Associations between Self-Rated Health and Personality

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Objective: The goal of our study was to examine how Big Five personality factors predict variability in self-rated health in a sample of older African Americans from the Baltimore Study of Black Aging.

Methods: Personality was measured by the NEO Personality Inventory-Revised, and self-rated health was assessed by the Health Problems Checklist.

Participants: The study sample had 202 women and 87 men. Ages ranged from 49 to 90 years (M=67.2 years, SD=8.55), and average years of formal education was 10.8 (SD=3.3).

Results: Multiple linear regressions showed that neuroticism and extraversion were significant regression predictors of self-rated health, after controlling for demographic factors.

Conclusions: These findings suggest individual personality traits may influence health ratings, behaviors, and decision-making among older African Americans. (*Ethn Dis*. 2014;24[4]:418–422)

Key Words: Personality, Subjective Health, Self-rated Health, African Americans, Aging

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Introduction

Subjective reports of health status are commonly used in research as proxies for actual health status or mortality. The terms subjective health and self-rated health appear to be used synonymously in previous literature; we will use these terms interchangeably throughout.

Personality and Health

Previous research has shown a significant relationship between several health-related variables and personality. Specifically, Hagger-Johnson et al[1] found that in a UK sample, high neuroticism in low-SES women was a risk for CVD mortality; however, high neuroticism in high-SES women was protective and did not increase CVD mortality risk. High neuroticism also has been associated with greater incidences of negative emotions, stress, and less impulse control.[2] Booth-Kewley and Vickers[3] found neuroticism was associated with fewer wellness behaviors, less accident control behavior, and more traffic risk-taking behavior. Meanwhile, Löckenhoff et al[4] found neuroticism to be negatively associated with mental health in two samples and with physical health in one study sample (Baltimore Longitudinal Study of Aging).

In addition, higher levels of extraversion have been shown to promote both positive health behaviors (eg, more wellness behaviors and accident control)[3] and negative health behaviors (eg, smoking).[5] Conscientiousness has been related to better wellness behaviors, more accident control, and less traffic risk-taking.[3] In fact, a meta-analysis revealed that conscientiousness-related traits were negatively related to all risky health-related behaviors and positively related to all beneficial health-related behaviors.[6] Regarding agreeableness, Booth-Kewley and Vickers[3] found that agreeableness was associated with more wellness behaviors, more accident control, and less traffic risk-taking. Finally, Openness has been related to greater substance risk-taking and was the only statistically significant personality predictor of substance risk-taking.[3]

Personality and Self-Rated Health

Although many studies have examined associations among personality traits and physical health and behaviors, fewer studies have focused on the associations between self-rated or subjective health and personality. Furthermore, there have been inconsistencies in the literature in how personality traits and self-rated health are related due in part to methodological limitations.[4]

Studies have shown that people higher on neuroticism report more physical symptoms and are more likely to over-report symptoms in general.[7] One study found extraversion was positively related to subjective mental health in two samples, although no association was found between extraversion and physical health.[4] Furthermore, one of the few studies to examine the association between openness and agreeableness and subjective health found openness to be a positive predictor of self-rated physical health after controlling for the effects of age and hospitalization, but it did not find a relationship between agreeableness and self-rated health.[4] Interestingly, another study found that higher levels of agreeableness, conscientiousness, and openness and lower levels of Neuroticism were associated with increased tendency to report health symptoms.[8]

One remaining gap in the literature is how personality relates to self-rated

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health in African Americans. Health is a salient variable in research on African American older adults due to the pervasive health disparities experienced in this population. Heart disease continues to be the leading cause of death in the United States, and African Americans experience significantly higher age-adjusted mortality rates of coronary heart disease than Caucasians (for a review, see Whitfield et al).[9] Given their prevalence among African Americans, hypertension and cardiovascular disease are indicators of health status that need further examination to elucidate which factors are predictive of and account for differences in these diseases.

The aim of our study was to examine the relationships between personality and self-rated health in a sample of older African Americans. Most previous studies examining personality and self-rated health associations have been performed on younger adult, majority White populations. To our knowledge, no study has yet explored these associations in older African Americans. Given the physical and self-rated health disparities observed in this population, it is possible we will find relationships between personality and self-rated health factors that are different, exacerbated, or minimized from those populations previously studied. We hypothesize that personality will be significantly related to self-rated health, with more extraverted and conscientious personality styles associated with better self-rated health. Further, extraversion and conscientiousness will be significantly associated with self-rated health, with these personality factors statistically predicting better self-rated health. Finally, we expect that neuroticism will be associated with worse self-rated health, particularly for self-rated cardiovascular health.

METHODS

Participants

Participants were recruited from the Baltimore Study of Black Aging (BSBA).[10] The BSBA was started in 1997 to examine a large, diverse group of African American adults living in the metropolitan Baltimore area. The goal of the study was to understand biobehavioral relationships between physical and mental health indices, social factors, personality, and cognition. The BSBA had eight study waves, and our study comes from the third wave of data collection, which included 343 participants. Following the criteria outlined by the NEO-PI-R Manual,[2] 51 participants' data were excluded due to: 1) protocols missing greater than 40 items (7 participants); 2) repetitive response set (eg, 10 consecutive neutral responses; 41 participants); and 3) disagreement with having answered honestly (3 participants). The neutral response was used to substitute missing data in protocols with less than 40 missing items. The current sample had an average of 2.1 items missing in the NEO-PI-R protocols.

Three additional participants were excluded for missing demographic and health status data, which resulted in a final sample of 289 participants for the present analyses. This sample consisted of 87 men (30.1%) and 202 women (69.9%), aged 49–90 years (M=67.2 years, SD=8.55), with average years of formal education of 10.8 (SD=3.3).

Measures

Demographics

Age (years), sex (male = 0, female = 1), and years of education were included in the bivariate correlations and entered as covariates in the regression analyses.

Personality

The NEO Personality Inventory is a 240-item scale that measures the Big Five domains of personality (neuroticism, extraversion, openness, agreeableness, and conscientiousness). Reliability has been established by previous studies.[2] Our study used the revised pencil-and-paper version of the measure (NEO-PI-R).

Self-rated Health

The Health Problems Checklist is a 234-item scale that assesses health problems across 15 health domains.[11] In these analyses, we focused on general and cardiovascular self-rated health. We were particularly interested in cardiovascular health problems because of their high prevalence in African American groups. These scores were obtained by summing the responses of the questions for these two subscales.

RESULTS

Correlation Analyses

The average NEO-PI-R scores for each personality factor were between 113 and 145. Correlations between demographic variables, self-reported health status (general and cardiovascular) and personality factors were conducted. Age was positively related to neuroticism, suggesting that older individuals in this sample reported higher levels of neuroticism ($P<.01$). Younger individuals reported higher levels of both extraversion and openness ($P<.05$). Women reported more agreeableness ($P<.05$), and education was negatively associated with general health status ($P<.05$) and neuroticism ($P<.01$). Higher-educated

individuals reported fewer general health problems and neuroticism traits. Education was positively related to extraversion ($P<.05$), openness ($P<.05$), and conscientiousness ($P<.01$) (data not shown).

Furthermore, neuroticism was positively correlated with self-rated general health status and cardiovascular health status, indicating that a higher level of neuroticism was associated with higher report of health problems ($P<.01$). Next, extraversion was negatively correlated ($P<.01$) with both general and cardiovascular health status. This suggests that higher extraversion was related to fewer health problems reported. Finally, both agreeableness ($P<.05$) and conscientiousness ($P<.01$) were negatively related to general health status. As with extraversion, higher agreeableness and conscientiousness were significantly associated with fewer reported health problems.

Table 1. Linear regression with personality factors predicting general health status

	B	SE	Beta
Step 1			
Age	.003	.020	.008
Sex	.036	.359	.006
Education	−.125	.053	−.148[a]
Step 2			
Age	−.013	.020	−.040
Sex	.175	.345	.029
Education	−.054	.052	−.064
Neuroticism	.052	.011	.306[b]
Extraversion	−.032	.014	−.152[a]
Openness	−.001	.015	−.006
Agreeableness	−.009	.014	−.041
Conscientiousness	.004	.013	.020

[a] $P<.05$.
[b] $P<.01$.

Regression Analyses

Next, two hierarchical regression analyses were conducted with age, education, and sex entered into the models in the first step and personality factors added to the second step of the models to assess which factors were relatively more important in predicting self-rated general and cardiovascular health status. Tables 1 and 2 present the findings for the general health and cardiovascular health models, respectively.

For general health status, after controlling for demographic factors, neuroticism was a significant positive predictor ($P<.01$), whereas extraversion was a significant negative predictor ($P<.05$). This model explained 11% of the variance for general health (Adjusted $R^2 = .110$). These findings suggest that people higher on neuroticism were more likely to report more general health problems, and more extraverted individuals reported fewer general health problems.

Regarding the model for cardiovascular health status (Table 2), after controlling for demographics, neuroticism was a significant positive predictor, indicating that those with more neurotic personality styles reported a higher number of cardiovascular health problems. Consistent with the finding for general health, more extraverted people reported fewer cardiovascular health problems. This model explained 8.7% variance in cardiovascular health (Adjusted $R^2 = .087$).

DISCUSSION

The purpose of our study was to examine the relationships between personality factors and self-rated health in a sample of older African Americans. Previous research has been mixed and has not focused on this special population, which suffers from persistent health disparities across various areas. Our results suggest that individuals higher in neuroticism report more health problems for both general and cardiovascular issues. Conversely, individuals who scored higher on extraversion were more likely to report experiencing fewer problems for both general and cardiovascular health. These findings replicate those found in non-Hispanic Whites and suggest that

Table 2. Linear regression with personality factors predicting cardiovascular health status

	B	SE	Beta
Step 1			
Age	−.044	.025	−.111
Sex	.143	.439	.019
Education	−.153	.064	−.148[a]
Step 2			
Age	−.062	.024	−.156[a]
Sex	.314	.427	.042
Education	−.085	.065	−.083
Neuroticism	.049	.013	.239[b]
Extraversion	−.053	.017	−.207[b]
Openness	.008	.019	.031
Agreeableness	−.002	.017	−.008
Conscientiousness	.006	.016	.026

[a] $P<.05$.
[b] $P<.01$.

…individuals who scored higher on extraversion were more likely to report experiencing fewer problems for both general and cardiovascular health

high-neuroticism individuals may over-report symptoms in general. Neuroticism is linked to increased self-reports for health problems in multiple populations. It may be that individuals who report more neuroticism are more likely to display negative affect (emotions, stress, and impulse control).[2] This relationship suggests that internal focus, self-evaluations, and anxiety lead to heightened and, perhaps, hypochondriacal evaluation and attention to one's health. As such, high neuroticism may lead to seeking medical confirmation of chronic health conditions.

Extraverts typically report greater levels of subjective well-being later in life,[12] and subjective well-being contributes to better health and increased longevity.[13] Therefore, it is not surprising that we would find a relationship between extraversion and self-rated health in this sample. Extraversion may also be related to help-seeking behavior and the amount and style of communication with one's physician. If patients ask more questions and feel more at ease probing physicians, they may end up identifying preclinical states of chronic conditions because of the engagement with physicians. Thus, it appears that patients could benefit from an extraverted style of interaction with physicians and vice versa. If doctor communication with patients is optimized, this could contribute to reducing health disparities.

Relevance of Personality and Health in African Americans

Our findings are informative in understanding the health of African Americans. Although we know that, as a group, African Americans are more likely to experience greater mortality due to CVD and have a prevalence rate of hypertension (44%) that is the highest in the world,[14] these diseases may be exacerbated in neurotic individuals and less prevalent in more extraverted individuals.

Savla et al[15] examined the NEO-PI R in older African Americans and found that the factor structure was nearly the same as in samples of European Americans. At face value, this would suggest that personality-health relations are no different in African Americans than in Whites. However, statistically significant differences in mean scores of some domains and facets have been found to exist,[16] even though the structure may be highly similar across race. Differences in mean scores may be contributors to health disparities experienced by African Americans. On the other hand, it may be that higher proportions of African Americans are extraverted in their orientation, and this may protect some and lead to mortality advantages seen in very late life (crossover effect). This also would mean that if not for varied dimensions of personality within the African American population, health disparities might be worse.

CONCLUSIONS

These findings are important in the context of health disparities, because African Americans are disproportionately affected by chronic diseases and illness, such as hypertension and diabetes. Accounting for personality differences may help explain these persistent health disparities, especially when considering positive and negative health behaviors and the factors that contribute to whether or not people seek medical attention.

Finally, what remains to be studied is how for many African Americans, there is a disconnect between self-rated and objectively measured health status. If an individual does not believe or accept that s/he has a health condition, they may subsequently refuse to pursue medical assistance to deal with that condition. This minimization of health conditions may amount to a person displaying strength in the face of a health challenge; nonetheless, it is likely that this attitude leads to more health problems than it solves. Further investigation of the incongruence between one's perception and rating of health status and the actual presence of significant health problems should be connected to personality research, as the variability observed in African Americans may be due in part to differences in personality.

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REFERENCES

1. Hagger-Johnson G, Roberts B, Boniface D, et al. Neuroticism and cardiovascular disease mortality: socioeconomic status modifies the risk in women (UK Health and Lifestyle Survey). *Psychosom Med*. 2012;74(6):596–603.
2. Costa PT, McCrae RR. *Revised NEO Personality Inventory (NEO PI-R) and NEO Five-Factor Inventory (NEO-FFI) professional manual*. Odessa, FL: Psychological Assessment Resources. Quarterly. 1992;17:93–108.
3. Booth-Kewley S, Vickers RR. Associations between major domains of personality and health behavior. *J Pers*. 1994;62(3):281–298.
4. Löckenhoff CE, Sutin AR, Ferrucci L, et al. Personality traits and subjective health in the later years: the association between NEO-PI-R and SF-36 in advanced age is influenced by health status. *J Res Pers*. 2008;42(5):1334–1346.
5. Spielberger CD, Jacobs GA. Personality and smoking behavior. *J Pers Asess*. 1982;46(4):396–403.
6. Bogg T, Roberts BW. Conscientiousness and health-related behaviors: a meta-analysis of the leading behavioral contributors to mortality. *Psychol Bull*. 2004;130(6):887–919.

7. Feldman PJ, Cohen S, Doyle WJ, et al. The impact of personality on the reporting of unfounded symptoms and illness. *J Pers Soc Psychol*. 1999;77(2):370–378.
8. Letzring TD, Edmonds GW, Hampson SE. Personality change at mid-life is associated with changes in self-rated health: evidence from the Hawaii personality and health cohort. *Pers Indiv Differ*. 2014; 58:60–64.
9. Whitfield KE, Weidner G, Clark R, et al. Sociodemographic diversity and behavioral medicine. *J Consult Clin Psych*. 2002; 70(3):463–481.
10. Whitfield KE, Baker-Thomas TA, Heyward K, et al. Evaluating a measure of everyday problem solving for use in African-Americans. *Exp Aging Res*. 1999;25(3): 209–222.
11. Schinka JA. *The Health Problems Checklist*. Odessa, FL: Psychological Assessment Resources, Inc. 1989.
12. Gale CR, Booth T, Mottus R, et al. Neuroticism and Extraversion in youth predict mental wellbeing and life satisfaction 40 years later. *J Res Pers*. 2013;47(6):687–697.
13. Diener E, Chan MY. Happy people live longer: subjective well-being contributes to health and longevity. *Appl Psychol Health Well-Being*. 2011;3(1):1–43.
14. Go AS, Mozaffarian D, Roger VL, et al. Heart disease and stroke statistics—2013 update a report from the American Heart Association. *Circulation*. 2013;127(1):e6–e245.
15. Savla J, Davey A, Costa PT, et al. Replicating the NEO-PI-R factor structure in African-American older adults. *Pers Indiv Differ*. 2007;43(5):1279–1288.
16. Heuchert J, Parker W, Stumpf H, et al. The five-factor model of personality in South African college students. *Am Behav Sci*. 2000;44(1):112–125.

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