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Low Life Course Socioeconomic Status (SES) is Associated with Negative NEO PI-R Personality Patterns

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Abstract

Background—Low socioeconomic status (SES) is associated with poor health. One potential pathway accounting for this relationship may be an association between low SES and personality characteristics that affect health.

Methods—Associations among parent's education, current SES (education and income), and personality were examined among 233 African Americans and Caucasian, male and female community volunteers.

Results—Using multivariate analysis of variance (MANOVA) to model neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness simultaneously, participant's education, household income, and father's and mother's education each had significant main effects on personality. When examining the life course—the combination of both current and childhood SES—distinctive patterns emerged for each domain, depending upon whether mother's or father's education was used to index childhood SES. When using mother's education as a childhood SES index, a high life course SES (high participant's SES/high mother's

education) was associated with high extraversion and openness. Using father's education as a childhood SES index, a low life course SES (low participant's SES/low father's education) was associated with disproportionately high neuroticism and low conscientiousness. These effects did not differ by race or sex.

Conclusion—The implications of these findings for the role of personality in the SES–health relationship are discussed.

Keywords

Socioeconomic factors; Social class; Personality; Education

Introduction

Individuals who have lived in a low socioeconomic status (SES) environment throughout both childhood and adulthood are more likely to experience poorer health than those who have lived in a high SES environment throughout the life span [1]. Poor health does not occur in isolation but is typically accompanied by negative behavioral factors occurring more frequently in low SES individuals [2]. Personality may be an important factor linking negative social experiences to maladaptive behaviors and poor health.

Personality has long been implicated in health outcomes [3–6]. Several models of personality exist; however, it is argued that the empirically based five-factor model (FFM) is the best representation of personality and provides a useful framework for the study of personality and health [7–9]. This hierarchical model posits that human personality can be captured by five broad relatively independent domains—neuroticism (a predisposition towards negative affect expressed through anxiety, depression, and hostility), extraversion (a desire for both a greater quantity and intensity of interpersonal interaction), openness to experience (a tendency to seek new experiences and perspectives), agreeableness (a perspective that emphasizes the positive qualities in others and an accommodating social presence), and conscientiousness (a quality associated with persistence and attention-to-detail in goal-directed behaviors) [10]. The FFM has been researched and validated across cultures, races [11, 12], genders [13], and ages [14]. In addition, studies have shown that NEO PI-R domains may be heritable [15], suggesting that they are not only behavioral descriptions but also phenotypes of temperamental tendencies towards certain cognitive and emotional patterns in behavior [16].

In the personality literature, a variety of theoretical models and measures have been used to represent personality, most with constructs psychometrically and conceptually similar to those represented in the five-factor model. Findings from this literature suggest that personality traits [17] and associated maladaptive coping behaviors [18, 19] contribute to one's inability to effectively buffer chronic stress, especially that which is present in low SES conditions. There is a greater prevalence of negative personality patterns (e.g., neuroticism) and unfavorable coping styles (external locus of control, lack of problem focused coping) among those raised in a lower social position [20]. Higher hostility [21, 22], depression [23], and low openness to experience—traits associated with poor psychosocial functioning, less effective stress coping, and risky health behaviors—are reported more commonly among low SES groups [24].

These “at risk” personality traits have been consistently associated with risky behaviors and poor health. Neuroticism is positively associated with increased risk of cardiovascular disease and mortality [25]. Cardiovascular reactivity is associated with higher levels of neuroticism facet hostility [26], anger [27], and extraversion [28]. Health behaviors such as smoking have been associated with higher neuroticism and lower conscientiousness and

agreeableness [29]. Motives for drinking have been associated with high extraversion, high neuroticism, low conscientiousness, and low agreeableness [30], while individuals lower on depression, another facet of neuroticism, and higher on extraversion are more likely to exercise [31].

Recent analysis of a subset from the current study sample demonstrated that low childhood SES, as indexed by father's education, was associated with heightened cardiovascular reactivity to stress [32]; a finding that supports previous evidence suggesting childhood SES is associated with cardiac-related morbidity and mortality [33, 34]. Thus, the current study sought to establish an association between low life course SES and personality factors thought to be linked to cardiovascular disease.

Childhood SES will be determined by participant's recall of parental education, a valid method used in previous empirical studies [35] and a more reliable measure than participants recall of childhood living conditions or parent's income. Because the specific combination of low childhood and low adulthood SES poses an additional health risk beyond low SES in one period alone [1], the current study compares the low/low SES group to all others. Few studies have examined mother's and father's education separately in association with personality. Father's occupation has been shown to have a stronger impact on longevity than mother's education [36] and may more strongly reflect economic resources available to household. Highly educated mothers, who are more likely to work outside of the home, may be less involved with the care and development of their child [37, 38]. Thus, mother's education may have a smaller impact than the father's on participants' personality.

We hypothesized that low SES throughout the life course would be associated with a high neuroticism and low conscientiousness, a pattern likely to be linked to poor health outcomes. In contrast, we predicted high life course SES would be associated with a more favorable personality pattern—high extraversion, openness, and agreeableness. Further, we expected to see a more significant contribution of father's education than mother's education on participants' personality.

Methods

Sample

This study used data collected in a research program that aims to identify biobehavioral factors involved in the etiology and pathogenesis of CHD [39–41]. The sample was recruited via newspaper ads, fliers, radio, or TV announcements in the community (supermarkets, barber shops, churches, etc.), civic organizations, and public events. Because clinical research has historically underrepresented minority groups, African Americans were specifically targeted in this study in order to have approximately equal proportions of African American and white participants. Furthermore, participants were recruited based on their income and education in order to specifically represent high and low SES groups in Durham, NC. Due to the medical requirements of the full study (i.e., spinal tap), phone interview screened out individuals who reported any previously diagnosed major long-term medical or psychological illness (e.g., diabetes, HIV, arthritis, and major depression). Participants who fulfilled the initial SES eligibility criteria and gave written informed consent underwent a short screening process that included a full battery of questionnaires, blood samples, and physical and psychological examination. The final sample used for this study consisted of 233 participants, ages 18–50 years (mean, 35.1 years), with 145 high SES and 88 low SES (see below for criteria), 113 female, 120 male, 141 African American, and 92 white (based on self-identification) participants. The current study included, among the 233 subjects, 68 individuals who did not complete the experimental arm of the study due to medical condition ($n=28$), psychiatric diagnosis ($n=3$), positive drug screen ($n=3$), and other

non-health-related reasons such as scheduling conflicts or dropout ($n=31$). Informed consent was obtained using a form approved by the Duke University Medical Center Institutional Review Board.

Measures

Life Course SES—Childhood SES was determined by participant's recall of parental education. Such retrospective data on childhood SES has been shown to be valid in empirical studies [35]. Participants reported each parent's number of years of education. To model life course SES, parent's education was classified as “high” if they had above 12 years education and “low” if they had 12 years of education or below. This served as a natural break point in level of education between high school and post-secondary education.

Predetermined SES criteria were used during recruitment to obtain a community sample representative of its full SES spectrum. Current education *and* household income of the participant were used to classify participants into higher SES and lower SES groups. Two categories of income were used—below or equal to \$24,900 and above \$24,900, which corresponded to the 40th percentile rank of household incomes in Durham County according to the 1990 Census. The low SES category includes those who had income of less than or equal to \$24,900 and who had less than a college degree. The high SES group included those who had income greater than \$24,900, regardless of education, or those with a college degree or more regardless of income. Full details on recruitment and SES classifications are described elsewhere [39].

To represent life course SES, participants were classified into four groups based on participant's current SES and education level for each parent: high participant's SES/high parent's education, high participant's SES/low parent's education, low participant's SES/high parent's education, and low participant's SES/low parent's education.

NEO PI-R—Participants completed the NEO PI-R [10], a 240-item questionnaire measure of the five-factor model of personality with five broad domains; neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness. Each domain has more specific traits or facet scales, but our analyses in this report focus only on the higher order or broader domains. The internal consistency of the NEO PI-R is very high. For each domain, Cronbach's alpha coefficients are: neuroticism (0.92), extraversion (0.82), openness (0.87), agreeableness (0.86), and conscientious (0.90). Test–retest reliability of this measure of the five-factor model of personality has also been reported to be very high: 0.79, 0.79, 0.80, 0.75, and 0.83 for neuroticism, extraversion, openness, agreeableness, and conscientiousness, respectively [10].

Statistical Analysis

Only participants with complete data were used for each analysis; father's education was available for 208/233 (89%; 19/25 missing were black), mother's education was available for 221/233 (95%; 9/12 missing were black) of the sample. However, participants who had missing SES data in any category did not differ in NEO PI-R scores when compared with the group with complete data.

Scores on NEO PI-R domains first were evaluated as continuous variables using the combined population normed *T* scores. *T* scores of 56 or higher are considered high, *T* scores ranging from 55 to 45 are considered average and *T* scores of 44 or lower are considered low [10]. For initial MANOVA and regression analyses, participant's and parent's education were entered into the model as continuous measures. Because of the

lower tail skew of participant's current household income data, log transformation was used to normalize the distribution of this variable.

To reduce type-I error rate from multiple tests and account for the high intercorrelation among personality domains, we first used MANOVAs to model separately the effect of participant's current household income and education, father's education and mother's education on all five NEO PI-R domains considered jointly. Age was tested as a possible covariate; no effect of age on NEO PI-R domains was found and was excluded as a covariate in subsequent analyses. Additional MANOVAs tested for possible sex and/or race moderation of SES indicators effects on personality. Wilk's Λ statistics are reported for all MANOVAs. To locate the sources responsible for the global differences reflected by the MANOVAs, multivariate regression analyses evaluated the effects of each SES variable on each NEO PI-R domain.

Next, in order to determine the effects of preplanned life course SES trajectories—persistently low SES, upward social mobility, downward social mobility, and persistently high SES—two life course SES variables were created using a combination of participant's SES and indicators of childhood SES based on the mother's or father's education. Two separate MANOVAs were used to model the effects of life course SES with childhood SES indexed by the father's education and mother's education on all five NEO PI-R domains. Additional MANOVAs tested for possible sex and/or race moderation of life course SES effects on personality. Based on the results of MANOVAs, we then evaluated the associations between our life course SES variables and the five NEO PI-R domain scores using ANOVAs.

Results

Demographic characteristics and NEO PI-R domain means, stratified by sex, are summarized in Table 1. There were no sex differences for any of our demographic data. Women scored higher on neuroticism, $F_{(1,231)}=7.51$, $p<.01$; openness, $F_{(1,231)}=7.00$, $p<.01$; and agreeableness, $F_{(1,231)}=11.50$, $p<.01$ than men. Sex differences in NEO PI-R scores have been reported previously [13]. In this sample, scores for both women and men fell within the average range based on population norms [10]. Age of participants had no association with NEO PI-R domains.

ANOVA showed blacks had lower education $F_{(1,232)}=22.11$, $p<.01$; household income, $F_{(1,232)}=7.07$, $p<.01$; and father's education, $F_{(1,232)}=11.49$, $p<.01$. On NEO PI-R domains, blacks scored lower on openness, $F_{(1,231)}=7.57$, $p<.01$ and agreeableness, $F_{(1,231)}=7.99$, $p<.01$. These scores were all within the average range (45 *T* scores 55).

In a test of moderation of SES effects on NEO PI-R domains by sex or race, using MANOVAs revealed no significant sex or race interactions with participant's current education, household income, and father's or mother's education affecting NEO PI-R domains. This suggests that any relevant effects of life course SES on NEO PI-R scores are independent of race and sex. Therefore, for subsequent analyses, all groups were collapsed across race and sex.

Current versus Childhood SES

The MANOVAs evaluating main effects of the continuous adulthood and childhood SES measures on all five personality domains considered simultaneously showed significant effects of participant's current education, $F_{(5,226)}=8.70$, $p<.001$; household income, $F_{(5,226)}=2.80$, $p=.02$; father's education, $F_{(5,201)}=2.69$, $p=.02$; and mother's education, $F_{(5,214)}=2.43$, $p=.04$. Therefore, as predicted, all indicators of SES were associated with

adulthood personality although participant's current education was the most strongly associated with their personality.

It was hypothesized that higher education and income would be associated with lower Neuroticism and higher extraversion, openness, agreeableness, and conscientiousness. Consistent with this hypothesis, Table 2 shows that higher participant's education was associated with lower neuroticism and higher extraversion, openness, agreeableness, and conscientiousness; higher participant's household income was associated with lower neuroticism, higher extraversion and conscientiousness, and marginally for openness.

For parent's education, mother's and father's education showed a remarkably different pattern of associations with NEO PI-R domains. It was hypothesized that father's education would be a stronger surrogate of childhood SES than mother's education, while high mother's education may be less strongly associated with personality traits. In line with this hypothesis, father's education showed a more robust association with NEO PI-R domains than mother's education. Higher father's education was associated with lower neuroticism, higher extraversion, openness, and conscientiousness and marginally for agreeableness; whereas, higher mother's education was significantly associated only with higher extraversion and openness. However, higher mother's education was not related to any negative personality traits such as high neuroticism or low conscientiousness.

Life Course SES

It was hypothesized that the persistently low SES group would have higher neuroticism and lower extraversion, openness, agreeableness, and conscientiousness scores than all other groups, particularly the persistently high SES group. Only 15 participants were downwardly mobile—24% of the low SES participants—when both of their parents had a high education level. However, 45 participants—32% of the high SES participants—were upwardly mobile when both of their parents had a low education level. A majority of the low SES participant's had both a mother and a father with a low education level indicating a persistently low SES throughout the life course (45%). Among the high SES participants, 38% had both a mother and a father with a high education level indicating a persistently high SES throughout the life course.

It was predicted that both life course SES as indexed by father's and mother's education would be associated with personality. MANOVAs showed that, indeed, life course SES was associated with the adulthood personality pattern regardless of whether father's ($F_{(15,550)}=2.15$; $p<0.01$) or mother's ($F_{(15,586)}=2.06$; $p=0.01$) education level was used to index childhood SES. However, post hoc univariate analyses revealed that these associations differed depending upon how life course SES was indexed and which domain was being examined. Tables 3 and 4 show the results of the univariate ANOVAs testing differences in personality domain scores between life course SES groups as indexed by father's and mother's education, respectively.

Neuroticism—Only life course SES as indexed by father's education was associated with neuroticism. As shown in Table 3, low SES participants whose father had a low education level scored higher on neuroticism (all $p=0.04$) than the other three life course groups, whose scores on these domains did not differ from each other. In this group, neuroticism was above population average. In marked contrast, when life course SES was indexed using mother's education level (Table 4), there was no effect of life course on neuroticism.

Extraversion—Both measures of life course SES had an association with extraversion. When life course SES was indexed by father's education (Table 3) means showed that participant's current SES had a predominant effect while scores did not largely differ by

father's education. Both the persistently high and upwardly mobile group had higher scores on extraversion than the persistently low SES group (both $p < .01$). All scores fell within population norms. Thus, childhood SES had limited influence on adult extraversion levels independent of participant's current SES. This finding is not consistent with our hypothesis suggesting that SES throughout the life course has additive effects on personality.

When life course SES was indexed by mother's education, however, a different life course pattern emerged for extraversion (Table 4). The persistently high SES group had significantly higher extraversion scores (above the population average) than the other three life course SES groups (all $p < .01$), which did not differ from each other. Both high childhood and high current SES were needed for extraversion scores to be high. Thus, while only participant's SES had an effect when indexing life course SES by father's education, using mother's education, high SES participants had a significantly higher extraversion score only when their mother had a high education level.

Openness to experience—Life course SES as indexed by father's and mother's education showed significant and similar patterns of association with openness. Comparison of the life course SES group means showed that the persistently high SES group (i.e., participants who were both high SES and who had a parent with a high education level) scored significantly higher on openness (above the population average) than the other three life course SES groups (all $p < 0.05$; Tables 3 and 4) who did not differ from each other. Effect sizes were similar for life course SES as indexed by either mother's or father's education.

Agreeableness—There was no significant association between life course SES and agreeableness regardless of how childhood SES was indexed. This was in line with the previous regressions (Table 2) that showed participant's education to have a positive association with agreeableness while all other SES indicators had no effect.

Conscientiousness—Similar to neuroticism, the association between life course SES and conscientiousness was significant only when using father's education to index childhood SES (Table 3). Comparison of the means between life course SES groups showed that persistently low SES participants scored lower on Conscientiousness (all $p < 0.02$) than the other three life course groups, whose scores on these domains did not differ from each other. In the persistently low SES group, conscientiousness was below the population average. In contrast, when life course SES was indexed using mother's education level (Table 4), there was only a marginal association between life course SES and conscientiousness ($p = 0.053$).

Discussion

Life course epidemiology has revealed several interesting findings concerning social inequalities in health, consistently showing a significant correlation between low SES in childhood and poor health in adulthood [42]. The major challenge has been attempting to explain why these health disparities exist. The importance of the psychosocial stress pathway in the association between SES and health has been frequently discussed. It is thought that early emerging personality vulnerabilities and predispositions towards negative affectivity may mediate the effect of life course SES on adult health [43]. However, the opportunity to explore this research question has been limited by the lack of strong psychosocial measures in epidemiological studies [44, 45].

The current study expands the life course epidemiological literature by examining a well-validated measure of the Big Five personality domains in relation to life course SES. Not only does the current study support the hypothesis that a psychosocial stress pathway links

low SES to poor health but the data also showed that the concurrent examination of childhood and adulthood SES in association with personality revealed distinctive personality patterns not evident when looking at either current or childhood SES alone.

Further, how childhood SES is determined (indexed by either father's or mother's education in the current study) is also an important factor when examining life course SES effects on psychosocial variables. In the current study, when considered alone, high father's education appears to be more robustly associated with positive personality traits than mother's education and may be a better index of childhood SES (Table 2). Mother's education was less strongly associated with personality as hypothesized, possibly due to increased likelihood of more educated mothers working outside the home [37, 38]. Future studies examining specific components of the childhood environment may help determine specific factors associated with adulthood personality.

Although childhood environment was shown to be important, the combination of both a high childhood and current SES may be necessary for positive coping and longevity. Persistently high life course SES was associated with above average scores on openness, regardless of how childhood SES was indexed. Previous research has suggested that high openness levels predict positive coping efforts and moderates the effects of perceived control in response to daily stressors [46] and has been linked to longevity [47]. Thus, persistently high life course SES may indicate an *accumulation of resistance* to stress—indexed by high openness—that is not evident in socially mobile or persistently low life course SES individuals.

Persistently high life course SES as indexed by mother's education was associated with higher scores on the interpersonally relevant domain of extraversion, which has been consistently linked to less health-risk behavior [48, 49] and greater participation in health-promoting behavior [50, 51]. High father's education, on the other hand, did not confer higher extraversion scores.

For neuroticism and conscientiousness, however, persistently low life course SES as indexed by father's education was associated with high levels of neuroticism and low levels of conscientiousness. Life course SES as indexed by mother's education was not associated significantly with participant's neuroticism or conscientiousness domain scores. Several studies have shown the combination of high neuroticism and low conscientiousness to be associated with unfavorable health outcomes such as increased health-risk behaviors, less effective coping strategies, and mortality [29, 52, 53]. Costa and McCrae [10] posit that the high neuroticism/low conscientiousness (undercontrolled) style identifies individuals who are at the mercy of their own impulses, drives, and urges, leaving them at a heightened risk or susceptible to unhealthy behaviors. Individuals with an “undercontrolled” personality style may have heightened vulnerability to the health consequences of psychosocial stress pervasive in low SES environments. Although the present study did not measure combinations of domain scores in individuals and cannot speak directly to the issue of personality styles, the presence of high mean neuroticism and low mean conscientiousness scores in those with low SES is consistent with the hypothesis that the personality pattern in that group is conducive to heightened health risk.

The current data also extend previous findings from a subpopulation of this sample suggesting that high father's education had protective effects on cardiovascular reactivity to stress [32]. Thus, increased vulnerability to stress along with poor psychological and physiological coping may help explain the higher rates of morbidity and mortality among low SES groups.

Findings from the current study are especially important due to the large percentage of African American participants (>60%). In line with previous studies on ethnicity and SES

[54, 55], African Americans in this sample had significantly lower SES in adulthood and childhood than whites. However, despite evidence showing more negative health outcomes among African Americans than whites of the same educational level [56], we found no racial differences in the impact of SES on personality. This suggests that the black–white health disparity, which exists even when blacks and whites are matched by SES, is not due to differential effects of SES on deleterious personality styles among African Americans. Rather, there may be ethnic group differences in the nature of SES that results from discrimination and inequalities in psychosocial burden [57].

Findings from the current study should be considered in light of some limitations. Due to the study design, our low SES group was relatively healthy and may have excluded individuals who have experienced the negative consequences of a very low SES environment. Therefore, results from this study are conservative estimates of SES effects on personality. Finally, it must be noted that SES is a distal measure of possible environmental influences on health and the current findings are cross-sectional. It will be important to not only replicate the findings of this study in a longitudinal design but to also identify proximal health factors within the low SES environment that need to be targeted to prevent the poor health trajectory. Furthermore, the current study makes the case for a more formal mediational analysis that evaluates the role of personality in the pathway linking low SES to poor health. The characteristics of the current sample are a limitation; a mediational analysis should be done in a larger more representative sample, using a longitudinal design. Future studies may show that to reduce the SES health gradient, interventions to ameliorate negative personality traits and coping mechanisms among low SES groups may be at least one solution, especially interventions that are targeted at childhood.

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Table 1

Means and standard deviations for SES variables and NEO PI-R domains by sex

Study variable	Women				Men			
	<i>n</i>	%	Mean	SD	<i>n</i>	%	Mean	SD
Race/ethnicity								
White	43	38.0			49	40.8		
African American	70	62.0			71	59.2		
Age			35.73	8.51			34.43	8.62
Current education (years)	113		14.64	2.53	120		14.15	2.66
Household income (×\$ 1,000)	113		32.46	21.79	120		31.21	21.51
Father's education (years)	102		12.40	3.86	106		13.02	3.75
Mother's education (years)	109		13.48	3.11	112		13.23	2.66
NEO PI-R domains								
Neuroticism*	113		53.82	9.39	119		50.37	9.80
Extraversion	113		53.28	9.82	119		52.95	8.60
Openness*	113		54.44	9.50	119		51.16	9.37
Agreeableness*	113		48.52	10.05	119		44.05	10.02
Conscientiousness	113		45.64	9.92	119		45.47	10.84

* $p < .01$

Table 2

Relationship between SES variables and NEO PI-R domains

NEO PI-R domain	<u>Current income (neuroticism=232)</u>		<u>Participant's education (neuroticism=232)</u>		<u>Father's education (neuroticism=207)</u>		<u>Mother's education</u>
	β	<i>p</i> value	β	<i>p</i> value	β	<i>p</i> value	β
Neuroticism	-0.14	0.04	-0.14	0.04	-0.16	0.02	0.02
Extraversion	0.21	<.01	0.26	<0.01	0.18	0.01	0.20
Openness	0.13	0.06	0.37	<0.01	0.16	0.02	0.15
Agreeableness	0.08	0.25	0.23	<0.01	0.13	0.06	0.07
Conscientiousness	0.18	0.01	0.19	<0.01	0.19	0.01	-0.01

^aEffects were similar when using only participants with full data

Table 3

Means (SEM) for NEO PI-R domains by life course SES using father's education

Father's/participant's SES	Low/low n=40	Low/high n=78	High/low n=25	High/high n=64	P value
Neuroticism	56.26 ^a (1.51)	51.51 (1.08)	50.85 (1.92)	51.39 (1.20)	0.04
Extraversion	49.18 (1.41)	54.13 (1.01)	51.84 (1.78)	54.93 (1.12)	<0.01
Openness	49.53 (1.47)	52.56 (1.05)	51.24 (1.86)	55.86 (1.16)	<0.01
Agreeableness	44.02 (1.61)	46.93 (1.15)	43.58 (2.04)	46.92 (1.28)	0.26
Conscientiousness	40.39 ^a (1.61)	45.96 (1.15)	46.49 (2.04)	47.79 (1.27)	<0.01

^aSignificantly different ($p < .05$) than all other groups

Table 4

Means (SEM) for NEO PI-R domains by life course SES using mother's education

Mother's/participant's SES	Low/low n=41	Low/high n=64	High/low n=27	High/high n=88	P values
Neuroticism	51.29 (1.52)	51.26 (1.21)	55.07 (1.87)	51.29 (1.03)	0.32
Extraversion	49.86 (1.39)	52.44 (1.11)	51.01 (1.72)	56.10 ^a (1.00)	<0.01
Openness	49.63 (1.46)	51.38 (1.16)	51.47 (1.80)	55.75 ^a (1.00)	<0.01
Agreeableness	45.19 (1.62)	46.34 (1.30)	43.13 (2.00)	47.84 (1.10)	0.18
Conscientiousness	43.31 (1.63)	47.59 (1.30)	42.20 (2.00)	46.50 (1.11)	0.05

^aHigh/high group significantly different ($p < .05$) than low/low group