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Personality traits and illicit substances: The moderating role of poverty

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ABSTRACT

Background: Illicit substances increase risk of morbidity and mortality and have significant consequences for society. Personality traits are associated with drug use; we test whether these associations vary by socioeconomic status.
Method: Participants ($N = 412$) from the Healthy Aging in Neighborhoods of Diversity across the Life Span (HANDLS) study completed the Revised NEO Personality Inventory and self-reported use of opiates and cocaine. 50% of participants were living below 125% of the federal poverty line. Mean-level personality differences across never, former, and current opiate/cocaine users were compared. Logistic regressions compared never versus current users and interactions between personality traits and poverty status tested whether these associations varied by socioeconomic status.
Results: High Neuroticism and low Agreeableness increased risk of drug use. The association between low Conscientiousness and drug use was moderated by poverty, such that low Conscientiousness was a stronger risk factor for illicit substance use among those with relatively higher SES. For every standard deviation decrease in Conscientiousness, there was a greater than 2-fold increase in risk of illicit substance use (OR = 2.15, 95% CI = 1.45–3.17). Conscientiousness was unrelated to drug use among participants living below 125% of the federal poverty line.
Conclusions: Under favorable economic conditions, the tendency to be organized, disciplined, and deliberate is protective against drug use. These tendencies, however, matter less when financial resources are scarce. In contrast, those prone to emotional distress and antagonism are at greater risk for current drug use, regardless of their economic situation.

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1. Introduction

Drug use and addiction is complex and involves both psychological and economic factors. Among the psychological factors, several traits that define the Five Factor Model of personality (Neuroticism, Extraversion, Openness to Experience, Agreeableness, and Conscientiousness) have been implicated in the use of illicit substances. Individuals who are prone to negative emotions (high Neuroticism), those who are antagonistic and hostile (low Agreeableness), and those who are disorganized and undisciplined (low Conscientiousness) are more likely to use drugs than those who score on the opposite pole of these traits (Anderson et al., 2007; Grekin et al., 2006; Kornør and Nordvik, 2007; Prisciandaro et al., 2011; Terracciano et al., 2008). Personality traits have also been implicated in the etiology of drug addiction. Adolescents who score high on Negative Emotionality, a trait akin to Neuroticism, or low on Constraint, a trait akin to Conscientiousness, are at greater risk of developing a substance dependence disorder by age 20 (Elkins et al., 2006). This evidence suggests that personality traits are in part an antecedent, not just consequence, of illicit drug use.

In addition to psychological factors, economic and social factors are also associated with drug use. The availability of drugs in the neighborhood, social norms, and low socio-economic status (SES) increase the likelihood of use (Degenhardt and Hall, 2012). In addition to the main effects of economic and psychological factors, the two may interact to amplify or ameliorate risk. For example, personality traits may be one coping resource to buffer against a poor economic situation. Personality traits could also be a vulnerability that exacerbates risks faced in the community.

In a diverse sample of urban dwellers, we examine the association between personality traits and use of cocaine and opiates. Our first goal is to identify a personality profile associated with drug use. Our second goal is to test whether the personality-drug use associations vary by poverty status. We also examine whether these associations vary by other demographic factors (race, sex, age).

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2. Method

2.1. Sample

Participants were drawn from the Healthy Aging in Neighborhoods of Diversity across the Life Span (HANDLS) study (Evans et al., 2010). HANDLS is a population-based longitudinal study designed to disentangle the effects of race and socio-economic status on morbidity and mortality. Participants were recruited as a fixed cohort from an area probability sample of 12 census segments in Baltimore, MD. To be included, participants had to be between 30 and 64 years old, be able to give informed consent, be able to perform at least five of the measures (medical history, physical performance, cognitive testing, dietary recall, audio questionnaire, body composition, carotid Doppler, or pulse wave velocity), and have a valid picture identification; exclusion criteria included pregnancy at time of entry and being within six months of cancer treatment.

From the total HANDLS cohort, 412 participants had valid personality and drug use assessments (see below). This subsample was selected such that participants were contacted for the personality assessment in the same order that they were recruited for the initial wave of testing. Although not every participant was available for interview, we attempted to contact all participants for which we had resources. The personality assessment was terminated because of financial constraints and was not based on pre-determined criteria. The response rate for contacted individuals was 88%. This sample was 66% female, 55% African American, and 50% were living below 125% of the federal poverty line, which is similar to the composition of the overall HANDLS cohort (Evans et al., 2010). The average age was 49.81 (SD = 8.38).

2.2. Measures

2.2.1. Personality. Participants completed the Revised NEO Personality Inventory (NEO-PI-R), a reliable and valid measure of personality traits (Costa and McCrae, 1992). The NEO-PI-R consists of 240 items that assess the five broad domains and 30 specific facets of personality. A trained staff member administered the personality measure via telephone. Psychometric properties of the NEO-PI-R were good in this sample and have been described in detail elsewhere (Sutin et al., submitted for publication). Normative data were used to standardize raw scores into T-scores (mean = 50, SD = 10).

2.2.2. Drug use. Use of illicit substances was self-reported. Participants were asked about their current and past use of opiates (heroin/morphine/codeine) and cocaine/crack. Participants were asked if they had ever used these substances and, if so, when was the last time they used it. Participants who had used cocaine and/or opiates within the last six months were classified as current users (n = 98; opiates only = 27, cocaine only = 40, both substances = 31), those who had used in the past but not within the last six months were classified as former users (n = 24), and those who had never used either cocaine or opiates were classified as never users (n = 290).

2.3. Statistical analyses

We used Analysis of Covariance (ANCOVA) to examine personality differences across never, former, and current opiate/cocaine users controlling for age, sex, ethnicity, and poverty status. We also used logistic regression to examine whether personality differentiated between current users and never users, controlling for the demographic factors. We then tested whether poverty, race, sex, and age moderated any of the factor-level associations using Aiken and West's (Aiken and West, 1991) method for testing interactions. For the moderator analyses, we followed up any significant factor-level associations with analyses on the facets.

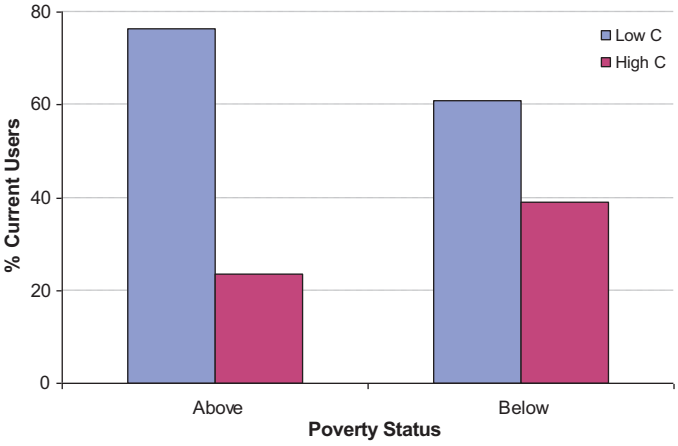

Fig. 1. Percentage of drug users scoring high and low in Conscientiousness by poverty status.

3. Results

Estimated marginal means (standard errors) for never, former, and current opiate/cocaine users are shown in Table 1. There were significant differences across the groups for Neuroticism, Agreeableness, and Conscientiousness. Post hoc analyses revealed that former and current opiate/cocaine users scored lower on both Agreeableness and Conscientiousness than never users and current users scored significantly higher on Neuroticism than never users. The logistic regressions further indicated that for every standard deviation increase in Neuroticism, there was about a 25% increased risk of current drug use, whereas for every standard deviation decrease in Openness to Experience, Agreeableness, and Conscientiousness there was a 25%, 45%, and 35% increased risk of use, respectively.

The facet-level analyses generally followed the domain-level associations. Current opiate/cocaine users scored higher on all facets of Neuroticism, except N4: Self-Conscientiousness. That is, current users were more prone to anxiety, hostility, depression, and were more impulsive and vulnerable to stress. Current users scored lower on all facets of Agreeableness, except A5: Modesty and A6: Tender-Mindedness, and lower on all facets of Conscientiousness than never users. Although there were no differences across the three groups for domain-level Extraversion, there were several differences at the facet level. Current users were more cold (low E1: Warmth), submissive (low E3: Assertiveness), and unhappy (low E6: Positive Emotions), but tended to crave excitement and stimulation (high E5: Excitement-Seeking). In general, former users scored in between never and current users and did not differ significantly from the other two groups.

Our second goal was to test whether poverty status moderated the association between personality and current drug use. And, indeed, the association between Conscientiousness and drug use varied by poverty level ($OR_{CxPoverty}$ = 1.05, 95% CI = 1.01–1.10; Fig. 1). Low Conscientiousness was a risk factor for substance use among those living above 125% of the poverty line, whereas it was unrelated to drug use among those living below this line. Specifically, among participants with relatively more means, there was a greater than 2-fold increase in risk of illicit substance use for every standard deviation decrease in Conscientiousness (OR = 2.15, 95% CI = 1.45–3.17). At the facet level, this pattern held for C1: Competence ($OR_{C1xPoverty}$ = 1.05, 95% CI = 1.01–1.10), C5: Self-Discipline ($OR_{C5xPoverty}$ = 1.05, 95% CI = 1.01–1.10), and C6: