator. The current study will address this issue and attempt to clarify the relation between subjective status, depression, and neuroticism.

Neuroticism and Negative Affect

Individuals usually experience negative affect in response to a threatening or unpleasant situation (Watson, Wiese, Vaidya, & Tellegen, 1999). Negative affect may include emotions such as fear, guilt, irritation, shame, and distress. Watson and colleagues (1999) argued that negative affect is a core component of the behavioral system that regulates withdrawal behaviors in situations of threat. Daily affective experience can be characterized in terms of different levels of positive and negative affect. Although intense positive and negative affect rarely occur together, everyday experiences of positive and negative affect are not mutually exclusive (Diener & Iran-Nejad, 1986). In other words, individuals can experience low to moderate levels of both negative and positive affect simultaneously. In fact, positive and negative affect are not correlated; they are orthogonal (i.e., statistically independent; Watson et al., 1999).

In looking at the relation between subjective status and health, some authors used negative affect as a control variable (Adler et al., 2000; Kraus et al., 2013; Operario et al., 2004). Participants reported on their acute negative affect at the same time as they completed measures of subjective status and health. The relation between negative affect and the other variables was controlled for when examining the relation between subjective status and health. The rationale behind using negative affect as a control variable is that it may influence the relation between subjective status and health, by

affecting people's ratings on both of these measures. This rationale is supported by the evidence that negative affect correlates with both subjective status and health, specifically self-rated health (Adler et al., 2000; Operario et al., 2004). Individuals who experience more negative affect have poorer perceptions of their subjective status and health.

In order to assess the relation among negative affect, subjective status, and self-rated health, Kraus and colleagues (2013) examined whether self-reported chronic negative affect mediates the relation between subjective status and self-rated health. They found that individuals with lower subjective status had lower self-rated health, but that the relation was reduced when negative affect was considered, even though the relation between subjective status and self-rated health remained statistically significant. In addition, they argued that there was a statistically significant indirect effect of subjective status on self-rated health through negative affect. Based on their findings, the authors concluded that the effects of subjective status on self-rated health were largely independent of negative affect.

Taking negative affect into account may be useful in that it gives a better understanding of the relation between subjective status and health, but it may also be insufficient. It is well known that neuroticism is characterized by a high propensity for acute negative affect (Wang, Shi, & Li, 2009; Widiger, 2009). Individuals who are higher on neuroticism tend to experience more negative emotions, such as anger, anxiety, and guilt, and are more likely to be depressed (Malouff et al., 2005; Widiger, 2009). Although acute negative affect may tap into the broad construct of neuroticism, it does not cover all the nuances of neuroticism. Neuroticism is a core personality characteristic that has a wide range of effects on health, well-being, and socio-economic status. These effects

cannot be explained merely through acute negative affect. For example, as mentioned previously, neuroticism is linked to poorer objective SES, which may not be easily explained only through negative affect. Objective SES influences subjective status. As such, negative affect may not be a sufficient control variable when looking at the relations between subjective status and well-being.

Hypotheses

In the present research, the relations among subjective status, objective SES, depression, neuroticism, and negative affect were examined in a sample of retired individuals. The first set of expectations concerned the correlations between subjective and objective status markers. Given prior research, it was expected that individuals with lower subjective status would have lower objective SES. Moreover, it was expected that individuals with lower education would have had lower salaries and held occupations of lower prestige during their working years. In other words, the objective SES markers were all expected to correlate with each other.

The second set of expectations concerned the relation of objective and subjective status to depression. It was expected that individuals with lower objective SES would have more symptoms of depression and that individuals with lower subjective status would have more symptoms of depression, and that this would be true above and beyond the contribution of objective SES markers as predictors of depression.

The third set of expectations concerned neuroticism and its relation to depression and to objective SES. Given prior research on neuroticism, it was expected that individuals with higher neuroticism scores would have more depressive symptoms and would have lower objective SES. The above expectations correspond to well-established

findings in prior research. In addition, hypotheses were formulated for more novel relations.

The first hypothesis was that individuals higher on neuroticism would have lower subjective status. The second hypothesis was that people's subjective status would not be related to their depressive symptoms when neuroticism is taken into account. In other words, people with lower subjective status would not report more symptoms of depression when their neuroticism scores are taken into account.

As noted above, researchers have used negative affect as a control variable when examining the relation between subjective status and health. Because negative affect only represents the emotional component of the broad characteristic of neuroticism, it is arguably not a sufficient proxy for neuroticism. As such, the third hypothesis was that subjective status would predict depression when negative affect is included as a predictor. In other words, individuals with lower subjective status would have more symptoms of depression, even when their acute negative affect is taken into account.

Method

Participants

Participants were retirees who participated in a large longitudinal study looking at life adjustment after retirement. They were recruited through associations of retirees and newspaper ads. In order to participate in the longitudinal study, participants had to speak either French or English, not work more than 10 hours per week at the time of the study, and had to have worked full time for a minimum of 20 years. Out of the original sample of 433 recruited retirees, 371 retirees completed annual assessments for three consecutive years.

Measures

The Center for Epidemiological Studies Depression Scale (CES-D; Radloff, 1977). Depressive symptoms were assessed using the CES-D, which is a 20-item questionnaire. Individuals respond to each item on a 4-point scale. The items are statements referring to different symptoms of depression, which can be categorized into depressed affect, positive affect, somatic and retarded activity, and an interpersonal factor (Gotlib & Hammen, 2009). Each item is rated on its frequency of occurrence in the past week. The scale ranges from 0 (*rarely or none of the time – less than 1 day*) to 3 (*most or all of the time – 5-7 days*). The scores on the CES-D scale range from 0 to 60, with higher scores indicating more depressive symptoms.

The scale was designed to assess depressive symptoms in the general population, and not as a diagnostic tool. It has previously served in epidemiological studies and was shown to have good reliability and validity in various populations (Gotlib & Hammen, 2009). It has good internal consistency, with alpha coefficients ranging from .85 in the general population to .90 in a clinically depressed population (Radloff, 1977). Given that the scale is meant to measure current depressive symptoms, which are expected to change over time, and was designed to be highly sensitive to changes in depressive symptoms following life events, test-retest reliability is not expected to be high. As such, it is not surprising that test-retest reliability drops with time and ranges from .45 to .70 (Radloff, 1977).

In the normative study conducted by Radloff (1977), the author also concluded that the scale had good discriminant validity, in that the scale was highly positively

correlated with other measures of depression and highly negatively correlated with measures of positive affect.

In the current sample, internal consistency ranged from .87 to .88 (Cronbach's alpha) for the full scale and from .25 to .27 for the mean inter-item correlation, measured at three different times with one year intervals. In general for this type of measure, mean inter-item correlations are not expected to be high. Given that items refer to different types of affect and behavior (such as Depressed Affect, Positive Affect, Somatic and Retarded Activity, and an Interpersonal factor) and that not all of these are present at the same time in the same individuals, inter-item correlations are not expected to be high. In the current sample, test-retest reliability ranged from .69 to .70 for one year intervals, which is considered acceptable for test-retest reliability.

The NEO Five Factor Inventory (NEO-FFI; Costa & McCrae, 1992). Neuroticism was assessed using the NEO-FFI, which is a short version of the Revised NEO Personality Inventory. It is a 60-item questionnaire, with each item rated on a 5-point scale, ranging from *strongly disagree* (1) to *strongly agree* (5). Each item on the NEO-FFI is a descriptive statement (e.g., "Sometimes I feel completely worthless"). The NEO-FFI is meant to measure five different personality domains: neuroticism, extroversion, agreeableness, conscientiousness, and openness to experience. Only neuroticism is of interest for the current study. Average scores for neuroticism for each participant could range from 1 to 5.

The NEO-FFI was shown to have good test-retest reliability in a community sample, with reliability coefficients above .73 for a 30-month interval (Murray, Rawlings, Allen, & Trinder, 2003). The NEO-FFI was also found to have good discriminant and

convergent validity in a large sample of Air Force trainees (Zeiger, 1996). These findings suggest that the NEO-FFI is a valid measure to use even in a highly homogenous group.

In the current sample, test-retest reliability for mean neuroticism scores over a 2-year interval was good ($r = .76$). Internal consistency for the present sample ranged from .87 to .88 (Cronbach's alpha) for the full scale and from .34 to .36 for the mean inter-item correlation, measured at two different times with a two year interval.

The MacArthur Scale of Subjective Social Status (Adler et al., 2000). Subjective status was assessed using the MacArthur Scale of Subjective Social Status. The MacArthur Scale of Subjective Social Status is a questionnaire in which there is a 10 rung ladder presented vertically on the page. The instructions indicate that it is a social ladder. People at the top of the ladder have the most money, are the most educated, and have the best jobs, whereas the people at the bottom of the ladder have the least money, the least education, and the worst jobs. Respondents indicate with an X where they stand on that social ladder in relation to other people in society. Instructions for the MacArthur Scale of Subjective Social Status were slightly modified for the present study. Because participants were retirees, they were asked to refer to the job from which they retired when making judgments about their own place in the social ladder.

Test-retest reliability for subjective status was found to decrease with time. In a sample of adolescents, Goodman and colleagues (2001) found that the subjective status scale had a two-month test-retest reliability coefficient of .73. In a community sample, the subjective status scale was found to have a six-month test-retest reliability coefficient of .62 (Operario et al., 2004). Most research on subjective status is cross sectional, so test-retest reliability is not reported. In the current sample, one-year interval test-retest

reliability coefficients ranged from .57 to .62, and the two-year interval test-retest reliability coefficient was similar, with a value of .65. As such, the test-retest reliability in the current sample is relatively low, and below the usual cutoff of .70.

The Positive and Negative Affect Scale (PANAS; Watson, Clark, & Tellegen, 1988). Acute negative affect was assessed using the Positive and Negative Affect Scale (PANAS). The PANAS is a measure of acute negative and positive affect and it consists of 20 items. Each item is a word that describes either positive or negative feelings or emotions (e.g., "Distressed", "Inspired"). Participants are asked to rate each item in terms of the extent that they experienced feeling that way in the past few weeks on a 5-point scale ranging from *very slightly or not at all* (1) to *extremely* (5). In the current study, only the negative affect subscale is of interest. Scores on the negative affect subscale can range from 10 to 50.

The PANAS has been found to have both good internal validity for the negative affect subscale and good construct validity (Crawford & Henry, 2004; Watson et al., 1988).

Because the PANAS is meant to measure current negative and positive affect, which may vary at different times, test-retest reliability is not expected to be high over long periods of time. In the current sample, test-retest reliability for total negative affect scores ranged from .58 to .64 over a 1-year interval, and was .50 over a 2-year interval. Internal consistency for the present sample ranged from .65 to .77 (Cronbach's alpha) for the full scale and from .14 to .23 for the mean inter-item correlation, measured at a one year interval.

Demographics Questionnaire. Participants completed a demographic questionnaire, which assessed their age, gender, and objective SES. Objective SES was comprised of education (measured by the number of years completed in the educational system), salary at the time of retirement, and occupation before retirement. Each participant's occupation was assigned a value using the Standard International Occupational Prestige Scale (SIOPS; Ganzeboom & Treiman, 1996; Treiman, 1977). The SIOPS is internationally recognized as a measure of occupational prestige, in which each occupation is assigned a value ranging from 13 for a garbage collector to 78 for a medical doctor. Participants' SIOPS scores were used in the analyses as a measure of their occupational prestige.

Procedure

Individuals who were interested in participating in the study first contacted researchers through phone or email. If they met the inclusion criteria, they were scheduled to come to the laboratory at Concordia University to complete a questionnaire booklet, in either French or English. There were no more than six participants completing the questionnaires at the same time. The booklet contained the different measures and took approximately 3 hours to complete. The booklet also contained other measures, which are not relevant to the current study. After completing the questionnaires, participants were invited to return for further testing with a one year interval for 3 more years. During their first testing session (at Time 0), participants completed the demographic questionnaire and the NEO-FFI. During their second testing session (at Time 1), which was a year later, participants completed the MacArthur Subjective Social Status scale, the PANAS, and the CES-D. During their third testing session (at Time 2),

which was two years after the first session, participants again completed the MacArthur Subjective Social Status scale, the NEO-FFI, the PANAS, and the CES-D. Participants were paid \$50 after each testing session.

Results

The assumptions and hypotheses concerned cross-sectional relations between subjective status, neuroticism, and depression. Given that the measures of subjective status, depression, neuroticism, and negative affect were each administered twice, it was possible to test the assumptions and hypotheses twice for each set of measures. See Table 1 for more information on when each measure was assessed. Demographic information (i.e., age and gender) and objective SES (i.e., education, occupation, and salary before retirement) were assessed at Time 0 and are included in all the correlational and regression analyses. For the first set of analyses, depression at Time 1 was examined with subjective status and negative affect at Time 1 and neuroticism at Time 0. For the second set of analyses, depression at Time 2 was examined with subjective status, neuroticism, and negative affect at Time 2.

Means and standard deviations is presented in Table 1. For means and standard deviations, subscripts T0, T1, and T2 refer to the time when each measure was administered, namely Time 0, Time 1, and Time 2, respectively. At the beginning of the study, the mean age of participants was 59.20 ($SD = 5.21$). Participants had an average of 15.14 ($SD = 2.60$) years of education and were earning on average \$62,861.86 ($SD = 30,797.30$) before their retirement. At both Time 1 and Time 2, participants' subjective status was relatively high ($M_{T1} = 7.02$, $SD_{T1} = 1.42$; $M_{T2} = 7.09$, $SD_{T2} = 1.42$). Participants' average negative affect and depression scores were low (negative affect: M_{T1}

= 15.78, $SD_{T1} = 5.60$; $M_{T2} = 16.22$, $SD_{T2} = 5.70$; depression: $M_{T1} = 7.46$, $SD_{T1} = 7.18$; $M_{T2} = 7.59$, $SD_{T2} = 7.39$). For each administration of the NEO-FFI, neuroticism scores were computed as an average for each participant, with a mean of 2.30 and 2.26 at Time 0 and 2 respectively ($SD_{T0} = .65$, $SD_{T2} = .60$).

Preliminary analyses showed that there were no statistically significant mean differences between the scores of depression ($SE = .29$, $t(372) = -.44$, $p = .66$), subjective status ($SE = .07$, $t(363) = -.53$, $p = .60$), and negative affect ($SE = .27$, $t(371) = -1.46$, $p = .15$) between Time 1 and 2. There were no statistically significant mean differences between the scores of neuroticism between Time 0 and Time 2 ($SE = .02$, $t(369) = .73$, $p = .47$).

Before conducting correlational and regression analyses, data was examined for assumptions of normality, namely for skewness and kurtosis. Extreme outliers (i.e., scores three standard deviations above or below the mean) were converted to the highest (or lowest) possible score within three standard deviations of that distribution. For salary, there were some very high values ($n = 3$) that were changed to the value of \$150 000, which was three standard deviations above the mean. The mean for subjective status at Time 1 and 2 was 7, with a standard deviation of 1.42. As such, scores below 3 ($n_{T1} = 2$, $n_{T2} = 4$) were converted to 3. For negative affect, there were some high scores ($n_{T1} = 7$, $n_{T2} = 6$), which were converted to the highest score below three standard deviations above the mean, which was the value of 32 at Time 1 and 33 at Time 2. Finally, there were some very high scores of depression ($n_{T1} = 5$, $n_{T2} = 9$), which were converted to the value of 29 at Time 1 and 2, as this was the highest score below three standard deviations above the mean. Two participants at Time 1 and two participants at Time 2 had

simultaneously high scores (above 3 standard deviations above the mean) on both the depression scale and the negative affect scale.

Correlations between all the measures are presented in Tables 2 and 3. Table 2 presents the first set of correlations; it contains correlations for depression, subjective status, and acute negative affect at Time 1 and neuroticism at Time 0. Table 3 presents the second set of correlations: it contains correlations for depression, subjective status, acute negative affect, and neuroticism at Time 2. The objective SES factors, namely education level, occupational prestige, and salary earned before retirement, were assessed Time 0 and the correlations of those factors are also presented in Tables 2 and 3. In describing correlational results, the subscripts 1 and 2 refer to the first and second set of correlations, respectively.

The first set of expectations was that subjective status will be correlated with objective SES factors and that objective SES factors will be intercorrelated with each other. In line with expectations, participants with higher subjective status completed more years of education ($r_1(383) = .27, r_2(367) = .20, ps < .001$), held occupations of greater prestige ($r_1(383) = .20, r_2(367) = .27, ps < .001$), and had higher salaries ($r_1(308) = .40, r_2(295) = .37, ps < .001$). The three objective SES factors were positively correlated, with correlations ranging from .39 ($p < .001$) for salary and education to .47 ($p < .001$) for education and occupational prestige. In other words, participants with higher education had held occupations of greater prestige and had higher salaries.

Another set of expectations was that subjective status and objective SES will be negatively correlated with depression. In line with expectations, participants with lower subjective status had more symptoms of depression ($r_1(383) = -.26, r_2(367) = -.31, ps$

< .001). In addition, participants with lower objective SES also had more symptoms of depression. In the first set of correlational analyses, participants with less education ($r_1(390) = -.12, p = .022$), who held occupations of lower prestige ($r_1(390) = -.12, p = .02$), and who had lower salaries ($r_1(314) = -.17, p = .009$) had more symptoms of depression. The same results emerged in the second set of correlational analyses, except that the relation between education and depression was non-significant (occupational prestige: $r_2(370) = -.11, p = .033$; salary: $r_2(299) = -.19, p = .01$; education: $r_2(370) = -.07, p = .221$).

Another expectation was that neuroticism will be positively correlated with depression. As expected, participants with higher neuroticism scores had more depressive symptoms ($r_1(391) = .48, r_2(368) = .65, ps < .001$).

An additional expectation was that neuroticism will be negatively correlated with objective SES. This expectation was confirmed. In the first set of correlational analyses, participants with higher neuroticism scores had completed fewer years of education ($r_1(390) = -.12, p = .021$), had held occupations of lower prestige ($r_1(390) = -.17, p = .001$), and their salaries had been lower ($r_1(339) = -.31, p < .001$). The same results emerged in the second set of correlational analyses, except that the relation between neuroticism and education was non-significant (occupational prestige: $r_2(368) = -.11, p = .032$; salary: $r_2(296) = -.24, p < .001$; education: $r_2(368) = -.05, p = .313$).

The first hypothesis was that people with higher neuroticism scores also have lower subjective status. This hypothesis was confirmed ($r_1(383) = -.30, r_2(367) = -.29, ps < .001$).

A series of linear regressions was conducted to test the assumptions and hypotheses. In each of the regressions predicting depressive symptoms, age and gender were predictors, in addition to objective SES factors, namely education, occupational prestige, and income before retirement. This set of predictors was part of all the regression analyses. Additional predictors were included to test different hypotheses.

Is subjective status a significant predictor of depressive symptoms, above and beyond objective SES?

Two parallel sets of regression analyses were conducted to assess the relation between subjective status and depression. The first linear regression predicted depression at Time 1. The predictors were objective SES (education, occupational prestige, and salary before retirement) and demographic variables (age and gender) at Time 0, and subjective status at Time 1. The second linear regression predicted depression at Time 2. The predictors were the same objective SES and demographic variables assessed at Time 0 and subjective status at Time 2. In describing results, subscripts T1 and T2 refer to the first and second set of regression analyses which predicted depression at Time 1 and depression at Time 2, respectively.

The assumption was that individuals with lower subjective status have more symptoms of depression, above and beyond their objective SES. Overall, the model explained a statistically significant portion of the variance in depression in both sets of analyses ($R^2_{T1} = .09$, $F_{T1}(6, 303) = 4.90$, $p < .001$; $R^2_{T2} = .09$, $F_{T2}(6, 290) = 4.54$, $p < .001$). As can be seen in Tables 4 and 5, subjective status was indeed a statistically significant predictor of depressive symptoms ($b_{T1} = -.15$, $p = .017$; $b_{T2} = -.18$, $p = .003$), above and beyond the influence of objective SES factors. Although the zero order

correlations between objective SES factors and depression were statistically significant (see Tables 2 and 3), objective SES factors were not statistically significant predictors of depression when subjective status was part of the analysis.

Age also had an effect on people's depressive symptoms, whereby older participants reported more depressive symptoms ($b_{T1} = .18, p = .003; b_{T2} = .13, p = .026$). No other factors were statistically significant predictors of depressive symptoms in these regression analyses.

Is subjective social status a significant predictor of depressive symptoms when neuroticism is also taken into account?

The second hypothesis was that people's depressive symptoms are not related to their subjective status when neuroticism is taken into account. Two parallel sets of regression analyses were conducted to assess the relation between neuroticism, depression, and subjective status. The first linear regression predicted depression at Time 1. The predictors were objective SES (i.e., education, occupational prestige, and salary before retirement), demographic variables (i.e., age and gender), subjective status at Time 1, and neuroticism at Time 0. The second linear regression predicted depression at Time 2. The predictors were the same objective SES and demographic variables, as well as subjective status at Time 2, and neuroticism at Time 2.

Overall, the model explained a much larger portion of the variance in depression with neuroticism as a predictor, for both sets of analyses ($R^2_{T1} = .25, F_{T1}(7, 302) = 13.99, p < .001; R^2_{T2} = .40, F_{T2}(7, 289) = 27.94, p < .001$). As shown in Tables 6 and 7, participants who had higher neuroticism scores had more depressive symptoms ($b_{T1} = .42, b_{T2} = .59, ps < .001$). In line with the second hypothesis, subjective status was not a

statistically significant predictor of depression when neuroticism was taken into account ($b_{T1} = -.07, p = .238; b_{T2} = -.08, p = .125$). Other than neuroticism, the only other statistically significant predictor of depression was age ($b_{T1} = .20, p < .001; b_{T2} = .16, p = .001$).

In the context of examining whether subjective status is related to depressive symptoms, is a measure of acute negative affect a good proxy for neuroticism?

The third hypothesis was that acute negative affect is not a good proxy for neuroticism when looking at the relation between subjective status and depression. In other words, when negative affect is taken into account, subjective status continues to play a significant role in predicting depression. This hypothesis was tested in a two different ways. First, the relation between subjective status, depression, and negative affect was analyzed. Second, the relation between subjective status, depression, negative affect, and neuroticism was analyzed.

Two parallel sets of regressions analyses were conducted to assess the relation between subjective status, depression, and negative affect. In the first linear regression, the outcome variable was depression at Time 1. The predictors were objective SES (i.e., education, occupational prestige, and salary before retirement), demographic variables (i.e., age and gender), subjective status at Time 1, and negative affect at Time 1. In the second linear regression, the outcome variable was depression at Time 2. The predictors were the same objective SES and demographic variables, as well as subjective status and negative affect at Time 2.

Overall, this model explained a statistically significant portion of the variance in depression in both sets of analyses ($R^2_{T1} = .38, F_{T1}(7, 302) = 26.91, p < .001; R^2_{T2} = .39,$

$F_{T2}(7, 288) = 26.48, p < .001$). As shown in Tables 8 and 9, negative affect was a statistically significant predictor of depressive symptoms ($b_{T1} = .55, b_{T2} = .56, ps < .001$). It is not surprising because individuals who experience depressive symptoms also experience negative affect. In addition, the third hypothesis was supported; even when negative affect was taken into account, subjective status continued to play at least a marginally significant role in depressive symptoms ($b_{T1} = -.09, p = .082; b_{T2} = -.11, p = .034$). In addition to subjective status and negative affect, age was also a statistically significant predictor of depression ($b_{T1} = .14, p = .004; b_{T2} = .12, p = .015$). Surprisingly, gender was a statistically significant predictor of depression at Time 1, but not at Time 2 ($b_{T1} = -.12, p = .014; b_{T2} = -.05, p = .343$), whereby men had more symptoms of depression.

To assess the relation between subjective status, depression, negative affect, and neuroticism, two parallel sets of regression analyses were conducted. In the first linear regression, the outcome variable was depression at Time 1. The predictors were objective SES (i.e., education, occupational prestige, and salary before retirement), demographic variables (i.e., age and gender), subjective status and negative affect at Time 1, and neuroticism at Time 0. In the second linear regression, the outcome variable was depression at Time 2. The predictors were the same objective SES and demographic variables, as well as subjective status, negative affect, and neuroticism at Time 2.

Overall, the model explained a statistically significant portion of the variance in depression in both sets of analyses, slightly more than the models with either neuroticism or negative affect alone ($R^2_{T1} = .43, F_{T1}(8, 301) = 28.82, p < .001; R^2_{T2} = .49, F_{T2}(8, 287) = 34.31, p < .001$). Results for each predictor's individual contribution are shown in

Tables 10 and 11. When both acute negative affect and neuroticism were considered together, both were statistically significant predictors of depressive symptoms. In other words, participants with higher neuroticism scores had more symptoms of depression ($b_{T1} = .25$, $b_{T2} = .39$, $p_s < .001$), above and beyond their acute negative affect. These findings add support to the third hypothesis, which states that negative affect is not a sufficient proxy for neuroticism. Negative affect and neuroticism explain unique variances in depression. Age also remained a statistically significant predictor of depression ($b_{T1} = .16$, $p = .001$; $b_{T2} = .14$, $p = .002$). In addition, gender was a statistically significant predictor of depression at Time 1, but not at Time 2 ($b_{T1} = -.13$, $p = .007$; $b_{T2} = -.04$, $p = .385$).

Discussion

Previous research that looked at the relation between subjective status and health had found that subjective status affected health, above the effects of objective SES (such as education, occupation, and income). Table 12 presents detailed information on studies that looked at the relation between subjective status and a psychosocial health outcome. It is important to note that many authors who included a psychosocial factor into their models saw a decrease in the predictive power of subjective status on psychosocial health. For example, Franzini & Fernandez-Esquer (2006) saw a drastic decrease in the association between subjective status and mental health when they included psychosocial factors in the model, such as social support and trust. Similar decreases in the predictive power of subjective status on self-rated health were observed by Adler and colleagues (2000) and Lundberg and Kristenson (2008), when psychosocial factors were taken into account. As such, the current study aimed to assess whether a broad personality

characteristic, namely neuroticism, reduces the link between subjective status and health. The health outcome in this study was depression.

The reasoning behind using neuroticism as the third variable in the relation between subjective status and depression is in the impact that high neuroticism has on many aspects of life. As mentioned previously, neuroticism is a broad personality construct that is characterized by a propensity for negative emotions and maladaptive behaviors (such as aggression, hostility, and impulsivity; Widiger, 2009). Individuals with higher neuroticism are more likely to have mood and anxiety disorders, and to engage in substance abuse (Malouff et al., 2005). As such, it was expected that individuals with higher neuroticism will have more symptoms of depression in the current study. Higher neuroticism is also linked to poor self-representation and self-esteem (Judge et al., 1998; Watson et al., 1994; Watson et al., 2002). Individuals with higher neuroticism report poorer health (Lahey, 2009; Löckenhoff et al., 2012; Okun & George, 1984; Vassend et al., 2012), have lower SES (Judge et al., 1999; Roberts et al., 2003), experience more negative life events (Magnus et al., 1993; Kandler et al., 2012), and have poorer interactions with others, in that they behave more submissively and have lower status in groups (Anderson et al., 2001; Gilbert & Allan, 1994). As such, it was hypothesized that higher neuroticism is linked to lower subjective status and that when neuroticism is taken into account, individuals with lower subjective status do not have more symptoms of depression. Results from the current study supported this hypothesis.

Before assessing the effects of neuroticism on the relation between subjective status and depression, it was important to determine whether subjective status was a significant predictor of depression in the current sample, above and beyond the influence

of objective SES. As such, the relation between subjective status, objective SES, and depression was examined. In line with previous research, subjective status was indeed a statistically significant predictor of depression above the effects of objective SES factors. In addition, although the bivariate associations between objective SES factors and depression were statistically significant, objective SES factors were not statistically significant predictors of depression when subjective status was considered. These findings are in agreement with most of the research conducted to date.

Before examining the effects of neuroticism on the relation between subjective status and depression, the correlations of neuroticism with subjective status and with depression were analyzed. In line with expectations, higher neuroticism was indeed associated with more depressive symptoms. In addition, higher neuroticism was also associated with lower subjective status. Having established the bivariate association of neuroticism with subjective status and depression, it was then possible to look at the relation between subjective status, depression, and neuroticism. As hypothesized, when neuroticism was included in the analyses, subjective status did not predict depression. In other words, when individuals' neuroticism scores were taken into account, individuals with lower subjective status did not have more symptoms of depression. These results were observed for two different sets of data, collected at different times.

In light of the present findings, whereby subjective status had little influence on depression when neuroticism and objective SES factors were considered, the utility of a subjective status scale is bound to be questioned. As mentioned previously, subjective status only partially reflects objective socio-economic status. Most of the variance in subjective status is not accounted for by objective measures of economic status (Brown et

al., 2008; Singh-Manoux et al., 2003). Singh-Manoux and colleagues (2003), in their analysis of subjective status, included subjective measures of financial security and satisfaction with standard of living in predicting subjective status. Because they included these subjective measures, they found that 48% of the variance in subjective status was accounted for. However, these measures may also reflect psychosocial factors in addition to objective SES. As such, it is not possible to ascertain which psychosocial factors play a more important role in the determination of subjective status. It is possible that factors such as self-esteem, social support, perceived health, and probably a number of other factors influence how individuals perceive their status in society.

In addition to the fact that subjective status reflects other factors apart from objective SES, subjective status may be affected by the extent to which individuals value social status, which may further “bias” the results. For instance, an individual who is not very concerned with his status may not perceive himself at the bottom of the ladder, regardless of his actual objective SES. In contrast, an individual who is very concerned with his status, and unsatisfied with his present socio-economic situation, may perceive himself to be lower on the ladder. As a result, subjective status may reflect different factors in different individuals. So it may be difficult to determine the validity of such a measure. In addition, considering the fact that subjective status does not consistently have acceptable test-retest reliability (Kline, 2009), it is difficult to ascertain its usefulness in research settings. If one considers personality characteristics alongside objective SES factors, subjective status does not significantly contribute to the explained variance in health. It would be beneficial, in future research, to consider factors such as life

satisfaction, personality, and objective SES when looking at health, as it would provide a more complete and unambiguous picture of what influences health.

In the current study, individuals with higher neuroticism scores had more symptoms of depression. Two different sets of analyses were conducted to look at the influence of subjective status and neuroticism on depression. The first analysis included neuroticism scores from the first administration of the NEO-FFI and depression scores from the first administration of the CES-D, which was a year later. Essentially, in that analysis, individuals' neuroticism scores predicted their depression scores a year later. Although the association between neuroticism and depression was strong in the first analysis, it was even more so in the second analysis. The second analysis contained scores of neuroticism and depression assessed at the same time. This provides further evidence that neuroticism is highly linked to depression and should be taken into consideration when assessing this outcome measure. Most research discussed in this paper did not control for neuroticism when looking at depression or a related construct (such as negative affect or mood dysfunction). Not accounting for neuroticism when looking at depression may lead to specification error, which reduces the accuracy of the results.

The question is to what extent is personality, specifically neuroticism, malleable? The neurotic personality characteristic may be evolutionarily adaptive, in that it helps individuals be more conscious of possible threats (Denissen & Penke, 2008), but it is highly maladaptive in non-threatening situations. An individual born into an impoverished and hostile environment may benefit more from having higher levels of neuroticism than an individual born into a stable environment. As such, the level of

neuroticism present in individuals may be shaped not only by genetic predisposition, but also by early childhood experiences (McFarlane et al., 2005). For example, a child growing up in a dangerous environment may exhibit more neuroticism. However, if he or she moves to a more stable environment, levels of neuroticism may eventually decrease. This is evident by the moderate decrease of neuroticism in adulthood (Costa et al., 1986; Roberts & Mroczek, 2008). In addition, research shows that important life events affect the level of neuroticism. When individuals experience positive life events, such as marriage or job satisfaction, their level of neuroticism decreases (Roberts et al., 2003; Roberts and Chapman, 2000). In contrast, when individuals experience negative life events, such as divorce, long-term unemployment, or conflict, their neuroticism scores increase (Costa, Herbst, McCrae, & Siegler, 2000; Lucas, Clark, Georgelis, & Diener, 2004; Robins, Caspi, & Moffitt, 2000; Scollon & Diener, 2006). Although neuroticism may be affected by important life events, it is important to note that neuroticism also affects the type and frequency of such events. For example, some authors have found that individuals with higher neuroticism scores experience more negative life events following their assessment (Lüdtke, Roberts, Trautwein, & Nagy, 2011). As such, it is difficult to disentangle the influence of neuroticism on important life events and the influence of such events on neuroticism. Nevertheless, there are other ways in which neuroticism scores may be reduced. Neuroticism is potentially malleable through therapy. Cognitive-behavioral therapy has shown to decrease levels of neuroticism in individuals, as well as drug therapy with selective serotonin reuptake inhibitors (SSRIs; Glinski & Page, 2010; Tang et al, 2009). In summary, although neuroticism is a relatively stable

personality characteristic, it may nevertheless be diminished through life experiences and with the help of therapy.

The current research also showed that negative affect is not a good proxy for neuroticism when looking at health. Although a prominent feature of neuroticism is the propensity for negative affect, negative affect does not encompass all the different features of neuroticism, namely the personality characteristics. Most people will experience a certain degree of positive and negative affect on a daily basis. Negative affect may affect people's current perception of their health, but in its volatile state, it does not necessarily affect health in the long term. As such, both personality features and affective states may be necessary to disentangle the influence of each one on health.

Limitations

A potential limitation of this study is the age of participants. Although neuroticism is present even in adolescence, the full effects of neuroticism may not be visible until later in life. Given that younger individuals may not yet have a stable career and may still be in school, the full socio-economic effects of neuroticism may not be visible. In older adulthood, the differences between the individuals with high and low neuroticism may be more pronounced. Older individuals with higher neuroticism may have visibly lower economic status, less emotional support, and more health problems than individuals with lower neuroticism. In addition, they may have had more stressful life events. As a result, they may have more psychological problems, and they may be more depressed. Nevertheless, younger individuals with higher neuroticism may also have lower SES and more depression. These individuals may have lower school performance, may be more likely to lose a job, and may have less social support. These

factors could affect both their perceived health and their susceptibility for depression. So it may be beneficial to assess the role of neuroticism in depression and in the health of younger individuals.

Another possible limitation of this study is the generalizability of these results to other health outcomes. As noted previously, individuals with higher neuroticism have a greater risk of depression. Neuroticism eliminated the association between subjective status and depression. It is likely that, given the high comorbidity between neuroticism and other mental disorders, neuroticism would also reduce or even eliminate the effects of subjective status on psychological health. However, it remains to be seen whether similar results will be found in the relation between subjective status and physical health problems. Although the present findings cannot be generalized to physical health, it is important to note that one study found that neuroticism eliminated the relation between subjective status and global self-rated health (Alfonsi, 2011).

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Table 1

Means and Standard Deviations of Measures of Objective Socio-Economic Status, Subjective Status, Depression, Neuroticism, and Negative Affect, and Age.

Variable	Time 0			Time 1			Time 2		
	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>
Age	433	59.20	5.21						
Education	392	15.14	2.60						
Salary	341	62,861.86	30,797.30						
Occupational Prestige	392	53.38	8.28						
Subjective Status				385	7.02	1.42	369	7.09	1.42
Depression				393	7.46	7.18	373	7.59	7.39
Neuroticism	433	2.30	.65				370	2.26	.60
Negative Affect				393	15.78	5.60	372	16.22	5.70

Note. For each variable, excluding gender, higher numbers correspond to more of the construct (e.g., more years of education or higher subjective status). *n* = number of participants in the sample; *M* = mean; *SD* = standard deviation; Time 0, Time 1, and Time 2 have a year interval in between each assessment.

Table 2

Summary of Correlations Between Education, Occupational Prestige, Salary, and Neuroticism at Time Zero and Subjective Status, Depression, and Negative Affect at Time 1.

Measure	1	2	3	4	5	6	7
1. Education (T0)	-						
2. Occupational Prestige (T0)	.47**	-					
3. Salary (T0)	.39**	.40**	-				
4. Subjective Status (T1)	.27**	.20**	.40**	-			
5. Depression (T1)	-.12*	-.12*	-.17**	-.26**	-		
6. Neuroticism (T0)	-.12*	-.17**	-.31**	-.30**	.48**	-	
7. Negative Affect (T1)	-.10*	-.04	-.09	-.16**	.61**	.42**	-

Note. * $p < .05$. ** $p < .01$. $N = 393$. For some correlations, the sample size is lower due to missing values. For each variable, higher numbers correspond to more of the construct (e.g., more years of education or more depressive symptoms); T0 = Time zero; T1 = Time 1.

Table 3

Summary of Correlations Between Education, Occupational Prestige, and Salary at Time Zero and Subjective Status, Depression, Neuroticism, and Negative Affect at Time 2.

Measure	1	2	3	4	5	6	7
1. Education (T0)	-						
2. Occupational Prestige (T0)	.47**	-					
3. Salary (T0)	.39**	.40**	-				
4. Subjective Status (T2)	.20**	.27**	.37**	-			
5. Depression (T2)	-.07	-.11*	-.19**	-.31**	-		
6. Neuroticism (T2)	-.05	-.11*	-.24**	-.29**	.65**	-	
7. Negative Affect (T2)	-.12*	-.09	-.13*	-.21**	.64**	.60**	-

Note. * $p < .05$. ** $p < .01$. $N = 392$. For some correlations, the sample size is lower due to missing values. For each variable, higher numbers correspond to more of the construct (e.g., more years of education or more depressive symptoms); T0 = Time zero; T2 = Time 2.

Table 4

Linear Regression Analysis predicting Depression Scores at Time 1 with Demographic, Objective Socio-Economic Status, and Subjective Status Predictors.

Predictors	<i>B</i>	<i>SE</i>	Beta	<i>R</i> ²	<i>t</i>	<i>p</i>
Gender	-.920	.758	-.072		-1.214	.226
Age	.232	.077	.176		3.003	.003
Education	-.088	.168	-.035		-.527	.599
Salary	<.001	<.001	-.069		-.982	.327
Occupational Prestige	-.035	.051	-.044		-.673	.502
Subjective Status (T1)	-.687	.286	-.147		-2.400	.017
				.088		

Note. *N* = 310. For each variable, excluding gender, higher numbers correspond to more of the construct (e.g., more years of education or higher subjective status); T1 = Time 1.

Table 5

Linear Regression Analysis Predicting Depression Scores at Time 2 with Demographic, Objective Socio-Economic Status, and Subjective Status Predictors.

Predictors	<i>B</i>	<i>SE</i>	Beta	<i>R</i> ²	<i>t</i>	<i>p</i>
Gender	-.480	.790	-.037		-.607	.544
Age	.177	.079	.133		2.240	.026
Education	.025	.172	.010		.148	.883
Salary	<.001	<.001	-.090		-1.255	.210
Occupational Prestige	-.036	.055	-.044		-.653	.514
Subjective Status (T2)	-.945	.315	-.184		-3.001	.003
				.086		

Note. *N* = 297. For each variable, excluding gender, higher numbers correspond to more of the construct (e.g., more years of education or higher subjective status); T2 = Time 2.

Table 6

Linear Regression Analysis Predicting Depression Scores at Time 1 with Demographic, Objective Socio-Economic Status, Subjective Status, and Neuroticism Predictors.

Predictors	<i>B</i>	<i>SE</i>	Beta	<i>R</i> ²	<i>t</i>	<i>p</i>
Gender	-1.209	.692	-.094		-1.747	.082
Age	.264	.071	.200		3.738	<.001
Education	-.160	.153	-.063		-1.041	.299
Salary	<.001	<.001	.013		.202	.840
Occupational Prestige	-.008	.047	-.011		-.179	.858
Subjective Status (T1)	-.314	.265	-.067		-1.183	.238
Neuroticism (T0)	4.355	.551	.421		7.907	<.001
				.245		

Note. *N* = 310. For each variable, excluding gender, higher numbers correspond to more of the construct (e.g., more years of education or higher neuroticism); T1 = Time 1; T0 = Time zero.

Table 7

Linear Regression Analysis Predicting Depression Scores at Time 2 with Demographic, Objective Socio-Economic Status, Subjective Status, and Neuroticism Predictors.

Predictors	<i>B</i>	<i>SE</i>	Beta	<i>R</i> ²	<i>t</i>	<i>p</i>
Gender	-.413	.639	-.032		-.646	.519
Age	.215	.064	.162		3.349	.001
Education	-.108	.139	-.042		-.777	.438
Salary	<.001	<.001	.033		.554	.580
Occupational Prestige	-.030	.044	-.037		-.684	.494
Subjective Status (T2)	-.398	.259	-.078		-1.540	.125
Neuroticism (T2)	6.701	.540	.590		12.409	<.001
				.404		

Note. *N* = 297. For each variable, excluding gender, higher numbers correspond to more of the construct (e.g., more years of education or higher neuroticism); T2 = Time 2.

Table 8

Linear Regression Analysis Predicting Depression Scores at Time 1 with Demographic, Objective Socio-Economic Status, Subjective Status, and Negative Affect Predictors.

Predictors	<i>B</i>	<i>SE</i>	Beta	<i>R</i> ²	<i>t</i>	<i>p</i>
Gender	-1.553	.626	-.121		-2.480	.014
Age	.187	.064	.141		2.927	.004
Education	-.034	.138	-.014		-.247	.805
Salary	<.001	<.001	-.082		-1.404	.161
Occupational Prestige	-.030	.042	-.038		-.715	.475
Subjective Status (T1)	-.413	.237	-.088		-1.746	.082
Negative Affect (T1)	.670	.056	.552		12.041	<.001
				.384		

Note. *N* = 310. For each variable, excluding gender, higher numbers correspond to more of the construct (e.g., more years of education or more acute negative affect); T1 = Time 1.

Table 9

Linear Regression Analysis Predicting Depression Scores at Time 2 with Demographic, Objective Socio-Economic Status, Subjective Status, and Negative Affect Predictors.

Predictors	<i>B</i>	<i>SE</i>	Beta	<i>R</i> ²	<i>t</i>	<i>p</i>
Gender	-.614	.646	-.047		-.949	.343
Age	.159	.065	.119		2.449	.015
Education	.108	.141	.042		.769	.443
Salary	<.001	<.001	-.072		-1.233	.219
Occupational Prestige	-.022	.045	-.028		-.503	.616
Subjective Status (T2)	-.553	.260	-.108		-2.127	.034
Negative Affect (T2)	.689	.057	.564		12.034	<.001
				.392		

Note. *N* = 296. For each variable, excluding gender, higher numbers correspond to more of the construct (e.g., more years of education or more acute negative affect); T2 = Time 2.

Table 10

Linear Regression Analysis Predicting Depression Scores at Time 1 with Demographic, Objective Socio-Economic Status, Subjective Status, Negative Affect, and Neuroticism Predictors.

Predictors	<i>B</i>	<i>SE</i>	Beta	<i>R</i> ²	<i>t</i>	<i>p</i>
Gender	-1.632	.602	-.127		-2.712	.007
Age	.213	.061	.161		3.458	.001
Education	-.085	.133	-.034		-.638	.524
Salary	<.001	<.001	-.030		-.535	.593
Occupational Prestige	-.015	.041	-.019		-.374	.709
Subjective Status (T1)	-.230	.230	-.049		-1.001	.318
Negative Affect (T1)	.570	.057	.469		10.021	<.001
Neuroticism (T0)	2.611	.508	.253		5.135	<.001
				.434		

Note. *N* = 310. For each variable, excluding gender, higher numbers correspond to more of the construct (e.g., more years of education or higher neuroticism); T1 = Time 1; T0 = Time zero.

Table 11

Linear Regression Analysis Predicting Depression Scores at Time 2 with Demographic, Objective Socio-Economic Status, Subjective Status, Negative Affect, and Neuroticism Predictors.

Predictors	<i>B</i>	<i>SE</i>	Beta	<i>R</i> ²	<i>t</i>	<i>p</i>
Gender	-.517	.594	-.040		-.870	.385
Age	.190	.060	.142		3.171	.002
Education	-.010	.130	-.004		-.077	.939
Salary	<.001	<.001	.002		.035	.972
Occupational Prestige	-.023	.041	-.029		-.569	.570
Subjective Status (T2)	-.339	.241	-.066		-1.407	.160
Negative Affect (T2)	.437	.063	.358		6.968	<.001
Neuroticism (T2)	4.416	.597	.389		7.392	<.001
				.489		

Note. *N* = 296. For each variable, excluding gender, higher numbers correspond to more of the construct (e.g., more years of education or higher neuroticism); T2 = Time 2.

Table 12

Summary of Results from Studies Containing a Psychosocial Outcome Variable and a Subjective Status Predictor.

Reference	Type of sample	Participant age	Sample size	Subjective status variables	Psychosocial outcome variables	Raw relation btwn SS & outcome	Relation btwn SS & outcome, accounting for control variables	Control variables	Relation btwn SS & control variables
Adler, Epel, Castellazzo, & Ickovics (2000)	White women in the US	Mean: 37.4 (range: 30-46)	153	SS-S	Health	$r = .18^*$	$b = .10$	Objective SES (composite of 3 SES factors)	$r = .40^*$
					Pessimism	$r = -.37^*$	$b = -.23^*$	Household income	$r = .22^*$
					Perceived control over life	$r = .26^*$	$b = .23^*$	Education	$r = .32^*$
					Active coping	$r = .24^*$	$b = .18^*$	Occupation	$r = .11$
					Passive coping	$r = -.33^*$	$b = -.17^*$	Negative affect	$r = -.31^*$
					Chronic stress	$r = -.36^*$	$b = -.24^*$		
				Stress	$r = -.25^*$	$b = -.06$			
Adler, Singh-Manoux, Schwartz, Stewart, Matthews, & Marmot (2008)	Community sample of adults in the US	Range: 33-48	3632	SS-US (9 rungs)	Depression (dichotomized: present in scores 16 and above)	$OR = 9.10^*(BW)$ $OR = 31.3^*(WW)$ $OR = 6.24^*(BM)$ $OR = 6.91^*(WM)$	$OR = 21.31^*(BW)$ $OR = 43.3^*(WW)$ $OR = 5.89^*(BM)$ $OR = 23.56^*(WM)$	Age	n/a
					Health (dichotomized: good/poor)	$OR = 21.31^*(BW)$ $OR = 43.3^*(WW)$ $OR = 5.89^*(BM)$ $OR = 23.56^*(WM)$	$OR = 5.82^*(BW)$ $OR = 11.05^*(WW)$ $OR = 3.28^*(BM)$ $OR = 4.74^*(WM)$	Education	$r = .19^*(BW)$ $r = .32^*(WW)$ $r = .18^*(BM)$ $r = .40^*(WM)$
					Analyses were conducted for each group separately: BW = Black women, WW = White women, BM = Black men, WM = White men	Higher odds of having depression in the lowest SS group relative to the highest SS group. Higher odds of having good health in the highest SS group relative to the lowest SS group.	Income	$r = .19^*(BW)$ $r = .51^*(WW)$ $r = .23^*(BM)$ $r = .53^*(WM)$	
				Higher odds of having depression in the lowest SS group relative to the highest SS group, controlling only for age. Higher odds of					

Reference	Type of sample	Participant age	Sample size	Subjective status variables	Psychosocial outcome variables	Raw relation btwn SS & outcome	Relation btwn SS & outcome, accounting for control variables	Control variables	Relation btwn SS & control variables
						having good health in the highest SS group relative to the lowest SS group, controlling only for age		Occupation	$r = .15^*(BW)$ $r = .28^*(WW)$ $r = .11^*(BM)$ $r = .35^*(WM)$
Ayalon (2008)	Sample of Long-term care staff members in Israel	Mean: 40.4	122	SS-C	Emotional exhaustion	$r = -.46^*$	$b = -2.83^*$	Education	$r = .11$
					Depersonalization of patients	$r = -.26^*$	$b = -2.99^*$	Professional affiliation	n/a
					Sense of accomplishment	$r = .32^*$	$b = 2.64^*$	Staff-to-patient ratio	$r = -.26^*$
					Positive aspects of caregiving	$r = .55^*$	$b = 5.88^*$	Daily hours of work	$r = -.02$
								Years worked with older adults	$r = .18$
Castro, Gee, & Takeuchi (2009)	Asian Americans in the US	Mean: 25-34	2095	SS-US	Physical health (dichotomized: poor/good)	$r = .27$	$OR = 1.22^*$	Age, gender, ethnicity, marital status, region of residence, nativity, years living in US	n/a
				SS-C			Higher odds of good self-rated health with higher SS.	Education	$r = .34$ (polychoric correlation)
				(average of both SS measures in all analyses)				Income	$r = .24$ (polychoric correlation)
								Occupation	n/a
								Satisfaction with economic opportunity	$r = .34$ (Spearman's)

Reference	Type of sample	Participant age	Sample size	Subjective status variables	Psychosocial outcome variables	Raw relation btwn SS & outcome	Relation btwn SS & outcome, accounting for control variables	Control variables	Relation btwn SS & control variables
								Financial strain	correlation) $r = -.31$
Demakakos, Nazroo, Breeze, & Marmot (2008)	Older adults from England	Median: 65 (M) & 66 (F)	7433	SS-S	Health (dichotomized: poor/good)	$OR = .73*(M)$ $OR = .78*(W)$	$OR = .83*(M)$ $OR = .90*(W)$	Age	n/a
					Depression (dichotomized: present in 4 or more symptoms)	$OR = .72*(M)$ $OR = .76*(F)$	$OR = .76*(M)$ $OR = .82*(W)$	Marital status	n/a
						Lower odds of poor health or 4 or more depressive symptoms with increasing SS, when adjusted for age and marital status.	Lower odds of having poor self-rated health or 4 or more depressive symptoms with higher SS.	Education	n/a
								Occupational class	n/a
								Wealth	n/a
Dennis, Webb, Lorch, Mahew, Bloch, & Culhane (2012)	Pregnant women in the US	Mean: 23.9 (range: 13-43)	1322	SS-S (divided into low, medium, high for analyses)	Physical health (dichotomized good/poor)	$\gamma = .25*(pregnancy)$ $\gamma = .18*(postpartum)$	$OR = 2.53*(pregnancy)$ $OR = 2.04*(postpartum)$	Education	n/a
					Emotional health (dichotomized good/poor)	$\gamma = .22*(pregnancy)$ $\gamma = .26*(postpartum)$	$OR = 2.32*(pregnancy)$ $OR = 2.08*(postpartum)$	Income	n/a
					Depression (dichotomized: present in scores 23 or above)	$\gamma = -.33*$	$OR = 1.95*$	Public assistance (yes/no)	n/a
					Stress (dichotomized: high stress)	$\gamma = -.24*$	$OR = 3.24*$	Homelessness (experienced/never)	n/a

Reference	Type of sample	Participant age	Sample size	Subjective status variables	Psychosocial outcome variables	Raw relation btwn SS & outcome	Relation btwn SS & outcome, accounting for control variables	Control variables	Relation btwn SS & control variables
					present in scores 28 or above)			experienced)	
						γ values refer to the association of SS with good physical and emotional health, and the presence of depression and high stress.	Higher odds of having good physical and emotional health in the high SS group relative to the low SS group. Higher odds of the presence of depression and high stress in the low SS group relative to the high SS group.	Basic utility (shut off/never shut off)	n/a
Finkelstein, Kubzansky, & Goodman (2006)	High school students in the US	Range: 12-17	838	SS-FS	Smoking	n/a	OR = 1.06 (SS-FS) OR = .75*(SS-SC)	Age	n/a
				SS-SC ⁺			Lower odds of smoking with higher school subjective status.	Gender	n/a
								Ethnicity	n/a
								School grade level	n/a
								Parental education level	$r = .22^*(SS-FS)$ $r = .15^*(SS-SC)$
								Stress	$r = -.22^*(SS-FS)$ $r = -.24^*(SS-SC)$
Franzini & Fernandez-Esquer (2006)	Mexican Americans from low income neighbourhoods in the US	Mean: 39.2 (range: 18-93)	1745	SS-OP ⁺	Physical health	$r = .11^*$	$b = .04$	Age, gender, nativity (US/foreign born)	n/a
					Emotional health	$r = .13^*$	$b = .04$	Education	$r = .26^*$ (Spearman's correlation)
					Health (dichotomized:	$r = .16^*$ (Spearman's correlation)	OR = 1.08*	Income	$r = .25^*$ (Spearman's

Reference	Type of sample	Participant age	Sample size	Subjective status variables	Psychosocial outcome variables	Raw relation btwn SS & outcome	Relation btwn SS & outcome, accounting for control variables	Control variables	Relation btwn SS & control variables
					poor/good)		Higher odds of having good or better health with a one unit (rung) increase in SS.	Work status, religiosity, social support, personal opportunity, trust, victimization, perceived racism	correlation)
Friestad (2010)	Male prisoners in Norway	Mean: 24-44	204	SS-S ⁺ (recoded into 3 categories)	Health (dichotomized: bad/better than bad)	$r = .15^*$	$OR = .89$	Age	$r = .01$
					Psychological distress (dichotomized: present/not present)	$r = -.28^*$	$OR = .46^*$	Education	$r = .18^*$
					Drug intake (non-user/user)	$r = -.14^*$	$OR = .97$	Income	$r = .24^*$
					(Spearman's correlations)		Lower odds of having psychological distress in high SS group relative to low SS group.	Occupation	$r = .08$
								Childhood SES	$r = -.16^*$
									(Spearman's correlations)
Ghaed & Gallo (2007)	Women in the US	Mean: 41	92	SS-US	Depression	$b = -.68(SS-US)$ $b = -1.21 (SS-C)$	$b = -.43(SS-US)$ $b = -1.18 (SS-C)$	Age	n/a
				SS-C ⁺	Trait anxiety	$b = -.54(SS-US)$ $b = -1.08^*(SS-C)$	$b = -.59 (SS-US)$ $b = -1.02^*(SS-C)$	Ethnicity	n/a
					Stress	$b = -.13 (SS-US)$ $b = -.63^*(SS-C)$	$b = -.12(SS-US)$ $b = -.58^*(SS-C)$	Objective SES (education, household income, job title)	n/a
					Pessimism	$b = -.28(SS-US)$ $b = -1.02^*(SS-C)$	$b = -.18(SS-US)$ $b = -.98^*(SS-C)$		

Reference	Type of sample	Participant age	Sample size	Subjective status variables	Psychosocial outcome variables	Raw relation btwn SS & outcome	Relation btwn SS & outcome, accounting for control variables	Control variables	Relation btwn SS & control variables
					Social support	$b = -.04(SS-US)$ $b = .98(SS-C)$ Beta coefficients refer to the association between SS (US and community) and the outcome variables, controlling for age and ethnicity.	$b = -.04(SS-US)$ $b = .84(SS-C)$		
Goodin, McGuire, & Smith (2010)	College students in the US	Mean:19.9 (range: 18-38)	149	SS-S	Sleep disturbance	$b = -.02 (W)$ $b = -.51*(B)$ $b = -.37*(A)$ Standardized beta coefficient in simple regression for each separate ethnic group: W = White American B = Black American A = Asian American	$b = -.02$	Gender Ethnicity Occupational status (working or not) Body mass index Depression Stress	n/a n/a n/a n/a n/a
Goodman, Huang, Schafer-Kalkhoff, Adler (2007)	High school students in the US	Mean: 15.1 (range: 12.2 - 19.3)	1179	SS-US	Health (dichotomized: poor/good)	$r = .23*$ (Spearman's correlation)	$B = .24*$ (year 1) $B = .34*$ (year 4)	Age Gender (0=female,1=male) Ethnicity (0=Black, 1=White)	$r = -.07*$ $r = -.11$ (Spearman's correlation) $r = -.05$ (Spearman's)

Reference	Type of sample	Participant age	Sample size	Subjective status variables	Psychosocial outcome variables	Raw relation btwn SS & outcome	Relation btwn SS & outcome, accounting for control variables	Control variables	Relation btwn SS & control variables
								Parental education level	n/a
								Household income	r = .01*
Gong, Xu, Takeuchi (2011)	Asian Americans in the US	Mean: 42.3 (range: 18-95)	1570	SS-US ⁺	Physical health (dichotomized: poor/good)	r = .26* (SS-US) r = .24*(SS-C)	OR = .84*(SS-US) OR = .87*(SS-C)	Age, gender, ethnicity, marital status, English proficiency, years living in US	n/a
				SS-C ⁺	Emotional health (dichotomized: poor/good)	r = .24* (SS-US) r = .24*(SS-C)	OR = .84*(SS-US) OR = .81*(SS-C)	Education	r = .36* (SS-US) r = .31*(SS-C)
					Psychological distress	r = -.10* (SS-US) r = -.09*(SS-C)	b = -.28*(SS-US) b = -.30*(SS-C)	Household income	r = .32* (SS-US) r = .26*(SS-C)
						(Spearman's correlations)	Lower odds of having good physical and emotional health with lower SS.	Occupation	n/a
								Social desirability	n/a
									(Spearman's correlations)
Hamad, Fernald, Karlan, & Zinman (2007)	Individuals in South Africa	Mean: 30-39	240	SS-S	Depression	B = -1.09*(SS-S) B = -2.02*(SS-C)	B = .02 (SS-S) B = -1.82*(SS-C)	Age, gender, ethnicity, province, number of people in household	n/a
				SS-C	Stress	B = -.54*(SS-S) B = -.78*(SS-C)	B = -.39 (SS-S) B = -.62*(SS-C)		
						Unstandardized beta coefficient in single predictor linear regression.			

Reference	Type of sample	Participant age	Sample size	Subjective status variables	Psychosocial outcome variables	Raw relation btwn SS & outcome	Relation btwn SS & outcome, accounting for control variables	Control variables	Relation btwn SS & control variables	
Hu, Adler, Goldman, Weinstein, & Seeman (2005)	Older individuals in Taiwan	Mean: 67.7	991	SS-S	Health (dichotomized: poor/good)	$r = .20^*$	$OR = 1.19^*$	Age, sex, ethnicity, marital status	n/a	
					Activities of Daily Living (ADL)	$r = .05$	$OR = .92$	Education, income, socioeconomic index, working status	n/a	
					Instrumental ADL	$r = .17^*$	$OR = 1.22^*$	Smoking, alcohol use, depression score	n/a	
					Physical activity	$r = .17^*$	$OR = 1.21^*$			
						(Spearman's correlations)	Odds of having better self-rated health and better instrumental ADL and physical activity with every 1 quartile increase on SS.			
John, de Castro, Martin, Duran, & Takeuchi (2012)	Sample of Asian Americans in the US	Mean: 39	1193	SS-US	Physical health (dichotomized poor/good)	$OR = .71^*(SS-US)$ $OR = .80^*(SS-C)$ $OR = .89^*(SS-CO)$	$OR = .87 (SS-US)$ $OR = .96 (SS-C)$ $OR = 1.00 (SS-CO)$	Age, gender, ethnicity, marital status, nativity (US born or immigrant), English language proficiency	n/a	
					SS-C	Emotional health (dichotomized poor/good)	$OR = .71^*(SS-US)$ $OR = .76^*(SS-C)$ $OR = .89 (SS-CO)$	$OR = .93 (SS-US)$ $OR = .96 (SS-C)$ $OR = 1.00 (SS-CO)$	Education, occupational class	n/a
					SS-CO	Depression (dichotomized: present or not)	$OR = .75^*(SS-US)$ $OR = .74^*(SS-C)$ $OR = .90 (SS-CO)$	$OR = 1.11 (SS-US)$ $OR = .78 (SS-C)$ $OR = 1.08 (SS-CO)$	Health insurance	n/a
						Anxiety (dichotomized: present or not)	$OR = .85^*(SS-US)$ $OR = .83^*(SS-C)$ $OR = .91 (SS-CO)$	$OR = 1.10 (SS-US)$ $OR = .85 (SS-C)$ $OR = .99 (SS-CO)$	Discrimination, social support (family and friends)	n/a
						Lower odds of good self-rated physical and emotional health with lower subjective status, controlling for age and gender.	Lower odds of good self-rated physical and emotional health with lower subjective status. Lower odds of the presence of	Immigration stress (acculturation), years living in US	n/a	

Reference	Type of sample	Participant age	Sample size	Subjective status variables	Psychosocial outcome variables	Raw relation btwn SS & outcome	Relation btwn SS & outcome, accounting for control variables	Control variables	Relation btwn SS & control variables
						Lower odds of the presence of depression and anxiety with higher subjective status, controlling for age and gender.	depression and anxiety with higher subjective status.		
Karvonen & Rahkonen (2011)	Representative sample of 8th & 9th grade students in Finland	Mean: 15 (range 14-16)	1923	SS-FS	Health (dichotomized: average/better than average)	OR = 4.52*(M) OR = 4.10*(W)	OR = 2.36*(M) OR = 3.22*(W)	Parental education level	r = .21(M) r = .27(W)
					Psychological distress (dichotomized: present in 4 or more symptoms)	OR = 7.16*(M) OR = 2.64*(W)	OR = 5.93*(M) OR = 2.51*(W)	Parental employment status (higher numbers mean both parents are unemployed)	r = -.23(M) r = -.13(W)
					Health complaints (dichotomized: present in 4 or more health complaints)	OR = 3.20*(M) OR = 3.46*(W)	OR = 2.43 (M) OR = 3.56*(W)	School performance	r = .11(M) r = .13(W)
						Higher odds of good self-rated health in the highest relative to the lowest SS group. Higher odds of psychological distress and health complaints in the lowest relative to the highest SS group.	Higher odds of good self-rated health in the highest relative to the lowest SS group. Higher odds of psychological distress and health complaints in the lowest relative to the highest SS group.	Pocket money	r = .17(M) r = .14(W)
Kraus, Adler, & Chen (2013)	Adults in the US	Mean: 33.84 (range: 18-72)	300	SS-S	Health	r = .42*	b = .41*	Age	n/a
					Physical health	r = .17*	b = .25*	Gender	n/a
					Emotional health	r = .29*	b = .36*	Ethnicity	n/a

Reference	Type of sample	Participant age	Sample size	Subjective status variables	Psychosocial outcome variables	Raw relation btwn SS & outcome	Relation btwn SS & outcome, accounting for control variables	Control variables	Relation btwn SS & control variables
					Chronic negative affect	$r = -.21^*$	$b = -.28^*$	Income	n/a
					Depression	$r = -.36^*$	$b = -.42^*$	Education	n/a
								(1) Neutral vs. negative condition	n/a
								(2) Sad vs. shame condition	n/a
								Interaction SS x (1)	n/a
								Interaction SS x (2)	n/a
Leu, Yen, Gansky, Walton, Adler, & Takeuchi (2008)	Foreign-born Asian Americans	Mean: 44.86	1451	SS-US	Mood Dysfunction	$B = -.13^*$ (SS-US)	$B = -.31^*$ (SS-US)	Age, gender, marital status, ethnicity,	n/a
				SS-C ⁺		$B = -.10$ (SS-C)	$B = -.23^*$ (SS-C)	Education, income	n/a
						Unstandardized beta coefficients in LR predicting the presence of mood dysfunction with higher SS.	Unstandardized beta coefficients in LR predicting the presence of mood dysfunction with lower SS controlling for all control variables and the interaction term between SS and age of arrival into US.	Citizenship status, English proficiency, age at immigration	n/a
Lundberg & Kristenson (2008)	Older individuals from Sweden	Mean: 60 (range: 45-69)	795	SS-S ⁺	Health	$r = .25^*$ (partial correlation)	n/a	Age, gender	n/a
						Correlation between SS and self-rated health, controlling for age and sex.	$b = .16^*$	Perceived control	partial $r = .25^*$
							$b = .15^*$	Self-esteem	partial $r = .33^*$
							n/a	Optimism	partial $r = .06$

Reference	Type of sample	Participant age	Sample size	Subjective status variables	Psychosocial outcome variables	Raw relation btwn SS & outcome	Relation btwn SS & outcome, accounting for control variables	Control variables	Relation btwn SS & control variables
							$b = .22^*$	Cynicism	partial $r = -.17^*$
							$b = .23^*$	Shame	partial $r = -.15^*$
							$b = .14^*$	Depression	partial $r = -.30^*$
							$b = .16^*$	Hopelessness	partial $r = -.32^*$
							$b = .16^*$	Sense of coherence	partial $r = .28^*$
							$b = .20^*$	Trust	partial $r = .28^*$
							$b = .12^*$	Mastery	partial $r = .33^*$
							$b = .11^*$	Vital exhaustion	partial $r = -.29^*$
							All beta refer to the relation of SS to self-rated health when each of the psychosocial variable was added to the model in isolation (in addition to age and gender).		Partial correlations controlling for age and gender.
Operario, Adler, & Williams (2004)	National random sample of US adults	Mean: 45.5	1294	SS-US	Health	$r = .31^*$	$b = .17^*$	Age	$r = .06^*$
								Sex (male = 0, female = 1)	$r = -.07^*$
								Ethnicity (white = 0, non-white = 1)	$r = -.12^*$
								Education	$r = .37^*$
								Income	$r = .39^*$
								High blood pressure	$r = -.08^*$
								Heart attack/heart problems	$r = -.02$

Reference	Type of sample	Participant age	Sample size	Subjective status variables	Psychosocial outcome variables	Raw relation btwn SS & outcome	Relation btwn SS & outcome, accounting for control variables	Control variables	Relation btwn SS & control variables
								Negative affect	$r = -.31^*$
Ostrove, Adler, Kuppermann, & Washington (2000)	Ethnically diverse pregnant women in the US	Mean: 32.76	878	SS-US (9 rungs)	Health	$r = .37^* W$, $r = .31^* C$, $r = .24^* L$, $r = .19^* A$	$b = .31^* W$, $b = .29^* C$, $b = .14 L$, $b = .14 A$	Education	$r = .32^* W$ $r = .22^* C$ $r = .02 L$ $r = .02 A$
						Correlations and regression coefficients were computed for each ethnic group separately. W = White, C = Chinese, L = Latin, A = African		Household income	$r = .60^* W$ $r = .54^* C$ $r = .39^* L$ $r = .21^* A$
Reitzel, Mazas, Cofta-Woerpel, Li, Cao, Businelle, Cinciripini & Wetter (2010)	Adult smokers wanting to quit in the US	Mean: 41.2	341	SS-S	Depression	n/a	$B = -.97^*$	Age, gender, ethnicity, relationship status	n/a
					Stress	n/a	$B = -.07^*$	Education, income, employment status	n/a
					Positive affect	n/a	$B = 1.32^*$		
					Negative affect	n/a	$B = -1.80^*$		
					Smoking abstinence	n/a	$B = .21^*$ (1 week post quit) $B = .19^*$ (2 weeks post quit)		
Reitzel, Vidrine, Li, Mullen, Velasquez, Cinciripini, Cofta-Woerpel, Greisinger, & Wetter (2007)	Ex-smoking pregnant women in the US	Mean: 22.0 (range: 18-24)	105	SS-S	Depression	$r = -.12$	$t = -1.91$	Ethnicity	n/a
					Stress	$r = -.14$	$t = -1.82$	Education	n/a

Reference	Type of sample	Participant age	Sample size	Subjective status variables	Psychosocial outcome variables	Raw relation btwn SS & outcome	Relation btwn SS & outcome, accounting for control variables	Control variables	Relation btwn SS & control variables
					Positive affect	$r = .30^*$	$t = 3.49^*$	Income	n/a
					Negative affect	$r = -.19^*$	$t = -2.09^*$	Relationship status (in couple or not)	n/a
					Social support	$r = .32^*$	$t = 3.58^*$		
Sakurai, Kawakami, Yamaoka, Ishikawa, & Hashimoto (2010)	Nationally representative sample of adults in Japan	Range: 20-74	1195	SS-JS ⁺ (5 categories)	Psychological distress (dichotomized: present in more than 5 symptoms)	$OR = 2.61^*(M)$ $OR = 1.83 (W)$	$OR = 1.48 (M)$ $OR = 2.47^*(W)$	Age	n/a
						Higher odds of having psychological distress in the lowest SS group relative to the highest SS group.	Higher odds of having psychological distress in the lowest SS group relative to the highest SS group.	Marital status	n/a
								Education	$r = .23$
								Household income	$r = .48$
Sani, Magrin, Scignaro, & Mccollum (2010)	Prison guards in Italy	Mean: 33 (range: 22-53)	93	SS-PG ⁺	Psychological distress	$r = -.40^*$	$b = -.18$	In-group identification	$r = .65^*$
					Stress	$r = -.54^*$	$b = -.30^*$		
					Job satisfaction	$r = .45^*$	$b = .19$		
Sani, Magrin, Scignaro, & Mccollum (2010)	Individuals in Scotland	Mean: 34 (range: 18-83)	113	SS-FC ⁺	Depression	$r = -.27^*$	$b = -.15$	In-group identification (family belongingness)	$r = .43^*$
					Life satisfaction	$r = .45^*$	$b = .31^*$		
					Stress	$r = -.29^*$	$b = -.17$		

Reference	Type of sample	Participant age	Sample size	Subjective status variables	Psychosocial outcome variables	Raw relation btwn SS & outcome	Relation btwn SS & outcome, accounting for control variables	Control variables	Relation btwn SS & control variables
Singh-Manoux, Adler, & Marmot (2003)	Office workers in England	Range: 35-55	6981	SS-S	Health (dichotomized: poor/good)	OR = 4.16*(M) OR = 3.76*(W)	OR = 2.28*(M) OR = 3.37*(W)	Age	n/a
					Depression (dichotomized: present in 5 or more symptoms)	OR = 1.78*(M) OR = 2.65*(W)	OR = 1.48 (M) OR = 4.55*(W)	Personal income	r = .48*
						Higher odds of having good health in the highest relative to the lowest SS categories, controlling for age and life satisfaction. Higher odds of having depression in the lowest relative to the highest SS categories, controlling for age and life satisfaction.	Higher odds of having good health in the highest relative to the lowest SS categories. Higher odds of having depression in the lowest relative to the highest SS categories.	Education	r = .41*
								Employment grade	r = .60*
							Life satisfaction	r = .33*	
Singh-Manoux, Marmot, & Adler, (2005)	Office workers in England	Range: 35-55	5486	SS-S	Psychological distress	b = -.19*(M) b = -.18*(W)	b = -.21*(M) b = -.22*(W)	Age	n/a
					Health	b = .25*(M) b = .24*(W)	b = .24*(M) b = .21*(W)	Employment grade	n/a
					Standardized beta coefficients adjusted for age.				
Stewart, Dean, Gregorich, Brawarsky, & Haas (2007)	Pregnant women in the US	Mean: 29.6 (range: 18-47)	1809	SS-US	Health	n/a	B = .06*	Age, ethnicity, number of children	n/a
					Depression	n/a	B = -.17*	Mother's education	r = .45*W r = .40*A/P r = .27*L r = .25*A

Reference	Type of sample	Participant age	Sample size	Subjective status variables	Psychosocial outcome variables	Raw relation btwn SS & outcome	Relation btwn SS & outcome, accounting for control variables	Control variables	Relation btwn SS & control variables
								Income	$r = .53^*W$ $r = .49^*A/P$ $r = .37^*L$ $r = .24^*A$
								Public assistance	$r = -.24^*W$ $r = -.22^*A/P$ $r = -.19^*L$ $r = -.18^*A$
								Material deprivation	$r = -.24^*W$ $r = -.21^*A/P$ $r = -.22^*L$ $r = -.19^*A$
									W = White A/P = Asian / Pacific Islander L = Latin A = African
Subramanyam, Diez-Roux, Hickson, Sarpong, Sims, Taylor, Williams, & Wyatt (2012)	African American adults in the US	Mean: 55 (range:21-95)	1571	SS-US	Depression	$B = -1.68^*(M)$ (SS-US) $B = -1.59^*(W)$ (SS-US) $B = -1.45^*(M)$ (SS-C) $B = -1.66^*(W)$ (SS-C)	$B = -1.10^*(M)$ (SS-US) $B = -1.08^*(W)$ (SS-US) $B = -1.10^*(M)$ (SS-C) $B = -1.31^*(W)$ (SS-C)	Age	n/a
				SS-C ⁺	Stress	$B = .14$ (M) (SS-US) $B = .11$ (W) (SS-US) $B = -.18$ (M) (SS-C) $B = .10$ (W) (SS-C)	$B = .12$ (M) (SS-US) $B = .07$ (W) (SS-US) $B = -.18$ (M) (SS-C) $B = .18^*(W)$ (SS-C)	Education	(SS-US) $r = .16^*(M)$ $r = .10^*(W)$ (SS-C) $r = .05^*(M)$ $r = .01$ (W)
						Unstandardized beta coefficients, adjusted for age.		Income	(SS-US) $r = .17^*(M)$ $r = .16^*W$ (SS-C) $r = .11^*(M)$ $r = .03$ (W)
								Lifetime discrimination	(SS-US) $r = -.03$ (M) $r = -.06^*(W)$ (SS-C) $r = -.00$ (M) $r = -.07^*(W)$
Wolff, Subramanian, Acevedo-	US nationally representative	Mean: 48.3	3644	SS-US	Health (dichotomized:	$r = 0.26^*$ (SS-US)	$OR = 4.29^*$ (SS-US)	Age, gender, ethnicity, marital status, household size, health	n/a

Reference	Type of sample	Participant age	Sample size	Subjective status variables	Psychosocial outcome variables	Raw relation btwn SS & outcome	Relation btwn SS & outcome, accounting for control variables	Control variables	Relation btwn SS & control variables
Garcia, Weber, & Kawachi (2010).	sample				poor/good)			insurance	
				SS-E		$r = 0.22^*$ (SS-E)	$OR = .54$ (SS-E)	Household income	$r = 0.37^*$ (SS-US)
				SS-N		$r = 0.16^*$ (SS-N)	$OR = .99$ (SS-N)	Education	$r = .38^*$ (SS-US)
				SS-P		$r = 0.18^*$ (SS-P)	$OR = 1.58$ (SS-P)	Home ownership	$r = .18^*$ (SS-US)
				(5 categories in each)			Odds of having good health in the highest SS category for each different SS, relative to the middle SS category (same as), controlling for all SS variables, control variables, and the interaction btwn ethnicity and SS.	Depression (presence or absence)	$r = -.18^*$ (SS-US)
							Bipolar disorder (presence or absence)	$r = -.09^*$ (SS-A)	
							Anxiety disorder (presence or absence)	$r = -.10^*$ (SS-A)	
							Physical health conditions (diabetes, skin cancer, other cancer, high cholesterol, high blood pressure, BMI)	n/a (All Spearman's correlations with SS- US)	

Note. Unless specified otherwise, higher numbers for each variable signify more of the construct (e.g., for pessimism, higher numbers indicate more pessimism; for subjective status, higher numbers indicate higher subjective status). Unless otherwise specified, subjective status was assessed with a 10 rung ladder and was explicitly defined in terms of education, income, and occupation. All correlations are Pearson correlations, unless specified otherwise. In studies with more than one outcome variable for which the sample size varied depending on the outcome variable, the lowest sample size was recorded in the table. Health refers to overall self-rated health. Physical health refers to self-rated physical health. Emotional health refers to self-rated emotional or mental health. Unless otherwise specified, stress is self-rated. *b* = standardized beta coefficient. *B* = unstandardized beta coefficient. *OR* = Odds ratio. *r* = correlation. *t* = *t*-statistic (unstandardized regression coefficient of an independent variable divided by its standard error). γ = Goodman and Kruskal's gamma (rank correlation). LR = Logistic regression. M = Men. W = Women. SES = Socio-economic status. SS = Subjective status. SS-C = Subjective status in the community. SS-CO =

Subjective status in country of origin. SS-E = Subjective status in relation to one's own ethnic group. SS-FC = Family's subjective status in the community. SS-FS = Family's subjective status in society. SS-J = Subjective status in Japan, using a 5 strata. SS-N = Subjective status compared to "neighbours". SS-OP = Subjective status compared to "other people". SS-P = Subjective status compared to own parents at the same age. SS-PG = Subjective status of own professional group compared to other professional groups in society. SS-S = Subjective status compared to society. SS-SC = Subjective status in the school setting. SS-US = Subjective status in relation to the United States population (or American society). + no reference to education, income, and occupation. * $p < .05$.