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Personality Traits and Chronic Illness: A Comparison of Individuals with Psychiatric, Coronary Heart Disease, and HIV/AIDS Diagnoses

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Until recently, personality research was conducted primarily with psychiatric patients. However, as links between personality characteristics and health are becoming more evident, researchers are increasingly focusing on ways in which personality plays a role in the predisposition for and outcome of physical as well as psychiatric illness. Personality traits underlie stable patterns of emotional and behavioral function that affect risk of

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developing chronic illnesses and the ways in which individuals perceive health and manage symptoms and treatment regimens, thereby, affecting outcomes (Aldwin, Spiro, Levenson, & Cupertino, 2001).-Understanding this mind-body relationship is relevant to the promotion and maintenance of health, particularly for the design of effective nursing interventions to promote healthy lifestyles and to manage symptoms and disease progression. The five-factor model of personality is an appropriate framework for examining personality traits among cohorts of patients with both chronic medical and psychiatric disorders (Christensen et al., 2002). Review of the most recent literature reveals links between personality traits and individuals living with coronary heart disease (CHD) and human immunodeficiency virus (HIV)/acquired immune deficiency syndrome (AIDS) (Denollet, Vaes, & Brutsaert, 2000; Trobst, Herbst, Masters, & Costa, 2002).

The purposes of this secondary data analysis study were to: (a) describe personality traits in patients with psychiatric, hyperlipidemia, and HIV/AIDS diagnoses and cardiothoracic transplant recipients; (b) explore relationships between personality traits and selected socio-demographic factors; (c) compare personality traits in each patient group with healthy subjects; and (d) compare profiles of personality traits across cohorts of patients with psychiatric disorders, hyperlipidemia, and HIV/AIDS, as well as cardiothoracic transplant recipients.

Background

“Personality traits are enduring patterns of perceiving, relating to, and thinking about oneself and the environment that are exhibited in a wide range of social and personal contexts” (American Psychiatric Association, 1994, p. 630). Early studies of personality in general medical populations were inconclusive and controversial due to the lack of an appropriate theoretical model and the use of instrumentation developed with psychiatric patients. The five-factor model of personality is the product of over four decades of factor analytic research in psychiatric and community populations; this model proposes that the basic dimensions of personality are represented by five traits: (a) neuroticism contrasts emotional stability and adjustment with instability and maladjustment; (b) extraversion contrasts sociability with preference for solitude; (c) openness contrasts the curious, imaginative with the conservative, conventional individual; (d) agreeableness is a dimension of tendencies toward altruism and cooperativeness versus egocentricity and competition; and (e) conscientiousness represents a continuum of goal-oriented vs. impulsive, tangential patterns of behavior (Costa & McCrae, 1992). The most salient personality traits in behavioral medicine and health psychology research have been neuroticism and conscientiousness. Two studies demonstrate significant relationships between high levels of neuroticism and low levels of conscientiousness and mortality in cohorts of patients with renal disease (Christensen et al., 2002) and diabetics (Brickman, Yount, Blaney, Rothberg, & De-Nour, 1996). Conscientiousness was the strongest predictor of self care agency according to Orem’s Self Care Deficit Theory of Nursing (Horsburgh, Beanlands, Locking-Cusolitto, Howe, & Watson, 2000). High neuroticism and low extraversion explained approximately 20% of the variance in self care among patients with end stage renal disease in an earlier study using Orem’s theory (Horsburgh, 1999).

High levels of neuroticism generate excessive and negative emotions that increase the risk for cardiac disease such as the extent of arterial stenosis or myocardial infarction (Denollet, Vaes, & Brutsaert, 2000). Proposed physiological mechanisms of the relationship between negative emotions and heart disease may be demonstrated by increases in catecholamines, slower metabolism of triglycerides, and hypertension (Allen, Stoney, Owens, & Matthews, 1993). Constitutional predisposition, or heritability, for personality traits is considerable (McCrae, Jang, Livesley, Reimann, & Angleitner, 2001) possibly contributing to the

increased risk for some chronic diseases. Because individuals seek and create situations that fit their personalities, some persons are more likely to place themselves in stressful situations and/or at risk for contracting and developing illness (Perkins, Davidson, Leserman, Liao, & Evans, 1993). For example, individuals with high neuroticism, low conscientiousness, and low agreeableness may be more likely to engage in behaviors that place themselves at risk for HIV infection (Trobst, Herbst, Masters, & Costa, 2002). Research in psychiatric populations demonstrates that negative patterns of personality traits are significantly higher in populations with histories of substance abuse and mood disorders (Regier et al., 1990), both of which are correlated with increased risk for chronic medical disorders.

Researchers have demonstrated overall stability of the five-factor personality traits throughout adulthood, acknowledging small individual differences in personality trajectories (Small, Hertzog, Hultsch, & Dixon, 2003) particularly in late life. There is little published work on links between socio-demographic variables and personality traits aside from sparse evidence that openness is related to educational level and that married people are less open and more extraverted (Bozionelos, 2004).

Personality traits not only underlie patterns of behavior that increase risk of acquiring acute or chronic illness but may also affect the self management and the course of the disease. Current nurse researchers are working with multi-disciplinary teams in order to better understand the complexities of patient behavior. It is vitally important to disseminate results of that research so that nurses have the evidence needed to best care for the whole patient.

Method

Participants

In this secondary data analysis study we pooled data on personality traits from four studies of patients with chronic medical or psychiatric illness; all subjects were on treatment regimens of varying complexity. None of these data have previously been published. A psychiatric sample, known to have a higher prevalence of personality pathology, was chosen to compare those individuals with samples of cardiothoracic transplant patients, patients with hyperlipidemia, and HIV/AIDS, illnesses known to be related to patterns of behavior believed associated with negative personality traits (Trobst, Herbst, Masters, & Costa, 2002). Data were collected from subjects at baseline in all studies. Instruments were self-administered, scored by the research teams, and entered into separate SPSS databases. For this study, pertinent data from each study were merged into a single database using SPSS (Version 11.0, SPSS Institute, Chicago, IL). All studies received Institutional Review Board approval prior to being conducted. A brief description of each of the investigations follows.

Psychiatric patients—One hundred and fifty-two psychiatric patients from the Mood Disorders Module at Western Psychiatric Institute and Clinic, Pittsburgh, PA were enrolled in an assessment and natural history outcome study (1990–97) to examine the predictive validity of measures of personality and personality disorders. Twenty percent of the subjects were inpatients and 80% were outpatients during the assessment period. All subjects had been diagnosed with a chronic mood disorder (depressive, anxiety, and bipolar disorders), the most prevalent diagnoses in the population of non-psychotic psychiatric patients. Of this sample, 129 participants completed the personality measure at baseline and are included in these analyses.

Hyperlipidemia—One hundred ninety-two volunteer subjects with recently diagnosed hyperlipidemia were included in an intervention study to test the effects of Lovastatin vs. placebo, and three behavioral interventions to promote medication adherence. As part of the

profile, individuals completed the personality measure at baseline. The sample was relatively healthy aside from low density lipoprotein cholesterol levels of >160 at baseline. A secondary analysis of the data determined that conscientiousness and the estimated intelligence quotient were robust predictors of medication adherence (Stilley, Sereika, Muldoon, Ryan, & Dunbar-Jacob, 2004).

Cardiothoracic Transplant Recipients—Ninety-one adult cardiothoracic transplant recipients completed the personality measure at 3–14 (M 5.6, SD 2.8) months after heart or lung transplantation. This research was an ancillary study to a five-year longitudinal study of adherence to medication, appointment keeping, and life-style change after transplantation. Mean values of personality traits for the sample were in the normative range but with wide variability; extreme values on 4 of the 5 personality traits were identified by subjects with a personality disorder (Stilley et al., 2005).

Patients with HIV/AIDS—Two hundred eleven patients with HIV/AIDS were recruited from community sites in a study designed to test an intervention to enhance adherence to combination therapy including protease inhibitors. The sample was representative of the general population of persons with HIV/AIDS as to age, gender, race, and risk factors at the time of data collection. Subjects completed the personality measure at baseline; medication adherence was assessed with electronic event monitors and diaries. Significant positive correlations were found between openness and dose adherence and between conscientiousness and interval adherence (Mellors, Erlen, Sereika, & Ptachcinski, 2001).

The entire sample numbered 623 subjects; demographic and background characteristics of the entire sample and by group are displayed in Table 1. Regardless of the patient sample, most participants were white. The patients with hyperlipidemia and the cardiothoracic transplant recipients were somewhat older than the psychiatric and HIV infected patients. Slightly more than half of the overall sample was men; two-thirds of the HIV sample were men. There were proportionately fewer single participants in the hyperlipidemia and cardiothoracic transplant groups. Two-thirds of the overall sample had greater than a high school education. The sample was primarily married or as with the HIV sample, partnered.

Measures

The NEO-PI, a 180-item instrument used in the psychiatric sample is a precursor to the 240 item NEO PI-R and the 60-item NEO-FFI; items for each of the trait subscales in the original measure are identical to those contained in the subscales of the newer measures. Normative sample descriptive data are available for only the newer measures; thus, the 60 FFI items were culled from each subject's raw data on the NEO PI to create a new, yet identical, measure for analyses in this study. Thus, two versions of the NEO Personality Inventory were used to measure personality traits in this study. The Revised NEO Personality Inventory (NEO PI-R) was used to measure personality traits in the hyperlipidemia and cardiothoracic transplant studies; the NEO-FFI, a condensed version, was used in the psychiatric and HIV/AIDS samples.

The NEO PI-R (Form S) is a 240-item paper and pencil questionnaire completed by the subject which rests on decades of factor analytic research on personality structure in both clinical and community samples (Costa & McCrae, 1992). The measure requires a 6th grade reading level and usually takes 30–45 minutes to complete. Internal consistency (alphas) published in the manual for the five trait scales are: neuroticism=.92, extraversion=.89, openness=.87, agreeableness=.86, conscientiousness=.90. The NEO-FFI is a shorter version of the NEO PI-R containing 60 identical items that yields the five trait scales each with 12 items. Cronbach's alphas for the trait scales are reported as: neuroticism=.86,

extraversion = .77, openness = .73, agreeableness = .68, and conscientiousness = .81 (Costa & McCrae, 1992). Test-retest reliability over three months to seven years of both the NEO PI-R and the NEO-FFI is demonstrated by coefficients ranging from .66–.92. Convergent, discriminant, and construct validity coefficients range over .5 in most comparisons (Costa & McCrae, 1992).

Data Analyses

Descriptive analyses were used to determine range and central tendency of traits in each sample. Relationships between personality traits and socio-demographic characteristics were examined with bivariate correlations (Spearman rho or eta). The *NEO PI-R Professional Manual* (Costa & McCrae, 1992) contains separate tables for the NEO PI-R and the NEO-FFI which convert raw scores into percentile ranks. Trait mean scores calculated for each sample were used to construct personality profiles using percentile ranks based on community based adult norms for both instruments. Costa and McCrae (1992) cite studies that were used to construct the norms for the NEO measures including the male veterans in the Normative Aging Study reported in 1972, both men and women in the Augmented Baltimore Longitudinal Study of Aging reported in 1978, and the peers of the Baltimore group reported in 1988.

Results

It is important to note, as is the case in all secondary and pooled analyses, that results are limited by characteristics of the samples available. Descriptions of personality traits in patients with psychiatric, hyperlipidemia, and HIV/AIDS diagnoses and cardiothoracic recipients are presented in Table 2 including the range of scores, means, and standard deviations for personality traits in each sample with percentile ranks for extreme scores. Minimum and maximum scores were compared with normative percentile ranks in the *NEO PI-R Professional Manual* for both the 60 and 240 item measures (Costa & McCrae, 1992). There are individual scores for all personality traits in all patient samples that are at the extremes, that is, at or below the first percentile, at or above the 98th or 99th percentile.

The relationships between personality traits and socio-demographic factors in each sample are presented in Table 3. As this table shows the most consistent relationship across studies is between educational level and openness which has been reported in other studies (Bozionelos, 2004). While age range is generally comparable across samples, the mean age in the psychiatric sample is younger than the others. Two-thirds of the total sample completed education beyond high school. Younger subjects in the psychiatric sample were significantly more neurotic, open, and less conscientious; older subjects in the hyperlipidemia sample were more agreeable and conscientious. Younger cardiothoracic transplant recipients were more introverted and less open; younger HIV/AIDS subjects were more neurotic and less agreeable. Female psychiatric and hyperlipidemia subjects were more agreeable; women in the HIV/AIDS sample were more neurotic, less open and less conscientious. Whites in the HIV/AIDS sample were more open. Subjects in the psychiatric sample who were single were less open and less agreeable.

Profiles of personality traits for each sample, constructed by using sample means and published community norm sample percentile ranks (Costa & McCrae, 1992), are displayed in Figure 1. Scores falling between the 27th and 73rd percentile are considered by statisticians to be within the average range of a normal distribution. Mean scores on all traits for all but psychiatric patients fell within that average range; psychiatric patients were more neurotic, less extraverted and less conscientious than the normative group and the other subjects in this study. Mean scores for HIV/AIDS patients fell within the average range; however, neuroticism was at the high end of average, and agreeableness and

conscientiousness were at the low end of average. Personality trait profiles across the groups are discussed in greater detail below.

Discussion

Links between personality and chronic illness are important because of the heritability of both (McCrae et al., 2001) and because personality underlies patterns of behavior making some individuals more vulnerable to contracting or developing illnesses such as HIV infection and cardiac disease (Perkins et al., 1993). This study extends prior research on personality traits among chronic illness populations by comparing personality profiles from samples of psychiatric patients, patients with hyperlipidemia, cardiothoracic transplant recipients, and patients with HIV/AIDS. Plotting the mean scores of the five traits for each group of patients provides a way to view the overall personality profile of each group and to compare the groups. Profiles feature mean scores on traits within the average range for all but the psychiatric sample that features very high neuroticism and very low conscientiousness. The psychiatric and HIV/AIDS patient profiles are similar in shape, but psychiatric patient profiles are more extreme on all traits except agreeableness when compared to the HIV/AIDS patients. The personality profiles of the hyperlipidemia patient and the cardiothoracic transplant recipient are similar in shape; all traits are in the average range. These findings support prior research linking different personality traits and different types of illnesses (Christensen et al., 2002); the findings are also consistent with prior reports of personality pathology in HIV/AIDS populations (Trobst et al., 2002).

Extreme values of the traits in the five-factor model of personality are strongly related to personality disorders which are common in both psychiatric and HIV/AIDS populations (Perkins et al., 1993). Neuroticism is highest in the psychiatric and HIV/AIDS patient samples, representing individuals who may be more emotionally unstable, with histories of more high risk and maladaptive behaviors than the other groups. The psychiatric and HIV/AIDS patient cohorts are more introverted and more open than the cardiothoracic transplant recipient and hyperlipidemia samples; these findings indicate that, as a group, the cardiothoracic transplant recipients and hyperlipidemia patients are more sociable and more conventional. Agreeableness and conscientiousness are lowest in the psychiatric and HIV/AIDS patient samples, indicating that these groups may have more egocentricity and competitiveness and more impulsive, tangential behaviors.

Interpreting the personality profile for an average patient in each sample, based on extensive work by the authors of the NEO measures (Costa & McCrae, 1992) illustrates differences between cohorts. It is important to note that, in comparing our samples to community norms, each of our samples was representative of the respective populations in terms of socio-demographic and diagnostic characteristics. For example, the average non-psychotic psychiatric patient would be emotionally labile, with high levels of anxiety and insecurity; this patient would also be socially isolative having few close relationships and low self esteem, tend to have a strong interest in experience for its own sake, be somewhat cynical but generally agreeable to others, and be impulsive and seek immediate rather than delayed gratification. The interpretation of the profile of the average patient with HIV/AIDS infection would be similar; however, this person would be slightly more emotionally stable, less isolative, more conservative in outlook, and have a tendency to seek unconventional experiences. This person would be less cynical than the psychiatric patient, with low self regulatory ability and generally impulsive patterns of behavior. The average hyperlipidemia patient or cardiothoracic transplant recipient would be even-tempered, socially connected but with a sense of reserve and independence. These patients would have a moderate level of intellectual curiosity and sense of adventure, be sympathetic to others, and be purposeful and goal oriented. It is noteworthy that personality profiles are similar in these samples of

patients, some of whom present with early and late manifestations of the same disease. While personality is rarely assessed prior to transplantation nor has it been considered a selection criterion, the personality characteristics of cardiothoracic transplant recipients are consistent with better adherence to treatment regimens in other samples which likely predicts longer survival to transplant and better health outcomes (Stilley et al., 2005).

These profiles of the average patient in each group suggest links between behavior patterns and the illnesses they have. For instance, impulsivity and low self regulatory ability increase vulnerability to psychiatric disorders and HIV/AIDS through conduct such as substance abuse (including IV drug use) and indiscriminate sexual activity. The even-tempered, socially connected yet reserved patient with hyperlipidemia or the cardiothoracic recipient might be more likely to engage in more socially acceptable indulgences such as over-eating or smoking.

However, there was considerable variability on the trait scores in each cohort suggesting that, although mean score profiles do represent the “typical” or “average” psychiatric, hyperlipidemia, and HIV/AIDS patient and cardiothoracic transplant recipient, individuals with atypical features may be common within each group. Therefore, nurses need to be aware of potentially negative personality traits when they encounter patients who are habitually unstable, thrill seeking, cynical, and impulsive, with poor social support systems. Although personality traits are stable and generally resistant to conventional therapy, alternate approaches and compensatory strategies can be successful. Treating mood and substance abuse disorders, strengthening social supports, teaching coping and self regulatory strategies, and delivering treatment plans in a collaborative fashion are likely to be more effective than conventional approaches when negative personality traits are an issue (Regier et al., 1990).

Our results are congruent with earlier research on relationships between personality traits and socio-demographic factors (Bozionelos, 2004). Education and openness are the most consistently and highly correlated across samples. The strongest inference that can be made about these relationships is that less neurotic and more open individuals are more highly educated which supports previous findings in personality research (Costa & McCrae, 1992). This finding may also explain some of the relationships between intelligence and treatment adherence reported in the health psychology literature (Stilley et al., 2004). Our data are insufficient to speculate about other significant associations between personality and socio-demographic factors; however, future research into relationships between age, gender and personality traits might examine whether our preliminary results are attributable to true age or to cohort effects.

Limitations of this study are primarily those inherent in any pooled or secondary analysis. The investigators were bound by the original studies as to the characteristics of the subjects, recruitment strategies, instrumentation, and methodology. Our analyses would have been simpler, and perhaps stronger, if the same version of the personality measure had been used in all studies. On the other hand, we were able to compare personality profiles across samples because the NEO instruments used in each of the original four studies shared identical items on each of the personality trait scales, allowing condensation of the original NEO PI-R measure, and because the authors and publishers had extensively normed both the NEO PI-R and the NEO-FFI. However, it is also possible that those participants completing the longer versions of the personality measure such as the NEO PI-R may have responded differently to some items had they been given the NEO-FFI with only the 60 items comprising the five trait scales.

There are implications for both nursing practice and research. Nurses are at the forefront of patient care and therefore are likely to encounter pervasive patterns of behavior and emotionality that are typically expressive of negative personality traits. Encouraging change in behaviors driven by maladaptive personality traits is likely to be less effective than addressing the underlying dynamics of those traits.

Nurse researchers are leaders in the study of patient characteristics that shape health, including assessments of personality traits in studies of chronic disorders where patient behavior is important for achieving positive outcomes. Two of the four studies in this analysis found that personality traits predicted medication adherence (Mellors et al., 2001; Stilley et al., 2004). Because this analysis is only a beginning understanding of the relationships between personality and chronic illness, further study of personality traits in diverse chronic illness populations is needed to understand better the processes underlying patient behaviors.

In conclusion, knowledge about personality traits may assist nurses in clinical practice to identify and target vulnerable individuals to more effectively promote and maintain patients' health. Nurses are uniquely positioned to be advocates of multidisciplinary approaches to patient care involving nurses, psychologists, and social workers that may be most effective in the treatment of patients demonstrating negative personality traits.

References

- Aldwin CM, Spiro A, Levenson MR, Cupertino AP. Longitudinal findings from the normative aging study: III. Personality, individual health trajectories, and mortality. *Psychology and Aging*. 2001; 16:450–564. [PubMed: 11554523]
- Allen MT, Stoney CM, Owens JF, Matthews KA. Hemodynamic adjustments to laboratory stress: The influence of gender and personality. *Psychosomatic Medicine*. 1993; 55:505–517. [PubMed: 8310111]
- American Psychiatric Association. Diagnostic and statistical manual of mental disorders. 4th ed. Washington, DC: Author; 1994.
- Bozionelos N. Personality and individual differences. *Personality and Individual Differences*. 2004; 36:1049–1058.
- Brickman AL, Yount SE, Blaney NT, Rothberg ST, De-Nour AK. Personality traits and long-term health status. The influence of neuroticism and conscientiousness on renal deterioration in type-1 diabetes. *Psychosomatics*. 1996; 37:459–468.
- Christensen AJ, Ehlers SL, Wiebe JS, Moran PJ, Raichle K, Ferneyhough K, et al. Patient personality and mortality: A 4-year prospective examination of chronic renal insufficiency. *Health Psychology*. 2002; 21:315–320. [PubMed: 12090673]
- Costa, PT.; McCrae, RR. NEO PI-R Professional Manual. Lutz, FL: Psychological Assessment Resources; 1992.
- Denollet J, Vaes J, Brutsaert D. Inadequate response to treatment in coronary heart disease: Adverse effects of type D personality and younger age on 5-year prognosis and quality of life. *Circulation*. 2000; 102:630–635. [PubMed: 10931802]
- Horsburgh ME. Self-care of well adult Canadians and adult Canadians with end stage renal disease. *International Journal of Nursing Studies*. 1999; 36:443–453. [PubMed: 10576115]
- Horsburgh ME, Beanlands H, Locking-Cusolitto H, Howe A, Watson D. Personality traits and self care in adults awaiting renal transplantation. *Western Journal of Nursing Research*. 2000; 22:407–437. [PubMed: 10826252]
- McCrae RR, Jang KL, Livesley WJ, Riemann R, Angleitner A. Sources of structure: Genetic, environmental, and artifactual influences on the covariation of personality traits. *Journal of Personality*. 2001; 69:511–535. [PubMed: 11497029]

- Mellors, MP.; Erlen, JA.; Sereika, SM.; Ptachcinski, RJ. Personality traits and adherence to antiretroviral therapy; Paper presented at the fourteenth annual conference of the Association of Nurses in AIDS Care; Minneapolis, MN. 2001 November.
- Perkins DO, Davidson EJ, Leserman J, Liao D, Evans DL. Personality disorder in patients infected with HIV: A controlled study with implications for clinical care. *American Journal of Psychiatry*. 1993; 150:309–315. [PubMed: 8422083]
- Regier DA, Farmer ME, Rae DS, Locke BZ, Keith SJ, Judd LL, et al. Comorbidity of mental disorders with alcohol and other drug abuse: Results from the Epidemiologic Catchment Area (ECA) Study. *Journal of the American Medical Association*. 1990; 264:2511–2518. [PubMed: 2232018]
- Small BJ, Hertzog C, Hultsch DF, Dixon RA. Stability and change in personality over 6 years: Findings from the Victoria Study. *Journal of Gerontology: Psychological Sciences*. 2003; 58B: 166–176.
- Stilley CS, Dew MA, Pilkonis P, Bender A, McNulty M, Christensen AJ, et al. Personality characteristics among cardiothoracic transplant recipients. *General Hospital Psychiatry*. 2005; 27:113–118. [PubMed: 15763122]
- Stilley CS, Sereika S, Muldoon MF, Ryan CM, Dunbar-Jacob J. Psychological and cognitive function: Predictors of adherence with cholesterol lowering medication. *Annals of Behavioral Medicine*. 2004; 27:117–124. [PubMed: 15026295]
- Trobst KK, Herbst JH, Masters HL III, Costa PT. Personality pathways to unsafe sex: Personality, condom use, and HIV risk behaviors. *Journal of Research in Personality*. 2002; 36:117–133.

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Figure 1.
 Personality Trait Profiles Based on Mean Sample Scores and Normative Percentile Ranks
 for Adult Community Samples
Note. N=Neuroticism. E=Extraversion. O=Openness. A=Agreeableness.
 C=Conscientiousness.

Figure 2.
Mean percentile ranks for sample groups compared to each across personality traits.
Note. N=Neuroticism. E=Extraversion. O=Openness. A=Agreeableness.
C=Conscientiousness.

Table 1

Socio-demographic Characteristics: Overall and by Patient Sample

Characteristic	Overall Sample	Psychiatric Patients	Hyper-lipidemia Patients	CT Transplant Recipients	HIV Patients
	N (%)	N (%)	N (%)	N (%)	N (%)
Race					
White	312 (73)	114 (88)	0	83 (90)	115 (55)
Black	94 (22)	14 (11)	0	7 (8)	73 (35)
Other	24 (6)	1 (1)	0	1 (2)	22 (10)
Missing	193	0	192	0	1
Age (years)					
Mean (SD)		35.11 (9.44)	46.36 (8.90)	50.72 (11.55)	40.63 (7.61)
Range	19–61	20–59	24–60	21–66	19–61
Gender					
Male	348 (56)	55 (43)	103 (54)	47 (52)	143 (68)
Female	275 (44)	74 (57)	89 (46)	44 (48)	68 (32)
Missing	0	0	0	0	0
Marital Status					
Single	181 (29)	60 (46)	16 (8)	13 (14)	92 (44)
Married	294 (47)	36 (28)	137 (71)	59 (65)	62 (29)
Other	147 (24)	33 (26)	39 (21)	19 (21)	56 (27)
Missing	1	0	0	0	1
Education					
≤ High School	220 (35)	22 (17)	54 (28)	41 (45)	103 (49)
> High School	403 (65)	107 (83)	138 (72)	50 (55)	108 (51)
Missing	0	0	0	0	0

Table 2

Range, Means, and Variability (SD) of NEO-PI-R (240 items) and FFI (60 items) raw scores with Percentile Ranks* of Extreme Scores for Five Factor Traits in Each Sample

Trait	Psychiatric Patients	HIV Patients	Hyperlipidemia Patients	CT Transplant Recipients
	FFI	FFI	PI-R	PI-R
Neuroticism				
Mean (SD)	31.53 (8.14)	22.62 (8.92)	81.67 (22.59)	77.78 (20.17)
Minimum	11 ¹	4 ¹	37 ¹	41 ¹
Maximum	47 ²	45 ²	147 ²	133 ²
Extraversion				
Mean (SD)	22.89 (7.32)	26.39 (6.42)	112.06 (19.62)	110.11 (18.46)
Minimum	6 ¹	8 ¹	45 ¹	63 ¹
Maximum	43 ²	44 ²	170 ²	153 ²
Openness				
Mean (SD)	29.78 (7.83)	27.68 (5.51)	110.68 (19.27)	101.32 (17.11)
Minimum	13 ¹	15 ¹	62 ¹	62 ¹
Maximum	46 ²	45 ²	168 ²	151 ²
Agreeableness				
Mean (SD)	31.14 (6.64)	29.76 (5.86)	124.92 (15.19)	125.78 (16.11)
Minimum	15 ¹	13 ¹	82 ¹	71 ¹
Maximum	48 ²	44 ²	176 ²	162 ²
Conscientiousness				
Mean (SD)	27.35 (8.40)	31.96 (6.61)	120.21 (20.58)	121.74 (20.51)
Minimum	6 ¹	5 ¹	46 ¹	60 ¹
Maximum	46 ³	48 ²	171 ²	162 ³

Note. Percentile ranks are based on normative adult data (community samples) for each scale published in Costa, P. T., & McCrae, R. R. (1992). *NEO PI-R Professional Manual*. Lutz, FL: Psychological Assessment Resources.

¹ ≤ 1st Percentile.

² ≥ 99th Percentile.

³ ≥ 98th Percentile.

Table 3

Relationships Between Socio-demographic Factors and Personality Traits in Each Sample (Spearman's Rho (r_s) for Age, Eta (η) for other Factors)

Study	Trait	Age (r_s)	Gender (η)	Race (η)	Marital Status (η)	Education (η)
			1=Male 2=Female	1=White 2=Black 3=Other	1=Single 2=Married 3=Other	1=HS or less 2=Beyond HS
Psychiatric	N	-.18*	.08	-.04	-.08	.10
Patients	E	-.05	.11	-.12	.08	-.13
(n=129)	O	-.25**	-.11	-.11	-.34**	.31**
	A	.16	.25**	.18*	.18*	-.04
	C	.18*	.17	.16	.16	-.13
Hyper-	N	-.02	.19*		.08	-.21*
lipidemia	E	-.01	-.07	Data	-.05	.16*
Patients	O	-.13	.01	not	.08	.32**
(n=192)	A	.23**	.27**	Available	.09	-.07
	C	.16*	.02		-.09	-.03
CT	N	.10	-.06	.02	.07	-.28**
Transplant	E	-.27**	-.01	.11	-.06	.40**
Recipients	O	-.21*	.13	.21	-.10	.32**
(n=91)	A	.12	.16	-.06	-.02	.05
	C	-.12	.08	.20	-.04	.10
HIV	N	-.17*	.17*	-.11	-.01	-.18**
Patients	E	-.04	-.10	.13	.01	.03
(n=211)	O	.02	-.16*	-.16*	-.05	.29**
	A	.23**	-.03	-.02	.16*	.12
	C	.07	-.16*	.04	.05	.12

*
p<.05.

**
p<.01

Note. N=Neuroticism. E=Extraversion. O=Openness. A=Agreeableness. C=Conscientiousness.