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Socioeconomic status moderates the association between John Henryism and NEO PI-R personality domains

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Abstract

OBJECTIVE—The aim of this study was to investigate associations between John Henryism (JH) and NEO PI-R personality domains. JH—a strong behavioral predisposition to engage in high-effort coping with difficult psychosocial and economic stressors—has been associated with poor health, particularly among persons in lower socioeconomic (SES) groups. Unfavorable personality profiles have also been frequently linked to poor health; however, no studies have yet examined what global personality traits characterize JH.

METHODS—Hypotheses were examined using data from a sample of 233 community volunteers (mean age: 33 years; 61% black and 39% white) recruited specifically to represent the full range of the SES gradient. Personality (NEO PI-R) and active coping (12-item John Henryism scale) measures and covariates were derived from baseline interviews.

RESULTS—In a multiple regression analysis, independent of SES JH was positively associated with Conscientiousness (C; $p < .001$) and Extraversion (E; $p < .001$), while the combination of low JH and high SES was associated with Neuroticism (N; $p = 0.02$). When examining associations between JH and combinations of NEO PI-R domains called “styles,” high JH was most strongly associated with a high E/high C “Go-Getters” style of activity while low JH was associated with the low E/high O “Introspectors” style. In facet level data, the most robust associations with JH were found for five C and five E facets.

CONCLUSIONS—High JH was associated with higher scores on C and E, but the combination of low JH and high SES was associated with higher scores on N.

Keywords

John Henryism; Personality; Coping; Conscientiousness; Extraversion; Neuroticism

A large body of behavioral and psychosomatic research has explored the connection between stress and chronic disease, focusing primarily on the development of cardiovascular disease

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risk factors like hypertension (1-3). Researchers have concluded that many health problems are mediated by personality traits (4,5) and coping behaviors (6,7) that either buffer or augment stress effects on health.

In the mid 1980s, James (2,8,9) developed the concept of John Henryism (JH) to describe a strong behavioral predisposition of some individuals, especially African Americans, to use effortful, active coping as a way to overcome difficult psychosocial and economic stressors. Underpinning such effortful active coping was the belief that these difficult stressors could be overcome through hard work and determination (8). The JH hypothesis posits that such repetitive high effort coping among persons of lower socioeconomic status (SES)—persons typically lacking the resources to overcome endemic psychosocial and economic stressors—contributes to the elevated rates of hypertension among low SES individuals, especially lower SES African Americans (10). Because of its strong focus on low SES individuals, and especially low SES African Americans, the health implications of the JH coping style has been examined most extensively in African Americans (11).

Coping styles can be considered either adaptive or maladaptive with respect to preserving health (12). For example, James et al. (8) noted that high JH, in the presence of adequate social and economic coping resources, may be highly adaptive and thus correlated with positive health outcomes. In the absence of adequate coping resources, however, high JH, over time, could lead to frustration, disappointment, rumination, poor social relations, and harmful physiological arousal (8,10,11).

Though exceptions exist (e.g. 13), empirical findings suggest that an interaction between JH and SES is associated with increased risk for cardiovascular dysregulation (8-10,14-18). Evidence varies in the manner in which SES interacts with JH to predict physiological markers (11); however, in studies where low SES is a reliable index of a high stress environment, individuals within these environments who routinely engage in repetitive high effort coping have been observed to have the highest prevalence of hypertension, and the highest mean diastolic blood pressure and cholesterol levels (8,15,16).

While high JH has been shown to be correlated with higher job satisfaction (9), higher life satisfaction (2), higher levels of social support (19) and lower levels of psychological stress (19,20), to our knowledge no comprehensive studies have investigated relationships between JH and personality constructs that have been a major focus of psychosomatic research. Researchers have long employed personality inventories and constructs seeking to discover behavioral origins of disease. Although several models of personality exist (12,21-23) the empirically based five-factor model of personality (24-27) provides arguably the most useful framework for the study of personality and health. This hierarchical model posits that human personality can be captured by five relatively independent domains—Neuroticism (N; a predisposition towards negative affect expressed through anxiety, depression and hostility), Extraversion (E; a desire for both a greater quantity and intensity of interpersonal interaction), Openness to Experience (O; a tendency to seek new experiences and perspectives), Agreeableness (A; a perspective that emphasizes positive qualities in others and an accommodating social presence), and Conscientiousness (C; a quality associated with persistence and attention-to-detail in goal-directed behaviors). Each of these five higher-level domains is comprised of six lower-order traits called facets. Finally, pairs of these domains can be plotted to yield 10 personality style circumplexes (24).

The five-factor model (FFM) has been researched and validated across cultures, races (28, 29), genders (30), and ages (31). In addition, studies have shown that NEO PI-R domains may be heritable (32), suggesting that they are not only behavioral descriptions but also phenotypes

of temperamental tendencies towards certain cognitive and emotional patterns in behavior (33).

The scores of individuals on NEO PI-R domain scores have been associated with both behavioral and health outcomes. Higher levels of Neuroticism are associated with cardiovascular disease and mortality (34). Further, individuals who are higher on N and lower on C and A are more likely to smoke (35), those with high E, high N, low C, and low A are more likely to have motives for drinking (36), but those lower on depression, another facet of N, and higher on E are more likely to exercise (37). Increased cardiovascular reactivity to stress, a predictor of cardiovascular disease, has been found to be associated with higher levels of N facet hostility (38) and anger (39) and E (40); and, facets of O have been associated with cardiac and all-cause mortality (41).

Research suggests that although independent domains can be used as predictors of health behaviors, combinations of domains that embody distinct personality styles may be stronger predictors of health outcomes. For instance, a low N and high C personality style is associated with participation in social/relaxation activities (42), more wellness behaviors and less risk taking (43). In contrast, a high N and low C personality style has been associated with health risk behaviors, less effective coping strategies, and mortality (35,44,45).

Individual risky health behaviors do not occur in isolation from one another but rather occur in clusters, with more unhealthy behaviors occurring more frequently in low SES individuals (6,46). Constellations of health risk behaviors in certain groups may be due to common personality traits or styles of coping among group members. Personality traits, such as higher hostility (47,48), depression and hopelessness (49) and low O—traits associated with poor psychosocial functioning, less effective stress coping, and risky health behaviors—are reported to be more common among low SES groups (50).

Despite similarities between coping and personality, there is a dearth of research linking these two areas of research in any systematic manner. In the case of JH, for example, it is not clear why this particular coping style has differential associations with cardiovascular health depending on the individual's SES. One possibility is that, depending on SES, high JH is differentially associated with “at risk” personality traits, a hypothesis that can be tested by investigating associations between JH and a well understood, and well validated, global measure of personality such as the NEO PI-R.

Given the standard characterization (8,9,15) of individuals who score high on JH as “hard working,” “optimistic” and “energetic”, we hypothesize that high JH individuals will share domain similarities in their NEO PI-R profile, such as high C and high E overall. However, because low SES may increase the likelihood that high JH individuals will experience frustration and anger when their high effort coping is unsuccessful, SES may moderate associations between JH and various personality dimensions as measured by the NEO PI-R. Specifically, we predict that high JH in the presence of low SES will be associated with less healthy global personality traits, such as high N and some facets of E, but that high JH in the presence of high SES will be associated with global personality traits indicative of good health, such as low N and high C.

Methods

Sample

This study used data collected between 1997 and 2002 in a research program that aims to identify biobehavioral factors involved in the etiology and pathogens of CHD (51-53). The sample was recruited during a period of 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, 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. As shown in Table 1, the final sample used for this study consisted of 233 participants, ages 18-50 (mean 33.40), with 138 high SES and 95 low SES (see below for criteria), 113 female 120 male, 141 African American and 92 whites (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 others non-health related reasons such as scheduling conflicts or drop out (n=31). Informed consent was obtained using a form approved by the Duke University Medical Center Institutional Review Board.

Measures

Socioeconomic Status (SES)—Predetermined SES criteria were used during recruitment to obtain an economically diverse community sample. 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 (51).

John Henryism—The John Henryism Scale for Active Coping (JHAC) was used to measure to JH (10,54). Using a five point Likert-type scale, the JHAC contains 12 items; responses for each item range from completely true (score = 5) to completely false (score =1). Total scores can thus range from a low of 12 to a high of 60, with high scores indicating a strong predisposition to engage in high effort coping with difficult and recurring socio-environmental stressors (job demands, family responsibilities, interpersonal conflict, etc). The JHAC has acceptable internal consistency, with Cronbach alphas of 0.70, or greater in most studies (54).

NEO PI-R—The internal consistency of the 240-item NEO PI-R is very high. Research (24) indicates that, for each domain, Cronbach's alpha coefficients were: N (0.92), E (0.89), O (0.87), A (0.86), and C (0.90). Test-retest reliability for the domains has also been reported to be very high: 0.79, 0.79, 0.80, 0.75, 0.83 for N, E, O, A, and C, respectively. In addition to the domain scores, subjects were also characterized on style graphs. Briefly, factor domain scores¹, expressed as z-scores, for any two dimensions are plotted against one another, yielding four quadrants: High on the 1st dimension, low on the 2nd (+ -), high on the 1st dimension, high on the 2nd (+ +), low on the 1st dimension, high on the 2nd (- +) and low on both

¹The formulas for computing the domain factor scores utilize scoring weights from each of the 30 facets to estimate each of the factor domain scores which are more nearly orthogonal than the domain scores yielded by summing the 6 facet scales in each domain. Formulas to calculate factor scores are provided in Table 2 of the NEO PI-R Professional Manual (24, p. 8).

dimensions (– –). Z-scores in the average range for any of the 2 dimensions (between –0.5 and 0.5) fall into an untyped, centered group. For description of all 10 styles, see Costa & Piedmont (55).

Analysis—Linear regressions were used to examine associations between continuous measures of JH and NEO PI-R domains. Non-significant higher order interactions were removed from the model. Analyses controlled for covariates race, age, and sex as recommended by James (54). Since JH and SES were strongly correlated ($b=-1.62$, $p=0.032$) in the current study, and still marginally correlated when other covariates are added to the model ($b=-1.498$, $p=0.055$), we decided to include SES among the covariates when testing the JH by NEO PI-R association. This addition also follows the suggestion of Braverman and colleagues (56) who recommend controlling for SES when studying variables influenced by race. To model the interaction between JH and SES, high SES was modeled as 1 and low SES as 0. To test the interaction, high SES and low SES were analyzed separately as criterion variables. Linear regression of NEO PI-R facets was conducted only when higher-order ANOVA NEO PI-R domain tests were significant. ANOVAs were conducted on 10 two-domain NEO PI-R style combinations, and Least Square means were computed only when higher order NEO PI-R style ANOVAs were significant. Multiple-test correction was performed using the Bonferroni correction and multiple comparison correction was performed using the Tukey-Kramer method. Analyses were conducted using SAS v.9.

Results

SES moderated the association between JH and personality domains only for N ($b=-0.47$, $p=0.02$). Within the full models including all covariates and the significant JH x SES interaction for N, women reported significantly higher N ($b=4.09$, $p<.001$) and A ($b=5.51$, $p<.001$) than men. Blacks reported lower O ($b=-2.6$, $p=0.04$) and A ($b=-3.64$, $p=0.006$) scores than Whites. Older individuals reported higher A ($b=0.15$, $p=0.04$). Higher SES subjects reported higher E ($b=3.84$, $p=0.001$), C ($b=3.59$, $p=0.004$), and O ($b=2.87$, $p=0.02$).

Regardless of SES, higher JH was associated with higher E ($b=0.36$, $p<.001$) and C ($b=0.68$, $p<.001$). However, as shown in Figure 1, SES moderated the association between JH and N (b for interaction= -0.47 , $p=0.02$): among low SES individuals, mean N scores changed little as mean JH scores increased ($b=0.03$), whereas among high SES individuals, mean N scores decreased sharply as mean JH scores increased ($b=-0.44$). Of particular note, N scores for high SES individuals with low JH scores were well above the population norm of 50, while high SES individuals with high JH scores had N scores well below the population norm.

To characterize this relationship in more detail, we conducted follow-up analyses testing associations between JH and facets (lower-order traits) of the larger domains E, C, and N using the Bonferroni correction (sig. at $p<0.008$). We restricted this analysis to E, C, and N facets since only these domains were significantly associated with JH. Since the only domain with a JH*SES interaction was N, N facets were examined only for JH*SES interactions. Although not significantly associated with JH following statistical correction, it seems that the significant JH*SES interaction at the domain level is driven by N facets Hostility ($b=-0.60$, $p=0.01$) and Self-Consciousness ($b=-0.46$, $p=0.03$). As also shown in Table 2, JH as a main effect was significantly associated with ten facets: E facets Warmth, Assertiveness, Activity, Excitement-Seeking, and Positive Emotion and C facets Competence, Dutifulness, Achievement Striving, Self-Discipline and Deliberation.

We next analyzed the relationship between JH scores and NEO PI-R style groups. Among the ten possible two-domain combinations, four combinations revealed a significant ANOVA test adjusted by the Bonferroni correction ($p=0.005$): EC ($p<.001$), EO ($p<.001$), OC ($p<.001$), NE

($p<.001$), AC ($p=0.002$), and NC ($p=0.002$). Further pairwise comparisons of these means using the Tukey-Kramer correction revealed that only one style, high E/high C was significantly different from other styles in each group after correction (Table 3). The high E/high C style of activity, or the “Go-Getters,” was significantly higher on JH ($M=52.09$) than all other E and C combinations ($E+C-$, $p=0.008$; $E-C+$, $p=0.02$; $E-C-$, $p<.001$), and also had the highest mean among all possible 50 quintiles. In contrast, the low E/high O style or the “Introspectors” group, was lower on JH ($M=45.54$) than other E and O combinations, marginally lower than $E-O-$, ($E+O-$, $p=0.02$; $E+O+$, $p<.001$; $E-O+$, $p=0.07$), and also had the lowest mean among all possible 50 quintiles.

Discussion

Contrary to expectations, the association between JH and personality was moderated by SES only for the N domain. After controlling for demographic variables, JH was positively associated with E and C as predicted, but only as a main effect. Also, contrary to expectations, it was not the combination of low SES and high JH that was most strongly associated with high N; rather, it was the combination of high SES and low JH. As Figure 1 shows, N changed little in low SES subjects as JH increased, but declined significantly among high SES subjects as JH increased.

In this study, the combination of high SES and high JH was associated with a generally healthy personality profile, specifically low N, high C and high E. However, the combination of low JH and high SES was associated with high N in this sample. As previously noted, the low N and high C personality style has been associated with increased participation in relaxation activities (42), more wellness behaviors and less risk taking (43). Other studies have noted the benefit of high JH among those with high SES vis-à-vis blood pressure (9,14,17,57), and Bonham, Sellers and Neighbors (58) reported that high JH in a sample of high SES African-American men was associated with better self-reported physical health as measured by the short form health survey (SF-12). This latter finding was recently replicated among Asian immigrants to the US, in that higher JH was associated with both higher self-rated health and physical functioning (20).

Our premise that high JH coupled with high SES is associated with positive personality characteristics is consistent with published findings from community studies of JH showing that the most favorable cardiovascular health profile is usually found for persons (especially, but not exclusively for African Americans – see (59)) who are high in both SES and JH (8, 14-16,19). In contrast, low JH coupled with high SES could be problematic since, at least in this sample, it was associated with lower C and E *plus* greater N, the latter a putative marker of impaired psychological health.

The combination of low JH and high SES may not be associated solely with poorer psychological health (e.g. higher N). In the Pitt County Study, for example, James et al. (19) found that high SES African American men who scored low on JH had higher levels of perceived stress, and correspondingly, higher levels of hypertension. Hence, low JH scores may indicate a low (or deteriorating) sense of environmental mastery resulting from past unsuccessful high-effort coping by high SES men. This issue warrants further study.

In addition to the health-damaging effects of the combination of high N and low C, high N levels alone could contribute to risk for poor health. The high SES/low JH individuals in this study reported N values in the ‘high’ range (1 SD greater than population average), a particularly important finding considering that N has been associated with health risk in previous research. High N may indicate a predisposition to engage in unhealthy behaviors and even early mortality (34,36,60-62). A body of research suggests that N is related to a variety

of diseases and disabilities from depression, and pain conditions to eating disorders, psychosomatic complaints and poor coping (63-66). Additional research suggests that those high in N are more likely to exhibit medical conditions of the tension type such as migraine, neck pain and high blood pressure (67).

Neuroticism is a broadly defined construct with several facets. Our study found that N facets Hostility and Self-Consciousness were the primary drivers of the JH*SES interaction, and both have been shown to be predictors of important health outcomes and health behaviors. Hostility has consistently been associated with an unhealthy lifestyle (e.g., obesity, social isolation), fasting glucose and insulin sensitivity, and increased risk of cardiac and all-cause mortality (53,68-70). While fewer studies have looked at the effect of Self-Consciousness, some suggest that it may be an important moderator of destructive drinking behavior (71,72) and of subsequent illness for those with previous stress (73), and it may be a significant predictor of social phobia (74), of subjective memory impairment (75), of irritable bowel syndrome (76), and of exercise (77,78). Thus, while it is likely that the combined effect of high SES and low JH increases one's risk for certain poor health outcomes, future research is needed to determine if the high N facets, Hostility and Self-Consciousness, account for any observed excess health risks in this group.

This study provides evidence that the same qualities (e.g., high E and high C) previously found to be associated with longevity, even when controlled for smoking and obesity (60,79-81) are also associated with high JH. This suggests that high JH alone, regardless of SES, could be positively associated with longevity. On the other hand, low JH may be unfavorable to health since it is associated with lower C and E. In this study, C facets Competence, Dutifulness, Achievement Striving, Self-Discipline, and Deliberation as well as E facets Warmth, Assertiveness, Activity, Excitement-Seeking and Positive Emotion were drivers of the significant association between C and E domains and JH.

Finally, our analysis of the relationship between JH and NEO PI-R styles revealed some interesting profiles. Individuals high on JH were more likely to have a high E/high C style of impulse control referred to as "Go Getters." The latter, according to Costa & McCrae (55), are productive and efficient workers who set a fast pace. They know what is necessary and are eager to contribute. They might design their own plan of action and follow it dutifully. They may also come across as bossy by imposing their style of working on others (55).

Individuals low on JH were observed to exhibit the low E/high O "Introspectors" style (55). Introspectors have interests that center on activities that they can perform alone; individual creative hobbies like painting and music or non-creative hobbies like reading and writing often appeal to this group. Importantly, the current study found that the interaction between JH and SES had a similar effect on N for blacks and whites living in the same geographic region. Whereas most prior health studies of JH, or the JH*SES interaction, have been conducted on all African American samples (11), it is not known whether the same relationship between SES and JH vis-à-vis important health measures would be found in racially diverse populations living in the *same* geographic area. Our inclusion of both whites and blacks in this study is thus a major strength of the current study.

This study has several limitations. First, the sample size is relatively small, and though the 233 study participants varied in terms of demographics (high and low SES groups), personality and coping features, some of our findings may have failed to reach statistical significance because of low statistical power for the low SES group (n=95). A second potential limitation was our decision to use a composite SES measure, and to dichotomize it for analysis, instead of using separate continuous measures for education and income. Our dichotomized SES measure may not have represented the full range of possible SES categories. However, other studies have

emphasized difficulty in isolating and measuring SES experimentally and the lack of consensus on the best method for measuring SES (56,82-84). Furthermore, our criteria for defining high and low SES were predetermined and used in the study design to recruit relatively equal numbers of high and low SES participants based on both their education and income.

Although JH correlates in interesting ways with the NEO PI-R, we do not view the two constructs/instruments as interchangeable. Each has its own theoretical and measurement history, and each is likely to be *differentially* predictive of a range of important health behaviors and health outcomes. The current study aimed to identify health-relevant dimensions of personality that contribute to variation in JH scores, a step viewed as appropriate to develop a fuller understanding of the multiple pathways through which JH might influence the well known inverse gradient between SES and health (10,11,85).

In conclusion, this study is the first systematic investigation of the relationship between the JH construct and global personality traits. Findings from this study provide some explanation for the frequently observed JH by SES effect on physiological health outcomes. Conditional on replicating our findings in other populations, especially in longitudinal studies, it should become increasingly possible to design early behavioral interventions targeting individuals who over-rely on persistent high-effort coping as a tactic for managing chronic life stressors.

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ABBREVIATIONS

SES	Socioeconomic Status
JH	John Henryism
N	Neuroticism
C	Conscientiousness
E	Extraversion
A	Agreeableness
O	Openness

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Figure 1. Regression Lines Displaying Neuroticism scores by John Henryism scores for High and Low SES, Controlling for Age, Sex, Race and Socioeconomic Status.

Table 1

Black/White Descriptive Statistics.

	Blacks-Mean	Std Dev	Whites-Mean	Std Dev	All-Mean	Std Dev
NEO PI-R domains						
-Neuroticism	51.3	± 7.81	49.99	± 10.08	50.78	± 8.78
-Extraversion	50.94	± 8.63	52.6	± 9.14	51.59	± 8.85
-Conscientiousness	47.5	± 10.28	46.87	± 9.26	47.25	± 9.88
-Openness	51.15	± 8.76	54.21	± 9.78	52.35	± 9.27
-Agreeableness	45.46	± 9.57	49.82	± 10.18	47.17	± 10.02
John Henryism	49.19	± 6.11	48.11	± 4.98	48.76	± 5.7
Age	32.11	± 8.8	35.38	± 8.32	33.4	± 8.75
Sex	70F/71M		43F/49M		113F/120M	
SES	75H/66L		63H/29L		138H/95L	

Table 2

Effect of John Henryism on NEO PI-R Facets Controlling for Age, Sex, Race, and Socioeconomic Status.

Main Effects					
C facets	b	p-value	E facets	b	p-value
Competence	0.63	<.001	Warmth	0.48	<.001
Order	0.25	0.02	Gregarious	0.25	0.02
Dutifulness	0.76	<.001	Assertiveness	0.51	<.001
Achievement striving	0.63	<.001	Activity	0.35	<.001
Self-Discipline	0.55	<.001	Excitement-seek	0.32	0.001
Deliberation	0.39	<.001	Pos Emotion	0.38	0.001

Note: bolded facets are significant at Bonferroni correction level of $p=0.008$

Table 3

John Henryism Scores for the Six Significant NEO PI-R Personality Styles, Controlling for Age, Sex, Race and Socioeconomic Status.

NC Combinations	N	Mean	std err	EC Combinations	N	mean	std err
Undercontrolled N+C-	73	47.54	0.66	Funlovers E+C-	56	47.88	0.82
Overcontrolled N+C+	39	49.50	0.90	Go-getters E+C+	50	52.09	0.79
Directed N-C+	33	51.78	0.10	Plodders E-C+	18	47.41	1.28
Relaxed N-C-	52	47.60	0.77	Lethargic E-C-	63	46.97	0.70

NE Combinations	N	Mean	std err	AC Combinations	N	mean	std err
Gloomy pessimists N+E-	51	47.37	0.87	Well-intentioned A+C-	41	46.57	0.89
Overly emotional N+E+	57	48.80	0.74	Effective altruists A+C+	35	51.20	0.95
Upbeat optimists N-E+	52	51.09	0.80	Self-promoters A-C+	42	50.35	0.88
Low-keyed N-E-	31	46.43	1.00	Undistinguished A-C-	88	48.20	0.63

OC Combinations	N	Mean	std err	EO Combinations	N	Mean	std err
Dreamers O+C-	64	46.80	0.69	Mainstream consumers E+O-	35	49.28	0.94
Good students O+C+	56	50.68	0.76	Creative interactors E+O+	80	50.07	0.65
By-the-bookers O-C+	21	51.42	1.20	Introspectors E-O+	36	45.29	0.92
Reluctant scholars O-C-	64	48.10	0.72	Homebodies E-O-	48	48.54	0.82

Note: bolded means are significantly different from other styles within group. Centered quintile is not included.